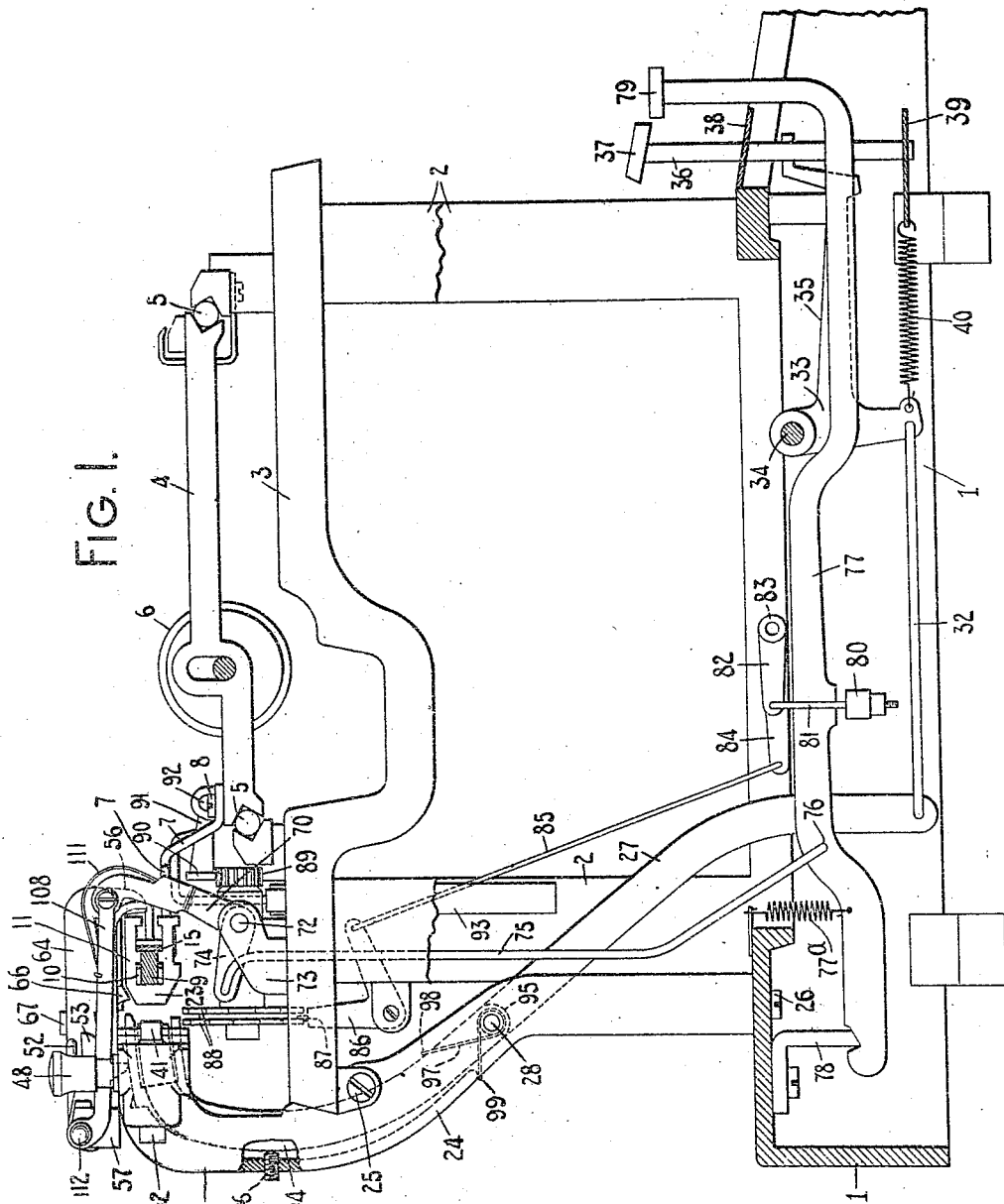


C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 26, 1912.

1,043,368.

Patented Nov. 5, 1912

3 SHEETS-SHEET 1.



WITNESSES:

E. M. Wells.
M. F. Hammer.

INVENTOR.

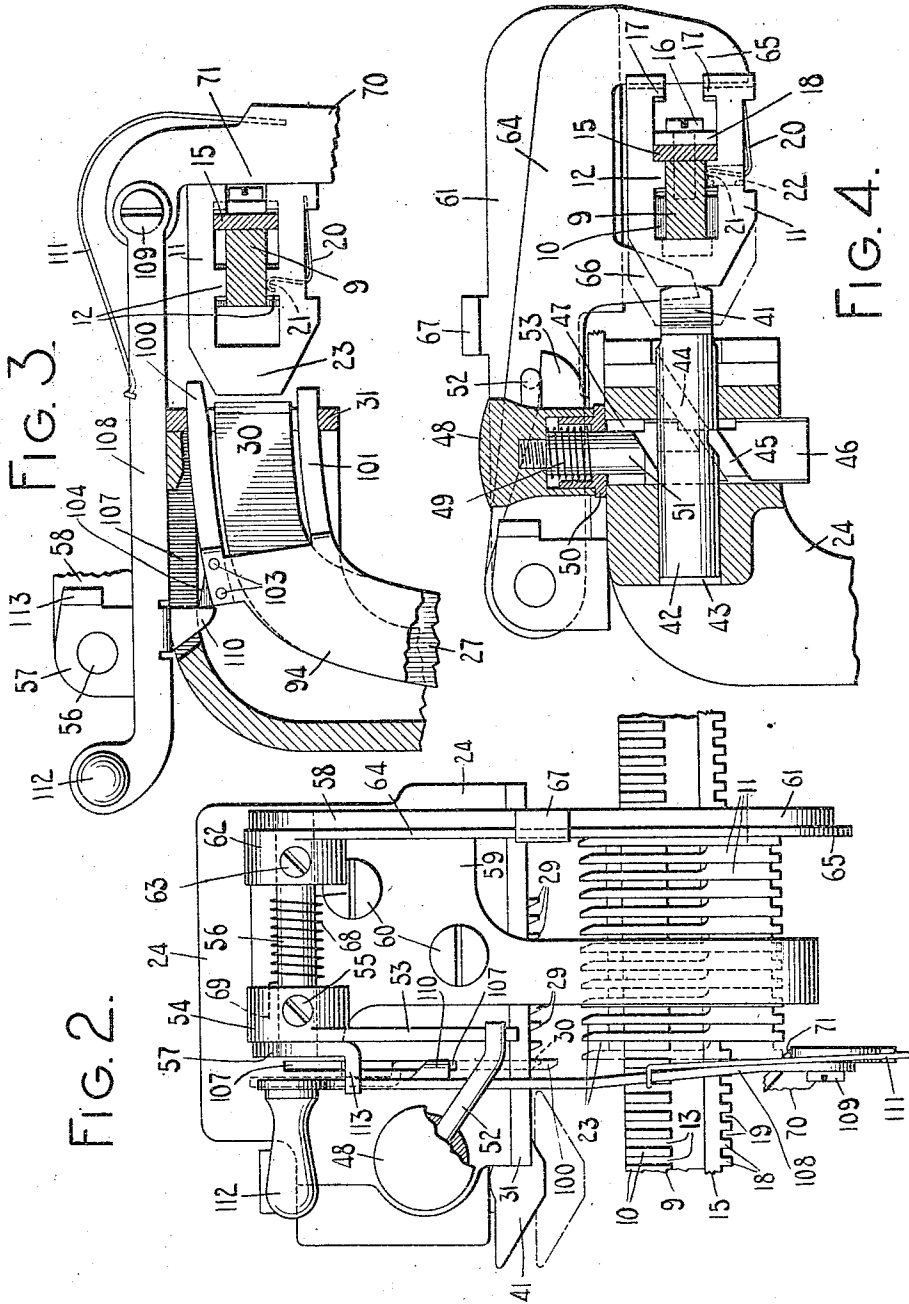
Charles E. Smith
By Jacob Felbel
HIS ATTORNEY

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 26, 1912.

1,043,368.

Patented Nov. 5, 1912.

3 SHEETS-SHEET 2.



WITNESSES:

E. M. Wells.
M. F. Hammer.

INVENTOR:

Charles E. Smith
By Jacob Felber
HIS ATTORNEY

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 26, 1912.

1,043,368.

Patented Nov. 5, 1912.

