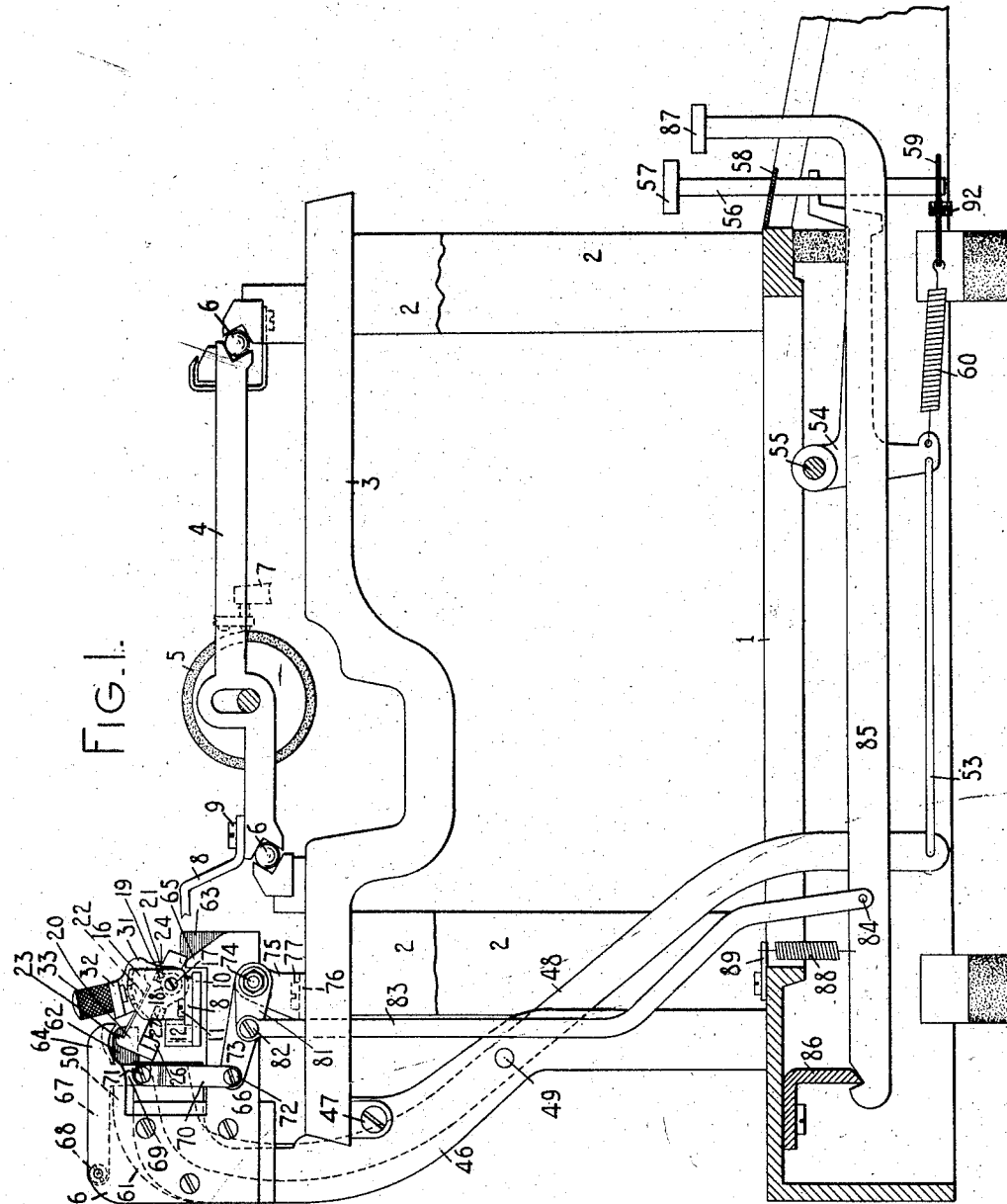


A. W. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 30, 1912.

1,043,738.

Patented Nov. 5, 1912.

3 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells.

Charles Smith

INVENTOR:

Arthur W. Smith

By Jacob Felber

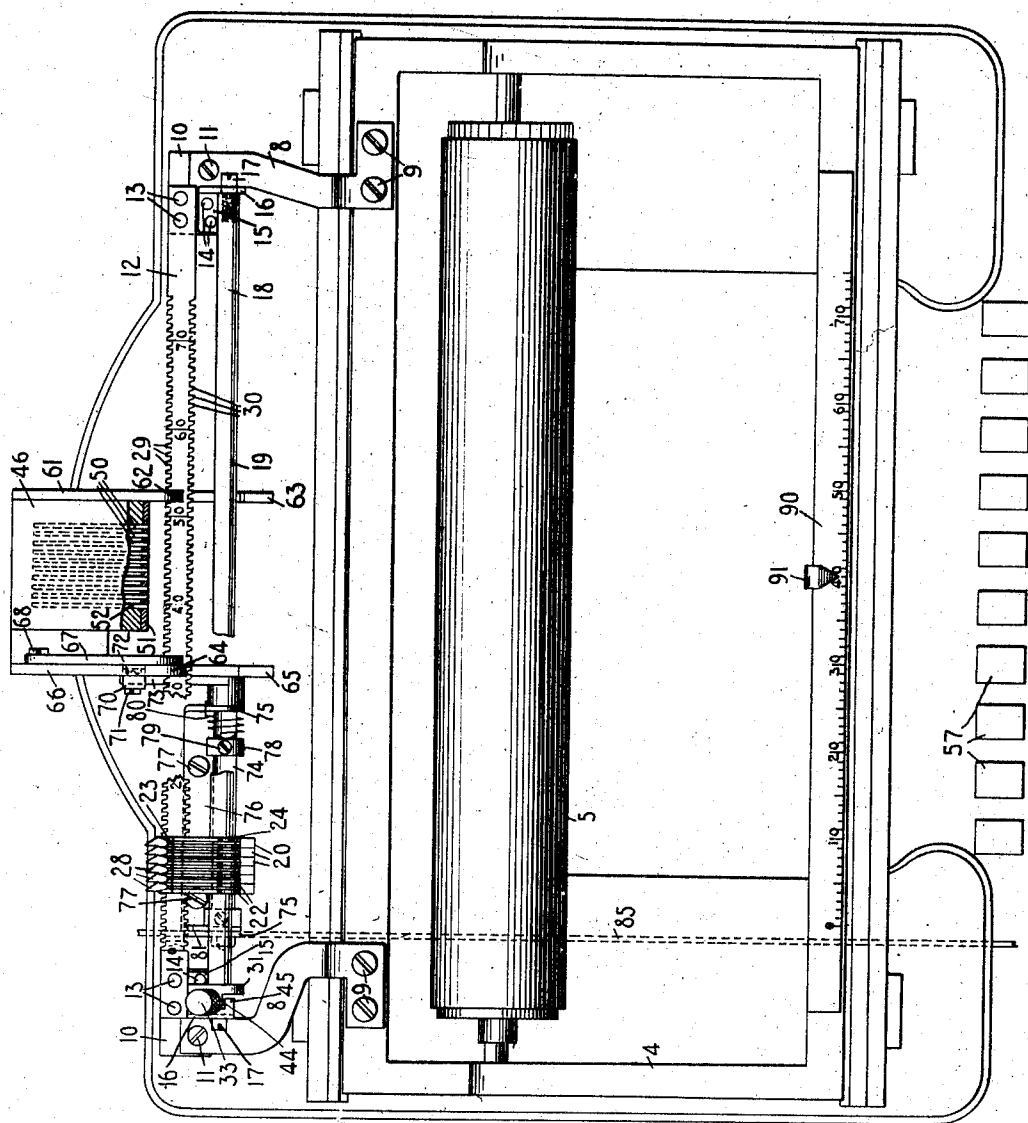
HIS ATTORNEY

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3 SHEETS—SHEET 2.



WITNESSES:

E. M. Wells.

Charles Smith

FIG. 2.

INVENTOR:

Arthur W. Smith

By Jacob Selvad

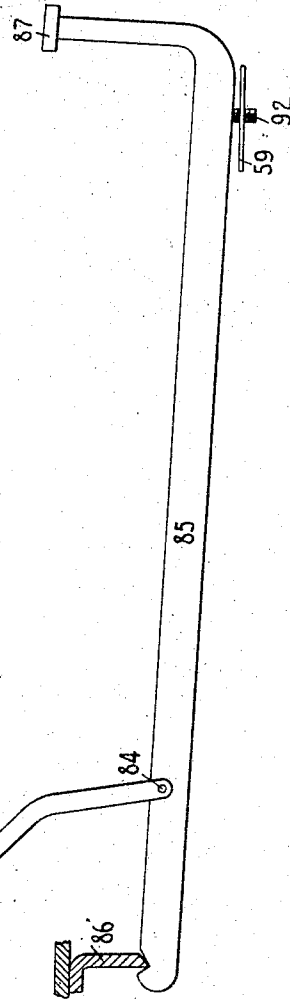
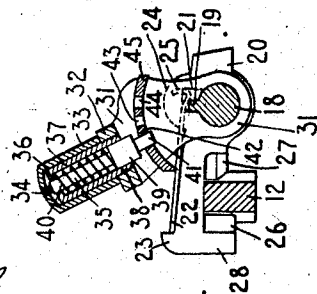
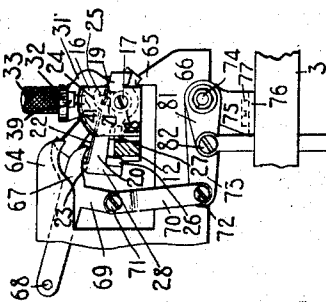
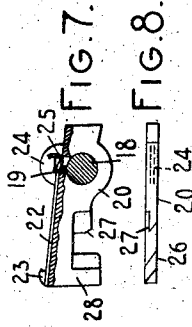
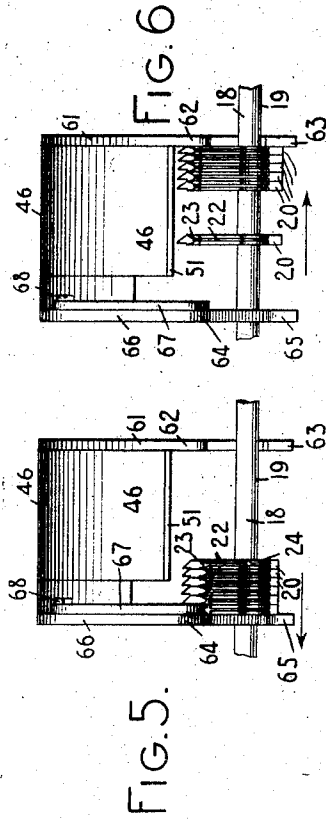
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3 SHEETS-SHEET 3.



WITNESSES:

E. M. Wells

Charles Smith

FIG. 4.

INVENTOR:

Arthur W. Smith

By atty J. A. Smith

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

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

TYPE-WRITING MACHINE.

1,043,738.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed March 30, 1912. Serial No. 687,400.

To all whom it may concern:

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

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

One of the main objects of my invention, generally stated, is to provide means whereby a series of column stops may be readily adjusted to or set in different columnar determining positions and in which the travel of the carriage aids in effecting such adjustment.

A further object of my invention, generally stated, is to readily "clear" the column stops preparatory to resetting them in different arrangement.

Considered from a more specific point of view, one of the main objects of my invention is to provide stop setting means of the character specified in which the number of column stops provided need not be in excess of the number which are to be actually used at one time.

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

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary side elevation with parts in section of one form of typewriting machine embodying my invention. Fig. 2 is a fragmentary plan view of the same with parts in section; parts being broken away. Fig. 3 is a fragmentary detail side elevation with parts in section of some of the stop setting devices and the parts associated therewith. Fig. 4 is an enlarged detail side elevation with parts in section; the view showing the column stops and certain of the parts which are coöperative therewith. Fig. 5 is a fragmentary detail plan view showing the column stops grouped preparatory to

setting them in the operative position, together with certain of the devices which co-operate with the column stops. Fig. 6 is a like view of the same showing the column stops as they are being grouped preparatory to setting them. Fig. 7 is a sectional view taken transversely through the column stop bar and showing a column stop in position thereon, a part of the column stop being sectioned away. Fig. 8 is a bottom plan view of one of the column stops.

The present invention has some of the same general objects in view as the constructions disclosed in the patents to Charles E. Smith No. 979,216, dated December 20, 1910 and to Walter E. Palmer No. 1,008,053, dated November 7, 1911, and one form of the invention is shown in the present instance embodied in a No. 11 Remington machine, although some of the features of that machine are only conventionally represented, and only so much of the machine is shown as may be necessary to arrive at an understanding of the invention. It should be understood, however, that the invention may be embodied in various styles of typewriting machines and that various changes in the construction may be made as may be required to effect such embodiment.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. A carriage 4 carries a cylindrical platen 5 and is mounted on anti-friction balls or rollers 6 for movement over the top plate from side to side of the machine. Type bars 7 are adapted to strike upwardly and rearwardly against the front face of the platen, the type bars being segmentally arranged and actuated by suitable type bar actuating devices (not shown).

Rearwardly extending bracket arms 8 are fixed to the carriage by screws 9 and constitute means by which the column stop bar and its locking means are connected to the carriage. Thus a plate or block 10 is secured to each of the bracket arms 8 by a screw 11. A rack or locking bar 12 is fixedly connected to each block 10 by rivets 13 or other suitable connecting means. Each block 10 also has riveted thereto at 14 a bracket 15 provided with a perforated upwardly extending ear 16. A screw 17 is received in a tapped opening in each end of a rock shaft, column stop bar or rod 18.

The cylindrical heads of these screws extend through the perforations in the ears 16 and constitute bearings on which the rock shaft 18 may turn on its longitudinal axis in the bearing openings in the bracket ears 16. It will be understood that each end of the rock shaft bears against the inner face of an ear or bracket arm 16 and prevents a longitudinal movement of the rock shaft on its bearings. The rock shaft 18 is provided with a spline 19 so that it is in the nature of a splined rod or rock shaft on which the column stops are mounted. Each of the column stops is designated as a whole by the reference numeral 20 and from an inspection of Figs. 4, 7 and 8 it will be observed that each column stop is perforated for reception on the spline rod 18 and extends on opposite sides of the axis of said rod. It will also be observed that each column stop is provided with an opening 21 which is greater than the thickness of the spline so as to afford a relative, limited, pivotal movement between the spline rod or rock shaft 18 and the column stops. Each column stop is also provided with a detent 22 which is in the nature of a wire spring secured at one end to the column stop.

The manner of securing each spring to the column stop preferably consists of splitting an extension or lug 23 to provide a slot in which one end of the spring may be received. The metal from which the lug 23 is formed may afterward be bent in to close the slot and force the metal against the spring to hold it in place. The spring extends longitudinally of the stop and the opposite end thereof is received in a bifurcated lug 24 in which the spring is free to move toward and away from the axis of the column stop bar 18. This end of the spring is bent as at 25 to form an engaging nose. It will be observed that this engaging nose is cooperative with the spline 19 to engage the same for purposes which will hereinafter more clearly appear. Each column stop is provided with teeth 26 and 27 which extend toward each other, as shown in Figs. 7 and 8. These teeth are arranged on the under side of the column stop and forward of the engaging or arresting portion 28 of the column stop with which the key actuated tabulator stops are adapted to cooperate to effect the arrest of the carriage. It will be understood that the teeth 26 and 27 on the column stops are shaped to be received in the interdental spaces between the teeth 29 and 30, respectively, on the rack 12. From an inspection of Figs. 1, 3 and 4 it will be understood that when the column stops are turned on the axis of the column stop bar 18 from the position shown in Fig. 1 to that indicated in Fig. 4, for example, the teeth 26 and 27 will engage in the interdental spaces between the teeth on the

rack bar 12 and will lock the column stops against adjustment along the column stop bar 18, thus fixedly connecting or locking the column stops against movement relatively to the column stop bar and to the part which carries the column stops, which, in the present instance, is the carriage. The column stop bar, or rock shaft 18, has fixed thereto near its left-hand end a plate or crank arm 31 which is bent laterally at the upper end thereof, as 32 to provide a bearing for a finger piece 33 by which the crank arm may be turned to effect a turning movement of the rock shaft. This finger piece 33 is in the nature of a knurled cap which is tapped to receive the threaded end 34 of a locking bolt 35. This locking bolt extends through a perforation 36 in a housing 37, which housing is fixed to the projection 32 by having its threaded end 38 received in a tapped opening in the part 32. The locking bolt is received and guided in this housing and is provided with a circumferential flange 39 against which the lower end of a coiled spring 40 is adapted to bear. This spring is contained within the housing and surrounds the bolt and bears at its upper end against the bottom wall of the housing 37. The power of this spring 40 is thus exerted to force the bolt and finger piece downwardly. The lower engaging portion 41 of the bolt is adapted to engage in any one of three slots 42, 43 or 44 which extend transversely through a segmental flange 45 which projects to the right from the left-hand bracket arm or ear 16. It will be understood, therefore, that by lifting the finger piece 33 the bolt 35 may be disengaged from a slot 42, 43 or 44 in the segment 45. The finger piece and crank arm may then be turned to effect a rotative movement of the rock shaft 18 to either one of two other positions determined by the positions of the other slots in the segment. A release of the finger piece will bring about an engagement of the bolt in either one of the other slots with which the bolt is in register.