3 SHEETS-SHEET 3.

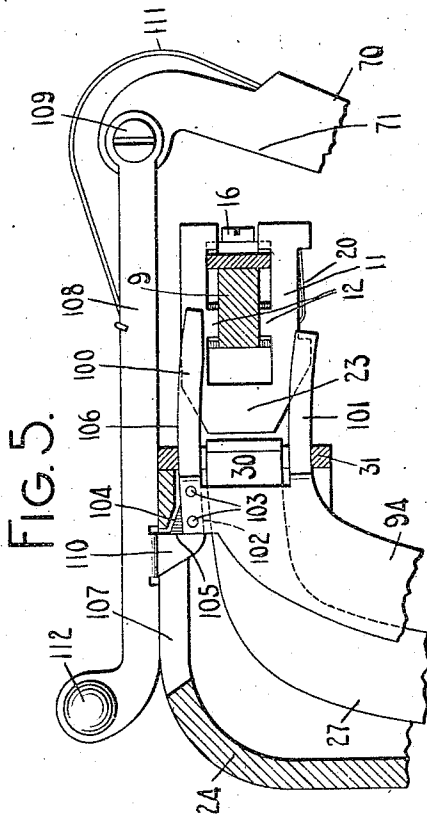


FIG. 8.

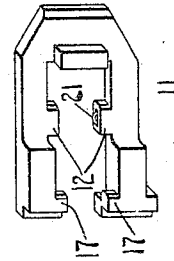


FIG. 7.

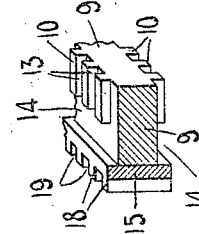


FIG. 9.

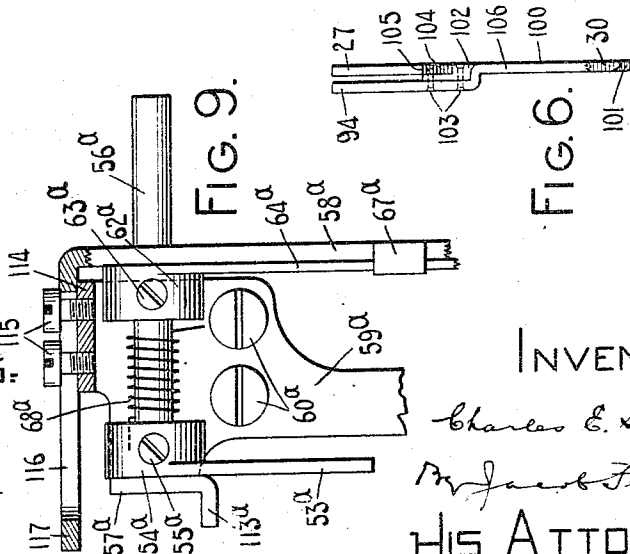
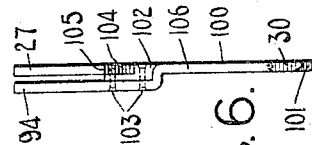


FIG. 6.



WITNESSES:

2. M. Wells.
M. F. Hammer

INVENTOR:

Charles E. Smith
My Jacob F. F. F.
HIS ATTORNEY

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.

1,043,368.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed June 23, 1912. Serial No. 705,938.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, a 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 tabulator mechanism and to means for readily bringing the column stops into use at different column determining positions and for "clearing" the stops preparatory to resetting them in a different arrangement.

My invention is in the nature of an improvement on the constructions disclosed in my Patent No. 979,216, dated December 20th, 1910, and in an application filed by me May 13th, 1912, Serial No. 696,858.

One object of my invention, generally stated, is to provide comparatively simple and efficient means of the character specified and which may be operated with greater facility than heretofore.

Some of the further objects of my invention, generally stated, are as follows:—1st, to provide means for automatically effecting a letter space movement of the carriage after each column stop is rendered operative; 2nd, to provide an automatically actuated stop positioning device coöperative with the column stops to aid in adjusting them; 3rd, to provide a column stop positioning device, the working face of which is in the plane of the working face of a tabulator stop which coöperates with the column stops; 4th, to provide a column stop positioning device which is controlled by stop setting means; 5th, to provide means for automatically effecting an operative connection between the stop setting device and a column stop positioning device; 6th, to provide means operable at will for effecting a disconnection between such devices; 7th, to provide two independently operable key controlled stop positioning devices; 8th, to provide means by which the carriage escapement mechanism is controlled by the stop setting means; 9th, to provide improved stop positioning means which are coöperative more effectually than heretofore with the column stops to aid in attaining a proper positioning of the stops; 10th, to provide

two automatically actuated positioning devices between which the entire series of column stops may be received; 11th, to provide means for effecting a relative adjustment between two column stop positioning devices; 12th, to provide efficient stop setting and clearing means which may be readily embodied in existing forms of typewriting machines and tabulator mechanisms without materially modifying the structural features of such machines as they now exist; and 13th, to improve generally my former constructions and facilitate the operation of positioning and adjusting the stops.

To the above and other ends which will hereinafter appear, my invention consists in the features of constructions, 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 corresponding parts in the various views, Figure 1 is a side elevation, with parts in section, of one form of typewriting machine embodying my invention. Fig. 2 is an enlarged detail fragmentary plan view showing portions of the tabulator mechanism and the coöperative devices by which the column stops are adjusted, set and cleared. Fig. 3 is an enlarged fragmentary side elevation of the same with parts in section and with some of the parts represented in Fig. 2 omitted. Fig. 4 is a like view of the same with some of the parts represented in Fig. 3 omitted and some of the parts omitted in Fig. 3 represented. Fig. 5 is a view which corresponds to Fig. 3 except that the parts are shown differently disposed in the two views. Fig. 6 is a detail fragmentary plan view of the decimal stop and positioning device associated therewith. Fig. 7 is a detail fragmentary perspective view of the column stop bar and the retaining bar. Fig. 8 is a detail perspective view of one of the column stops. Fig. 9 is a fragmentary detail plan view of a modified form of construction of positioning device with parts in section.

I have shown my invention in the present instance embodied in a No. 11 Remington machine although some of the parts of that machine are only conventionally represented to simplify the illustration. The invention may be readily included in this machine

without materially modifying the structural features of the machine as they now exist. It should be understood, however, that the invention may be embodied in various forms of typewriting machines and may be employed in connection with different characters of tabulating mechanism, the present embodiment of the invention being but one of the various forms which the invention may assume.

10 In the present instance the frame of the machine comprises a base 1, corner posts 2 and top plate 3. A carriage 4 is mounted on anti-friction balls or rollers 5 to travel over the top plate from side to side of the machine, the carriage as shown supporting the usual cylindrical platen 6. Rearwardly extending bracket arms 7 are fixed by screws 8 to the carriage and are connected at their rear ends to a column stop bar 9. This bar is provided with oppositely extending teeth 10 projecting from the upper and lower sides thereof. A series of column stops, each designated as a whole by the reference numeral 11, is mounted upon the column stop bar for movement thereon fore and aft of the machine out of and into operative position. The stops are also mounted for relative sliding adjustment along the column stop bar to different column determining positions. Each column stop is substantially U-shape and is provided with oppositely disposed inwardly projecting teeth 12, which when the stops are moved to operative position, as indicated in Fig. 5, are adapted to be received in interdental spaces 13 between adjacent teeth 10 on opposite sides of the column stop bar to lock the stops against sliding adjustment along the stop bar. 40 When, however, the column stops are moved to the inoperative position represented in Fig. 1 and in full lines in Fig. 4, the teeth 12 are received in longitudinally extending channels 14 on opposite sides of the column stop bar so that the column stops are disengaged from the rack teeth 10 so that the column stop bar and column stops are freed from each other to afford an independent relative movement between them longitudinally of the stop bar. A retaining bar 15 is adapted to be received in and extend through the central opening in the column stops and may be secured at its ends to the column stop bar by screws 16. When this retaining bar is secured in place the top and bottom edges thereof extend respectively above and below the top and bottom edges of the column stop bar so as to cooperate with the teeth 12 and with oppositely projecting teeth 17 to prevent a removal of the column stops from the bar. The retaining bar 15 is provided with forwardly projecting teeth 18 and the teeth 17 on the column stops are adapted to be received in the interdental spaces 19 between the teeth 18 when

the column stops are moved to operative position, as represented in Fig. 5. Each column stop is preferably provided with a detent spring 20 secured at one end to the associated column stop. The free end 21 of each detent spring extends through an opening 22 formed in the associated column stop and bears against the body portion of the column stop bar 9 to aid in maintaining the column stop against accidental displacement from the position to which it may be positioned on the stop bar. The column stops, except for the detent springs, are somewhat like those shown in my prior application hereinbefore referred to and these stops are mounted on the stop bar and held in place by a retaining bar, as in the prior construction. Further description thereof is therefore deemed unnecessary, except to point out that each stop is preferably of a width that corresponds to a full letter space movement of the carriage and that the different column stops are adapted to bear directly against one another and to maintain their contact or engaging portions 23 separated at letter space intervals, as represented in Fig. 3.