It should be understood that any suitable tabulator mechanism may be employed to cooperate with the column stops. In the present instance I have shown denominational stop mechanism of the character employed in the No. 11 Remington machine. A tabulator stop frame 46 is secured to the frame of the machine by screws 47 and extends upwardly in rear of the top plate of the machine. For the purpose of the present invention the frame 46 may be regarded as a part of the frame of the machine. A series of denominational stop levers 48 are pivoted at 49 in the tabulator frame and extend forwardly at the upper ends thereof to provide denominational stops 50. These stops extend through slots in a guide plate 51 secured to the tabulator frame. The de-

5 nominal stop at the left-hand end of
 the series may be assumed to be the decimal
 stop and this is indicated by the reference
 numeral 52. The denominational stop levers
 10 are connected at their lower ends to push rods
 53 which in turn are connected to depending
 arms of angular levers 54 which are pivoted
 on a pivot rod 55. The forwardly extend-
 15 ing arms of these angular levers are con-
 nected to key stems 56 of denominational
 keys 57 and the key stems are guided in
 guide openings in plates 58 and 59. A con-
 tractile spring 60 is connected at one end
 20 to an angular lever 54 and at its opposite
 end to the guide plate 59, it being under-
 stood that a separate spring 60 is provided
 for each of the angular levers 54. Suitable
 carriage releasing mechanism (not shown)
 25 is employed which is actuated by the angu-
 lar levers 54. The carriage releasing me-
 chanism as hereinbefore indicated may be of
 any suitable character, such, for instance,
 as that ordinarily employed in the No. 11
 30 Remington machine. It will be understood
 that when the column stops are in the posi-
 tion shown in Fig. 4 they will be in the op-
 erative position and will be locked in such
 position by engagement with the rack 12.
 A depression of one of the denominational
 35 keys 57 is effective to move the correspond-
 ing denominational stop into the path of the
 column stops and to arrest the carriage when
 the first of the column stops reaches the
 projected denominational stop.
 40 Secured on the right-hand side of the
 tabulator stop frame 46 is a plate 61. This
 plate has an arresting stop or positioning
 device 62 which projects forwardly in front
 of the tabulator frame. The plate 61 is also
 45 provided with a finger or positioning device
 63 arranged in the same plane as the posi-
 tioning device 62 but extending forwardly
 in advance thereof. From an inspection of
 Figs. 1 and 6 it will be understood that
 50 when the column stops are moved to the
 inoperative position shown in Fig. 1, the
 stops are released from locking engagement
 with the rack 12 and are moved to coopera-
 tive relation with the positioning devices 62
 and 63. If the carriage should be moved
 55 from left to right at this time the column
 stops will be carried along with the carriage
 through the frictional engagement between
 the detent springs 22 and the column stop
 bar until the stops are brought into engage-
 ment with the left-hand faces of the posi-
 60 tioning devices or stops 62 and 63. When
 such engagement is effected the first of the
 stops will be arrested and each succeeding
 stop, as it is brought into contact with the
 previously arrested stop, will be held
 against further movement to the right with
 the carriage and the column stop bar. The
 65 effect of this movement of the carriage from
 left to right, or in the direction of the arrow

indicated in Fig. 6, is to group the column
 stops against the positioning devices 62
 and 63, the stops being grouped one next to
 another at letter space intervals. If the
 rock shaft or column stop bar 18 now be
 70 turned by the finger piece 33 to the position
 shown in Fig. 3, where the locking bolt en-
 gages in the opening 44, the column stops
 will be turned to the position where the
 stops are shown uppermost in Fig. 3. It
 75 will be seen that the column stops when dis-
 posed in this manner are arranged to the
 right of two positioning devices or arrest-
 ing stops 64 and 65 which are formed as a
 part of a plate 66 which is secured to the
 80 left-hand side of the tabulator frame 46.
 Moreover, the column stops disposed in the
 positions referred to will be brought into
 cooperative relation with the positioning
 devices 64 and 65 so that when the carriage
 85 is moved to the left, as indicated in Fig. 5,
 the previously grouped column stops will be
 carried along with the carriage until the
 first of said stops from the left reaches en-
 gagement with the right-hand faces of the
 90 positioning devices 64 and 65. The effect
 of this engagement is to arrest the group
 of column stops, as shown in Fig. 5, and en-
 able the column stop bar to move to the left
 independently thereof.

95 From an inspection of Figs. 1, 3 and 5
 it will be seen that a stop setting device 67
 is pivoted at 68 on the plate 66. This stop
 setting device has a depending arm 69 to
 100 which the upper end of a link 70 is pivoted
 as at 71. The lower end of this link is piv-
 oted at 72 to a crank arm 73. This crank
 arm projects rearwardly from a rock shaft
 74 which is mounted to turn in bearing
 105 openings in bracket arms 75. These bracket
 arms project from a bracket plate 76 se-
 cured to the top plate of the machine by
 screws 77. A collar 78 (Fig. 2) is fixed to
 the rock shaft by a screw 79. A coiled
 110 spring 80 surrounds the rock shaft 74 and
 is fixed at one end to the collar 78 and at
 its opposite end to the right-hand bracket
 arm 75. The power of this spring is ex-
 115 erted to turn the rock shaft so as to nor-
 mally maintain the stop setting device 67
 in the elevated position represented in Fig.
 1. The left-hand end of the rock shaft 74
 is extended beyond the left-hand bracket
 arm 75 and has connected thereto, outside
 120 of said bracket arm, a rearwardly projecting
 crank arm 81. The rear end of this arm 81
 is pivotally connected at 82 with a depend-
 ing link 83 which in turn is pivoted at 84
 to a key lever 85 fulcrumed on the usual
 125 fulcrum bar 86 for the printing key levers.
 This key lever 85 extends forwardly to the
 keyboard of the machine where it is pro-
 vided with a finger key 87. A returning
 spring 88 is connected at one end to a plate
 89 and at its opposite end to the key lever

35 to assist in returning the key lever 85 and the parts controlled thereby to normal position. It will be understood that a depression of the key 87 is effected to move the stop setting device from the normal position shown in Fig. 1 and indicated by dotted lines in Fig. 3 to the full line position shown in Fig. 3. The width or thickness of the stop setting device 67 corresponds substantially to the thickness of a column stop so that the stop setting device is cooperative with but one column stop at a time. Moreover, it will be observed from an inspection of Fig. 5, that the stop setting device bears against one side of the plate 66 and is maintained adjacent to the left-hand contact face of the positioning device 64. It will be understood therefore that when the column stops are grouped in the manner shown in Fig. 5, the column stop which is directly engaged by the positioning devices 64 and 65 is in register with the stop setting device 67. A depression of the stop setting key 87 at this time is effective to turn the column stop which is in register with the stop setting device from the uppermost position down to and in engagement with the rack 12, as shown in Fig. 3. The next letter space movement of the carriage is effective to move the group of stops a corresponding distance and bring the next column stop into engagement with the positioning devices 64 and 65 and into register with the stop setting device 67. In this manner the column stops may be successively moved by the stop setting device 67 from an inoperative position to an operative position, and may be moved from a position where they afford an independent movement of the carriage relatively thereto to a position where they are locked to the rack 12 to move with the carriage. When the stop setting device is moved from the normal position to the full line position shown in Fig. 3, to effect a movement of a column stop from the inoperative to the operative position, this same movement is effective to move said stop out of cooperative relation with the positioning devices 64 and 65 so that said positioning devices no longer stand in the path of the column stop thus moved and said positioning devices no longer obstruct a movement of such column stop with the carriage.

As hereinbefore explained, the column stops have a rotative movement with the rock shaft or column stop bar 18, and the column stops also have a limited rotative movement independently of said bar. The detent spring 22 on each column stop is effective, in its cooperation with the spline 19, to maintain sufficient frictional contact with the spline to cause the column stops to turn with the bar when the latter is rotated from the position shown in Fig. 4 to the position shown in Figs. 1 and 3. Thus if the

finger piece 33 is moved from the position shown in Fig. 4 to that indicated in Fig. 1, all of the column stops will be carried around with the column stop bar to the position shown in Fig. 1, thus simultaneously releasing all of the column stops from the rack 12 and turning them to a position where they are cooperative with the positioning devices 62 and 63, during the travel of the carriage. If, on the other hand, the finger piece 33 receives a further movement to the position shown in Fig. 3, then all of the column stops will receive a further extent of rotative movement to the position of the uppermost stop shown in Fig. 3. At this time all of the column stops will be brought into cooperative relation with the engaging devices 64 and 65 so that during the travel of the carriage the column stops will be brought into engagement with said positioning devices and will be held thereby against further movement until they are released, or until they are again moved out of cooperative relation with said positioning devices. This latter movement, as has been hereinbefore pointed out, is effected by an actuation of the stop setting device 67, the stops being individually moved by said stop setting device and during this individual movement the stops are moved independently of the column stop bar 18, which at this time is locked in the position indicated in Fig. 3. After all of the stops have been set by the stop setting device 67 the finger piece 33 is released from the slot 44 and the rock shaft is turned from the position shown in Fig. 3 to that indicated at Fig. 4, where the locking bolt engages in the opening 42. It will be seen that this rotative movement of the rock shaft 18 is effective to bring the spline 19 into engagement with the rear wall in the opening 21 in each of the column stops, thereby positively holding the column stops against rotative movement on the column stop bar and positively locking them down in engagement with the rack 12, so that they cannot be accidentally displaced from engagement with the rack. It will be noted that when the parts are in this position the engaging nose 25 on each spring detent 22 engages over the spline on the column stop bar. The effect of this engagement is to more effectively bring about a disengagement of the column stops from the rack 12 when the rock shaft or column stop bar is rotated to cause the stops to be moved to the inoperative position.

From an inspection of Fig. 3 it will be observed that while the stop setting device 67 is effective to move the column stops down into operative position and into engagement with the teeth of the rack 12, a slight further movement of the column stops is effected when the finger piece 33 is shifted to the position shown in Fig. 4, to bring

about a locking of the column stops against accidental displacement from the operative position and against an accidental displacement of the column stops from engagement with the rack 12. It will be understood, nevertheless, that if desired a complete movement of each column stop to its operative position and into engagement with the rack 12 may be effected by the stop setting device 67.

From the foregoing description it will be understood that the column stop bar or rock shaft 18 and the locking bar 12 are carried by the same part which in the present instance is the carriage, whereas the stop setting device and the positioning devices 62, 63, 64 and 65 are carried by the other part, which, in the present instance, is the frame of the machine.

When the operator desires to clear previously set stops and reset them, when the character of the work is such as to demand a re-arrangement of the column stops, the clearing and resetting may be effected in the following manner: The parts may be assumed to be in the normal position represented in Fig. 4 with the column stops locked against movement in the operative position. The operator moves the carriage to the limit of its movement to the left, thereby carrying all of the column stops to the left of the positioning devices 62 and 63. The operator then releases the locking bolt 35 from the slot 42 and turns the rock shaft 18 with the aid of the finger piece 33 from the position shown in Fig. 4 to that represented in Fig. 1, where the locking bolt is engaged in the slot 43 to lock the parts in the position represented in Fig. 1. It will be seen that the turning movement of the rock shaft to the position shown in Fig. 1 is effective to move all of the column stops out of engagement with the rack bar 12 and to bring them into co-operative relation with the positioning devices 62 and 63. A movement of the carriage to the right at this time is effective to move the column stops with the carriage until they are successively arrested by the positioning devices 62 and 63, the first of the column stops engaging the left-hand faces of said positioning devices as shown in Fig. 6. As the column stops are thus grouped together at letter space intervals as shown in Fig. 6 and arrested in such positions, the column stop bar 18 may continue its movement with the carriage until all of the column stops are grouped together. The operator then releases the bolt 35 and effects a further forward turning movement of the column stop bar until the locking bolt is in position to register with the slot 44. The effect of this movement of the rock shaft 18 is to move the column stops to the uppermost position represented in Fig. 3 where

they are brought into coöperative relation with the positioning devices 64 and 65, the stops at this time being arranged on the right-hand side of such positioning devices. It will be understood that the movement of the carriage to the right to effect a grouping of the column stops as shown in Fig. 6 brought about a movement of the carriage to the limit of its movement to the right or approximately to such position. The paper may now be introduced into the machine and the carriage stepped to the left, and during this movement the group of column stops will be moved with the carriage to the left until they are brought into coöperation with the positioning devices 64 and 65, as represented in Fig. 5. The movement of the carriage to the left may continue while the group of column stops is held against movement by the positioning devices 64 and 65. When the paper reaches the proper position where the first column is to appear, which may be determined by reference to the position of the paper with reference to the printing point or the usual printing point indicator, the operator observes the reading on the carriage scale 90 which is indicated by the pointer 91. This reading in the present instance may be assumed to be at "40". The operator then continues to advance the carriage to the left a letter space distance at a time, with the aid of the usual spacing key, until the corresponding reference numeral on the rack bar 12 is in register with the left-hand face of the plate 66 or the positioning device 64 formed thereon. When this position is attained, the operator depresses the stop setting key 87. As hereinbefore explained the effect of the depression of this key is to move the stop setting device 67 from the uppermost or normal position to the full line position represented in Fig. 3. This movement of the stop setting device is effective to move the column stop which is in register therewith and in direct engagement with the positioning devices 64 and 65 to the operative position, and into engagement with the rack bar 12, as shown in Fig. 3. I preferably provide a screw stop 92 in the guide plate 59 to coöperate with the key lever 85 in order to limit the downward movement of the key lever and determine the extent of downward movement of the stop setting device 67. After the stop setting key 87 is released the carriage is again stepped to the left until the position where the next column is to appear on the paper is determined in the manner hereinbefore indicated and the operation previously described is repeated, thereby effecting an engagement between the next column stop and the rack bar 12 through an actuation of the stop setting device 67. These operations continue until all of the column stops are

moved down into operative position and into engagement with the rack 12. Six column stops are shown in the present instance, although it should be understood that this number may be varied at will. When all of the column stops have been moved down into operative position and into engagement with the rack bar 12, as shown by the position of the lowermost stop in Fig. 3, a disengagement of the locking bolt 35 from the slot 44 is effected and the rock shaft 18 is turned from the position shown in Fig. 3 to that represented in Fig. 4, with the aid of the finger piece 33. The bolt 35 is then engaged in the slot 42 to lock the rock shaft against rotative movement from the position to which it has been turned. It will be seen that when the parts are disposed in this position the spline 19 of the rock shaft 18 engages the rear wall of each slot or opening 21 in each column stop, as shown in Fig. 4, and locks the column stops against rotative movement and against accidental displacement or disengagement from the rack bar 12.

After the stops are grouped against the right-hand face of the positioning devices 64 and 65 in the manner hereinbefore described, the setting of the stops may proceed as the first sheet in the machine is being actually written upon. That is to say, the operator may actuate the stop setting key just previous to beginning the writing of the first item in the first columnar position. When this is completed and prior to the writing of the second item within the second columnar position, the stop setting key 87 may be again depressed and so on as the items for each separate column are produced.