When the column stops are in the operative position indicated in Figs. 3 and 5, they are positioned so as to cooperate with key controlled tabulator stop mechanism of any suitable character. In the present instance I have shown denominational stop mechanism, such as is employed in the No. 11 Remington machine. Thus a tabulator frame 24 is fixedly secured to the frame of the machine by screws 25 and 26, and for the purpose of the present invention may be regarded as a part thereof. A series of denominational stop levers 27 are pivoted in the tabulator frame at 28 and extend upwardly and forwardly to form a series of denominational stops 29 the decimal stop being separately indicated by the reference numeral 30. These stops extend through the usual guide comb 31 and are adapted to be projected into the path of the column stops when the latter are projected to operative position. The lower end of each denominational stop lever is connected to an actuating link 32 which in turn is connected at its forward end to a depending arm of an angular lever 33, which latter is pivotally mounted on a pivot rod 34 mounted in the base of the machine. The forwardly extending arm 35 of each angular lever 33 is operatively connected to a key stem 36 which carries a denominational key 37, and which is received in guide openings in guide plates 38 and 39 secured to the frame of the machine. The depending arm of each angular lever 33 is connected to one end of a contractile spring 40, which spring in turn is connected at its opposite end to the guide plate 39. The usual means (not shown), by which the carriage is released on the depres-

sion of a denominational key, is provided. It will be understood, therefore, that a depression of a denominational key is effective to project the corresponding denominational stop forwardly into the path of the operative column stops and to effect a release of the carriage.

From certain aspects of the invention the means by which the column stops are "cleared" or moved to inoperative position may be of any suitable character but, as shown in the present instance, are similar to those employed in the No. 11 Remington machine and comprise a clearing device, cam or wiper 41 formed on the forward end of a stem 42 adapted to move fore and aft of the machine in a bearing opening 43 formed in the tabulator frame 24. This stem has an inclined cam groove 44 extending diagonally across a flattened side thereof and in which is received an inclined cam projection 45 on a flattened side of a key controlled actuating member 46. An actuation of the member 46 effects a back and forth camming movement of the stem 42 and the wiper carried thereby. The member 46 is received in a bearing opening 47 which extends at right angles to the bearing opening 43 in the tabulator frame and is provided at its upper end with a finger piece 48. An expansion spring 49 bears at its upper end against the finger piece 48 and at its lower end against a cup-like containing member 50 which is supported on the top of the tabulator frame. A stem 51 of the member 46 passes freely through a central opening in the part 50 and is surrounded by the coiled spring 49. The spring is effective to normally maintain the finger piece and the member 46 in elevated position, and to maintain the wiper 41 in the full line position represented in Fig. 2 where it is out of cooperative relation with the operative column stops. When, however, the finger piece or key 48 is depressed the wiper 41 is moved forwardly to the dotted line position represented in Fig. 2 where it is in cooperative relation with the column stops which are in the operative position, and a traveling movement of the carriage at this time is effective to cam the operative column stops from the dotted line to the full line position represented in Fig. 4 to move the column stops from the operative to the inoperative position.

The finger piece 48 is provided with a pin or arm 52 which extends to the right thereof and overlies a crank arm 53 formed with a hub 54. This hub is secured by a set screw 55 to a rock shaft 56 mounted to turn in bearing openings in an upwardly extending ear 57 and in an upwardly extending projection 58, the ear and projection being formed, in the example shown, on a bracket plate 59 secured on top of the tabulator frame 24

by screws 60. The projection 58 is extended forwardly beyond the tabulator frame 24 and over the column stop bar to form a supporting member or arm 61. A second hub 62 is secured to the rock shaft 56 by a screw 63. An arm or column stop positioning device 64 extends forwardly from this last mentioned hub and is bifurcated at its forward end portion to provide two depending arms or fingers 65 and 66 which in the normal position of the arm 64 are arranged above the column stop bar and out of the path of the column stops. The arm 64 receives a bearing against the supporting arm 61, which latter resists the movement of the arm or positioning device 64 to the right. An ear or stop 67 extends from the upper edge of the supporting arm 61 and overlies the stop positioning device 64 and is adapted to limit the upward movement of the latter. A coiled spring 68 surrounds the rock shaft 56 and bears at one end against the bracket plate 59 and is received at its opposite end, as at 69, in an opening in the hub 54. The power of this spring is exerted to normally maintain the positioning device 64 and the crank arm 53 in the elevated position. When, however, the finger piece or key 48 is depressed to move the wiper or clearing device 41 to operative position, the arm 52 cooperates with the crank arm 53 to move the positioning device 64 into cooperative relation with the column stops, as represented in Fig. 4. When the positioning device is in the position shown in this figure the arms 65 and 66 cooperate with opposite end portions of the column stop on opposite sides of the column stop bar to arrest the column stops during the movement of the carriage from left to right and to group the column stops against the positioning device 64, as represented in Figs. 2 and 4. In other words, a depression of the key 48 is effective to move the wiper 41 to operative position and to simultaneously interpose the positioning device 64 in the path of the column stops. As the carriage moves from left to right the column stops, which are in the operative position, are successively moved to the inoperative position by the wiper 41 and as the stops continue their movement to the right with the carriage beyond the wiper they are brought into engagement with the positioning device 64 or with a column stop previously arrested by said positioning device so that the various column stops are grouped as indicated in Fig. 2. This stop positioning device, and the manner of controlling it, is substantially the same as in the construction represented in my pending application hereinbefore referred to.

The column stops in the present instance are operated upon individually to move them to operative position by a device simi-

lar to that employed in the No. 11 Remington machine for setting the stops in the operative position. This device, as shown, comprises a crank arm 70 which has an engaging member 71 of a width sufficient to cooperate with but one column stop at a time. The crank arm 70 is fixed to a rock shaft 72 supported in bracket arms 73 forming part of a bracket member secured to the top plate of the machine in the usual manner. A second crank arm 74 projects rearwardly from the rock shaft 72 and is connected to the upper end of a depending link 75. The lower end of this link is pivoted at 76 to a key lever 77 which is fulcrumed on the usual fulcrum bar 78 and is returned to normal position by a spring 77^a. The key lever 77 extends forwardly to the keyboard of the machine where it is provided with a finger key 79 by which the stop setting device 70 is actuated.

From an inspection of Fig. 1 it will be observed that the key lever 77 extends over the universal bar 80 of the escapement mechanism, the universal bar being connected by links 81 to crank arms 82 secured to a rock shaft 83. A third arm 84 extends centrally from the rock shaft 83 and is connected by means of an upwardly extending link 85 to a dog rocker 86. This dog rocker carries a feed dog 87 which cooperates with two relatively adjustable escapement wheels 88 which in operation are maintained relatively fixed, the wheels being operatively connected to a feed pinion 89. The feed pinion meshes with a feed rack 90 connected to forwardly extending arms 91 which are pivoted at 92 to the carriage. The escapement mechanism thus described may be of the usual construction employed in the No. 11 Remington machine, or of any suitable construction.

It will be understood from the foregoing description that a depression of the stop set key 79 at the keyboard of the machine is effective to move the stop setting device from the normal position shown in Fig. 1 to the operative position indicated in Fig. 3, to effect a movement of the column stop which is in register therewith from the inoperative to the operative position. At the same time the universal bar 80 is depressed and at the last portion of the movement of the finger key 79 the feed dog 87 is shifted from one escapement wheel to the other, it being understood that there is a slight "drop" during this movement of the dog from one escapement wheel to the other. It will also be understood, that after the column stop has been moved in the manner described to operative position and pressure is released on the stop set key 79, the stop set device will be returned to its normal position by the spring 77^a and as the feed dog 87 moves back into engagement

with the normally engaged escapement wheel a letter space movement of the carriage will be effective under the power of the spring drum 93, which is connected in the usual manner to the carriage. It will be seen, therefore, that after each column stop is moved to operative position a letter space movement of the carriage is effected to bring the next adjacent column stop into register with the stop setting device, as will hereinafter more clearly appear.

The column stops having been grouped in the manner indicated in Fig. 2, it is necessary to retain the group of stops in such position that one of them will register with the engaging portion of the stop setting device 70 to enable the stops to be successively moved to operative position and to be thrown into engagement with the teeth 10 by which they are locked in such a position. These means will now be described. A second column stop positioning device is employed, such device comprising an arm 94, which corresponds in part to one of the denominational stop levers 27. This arm is contained within the tabulator frame and is mounted to turn on the pivot 28 by which the denomination stop levers are pivoted in the frame. The arm 94, however, terminates at the pivot 28, as indicated at 95. This arm is mounted adjacent to and at the left of the denominational stop lever which carries the decimal stop 30, which in the present instance may be assumed to be the left-hand denominational stop of the series. The arm 94 normally bears against a screw stop 96 which is received and adapted to be adjusted in a tapped opening in the tabulator frame 24. A spring 97 surrounds the pivot 28 and is connected at one end, as at 98, to the arm 94 and at its opposite end 99 bears against a wall of the tabulator stop frame. The pressure of this spring is exerted to normally maintain the arm 94 against the stop 96. The upper end of the member 94 is best shown in Figs. 3, 5, and 6, from which it will be seen that said upper end portion is extended forwardly like the denominational stops but is bifurcated to form two arms or fingers 100, 101, which are offset laterally to the right from the body portion of the member 94 (see Fig. 6) and are arranged respectively above and below the decimal stop 30 and in the plane thereof so that the right-hand or contact faces of the arms 100, 101 are in the same plane as the contact face of the decimal stop. These arms and the decimal stop move fore and aft of the machine into and out of operative position in the same plane.

It will be noted from an inspection of Fig. 5 that when the positioning device, comprising the member 94 and arms 100, 101 are moved forward from the position shown in Fig. 1 to that indicated in Fig. 5, 130

said arms will be located on opposite sides of the column stop bar and are adapted to engage opposite edge portions of the column stops to effectively engage the stops and hold them against movement while the column stop bar may be moved with the carriage independently of the column stops.

In order to control the movement of the positioning device 94 into and out of operative position, I have provided means whereby the stop setting device may be operatively connected with the positioning device to automatically control its movement. Thus the member 94 has what I term a catch block 102 riveted thereto, as indicated at 103 (see Figs. 5 and 6). This block is provided with an upper beveled face 104 terminating at its rear end in an abrupt vertically disposed wall or engaging face 105. The inclined face or bevel 104 is in the same plane as the arms 100, 101 and is arranged so as to form a continuation of the upper edge 106 of the arm 100. The inclined portion of the block extends above the upper edge of the arm 100, as represented in Fig. 5, and is received in and adapted to move along a slot 107 formed in the tabulator stop frame 24, the slot extending fore and aft of the machine. An engaging arm 108 is pivoted at 109 to the upper end of the stop setting device 70. The engaging arm extends rearwardly from the member 70 over the column stop bar and above the tabulator frame 24. The rear end portion of the engaging arm 108 is provided with a depending engaging member or pawl 110, the lower end portion of which is offset laterally to the right, as indicated in Fig. 2, and is received in the slot 107. A spring 111 is fixed at one end to the member 70 and exerts a downward pressure at its free end on the arm 108. When the member 94 is in the normal position shown in Fig. 1 the pawl 110 rests upon the upper edge 106 of the arm 100, as shown in dotted lines in Fig. 1. By this engagement of the pawl with the upper edge of the arm 100, a downward swinging movement of the engaging arm 100 around its pivot 109 by the pressure of a spring 111 is resisted. When, however, the stop set key 79 is actuated to move the member 70 rearwardly, a corresponding movement of the arm 108 is effected. This movement continues until the pawl 110 encounters the bevel 104 which causes the free end of the arm to be elevated against the pressure of the spring 111 until the pawl has passed the rear terminal portion of the bevel. When the pawl passes the rear end of the bevel the spring is effective to depress the arm 108 to move the pawl into engagement with the rear abrupt engaging face 105 of the catch block, as represented in Fig. 3. In this manner an operative connection is effected between the member 70

and the positioning device 94 and as pressure is released from the stop setting key 79, the stop setting device will be returned to normal position by the spring 77^a and the positioning device will be moved with it from the position indicated in Fig. 3 to that represented in Fig. 5 where it extends into the path of the column stops while they are in the inoperative position. It will be seen that each subsequent depression of the stop setting key 79 is effective to move the stop setting device 70 rearwardly and to afford a movement of the associated positioning device 94 out of coöperative relation with the column stops, whereas each return movement of the stop setting device to normal position is effective to bring about a forward movement of the stop positioning device or member 94 into coöperative relation with the column stops. The operative connection, once established between the stop positioning device 94 and the stop setting device, continues indefinitely. Nevertheless a disconnection between the parts may be effected at any time by merely lifting the rear end of the arm 108 against the pressure of its spring 111, a finger piece 112 carried by and extending laterally from the rear end of the stop arm 108 being provided for this purpose. When the arm 108 is lifted to the limit of its movement, determined by an overlying stop 113 which forms part of the ear 57, the pawl 110 will be disengaged from the stop positioning device 94, thus enabling it to return to its normal position under the power of its spring 97. It will be observed that the stop 113 prevents an upward movement of the arm 108 a sufficient distance to entirely withdraw the pawl 110 from the slot 107. The pawl therefore remains at all times within the slot, and the pawl, in its fore and aft movement in the slot, is guided by the side walls thereof and prevented from lateral deflection and is thus maintained in coöperative relation with the upper edge of the arm 100 or with the catch block, as the case may be.

It will be observed from an inspection of Fig. 2 that the positioning devices 94 and 64 are spaced apart to receive the entire series of column stops between them. In the present instance I have shown twelve column stops which ordinarily is as many as will be used at any one time. It should be understood, however, that if a greater number of stops are to be used, the positioning devices 94 and 64 may be more widely separated to receive the entire series of column stops between them. In the modification shown in Fig. 9 I have provided means by which a relative adjustment of the positioning devices toward and away from each other may be effected for this purpose. It will also be observed from an inspection of Fig. 2 that the position of the column stop positioning

device 94 is such that when the column stops are engaged thereby the left-hand stop of the series will be maintained in a position where it registers with the engaging portion 71 of the stop setting device.

It may be assumed that previously set column stops are to be "cleared" preparatory to setting them in different arrangement. To accomplish this it is merely necessary to move the carriage to the limit of its movement to the left, depress the finger piece or key 48, and move the carriage to the limit of its movement to the right. The effect of this movement will be to cam the operative column stops forwardly on the column stop bar to the inoperative position and to group the column stops adjacent to one another against the stop positioning device 64, as represented in Fig. 2. The column stops are thus all cleared preparatory to resetting them. The column stops may now be set in the operative position. Preparatory to such setting, however, the stop setting key 79 will be depressed, thereby moving the connecting bar 108 rearwardly to effect an operative connection with the stop positioning device 94. When pressure on the stop setting key 79 is released the positioning device 94 will be brought forwardly in the manner hereinbefore described, the positioning device extending into the path of the column stops which have been grouped to the right thereof. The carriage may now be moved through an actuation of the spacing key or otherwise from right to left until the carriage reaches the position where the first column stop is to be set. During this movement of the carriage to the left the series of column stops have been brought into engagement with, and are maintained against further movement to the left by, the interposed positioning device 94, the left-hand of the series of stops being in the position of the dotted line stop in Fig. 2 where it is maintained in register with the contact portion 71 of the stop setting device. When the carriage reaches the proper position a depression of the stop setting key will therefore effect a movement of the column stop, which is in register with the stop setting device to operative position. During the movement of the stop setting device to position the column stop a rearward movement of the stop positioning device 94 is effected, thus carrying it out of the path of the column stop which has been projected to operative position, as indicated in Fig. 3. As soon as the clearing device has been moved out of the path of the projected column stop and the key 79 starts to return to normal position, a letter space movement of the carriage will be effected to carry the projected column stop a letter space distance to the left of the positioning device 94. It follows, therefore, that on the continued

forward movement of the positioning device 94 it will be interposed in the path of the next succeeding column stop to arrest all of those column stops to the right of the one which has been projected to operative position. The carriage may then be stepped along until it attains a position where the next column stop is to be set and the stop setting key 79 is again depressed as before, thereby moving the registering column stop to operative position and withdrawing the positioning device 94 out of the path thereof. A release of the stop setting key is effective to bring about a letter space movement of the carriage so as to enable the projected stop to clear the positioning device 94 in order that the latter may on the return movement of the stop setting key be interposed in the path of the other column stops to the right of the one which has been last projected to operative position. These operations continue until all of the column stops have been set in their operative positions.

It will be understood from the foregoing description that the step-by-step letter feed movement of the carriage, automatically effected by the actuation of the stop set key, enables the projected stops to clear the positioning device 94 and it enables the positioning device to be successively introduced into the path of the column stops to the right of the last one which has been moved to operative position, thereby retaining all of the inoperative stops against movement with the carriage to the left at a time when it is desired to maintain the stops against such movement with the carriage.

It will be understood that by arranging the stop positioning device 94 in the same plane as the decimal stop, I am enabled to maintain the column stops in such position that the left-hand one of the series of column stops will register with the stop setting device 70 so that said registering stop when projected to operative position will be arranged to arrest the carriage by cooperation with the decimal stop at a point corresponding to the reading on the carriage scale. If, for example, the carriage scale and pointer indicate a point "40" on the carriage scale when the stop set device is actuated to project a column stop to operative position, then this same column stop will co-act with the decimal stop to arrest the carriage at "40" during the subsequent tabulating operations.

The positions where the column stops are to be set may be determined either by the carriage scale and pointer or by direct reference to a sheet in the machine. If, for example, a sheet ruled to divide the different columns is placed in position in the machine, the carriage may be stepped to the left, and the stop set key 79 is actuated as each line on the sheet reaches the printing point.