It will be understood that after the column stops are set in the manner described subsequent tabulating operations will effect an arrest of the carriage at the different columnar positions determined by the column stops which have been set in the manner described. If the tabulator is to be used merely to bring the different columnar fields into position to receive the items to be written therein, the decimal key alone will be actuated to operate the decimal stop 52 and the column stops will cooperate successively with the decimal stop to arrest the carriage in the different columnar positions determined by the setting of the column stops. If denominational positions are to be attained within the columnar fields, the denominational stops 50 will be actuated in the usual manner.

From the foregoing description it will be understood that a rotative movement of the column stop bar or rock shaft 18 is effective to simultaneously disengage all of the column stops from their locking means or rack bar 12 and to move the column stops to an inoperative position, and to a position where

they may be first arrested by the positioning devices 62 and 63 during the movement of the carriage to the right. The column stops are then simultaneously turned to the position of the uppermost stop in Fig. 3 where they are in cooperative relation with the positioning devices or stops 64 and 65, so that they will be arrested by such positioning devices during the movement of the carriage to the left and will also be brought into cooperative relation with the stop setting device 67, to be successively moved thereby into engagement with the rack 12 by which they are locked to the carriage against movement relatively thereto.

It will be observed that the stop setting device 67 is off-set to the left of the decimal stop 52. The relation of the scale on the locking bar 12 and the carriage scale, however, is such as to compensate for this. Thus when a position where the stop is to be located has been determined by the carriage scale, which position has been assumed to be at "40", and the corresponding index "40" on the locking bar 12 has been brought into register with the plate 66, an actuation of the stop setting device 67 at this time will effect a proper positioning of the column stop which registers therewith and compensation for the off-setting of the stop set device and an arrest of the carriage will be effected with the aid of the decimal stop when the point "40" on the carriage scale is in register with the pointer 91.

The thickness of each column stop corresponds substantially to a letter space movement of the carriage so that the column stops, when grouped together, have their engaging faces arranged at letter space intervals. This enables the column stops, when grouped at letter space intervals, to bear directly one against another as shown in the drawings and enables them to be effectively held in planes at right angles to the axis of the column stop bar, so as to prevent a buckling or skewing of the column stops on the column stop bar. Moreover, it will be seen that the positioning devices 62 and 63 engage each column stop at opposite ends thereof, and at opposite sides of the column stop bar 18, in order to effectively hold the engaged stop in a plane at right angles to the axis of the column stop bar, to prevent a skewing of the column stop on the rod during the movement of the column stop rod in the direction of its length independently of the column stop. It will also be seen that the positioning devices 64 and 65 engage with the column stops in a like manner to effectively hold the same and prevent a skewing of the stops while the stop rod is being moved independently thereof.

From the foregoing description it will be understood that the positioning devices 62 and 63 constitute grouping means by which

the column stops may be grouped together at letter space intervals, as indicated in Fig. 6, by a relative movement between the column stops and grouping means in the direction of the travel of the carriage in one direction, or to the right; that the devices 64 and 65 constitute separate holding means co-operative with said grouped column stops during the relative movement between said stops and holding means in the opposite direction to hold the grouped stops fixed relatively to one of the machine frame and carriage parts; and that each of the column stops in its movement into and out of operative position moves in a plane which extends transversely of the column stop bar 18; that each of the detent springs 22 is effective to hold its column stop against accidental displacement in the position to which it may be moved both rotatively and longitudinally on the column stop bar; and co-operates with the column stop bar to effect this result, as well as to cause the column stops to turn with the column stop bar; that the two sets of positioning devices on opposite sides of the tabulator frame are spaced apart to receive the entire series of column stops between them; and that a movement of the column stops transversely of the column stop bar in one direction is effective to bring the column stops into co-operative relation with said positioning devices, whereas a movement of the column stops in the opposite direction is effective to move the column stops out of co-operative relation with said positioning devices.

While I have shown and described one form of construction embodying my invention, it should be understood that various changes may be made without departing from the spirit and scope of my invention, and that various features of the construction may be used without others, or in combination with other forms of devices.

Some of the claims embodied herein are intended to be sufficiently generic to cover the construction made the subject of a separate application filed by me May 11th, 1912, Serial No. 696,560.

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

1. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same and also movable individually into operative position, and means for grouping the entire series of said column stops together at adjacent letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage.

2. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of

said parts and adjustable along the same, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage, and a single device operating to move said stops individually to positions where they are held in accordance with their adjustment.

3. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage in one direction, and separate holding means co-operative with said grouped stops during a relative movement between said holding means and stops in the direction of the travel of the carriage in the opposite direction to hold the group of stops fixed relatively to one of said frame and carriage parts.

4. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same, and also movable into and out of operative position on the part by which said stops are carried, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage, and means operative on said stops individually to move them to operative position.

5. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same, and also movable into and out of operative position on the part by which said stops are carried, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage, and means operative on said stops individually to move them to operative position and into holding engagement with the part that carries them.

6. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage in one direction, separate holding means co-operative with said grouped stops during a relative movement between said holding means and stops in the direction of the travel of the carriage in the op-

posite direction to hold the group fixed relatively to one of said frame and carriage parts, and a single device operating to move said stops individually to positions where they are held in accordance with their adjustment.

7. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same and also movable into and out of operative position on the part by which said stops are carried, means for locking the stops in their adjusted positions when they are moved to operative position, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage, and setting means operable individually on the grouped column stops to move them to operative position and into cooperation with their locking means.

8. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and adjustable along the same and also movable into and out of operative position on the part by which said stops are carried, means for locking the stops in their adjusted positions when they are moved to operative position, means for grouping said column stops together at letter space intervals by a relative movement between said column stops and grouping means in the direction of the travel of the carriage, setting means operable individually on the grouped column stops to move them to operative position and into cooperation with their locking means, and means for holding the grouped stops in fixed relation with reference to the setting means so that the latter may operate individually on said stops.

9. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and having a sliding adjustment thereon in the direction of the travel of the carriage, means for locking each of said stops in its adjusted position on the part which carries it, means for simultaneously releasing all of said column stops from said locking means, and stop set means operative individually on said column stops to effect a locking by said locking means of the stops to the part which carries them, said stop set means being carried by the other of said parts.

10. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with said rod and for pivotal movement independently of the rod,

and stop setting means cooperative with said stops to effect such independent pivotal movement of the stops on the bar.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with said rod and for pivotal movement independently of the rod, and stop setting means cooperative with said stops to effect such independent pivotal movement of the stops on the rod, said stop setting means being operative individually on said column stops.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with said rod and for pivotal movement independently of the rod, and stop setting means cooperative with said stops to effect such independent pivotal movement of the stops on the rod, said stop setting means being operative individually on said column stops, the series of column stops and stop setting device being carried one by the carriage and the other by the frame of the machine.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with said rod and for pivotal movement independently of the rod, stop setting means cooperative with said stops to effect such independent pivotal movement of the stops on the rod, and a positioning device with which said stops are brought into cooperative relation by a pivotal movement of the column stop rod.

14. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with said rod and for pivotal movement independently of the rod, stop setting means cooperative with said stops to effect such independent pivotal movement of the stops on the rod, and locking means with which the column stops are brought into engagement by the independent pivotal movement of the stops on said stop rod to lock the column stops against sliding adjustment along the rod.

15. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with said rod and for pivotal movement independently of the rod, stop

setting means coöperative with said stops to effect such independent pivotal movement of the stops on the rod, a positioning device with which said stops are brought into co-operative relation by a pivotal movement of the column stop rod, and locking means with which the column stops are brought into engagement by the independent pivotal movement of the stops on said rod to lock the column stops against sliding adjustment along the rod.

16. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement on the axis of said rod to two definite positions, a positioning device with which the stops are brought into coöperative relation when they are turned to one of said two positions, and a second positioning device with which the stops are brought into co-operative relation when they are turned to the other of the two said positions.

17. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with the rod to two definite positions, a positioning device with which the stops are brought into coöperative relation when they are turned to one of said two positions, a second positioning device with which the stops are brought into coöperative relation when they are turned to the other of the two said positions, and stop set means coöperative with said stops.

18. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with the rod to two definite positions, a positioning device with which the stops are brought into coöperative relation when they are turned to one of said two positions, a second positioning device with which the stops are brought into coöperative relation when they are turned to the other of the two said positions, and stop set means coöperative with said stops, the stop set means and series of column stops being carried one by the frame of the machine and the other by the carriage.

19. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with the rod to two definite positions, a positioning device with which the stops are brought into coöperative relation when they are turned to one of said two positions, a second positioning device with

which the stops are brought into coöperative relation when they are turned to the other of the two said positions, and stop set means operable individually on said column stops as they are brought successively into coöperation with one of said positioning devices, the stop set device and series of column stops being carried one on the frame of the machine and the other by the carriage.

20. In a typewriting machine and tabulating mechanism, the combination of a carriage, a pivoted column stop rod, a series of column stops mounted thereon for sliding adjustment along said rod and for pivotal movement with the rod and for pivotal movement independently of the rod, a positioning device with which the column stops are brought into coöperative relation by a pivotal movement of the column stops with the column stop rod, and a stop set device co-operative individually with the column stops to effect the said independent pivotal movement thereof when the stops are brought successively into coöperation with said positioning device.

21. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement into and out of operative position in a plane which extends transversely of said bar, said stops being adapted to remain indefinitely in either the operative or inoperative positions, and a column stop set device for moving the column stops to operative position, said series of column stops and stop setting device being carried one by the carriage and the other by the frame of the machine.

22. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement into and out of operative position in a plane which extends transversely of said bar, a column stop positioning device with which the column stops are in coöperative relation when they are moved to an inoperative position, and a column stop set device for moving the column stops to operative position, said series of column stops and stop setting device being carried one by the carriage and the other by the frame of the machine.

23. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement into and out of operative position in a plane which extends transversely of said bar, a column stop positioning device with which the column stops

- are in coöperative relation when they are moved to an inoperative position and with which the column stops may be brought into contact by a relative movement between said column stops and said positioning device in the direction of the travel of the carriage, and a column stop set device for moving the column stops individually to operative position when successive engagements of the column stops and said positioning device have been effected, said series of column stops and stop setting device being carried one by the carriage and the other by the frame of the machine.
24. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement into and out of operative position in a plane which extends transversely of said bar, a column stop positioning device with which the column stops are in coöperative relation when they are moved to an inoperative position and by which positioning device the stops may be grouped one next to another by a relative movement between the column stops and positioning device in the direction of the travel of the carriage, and a stop setting device operative individually on said column stops to move them to operative position.
25. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement into and out of operative position in a plane which extends transversely of said bar, a column stop positioning device with which the column stops are in coöperative relation when they are moved to an inoperative position and by which positioning device the stops may be grouped one next to another by a relative movement between the column stops and positioning device in the direction of the travel of the carriage, and a stop setting device operative individually on said column stops to move them to operative position, the series of column stops and said stop setting device being carried one by the carriage and the other by the frame of the machine, so that the travel of the carriage brings about the registration between successive column stops and said setting device.
26. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement into and out of operative position in a plane which extends transversely of said bar, means for simultaneously moving all of the column stops to inoperative position, and key controlled means operable individually on said column stops to move them to operative position.
27. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement in a plane which extends transversely of said bar, locking means with which said stops are thrown into and out of engagement by such transverse movements, means for effecting such transverse movement of all of said stops in one direction to throw them out of engagement with their locking means, and key controlled means operable individually on said stops to effect such transverse movements of the stops in the opposite direction to bring about an engagement of the stops with their locking means.
28. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement in a plane which extends transversely of said bar, locking means with which said stops are thrown into and out of engagement by such transverse movements, means for effecting such transverse movement of said stops in one direction to throw them out of engagement with their locking means, key controlled means operable individually on said stops to effect such transverse movements of the stops in the opposite direction to bring about an engagement of the stops with their locking means, and stop positioning means with which the stops are thrown into coöperative relation when they are thrown out of engagement with their locking means.
29. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops, each of said stops being mounted for sliding adjustment longitudinally of said bar and for movement in a plane which extends transversely of said bar, locking means with which said stops are thrown into and out of engagement by such transverse movements, means for effecting variable extents of such transverse movement of said stops in one direction to throw them out of engagement with their locking means, two stop positioning devices with which the stops are brought into coöperative relation by the variable extents of transverse movement thereof out of engagement with their locking means, the stops being brought into coöperative relation with one of the stop setting devices when they are moved to one of such variable positions and being brought into coöperative relation with another of such stop positioning devices when the stops

are moved to another of such variable positions, and means operable on said stops to effect transverse movements of the stops in the opposite direction to bring about an engagement of the stops with their locking means.

30. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, and a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the rock shaft independently thereof.

31. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon for adjustment along said rock shaft, and a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the rock shaft independently thereof.

32. In a typewriting machine and tabulating mechanism, the combination of a carriage, a splined rock shaft, column stops mounted thereon and each of said stops having a notch larger than the thickness of the spline to afford a limited pivotal movement of each of said column stops on the rock shaft, and a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft.

33. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the shaft and to afford a turning movement of the stops on the shaft independently thereof, and locking means with which the stops engage when the rock shaft is turned in one direction.

34. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon for adjustment along said rock shaft, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the rock shaft independently thereof, and locking means with which the column stops engage when the rock shaft is turned in one direction, the engagement of the stops with their locking means preventing a movement of the column stops longitudinally of the rock shaft.

35. In a typewriting machine and tabulating mechanism, the combination of a carriage, a splined rock shaft, column stops

mounted thereon and each of said stops having a notch larger than the thickness of the spline to afford a limited pivotal movement of each of said column stops on the rock shaft, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft, and locking means with which the column stops engage when the rock shaft is turned in one direction, the engagement of the stops with their locking means preventing a movement of the column stops longitudinally of the rock shaft.

36. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the shaft independently thereof, the turning movement of the rock shaft in one direction moving the column stops out of operative position, and a stop positioning device with which the stops are brought into cooperative relation when the stops are moved to inoperative position.

37. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, a spring detent carried by each of said stops and cooperative with the shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the shaft independently thereof, and a stop set device operable individually on said column stops to turn them independently of the rock shaft.

38. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop rod, column stops mounted thereon for adjustment along said stop rod, a spring detent carried by each of said stops and cooperative with the stop rod to afford a turning movement of the stops on the stop rod independently thereof and to hold the stops against accidental displacement from the positions to which they have been moved on said rod, locking means with which the column stops engage, the engagement of the stops with their locking means preventing a movement of the column stops longitudinally of the stop rod, and a key actuated stop set device operable individually on said column stops to turn them independently of the stop rod and effect an engagement of the column stops with their locking means, the series of column stops and stop setting device being carried one by the carriage and the other by the frame of the machine.

39. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon for adjustment along said rock

shaft, a spring detent carried by each of said stops and coöperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the rock shaft independently thereof, locking means with which the column stops engage when the rock shaft is turned in one direction, the engagement of the stops with their locking means preventing a movement of the column stops longitudinally of the rock shaft, and a key actuated stop set device operable individually on said column stops to turn them independently of the rock shaft and effect an engagement of the column stops with their locking means, the series of column stops and stop setting device being carried one by the carriage and the other by the frame of the machine.

40. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop rod, column stops mounted thereon, a spring detent carried by each of said stops and coöperative with the stop rod to afford a turning movement of the stops on the stop rod independently thereof and to hold the stops against accidental displacement from the positions to which they have been moved on said rod, a turning movement of the stops in one direction carrying them out of operative position, a stop positioning device with which the stops are brought into coöperative relation when the stops are moved to inoperative position, and a key actuated stop setting device operable individually on the column stops to turn them independently of the stop rod and bring them into operative position, the series of column stops and the stop setting device being carried one by the carriage and the other by the frame of the machine.

41. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, a spring detent carried by each of said stops and coöperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the shaft independently thereof, the turning movement of the rock shaft in one direction moving the column stops out of operative position, a stop positioning device with which the stops are brought into coöperative relation when the stops are moved to inoperative position, and a key actuated stop setting device operable individually on the column stops to turn them independently of the rock shaft and bring them into operative position, the series of column stops and the stop setting device being carried one by the carriage and the other by the frame of the machine.

42. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop rod, column stops mounted

thereon for adjustment along said rod, a spring detent carried by each of said stops and coöperative with the rod to afford a turning movement of the stops on the rod independently thereof and to hold the stops against accidental displacement from the positions to which they have been moved on said rod, a turning movement of the stops in one direction carrying them out of operative position, a stop positioning device with which the stops are brought into coöperative relation when the stops are moved to inoperative position and which engages each stop and holds it against movement relatively thereto in the direction of the travel of the carriage, and a stop set device operable individually and successively on said column stops when they are in engagement with said positioning device, said stop setting device being operative to turn the stops independently of the rock shaft and to move them to operative position.

43. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon for adjustment along said shaft, a spring detent carried by each of said stops and coöperative with the rock shaft to cause the column stops to turn with the shaft and to afford a turning movement of the stops on the shaft independently thereof, the turning movement of the rock shaft in one direction moving the column stops out of operative position, a stop positioning device with which the stops are brought into coöperative relation when the stops are moved to inoperative position and which engages each stop and holds it against movement relatively thereto in the direction of the travel of the carriage, and a stop set device operable individually and successively on said column stops when they are in engagement with said positioning device, said stop setting device being operative to turn the stops independently of the rock shaft and to move them to operative position.

44. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop rod, column stops mounted thereon for adjustment along said rod, a spring detent carried by each of said stops and coöperative with the rod to afford a turning movement of the stops on the rod independently thereof and to hold the stops against accidental displacement from the positions to which they have been moved on said rod, locking means with which the column stops engage when they are turned in one direction, the engagement of the stops with their locking means preventing a movement of the column stops longitudinally of the stop rod, a stop positioning device with which said stops may be brought into coöperative relation when the stops are moved out of engagement with their locking means

and by which each stop may be held against movement relatively thereto in the direction of the travel of the carriage, and a stop setting device coöperative individually with the column stops to turn them independently of the stop rod into engagement with said locking means, a column stop being in register with said stop setting device when said stop is in engagement with said stop positioning device.

45. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon for adjustment along said shaft, a spring detent carried by each of said stops and coöperative with the rock shaft to cause the column stops to turn with the shaft and to afford a turning movement of the stops on the shaft independently thereof, locking means with which the column stops engage when the rock shaft is turned in one direction, the engagement of the stops with their locking means preventing a movement of the column stops longitudinally of the rock shaft, a stop positioning device with which said stops may be brought into coöperative relation when the stops are moved out of engagement with their locking means and by which each stop may be held against movement relatively thereto in the direction of the travel of the carriage, and a stop setting device coöperative individually with the column stops to turn them independently of the rock shaft into engagement with said locking means, a column stop being in register with said stop setting device when said stop is in engagement with said stop positioning device.

46. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, a series of column stops mounted on said rock shaft for adjustment along the same, means whereby the stops may be caused to turn with the shaft or to turn independently thereof, hand actuated means operable at will to turn the shaft, and separate means operable at will and operable individually on said column stops to turn them independently of said shaft.

47. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement transversely of said column stop bar, tabulator stop mechanism which co-acts with said column stops, positioning means independent of the tabulator stop mechanism and by which the column stops may be grouped next to one another on the column stop bar and through the movement of the carriage, and stop setting means operable individually on said column stops to move them transversely of the stop bar.

48. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement transversely of said column stop bar, tabulator stop mechanism which co-acts with said column stops, positioning means independent of the tabulator stop mechanism and by which the column stops may be grouped next to one another at the left-hand end of the column stop bar and through the movement of the carriage, and stop setting means operable individually on said column stops to move them transversely of the stop bar, said positioning means also including means for holding the grouped stops against movement with the carriage in the movement of the latter from right to left and in a position where the stop setting means is in register with the left hand stop of the group to be acted on by the stop setting means.

49. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement transversely of said column stop bar, and a fixed positioning device carried by the frame of the machine and extending into the path of the column stops when they are moved transversely of the column stop bar to enable the positioning device to engage the stops on one side thereof and hold them against movement while the column stop bar and the carriage continues to move relatively to the column stops.

50. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement transversely of said column stop bar, a fixed positioning device carried by the frame of the machine and extending into the path of the column stops when they are moved transversely of the column stop bar to enable the positioning device to engage the stops on one side thereof and hold them against movement while the column stop bar and the carriage continue to move relatively to the column stops, and a key actuated stop setting device operable on said column stops individually to move them transversely of the column stop bar in one direction.

51. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each mounted for adjustment along and for movement transversely of the column stop bar, and two positioning devices which are spaced apart to receive the entire series of stops between them and which extend into the path of the column stops when

they are moved transversely of the column stop bar.

52. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement to varying positions transversely of the column stop bar, a fixed positioning device which extends into the path of the column stops when they are moved to one position transversely of the column stop bar, and a second positioning device which extends into the path of the column stops when they are moved to another position transversely of the column stop bar.

53. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each mounted for adjustment along and for movement transversely of the column stop bar, two fixed positioning devices which are spaced apart to receive the entire series of stops between them and which extend into the path of the column stops when they are moved to one position transversely of the column stop bar, and means by which the column stops may be moved transversely of the column stop bar to cooperate with said positioning devices.

54. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement to varying positions transversely of the column stop bar, a fixed positioning device which extends into the path of the column stops when they are moved to one position transversely of the column stop bar, a second positioning device which extends into the path of the column stops when they are moved to another position transversely of the column stop bar, and means by which the column stops may be simultaneously moved to either of the said transverse positions to cooperate with one or another of said positioning devices.

55. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each mounted for adjustment along and for movement transversely of the column stop bar, two positioning devices which are spaced apart to receive the entire series of stops between them and which extend into the path of the column stops when they are moved transversely of the column stop bar, means by which the column stops may be moved transversely of the column stop bar in one direction to cooperate with said positioning devices, and a stop setting device operable individually on said stops for moving them transversely of the column stop bar in the opposite direction.

56. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement to varying positions transversely of the column stop bar, a fixed positioning device which extends into the path of the column stops when they are moved to one position transversely of the column stop bar, a second positioning device which extends into the path of the column stops when they are moved to another position transversely of the column stop bar, means by which the column stops may be simultaneously moved to either of the said transverse positions to cooperate with one or another of said positioning devices, and a stop setting device operable individually on said stops for moving them transversely of the column stop bar.

57. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement transversely of said column stop bar, a fixed positioning device carried by the frame of the machine and extending into the path of the column stops when they are moved transversely of the column stop bar to enable the positioning device to engage the stops on one side thereof and hold them against movement while the column stop bar and the carriage continues to move relatively to the arrested column stops, a key actuated stop setting device operable on said column stops individually to move them transversely of the column stop bar in one direction, and locking means for locking the column stops against movement along the column stop bar, the movement of the stops transversely of the column stop bar under control of the stop setting device effecting an engagement of the stops with said locking means.

58. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement transversely of the column stop bar, two fixed positioning devices which are spaced apart to receive the entire series of stops between them and which extend into the path of the column stops when they are moved in one direction transversely of the column stop bar, means by which the column stops may be moved transversely of the column stop bar to cooperate with said positioning devices, a stop setting device operable individually on said stops for moving them transversely of the column stop bar in the opposite direction, and locking means for locking the column stops against movement along the column stop bar, the movement of the stops transversely of the column stop

bar under control of the stop setting device effecting an engagement of the stops with said locking means.

59. In a typewriting machine and tabulating mechanism, the combination of a carriage; a column stop bar carried thereby, a series of column stops each mounted for adjustment along and for movement to varying positions transversely of the column stop bar, a fixed positioning device which extends into the path of the column stops when they are moved to one position transversely of the column stop bar, a second positioning device which extends into the path of the column stops when they are moved to another position transversely of the column stop bar, means by which the column stops may be simultaneously moved to either of the said transverse positions to cooperate with one or another of said positioning devices, stop setting devices operable individually on said stops for moving them transversely of the column stop bar, and locking means for locking the column stops against movement along the column stop bar, the movement of the stops transversely of the column stop bar under control of the stop setting device effecting an engagement of the stops with said locking means.

60. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of denominational stops, a column stop bar, a series of column stops each mounted for movement along said bar and in a plane which extends transversely thereof, the transverse movements of said column stops carrying them into and out of operative position, two positioning devices, one on each side of the series of denominational stops, and means for moving the column stops out of operative position and into cooperative relation with said positioning devices.

61. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of denominational stops, a column stop bar, a series of column stops each mounted for movement along said bar and in a plane which extends transversely thereof, the transverse movements of said column stops carrying them into and out of operative position, two positioning devices, one on each side of the series of denominational stops, means for moving the column stops out of operative position and into cooperative relation with said positioning devices, and a key-actuated stop-set device located between said positioning devices and adjacent to one of them, said stop-set device being operable individually on the column stops to move them to operative position.

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

each mounted for movement along said bar and in a plane which extends transversely thereof, the transverse movements of said column stops carrying them into and out of operative position, two positioning devices, one on each side of the series of denominational stops, means for moving the column stops out of operative position and into cooperative relation with said positioning devices, a key-actuated stop-set device located between said positioning devices and adjacent to one of them, said stop-set device being operable individually on the column stops to move them to operative position, and means for locking the stops against movement along the column stop bar, the column stops being moved into engagement with said locking means by the actuation of said stop-setting means.

63. In a typewriting machine, the combination of a carriage; a frame of the machine; a series of column stops carried by one of said parts and adjustable relatively thereto in the direction of the travel of the carriage; means for locking the column stops to the part which carries them; stop positioning means carried by the other of said parts and with which the column stops are adapted to cooperate, said stop positioning means comprising two engaging devices spaced apart to receive the entire series of column stops between them; and means for effecting a relative movement between the stops and engaging devices toward and away one from the other to bring them into cooperative relation.

64. In a typewriting machine, the combination of a carriage; a frame of the machine; a column stop carried by one of said parts and adjustable relatively thereto in the direction of the travel of the carriage; means for locking the column stop to the part which carries it; stop positioning means carried by the other of said parts and with which the column stop is adapted to cooperate, said stop positioning means comprising two engaging devices; and means for effecting different extents of relative movement between the stop and engaging devices toward and away one from the other to bring them into cooperative relation, one extent of such relative movement bringing the column stop and one of said engaging devices into cooperative relation and a different extent of such relative movement bringing the column stop and another of said engaging devices into cooperative relation.

65. In a typewriting machine, the combination of a carriage; a frame of the machine; a column stop carried by one of said parts and adjustable relatively thereto in the direction of the travel of the carriage; means for locking the column stop to the part which carries it; stop positioning

means carried by the other of said parts and with which the column stop is adapted to cooperate, said stop positioning means comprising two engaging devices; and means for effecting different extents of relative movement between the stop and engaging devices toward and away one from the other to bring them into cooperative relation, one extent of such relative movement disengaging the column stop from its locking means and bringing the column stop and one of said engaging devices into cooperative relation and a different extent of such relative movement disengaging the column stop from its locking means and bringing the column stop and another of said engaging devices into cooperative relation.

66. In a typewriting machine, the combination of a carriage; a frame of the machine; a column stop carried by the carriage and adjustable thereon in the direction of the travel of the carriage; means for locking the stop in its adjusted position; stop positioning means carried by the frame of the machine, said positioning means comprising two engaging devices with which the column stop is adapted to cooperate; and means for effecting variable extents of movement of said column stop out of engagement with said locking means and into cooperative relation with said engaging devices, one extent of such movement of the column stop bringing it into cooperative relation with one of said engaging devices and another extent of movement of the column stop bringing it into cooperative relation with the other of said engaging devices.

67. In a typewriting machine, the combination of a carriage, a frame of the machine, a series of column stops carried by one of said parts and mounted for adjustment thereon in the direction of the travel of the carriage, means for effecting such an adjustment of the column stops, said means comprising two engaging devices carried by the other of said parts and cooperative one at a time with said column stops, said engaging devices being spaced apart to receive the entire series of column stops between them, and means for effecting a relative movement between the column stop and engaging devices to bring said engaging devices and the column stop into cooperative relation.

68. In a typewriting machine, the combination of a carriage, a frame of the machine, a column stop carried by one of said parts and mounted for adjustment thereon in the direction of the travel of the carriage, means for effecting such an adjustment of the column stop, said means comprising two engaging devices carried by the other of said parts and cooperative one at a time with said column stop, and means for effecting a relative movement between the column

stop and engaging devices to bring one or the other of said engaging devices and the column stop into cooperative relation depending on the extent of relative movement between them.

69. In a typewriting machine the tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the rock shaft independently thereof, and means for locking the rock shaft against turning movement in any one of several positions to which it may be turned.

70. In a typewriting machine and tabulating mechanism, the combination of a carriage, a rock shaft, column stops mounted thereon, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft and to afford a turning movement of the stops on the rock shaft independently thereof, locking means with which the stops engage when the rock shaft is turned in one direction, and means for locking the rock shaft against turning movement to prevent the stops from being disengaged from their locking means.

71. In a typewriting machine and tabulating mechanism, the combination of a carriage, a splined rock shaft, column stops mounted thereon and each of said stops having a notch larger than the thickness of the spline to afford a limited pivotal movement of each of said column stops on the rock shaft, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft, and means for locking the rock shaft in a given position against turning movement to lock the stops against individual movement on the rock shaft.

72. In a typewriting machine and tabulating mechanism, the combination of a carriage, a splined rock shaft, column stops mounted thereon and each of said stops having a notch larger than the thickness of the spline to afford a limited pivotal movement of each of said column stops on the rock shaft, a spring detent carried by each of said stops and cooperative with the rock shaft to cause the column stops to turn with the rock shaft, locking means with which said stops engage when the stops are in normal position to prevent a movement of the stops along said shaft, and means for locking the rock shaft against rotative movement to prevent the stops from being disengaged from their locking means.

73. In a typewriting machine, the combination of a carriage, a rock shaft, a series of stops carried by said rock shaft and

adapted to turn with the shaft and to turn independently thereof, and releasable means for positively locking the rock shaft against turning movement.

74. In a typewriting machine, the combination of a carriage, a rock shaft, a series of stops carried by said rock shaft and having a limited turning movement on said shaft and adapted to turn therewith to move the stops out of operative position, and means for locking the shaft against turning movement in its normal position, to thereby lock the stops against turning movement from the normal position independently of said shaft.

75. In a typewriting machine, the combination of a carriage, a rock shaft, a series of stops carried by said rock shaft and having a limited turning movement on said shaft and adapted to turn therewith to move the stops out of operative position, said stops also being adapted to move longitudinally of said rock shaft, locking means for holding the stops against movement longitudinally of said shaft, and means for locking the shaft against rotative movement to prevent the stops from being accidentally disengaged from the locking means which hold them against movement longitudinally of the rock shaft.

76. In a typewriting machine, the combination of a carriage, a splined rod, a series of stops mounted thereon, each of said stops having a spline-receiving notch larger than the thickness of said spline, and a spring detent carried by each of said stops and coöperative with said rod.

77. In a typewriting machine, the combination of a carriage, a column stop bar, a series of column stops mounted for movement transversely of said bar and for sliding movement along the bar, positioning devices between which the entire series of column stops may be received and one of which devices prevents a relative movement between the device and stops in one direction and the other of which devices

prevents a relative movement between it and the stops in the opposite direction, and means for bringing said stops and positioning devices into coöperative relation.

78. In a typewriting machine, the combination of a carriage, a column stop bar, a series of column stops mounted for movement transversely of said bar and for sliding movement along the bar, positioning devices between which the entire series of column stops may be received and one of which devices prevents a relative movement between the device and stops in one direction and the other of which devices prevents a relative movement between it and the stops in the opposite direction, and means for bringing said stops and positioning devices into coöperative relation by a transverse movement of the column stops.

79. In a typewriting machine, the combination of a carriage, a column stop bar, a series of column stops mounted for movement transversely of said bar and for sliding movement along the bar, positioning devices between which the entire series of column stops may be received and one of which devices prevents a relative movement between the device and stops in one direction and the other of which devices prevents a relative movement between it and the stops in the opposite direction, means for bringing said stops and positioning devices into coöperative relation by a transverse movement of the column stops, and a stop-setting device operating individually on said column stops to move them in an opposite direction and out of coöperative relation with said positioning devices.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 29th day of March A. D. 1912.

ARTHUR W. SMITH.

Witnesses:

CHARLES E. SMITH,
E. M. WELLS.