Thus the column stops will be set in accordance with the ruling on the sheet to position the column stops according to such ruling. After the column stops have been set the operator may lift the handle 112, thus effecting a disconnection between the stop setting device and the positioning device 94, enabling the latter to return to normal position under the pressure of its spring 97. The machine may then be actuated and the tabulating operations carried out in the usual manner.

In the modified form of the construction shown in Fig. 9 I have provided for effecting a relative adjustment between the two stop positioning devices in order that they may be fixed at varying distances apart according to the number of column stops to be employed. If, for example, a greater number of column stops is to be used than is provided for by the construction represented in the preceding figures the stop positioning device 64^a (Fig. 9) may be adjusted to the right along the shaft 56^a after the supporting arm 58^a has first been adjusted to the right. In the modification shown in Fig. 9 parts which correspond to those previously described are represented by the same reference numerals as those employed in the preceding figures with the addition thereto of the exponent "a". It will be seen that the bracket 59^a is provided with an upwardly extending ear 114 tapped to receive two headed screws 115 which are adapted to extend through a slot 116 in a bracket arm 117. This arm 117 is formed as a part of the member 58^a which supports the positioning device 64^a against deflection to the right. It will be understood therefore by loosening the screws 115 the member comprising the supporting arm 58^a and the bracket arm 117 may be adjusted to the right and the screws tightened to secure the member in its adjusted position. The set screw 63^a may then be loosened to enable a corresponding adjustment of the positioning device 64^a to the right to be effected, the screw 63^a being tightened to secure the positioning device in its newly adjusted position on the rock shaft 56^a. In this manner a relative adjustment between the two positioning devices 94 and 64^a may be readily effected. The extreme outward adjustment provided for by this modified form of construction enables as many as some eight additional stops to be employed, thus providing for the use of as many as twenty column stops at any one time. It should be understood, however, that the means disclosed in this modification may be so arranged as to provide for the use of any desired number of column stops.

While I have shown in the present instance certain embodiments of the different features of my invention it should be understood that various modifications may be

made without departing from the spirit of my invention and that various features of the construction may be used without other of the features shown.

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

1. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, a key-controlled cooperative tabulator stop, and a key controlled stop positioning device movable into and out of cooperative relation with said column stops and having a contact face substantially in the plane of the contact face of said tabulator stop.

2. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, a series of key controlled denominational stops which cooperate with said column stops, and a stop positioning device movable into and out of cooperative relation with said column stops, the positioning device having a contact face substantially in the plane of the contact face of the decimal stop of said series of denominational stops.

3. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, a key controlled cooperative tabulator stop, and a key controlled stop positioning device movable into and out of cooperative relation with said column stops and having a contact face substantially in the plane of the contact face of said tabulator stop, the series of column stops and said positioning device being carried one by the carriage and the other by the frame of the machine.

4. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops relatively adjustable to different positions along said bar and also movable on said bar into and out of operative position, a key controlled tabulator stop cooperative with said column stops, and a positioning device movable into and out of cooperative relation with said column stops when they are in the inoperative position and against which positioning device the column stops are adapted to be grouped, said positioning device having a contact face which is substantially in the plane of the contact face of said key controlled cooperative tabulator stop.

5. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions and movable into and out of oper-

ative position, a positioning device which is cooperative with the column stops to aid in controlling the adjustment of said stops, and automatically operating means for moving said positioning device out of cooperative relation with said column stops when a column stop is moved to operative position.

6. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions and movable into and out of operative position, a positioning device against which the column stops are adapted to be grouped, and automatically operating means for moving said positioning device out of cooperative relation with said column stops when a column stop is moved into operative position.

7. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions and movable into and out of operative position, controlling means for moving said stops into operative position, a stop positioning device movable into and out of cooperative relation with said stops, and means by which said controlling means are effective to control the movement of said positioning device.

8. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions and movable into and out of operative position, a stop setting device operative individually on the column stops for moving them into operative position, a stop positioning device movable into and out of cooperative relation with said stops, and means by which a movement of a column stop to operative position under control of the setting device is effective to bring about a movement of the positioning device out of cooperative relation with the column stops.

9. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions and also movable into and out of operative position, stop positioning means movable into and out of cooperative relation with said column stops and cooperative therewith to hold the column stops relatively thereto while a relative adjustment between a column stop or stops and the part that carries them is effected, stop setting means for moving said stops to operative position, and means by which said stop setting means is effective to control the movement of the stop positioning means.

10. In a typewriting machine and tabulat-

ing mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, locking means for locking the stops in their adjusted positions, key controlled means for effecting a locking of said stops, positioning means cooperative with said column stops, and means whereby a movement of the positioning means into cooperative relation with said stops may be effected under control of said key controlled means.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, stop setting means, stop positioning means movable into and out of cooperative relation with the column stops and operative to aid in effecting a relative adjustment between said stops and the means by which they are supported and against which stop positioning means the column stops are adapted to be grouped and held relatively thereto while the said relative adjustment of the stops is being effected, and means by which the movement of the stop setting means is operative to control the movement of the stop positioning means into and out of cooperative relation with the column stops.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, a stop setting device, a stop positioning device movable into and out of cooperative relation with the column stops, and means for effecting an operative connection or disconnection between said stop setting and positioning devices, so that one may control the movement of the other or may move independently thereof as may be desired.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, a stop setting device, a stop positioning device movable into and out of cooperative relation with the column stops, and automatically operating means for effecting an operative connection between said devices so that one may control the movement of the other, said connecting means being operative at will to effect a disconnection between said devices so that one may operate independently of the other when desired.

14. In a typewriting machine and tabulating mechanism, the combination of a power driven carriage, escapement mechanism therefor, a series of column stops, and key controlled column stop set mechanism

operable individually on the column stops to render them operative and also operable to control said escapement mechanism.

15. In a typewriting machine and tabulating mechanism, the combination of a power driven carriage, escapement mechanism therefor, a series of column stops mounted for individual movement into and out of operative position and adapted to remain indefinitely in either of said positions, means for moving the stops out of operative position, and means operable individually on the column stops to move them into operative position and also operable to control said escapement mechanism.

16. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops, means for selecting different column stops for use, and means for effecting a letter space movement of the carriage by an actuation of said selecting means.

17. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops, means for moving the column stops individually into operative position, and means for effecting successive letter space movements of the carriage as the column stops are moved successively into operative position.

18. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for individual movement into and out of operative position and adapted to remain indefinitely in either of the said positions to which they may be moved, means for moving the column stops out of operative position, key controlled stop set means operable individually on the column stops to move them separately into operative position, and means controlled by said key controlled stop set means for effecting successive letter space movements of the carriage as the column stops are moved successively into operative position.

19. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable individually into and out of operative position and also movable relatively to each other to vary the distances between said stops, a stop setting device for moving the stops individually into operative position, and means for effecting successive letter space movements of the carriage as the stops are successively moved into operative position.

20. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable relatively to each other to vary the distances between said stops, a stop positioning device for holding the column stops relatively to said positioning device, means for effecting a relative movement between said position-

ing device and stops to bring the two into and to throw them out of coöperative relation, and means for effecting successive letter space movements of the carriage when successive relative movements between the positioning device and column stops are effected to bring them into and throw them out of coöperative relation.

21. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable relatively to each other to vary the distances between said stops, a stop positioning device against which a group of adjacent column stops is adapted to bear and by which the group of stops may be retained relatively thereto, means for moving said positioning device into and out of coöperative relation with said column stops, and means for effecting successive letter space movements of the carriage as the positioning device is moved successively out of coöperative relation with said column stops.

22. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable relatively to each other to vary the distances between said stops, a stop positioning device for holding the column stops relatively to said positioning device, the series of column stops and said positioning device being carried one by the carriage and the other by the frame of the machine, means for effecting a relative movement between said positioning device and stops to bring the two into and to throw them out of coöperative relation, and means for effecting successive letter space movements of the carriage when successive relative movements between the positioning device and column stops are effected to throw them out of coöperative relation.

23. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable individually into and out of operative position and also movable relatively to each other to vary the distances between them, a stop positioning device movable into and out of coöperative relation with said column stops to retain them relatively to said positioning device, and means for effecting a letter space movement of the carriage when said positioning device is actuated.

24. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable individually into and out of operative position and adapted to remain indefinitely in either of said positions and movable also relatively to each other to vary the spaces between the stops, stop setting means for moving the stops individually into operative position, means for moving the stops out of operative position, a positioning device coöperative

with the column stops to retain them relatively thereto, means for throwing said positioning device and column stops into and out of coöperative relation, and means for effecting successive letter space movements of the carriage as the positioning device and stops are thrown successively out of coöperative relation.

25. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable individually into and out of operative position and adapted to remain indefinitely in either of said positions and movable also relatively to each other to vary the spaces between the stops, a stop setting device operable individually on said stops for moving them separately into operative position, a stop positioning device coöperative with said column stops to retain one of them in register with said stop setting device, means for moving said positioning device into and out of coöperative relation with the column stops, and means for effecting successive letter space movements of the carriage when the positioning device is moved successively out of coöperative relation with the column stops.

26. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops, a single key controlled device operative individually on the column stops to render them operative, and automatically operating means for effecting a letter space movement of the carriage after each column stop is rendered operative by said key controlled means.

27. 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 carried by said column stop bar and movable thereon into and out of operative position and also having a relative sliding movement along said bar, a single key controlled stop setting device operative individually on said column stops to move them into operative position, and means controlled by an actuation of said key controlled means for effecting a letter space movement of the carriage after each stop has been moved into operative position.

28. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops, a stop setting device, a stop positioning device, and means for moving one of said devices into coöperative relation with said column stops when the other of said devices is moved out of coöperative relation therewith.

29. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for movement thereon into and out of operative position and also for relative adjustment to different points along

said bar, a stop positioning device coöperative with said column stops to hold them relatively thereto while a relative adjustment between said stops to different points along the stop bar is being effected, a stop set device coöperative individually with the column stops to move them separately into operative position, and means for effecting a movement of one of said devices into coöperative relation with the column stops when the other of said devices is moved out of coöperative relation with the stops.

30. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for movement thereon into and out of operative position and also for relative adjustment to different points along said bar, a stop positioning device coöperative with said column stops to hold them relatively thereto while a relative adjustment between said stops to different points along the stop bar is being effected, a stop set device coöperative individually with the column stops to move them separately into operative position, means for effecting a movement of one of said devices into coöperative relation with the column stops when the other of said devices is moved out of coöperative relation with the stops, and means operable at will to enable one of said devices to be moved independently of the other.

31. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted on said bar for movement into and out of operative position, a stop setting device on one side of said bar, a stop positioning device on the other side of said bar, and means whereby the movement of one of said devices is operative to control the movement of the other of said devices.

32. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted on said bar for movement into and out of operative position, a positioning device coöperative with said column stops, and automatically operating means for moving said positioning device into and out of coöperative relation with said stops.

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, a positioning device coöperative with said column stops, automatically operating means for moving said positioning device into and out of coöperative relation with said stops, and automatically operating means for effecting a letter space movement of the carriage when the positioning device is moved out of coöperative relation with the column stops.

34. In a typewriting machine and tabulat-

ing mechanism, the combination of a series of column stops carried by the carriage and movable into and out of operative position and also relatively adjustable to different column determining positions, a positioning device carried by the frame of the machine and movable into and out of coöperative relation with said column stops and operative to aid in effecting said relative adjustment between them, a stop setting device for controlling the movement of the column stops into operative position, and means under control of said stop setting device for controlling the movement of said positioning device into and out of coöperative relation with the column stops.

35. In a typewriting machine and tabulating mechanism, the combination of a series of column stops carried by the carriage and movable into and out of operative position and relatively adjustable to different column determining positions, a positioning device carried by the frame of the machine and movable into and out of coöperative relation with said column stops and operative to aid in effecting said relative adjustment between them, a stop setting device for controlling the movement of the column stops into operative position, means under control of said stop setting device for controlling the movement of said positioning device into and out of operative position, and automatically operating means for effecting a letter space movement of the carriage when the positioning device is moved out of coöperative relation with the stops.

36. In a typewriting machine and tabulating mechanism, the combination of a series of column stops carried by the carriage and movable into and out of operative position and relatively adjustable to different column determining positions, a positioning device carried by the frame of the machine and movable into and out of coöperative relation with said column stops and operative to aid in effecting said relative adjustment between them, a stop setting device for controlling the movement of the column stops into operative position, means under control of said stop setting device for controlling the movement of said positioning device into and out of operative position, and means for enabling one of said devices to be moved independently of the other.

37. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted on said column stop bar for movement into and out of operative position and also for relative sliding adjustment to different positions along said bar, a stop setting device operable individually on said column stops to move them into operative position, a stop positioning device for hold-

ing a column stop in register with said stop setting device, and means by which said stop setting device controls the movement of the stop positioning device into and out of coöperative relation with said column stops.

38. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted on said column stop bar for movement into and out of operative position and also for relative sliding adjustment to different positions along said bar, a stop setting device operable individually on said column stops to move them into operative position, and a stop positioning device movable into and out of coöperative relation with said column stops and operative to hold a column stop in register with said stop setting device, said positioning device coöperating with the column stops on opposite sides of the column stop bar.

39. 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 to different points along said bar, key controlled tabulator stop mechanism, a positioning device distinct from said key controlled tabulator stop mechanism and by which and relatively to which the column stops are adapted to be held to afford a relative adjustment between the stop bar and column stops, and a key at the keyboard of the machine for controlling the movement of said positioning device into and out of coöperative relation with said column stops.

40. 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 to different points along said bar, key controlled tabulator stop mechanism, a positioning device distinct from said key controlled tabulator stop mechanism and by which and relatively to which the column stops are adapted to be held to afford a relative adjustment between the stop bar and column stops, and a key at the keyboard of the machine for controlling the movement of said positioning device into and out of coöperative relation with said column stops, said positioning device coöperating with the column stops on opposite sides of the column stop bar.

41. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, stop positioning means against which the column stops are adapted to be grouped in the movement of the carriage from left to right, and an automatically actuated stop positioning de-

vice by which the group of stops is held in the movement of the carriage from right to left.

42. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, stop positioning means against which the column stops are adapted to be grouped in the movement of the carriage from left to right, an automatically actuated stop positioning device by which the group of stops is held in the movement of the carriage from right to left, and automatically operating means for effecting successive letter space movements of the carriage as the automatically actuated positioning device is moved at successive operations out of cooperative relation with the column stops.

43. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a locking of them in their adjusted positions, a positioning device against which the column stops are adapted to be grouped during the relative movement between said stops and positioning device in one direction, and a second automatically actuated positioning device cooperative with the grouped stops during a relative movement between the stops and said second positioning device in the opposite direction, said automatically actuated positioning device maintaining the group of stops so that one of them will be in register with said key controlled device.

44. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a locking of them in their adjusted positions, a positioning device against which the column stops are adapted to be grouped during the relative movement between said stops and positioning device in one direction, a second automatically actuated positioning device cooperative with the grouped stops during a relative movement between the stops and said second positioning device in the opposite direction, said automatically actuated positioning device maintaining the group of stops so that one of them will be in register with said key controlled device, and automatically operating means for effecting successive letter space movements of the carriage as the automatically actuated position-

ing device is moved at successive operations out of cooperative relation with the column stops.

45. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, cooperative key controlled tabulator stop mechanism, and two stop positioning devices each of which is movable into and out of cooperative relation with the column stops independently of the other.

46. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, cooperative key controlled tabulator stop mechanism, two stop positioning devices each of which is movable into and out of cooperative relation with the column stops independently of the other, and automatically operating means for controlling one of said positioning devices.

47. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, cooperative key controlled tabulator stop mechanism, and two stop positioning devices each of which is movable into and out of cooperative relation with the column stops independently of the other and between which positioning device the entire series of column stops is adapted to be received.

48. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the column stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a locking of them in their adjusted positions, key controlled tabulator stop mechanism which cooperates with said column stops, and two stop positioning devices, each movable into and out of cooperative relation with column stops independently of the other, one of said positioning devices being operative to maintain a column stop in register with said key controlled device.

49. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the column stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a locking of them in their adjusted positions, key controlled tabulator stop mechanism which cooperates with said column stops, and

two stop positioning devices, each movable into and out of cooperative relation with column stops independently of the other, one of said positioning devices being operative to maintain a column in register with said key controlled device, and automatically operating means for actuating said last mentioned positioning device.

50. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the column stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a locking of them in their adjusted positions, key controlled tabulator stop mechanism which cooperates with said column stops, two stop positioning devices, each movable into and out of cooperative relation with column stops independently of the other, one of said positioning devices being operative to maintain a column stop in register with said key controlled device, and means under control of said key controlled device for controlling the movement of said last mentioned positioning device into and out of cooperative relation with the column stops.

51. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the column stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a locking of them in their adjusted positions, key controlled tabulator stop mechanism which cooperates with said column stops, two stop positioning devices, each movable into and out of cooperative relation with column stops independently of the other, one of said positioning devices being operative to maintain a column stop in register with said key controlled device, means under control of said key controlled device for controlling the movement of said last mentioned positioning device into and out of cooperative relation with the column stops, and automatically operating means for effecting successive letter space movements of the carriage as the automatically actuated positioning device is moved at successive actuations out of cooperative relation with the column stops.

52. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative adjustment to vary the column determining positions thereof, means for locking the column stops in their adjusted positions, a key controlled device operative individually on the column stops to effect a lock-

ing of them in their adjusted positions, key controlled tabulator stop mechanism which cooperates with said column stops, and two stop positioning devices between which the entire series of column stops is adapted to be received and each of which positioning devices is movable into and out of cooperative relation with column stops independently of the other, one of said positioning devices being operative to maintain a column stop in register with said key controlled device.

53. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative movement to different column determining positions and also for individual movement into and out of operative position, the stops being adapted to remain indefinitely in either the operative or inoperative position, means for locking the stops in their adjusted positions when they are moved to the operative position, key controlled cooperative tabulator stop mechanism, a key controlled stop set device operative individually on said column stops to move them into operative position and into engagement with said locking means, and a stop positioning device independent of said key controlled tabulator stop mechanism and movable into and out of cooperative relation with said column stops and operative to maintain a column stop in register with said stop set device.

54. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative movement to different column determining positions and also for individual movement into and out of operative position, the stops being adapted to remain indefinitely in either the operative or inoperative position, means for locking the stops in their adjusted positions when they are moved to the operative position, key controlled cooperative tabulator stop mechanism, a key controlled stop set device operative individually on said column stops to move them into operative position and into engagement with said locking means, a stop positioning device independent of said key controlled tabulator stop mechanism and movable into and out of cooperative relation with said column stops and operative to maintain a column stop in register with said stop set device, and a second independently operated stop positioning device against which the column stops may be grouped.

55. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative movement to different column determining positions and also for individual movement into and out of operative posi-

tion, the stops being adapted to remain indefinitely in either the operative or inoperative position, means for locking the stops in their adjusted positions when they are moved to the operative position, key controlled coöperative tabulator stop mechanism, a key controlled stop set device operative individually on said column stops to move them into operative position and into engagement with said locking means, a stop positioning device independent of said key controlled tabulator stop mechanism and movable into and out of coöperative relation with said column stops and operative to maintain a column stop in register with said stop set device, and automatically operating means for moving said stop positioning device into and out of coöperative relation with said column stops.

56. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative movement to different column determining positions and also for individual movement into and out of operative position, the stops being adapted to remain indefinitely in either the operative or inoperative position, means for locking the stops in their adjusted positions when they are moved to the operative position, key controlled coöperative tabulator stop mechanism, a key controlled stop set device operative individually on said column stops to move them into operative position and into engagement with said locking means, a stop positioning device independent of said key controlled tabulator stop mechanism and movable into and out of coöperative relation with said column stops and operative to maintain a column stop in register with said stop set device, and automatically operating means for effecting successive letter space movements of the carriage as the said positioning device is successively withdrawn from coöperative relation with the column stops.

57. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative movement to different column determining positions and also for individual movement into and out of operative position, the stops being adapted to remain indefinitely in either the operative or inoperative position, means for locking the stops in their adjusted positions when they are moved to the operative position, key controlled coöperative tabulator stop mechanism, a key controlled stop set device operative individually on said column stops to move them into operative position and into engagement with said locking means, a stop positioning device independent of said key controlled tabulator stop mechanism and movable into

and out of coöperative relation with said column stops and operative to maintain a column stop in register with said stop set device, automatically operating means for moving said stop positioning device into and out of coöperative relation with said column stops, and automatically operating means for effecting successive letter space movements of the carriage as the said positioning device is successively withdrawn from coöperative relation with the column stops.

58. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of adjustable column stops, means to aid in effecting an adjustment of said column stops, said means comprising a positioning device, and automatically operating means for effecting a relative movement between said positioning device and column stops out of coöperative relation when a column stop is positioned for operation in its adjusted position.

59. 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 adjustable to vary the column determining positions of said stops, means to aid in effecting an adjustment of said stops, said means comprising a positioning device, and automatically operating means for effecting a movement of said positioning device out of coöperative relation with said stops when a stop is moved into operative position.

60. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of adjustable column stops, means to aid in effecting an adjustment of said column stops, said means comprising a positioning device, automatically operating means for effecting a relative movement between said positioning device and column stops out of coöperative relation when a column stop is positioned for operation in its adjusted position, and automatically operating means for effecting successive letter space movements of the carriage as the positioning device and stops are at successive operations thrown out of coöperative relation.

61. 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 adjustable to vary the column determining positions of said stops, means to aid in effecting an adjustment of said stops, said means comprising a positioning device, automatically operating means for effecting a movement of said positioning device out of coöperative relation with said stops when a stop is moved into operative position, and automatically operating means for effecting successive letter space movements of the car-

riage as the positioning device is successively thrown out of cooperative relation with the column stops.

62. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops mounted for relative movement to different column determining positions and also for individual movement into and out of operative position, the stops being adapted to remain indefinitely in either the operative or inoperative position, means for locking the stops in their adjusted positions when they are moved to the operative position, key controlled cooperative tabulator stop mechanism, a key controlled stop set device operative individually on said column stops to move them into operative position and into engagement with said locking means, a stop positioning device independent of said key controlled tabulator stop mechanism and movable into and out of cooperative relation with said column stops and operative to maintain a column stop in register with said stop set device, a second independently operated stop positioning device against which the column stops may be grouped, said positioning devices being spaced apart to receive the entire series of column stops between them, a relative movement between the stops and the second positioning device in one direction grouping the stops against such positioning device, and a relative movement between the stops and the other positioning device in the opposite direction, bringing the group of stops to such position that one of the stops will be in register with said stop set device.

63. In a typewriting machine and tabulating mechanism, the combination of a series of column stops adapted to be rendered separately operative, and automatically operating means for effecting a letter space movement of the carriage as each stop is rendered operative.

64. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops, and two bifurcated stop positioning devices that are movable into and out of cooperative relation with the column stops.

65. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops, and two bifurcated stop positioning devices that are movable into and out of cooperative relation with the column stops, the positioning devices being spaced apart to receive the entire series of column stops between them and each positioning device cooperating with the column stops at opposite edge portions thereof.

66. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column

stops adjustable to two different positions along said bar, and two positioning devices movable into and out of cooperative relation with said column stops and each adapted to straddle the column stop bar and to cooperate with each column stop on opposite sides of the column stop bar.

67. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, a series of cooperative denominational stops, a positioning device to aid in effecting the adjustment of said column stops, the contact face of said positioning device being in the plane of the contact face of one of said denominational stops, and means for throwing said positioning device and column stops into and out of cooperative relation.

68. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, a series of cooperative denominational stops, a positioning device to aid in effecting the adjustment of said column stops, the contact face of said positioning device being in the plane of the contact face of one of said denominational stops, means for throwing said positioning device and column stops into and out of cooperative relation, and automatically operating means for effecting a letter space movement of the carriage when the positioning device and column stops are thrown out of cooperative relation.

69. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a series of cooperative denominational stops, a positioning device to aid in effecting the adjustment of said column stops, the contact face of said positioning device being in the plane of the contact face of one of said denominational stops, means for throwing said positioning device and column stops into and out of cooperative relation, and a stop set device operative individually on the column stops to move them into operative position, said stop set device being in register with a column stop which is in contact with said positioning device.

70. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a series of cooperative denominational stops, a positioning device to aid in effecting the adjustment of said column stops, the contact face of said positioning device being in the plane of the contact face of one of said denominational stops, means for throwing said positioning device and column stops into and

out of coöperative relation, a stop set device operative individually on the column stops to move them into operative position, said stop set device being in register with a column stop which is in contact with said positioning device, and automatically operating means for throwing said positioning device and column stops out of coöperative relation by an actuation of said stop set device.

71. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a series of coöperative denominational stops, a positioning device to aid in effecting the adjustment of said column stops, the contact face of said positioning device being in the plane of the contact face of one of said denominational stops, means for throwing said positioning device and column stops into and out of coöperative relation, a stop set device operative individually on the column stops to move them into operative position, said stop set device being in register with a column stop which is in contact with said positioning device, and automatically operating means for effecting a letter space movement of the carriage when said positioning device and the column stops are thrown out of coöperative relation.

72. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a series of coöperative denominational stops, a positioning device to aid in effecting the adjustment of said column stops, the contact face of said positioning device being in the plane of the contact face of one of said denominational stops, means for throwing said positioning device and column stops into and out of coöperative relation, a stop set device operative individually on the column stops to move them into operative position, said stop set device being in register with a column stop which is in contact with said positioning device, automatically operating means for throwing said positioning device and column stops out of coöperative relation by an actuation of said stop set device, and automatically operating means for effecting a letter space movement of the carriage when said positioning device and the column stops are thrown out of coöperative relation.

73. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position and adapted to remain indefinitely in either of said positions, means for moving the col-

umn stops into operative position, means for moving the column stops out of operative position, a stop positioning device, and means by which the said means for moving the column stops into operative position are operative to control the relative movement between the positioning device and stops into and out of coöperative relation.

74. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position and adapted to remain indefinitely in either of said positions, means for moving the column stops into operative position, means for moving the column stops out of operative position, two stop positioning devices between which the entire series of column stops is adapted to be received, and means by which said means for moving the stops into operative position are operative to control the relative movement between one of said positioning devices and the column stops into and out of coöperative relation.

75. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position and adapted to remain indefinitely in either of said positions, a single key controlled stop setting device operative individually on the column stops to move them separately into operative position, means for moving the column stops out of operative position, two stop positioning devices between which the entire series of column stops is adapted to be received, and means by which an actuation of said stop setting device is operative to control the relative movement between one of said positioning devices and the column stops into and out of coöperative relation.

76. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position and adapted to remain indefinitely in either of said positions, a single key controlled stop setting device operative individually on the column stops to move them separately into operative position, means for moving the column stops out of operative position, two stop positioning devices between which the entire series of column stops is adapted to be received, means by which an actuation of said stop setting device is operative to control the relative movement between one of said positioning devices and the column stops into and out of coöperative relation, and automatically operating means for effecting successive letter space movements of the carriage when said last mentioned posi-

tioning device and the column stop are thrown out of coöperative relation at successive operations.

77. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, and means to aid in effecting such adjustment, said means comprising two automatically actuated positioning devices coöperative with said column stops.

78. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, and means to aid in effecting such adjustment, said means comprising two automatically actuated positioning devices coöperative with said column stops and between which the entire series of column stops is adapted to be received.

79. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, and means to aid in effecting such adjustment, said means comprising two key controlled positioning devices movable into and out of coöperative relation with said column stops, said positioning devices being independent of the tabulator mechanism.

80. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, and means to aid in effecting such adjustment, said means comprising two stop positioning devices which are independently movable into and out of coöperative relation with said column stops and between which the column stops are adapted to be received, said positioning devices being independent of the tabulator mechanism.

81. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, and means to aid in effecting such adjustment, said means comprising two key controlled positioning devices movable into and out of coöperative relation with said column stops, and automatically operating means for effecting a letter space movement of the carriage when one of said positioning devices is moved successively out of coöperative relation with said stops.

82. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions, and means to aid in effecting such adjustment, said means comprising two automatically actuated positioning devices movable into and out of coöperative relation with said column stops and coöperative therewith to

hold the column stops relatively thereto, said column stops and positioning devices being carried one by the carriage and the other by the frame of the machine.

83. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a stop setting device for moving the column stops into operative position, a stop clearing device for moving the column stops out of operative position, a stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop setting device, and a second stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop clearing device.

84. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a stop setting device for moving the column stops into operative position, a stop clearing device for moving the column stops out of operative position, a stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop setting device, and a second stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop clearing device, said stop positioning devices being spaced apart to receive the entire series of column stops between them and operable independently of each other.

85. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a stop setting device for moving the column stops into operative position, a stop clearing device for moving the column stops out of operative position, a stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop setting device and adapted to maintain a column stop in register with said stop setting device, and a second stop positioning device between which and said first mentioned stop positioning device the entire series of column stops is adapted to be received.

86. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable to different column determining positions and movable into and out of operative position, a stop setting device for moving the column stops into operative position, a stop clearing device for moving the column stops

out of operative position, a stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop setting device and adapted to maintain a group of column stops so positioned relatively to the stop setting device that one of the group will be in register with the stop setting device, and a second stop positioning device controlled in its movement into and out of coöperative relation with the column stops by said stop clearing device and against which the column stops are adapted to be grouped.

87. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops relatively adjustable to different column determining positions, a tabulator stop which coöperates therewith, and a key controlled stop positioning device movable into and out of coöperative relation with said column stop in the same plane as said coöperative tabulator stop and coöperative with the column stops to aid in effecting such relative adjustment thereof.

88. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops having a sliding adjustment to different column determining positions along said bar, a coöperative key controlled tabulator stop, and a positioning device movable into and out of coöperative relation with said column stops in the plane of movement of said coöperative tabulator stop.

89. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops having a sliding adjustment to different column determining positions along said bar and movable on said bar into and out of operative position and adapted to remain indefinitely in either of said positions, a coöperative key controlled tabulator stop coöperative with said column stops, and a positioning device carried by the frame of the machine and movable into and out of coöperative relation with the column stops when the latter are in the inoperative position for holding the column stops while the stop bar travels with the carriage independently of the column stops, the positioning device and said tabulator stop moving in the same plane in their movements into and out of coöperative relation with said column stops.

90. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops having a sliding adjustment to different column determining positions along said bar and movable on said bar into and out of operative position and adapted to remain indefinitely in either of said positions, a stop setting device opera-

tive individually on the column stops to move them into operative position, and a key controlled positioning device carried by the frame of the machine and movable into and out of coöperative relation with the column stops when the latter are in the inoperative position for holding the column stops while the stop bar travels with the carriage independently of the column stops, the positioning device holding the column stops so that one of them will be in register with said stop setting device.

91. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops having a sliding adjustment to different column determining positions along said bar and movable on said bar into and out of operative position and adapted to remain indefinitely in either of said positions, a stop setting device operative individually on the column stops to move them into operative position, a key controlled positioning device carried by the frame of the machine and movable into and out of coöperative relation with the column stops when the latter are in the inoperative position for holding the column stops while the stop bar travels with the carriage independently of the column stops, the positioning device holding the column stops so that one of them will be in register with said stop setting device, and a second key controlled stop positioning device carried by the frame of the machine and against which the column stops may be grouped preliminary to setting them.

92. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable relatively to each other to vary the distances between the stops, two stop positioning devices for aiding in effecting such adjustment, and means for effecting a relative adjustment between said positioning devices toward and away from each other.

93. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable relatively to each other to vary the distances between the stops, two stop positioning devices between which the entire series of column stops may be received, and means for effecting a relative adjustment between said positioning devices toward and away from each other.

94. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops adjustable relatively to each other to vary the distances between the stops, two stop positioning devices for aiding in effecting such adjustment, means for effecting a relative adjustment between said positioning devices toward and away from each other, and means

for effecting a relative movement between said positioning devices and column stops for throwing them into and out of coöperative relation.

95. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops adjustable to different positions along said bar, two positioning devices between which said column stops are adapted to be received and which coöperate with said stops to aid in effecting a relative adjustment thereof, means for effecting a relative adjustment between said positioning devices toward and away from each other, and means for effecting a relative movement between said positioning devices and column stops to throw them into and out of coöperative relation.

96. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop, means for moving or shifting the column stop into and out of column determining position, a coöperative stop, key controlled means for actuating the same, and a second coöperative stop coöperative in the same vertical plane as the first named coöperative stop.

97. In a typewriting machine and tabulating mechanism, the combination of a column stop, means for moving or shifting the column stop into and out of column determining position, a set of key controlled denominational stops coöperative with said column stop, and a key controlled arresting stop also coöperative with said column stop and in the same plane as one of said denominational stops.

98. In a typewriting machine and tabulating mechanism, the combination of a column stop, means for moving or shifting the column stop into and out of column determining position, a set of key controlled denominational stops coöperative with said column stop, and a key controlled stop in the same vertical plane as the decimal denominational stop and operative at will independently of said decimal stop.

99. In a typewriting machine and tabulating mechanism, the combination of a column stop, means for moving or shifting the column stop into and out of column determining position, a set of key controlled denominational stops coöperative with said column stop, a key controlled arresting stop also coöperative with said column stop in the same vertical plane as one of said denominational stops, and means operative concurrently with said arresting stop for affording a movement of the carriage.

100. In a typewriting machine and tabu-

lating mechanism, the combination of a carriage, a column stop bar, a series of column stops adapted to move transversely of the column stop bar and to be positioned at different points along said bar, a key controlled device operative individually on the column stops to move them transversely of the column stop bar, a positioning device or stop movable into and out of the path of the column stops, and means under control of said key controlled device for moving the positioning device into and out of coöperative relation with the column stops.

101. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops adapted to move transversely of the column stop bar and to be positioned at different points along said bar, a key controlled coöperative tabulator stop, a key controlled device operative individually on the column stops to move them transversely of the column stop bar, a positioning device or stop movable into and out of the path of the column stops, the key controlled coöperative tabulator stop and the positioning device moving in the same plane into and out of coöperative relation with the column stops, and means under control of said key controlled device for moving the positioning device into and out of coöperative relation with the column stops.

102. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops adapted to move transversely of the column stop bar and to be positioned at different points along said bar, a key controlled coöperative tabulator stop, a key controlled device operative individually on the column stops to move them transversely of the column stop bar, a positioning device or stop movable into and out of the path of the column stops, the key controlled coöperative tabulator stop and the positioning device moving in the same plane into and out of coöperative relation with the column stops, means under control of said key controlled device for moving the positioning device into and out of coöperative relation with the column stops, and means for effecting a movement of the carriage at each actuation of said key controlled device.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 25th day of June, A. D. 1912.

CHARLES E. SMITH.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.