G. H. SMITH.

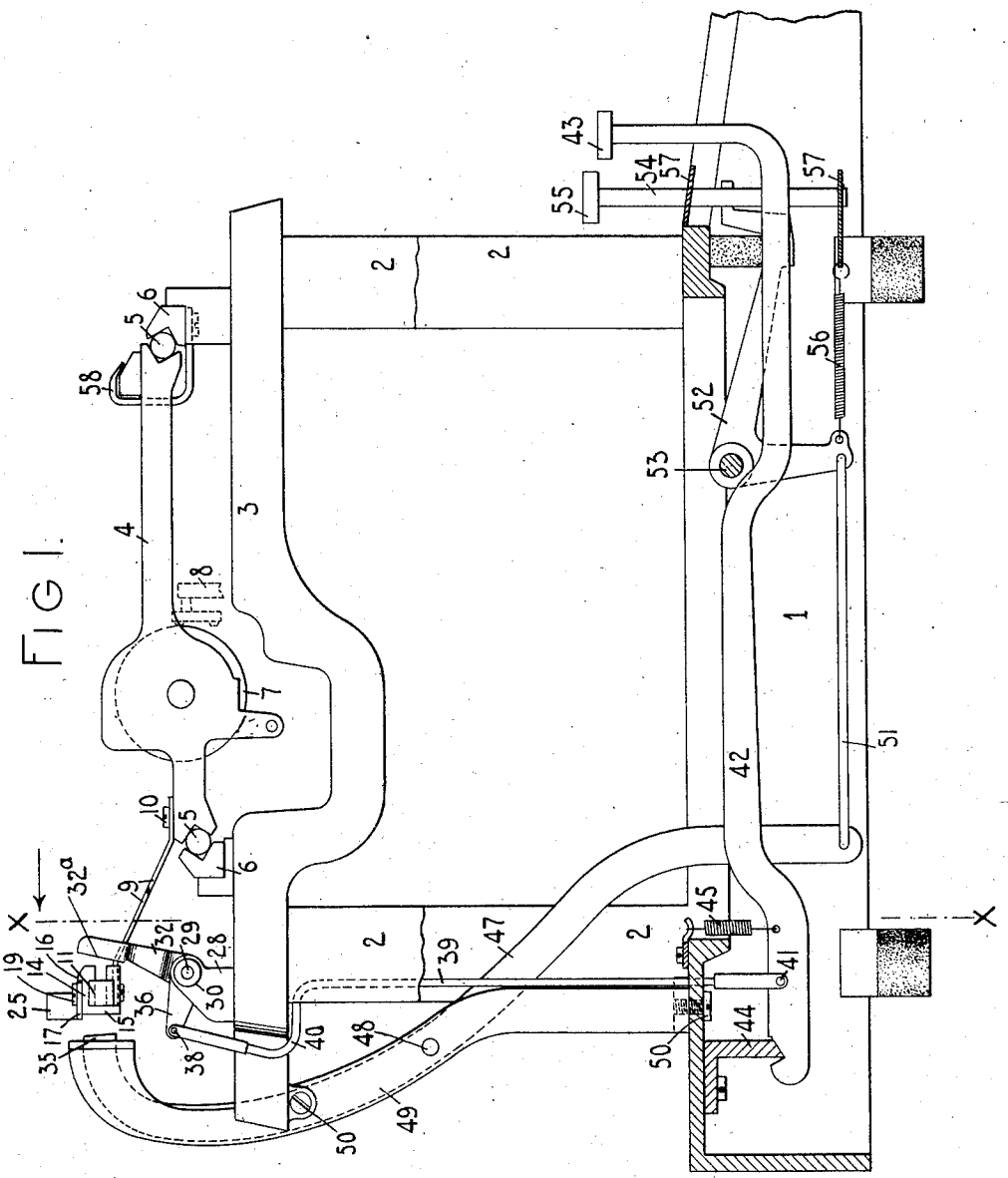
TYPE WRITING MACHINE.

APPLICATION FILED DEC. 17, 1909.

973,226. **Patented Oct. 18, 1910.**

4 SHEETS—SHEET 1.

FIG 1.



WITNESSES.

E. M. Wells.

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INVENTOR.

George H. Smith

By Jacob Feldt

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4 SHEETS—SHEET 2.

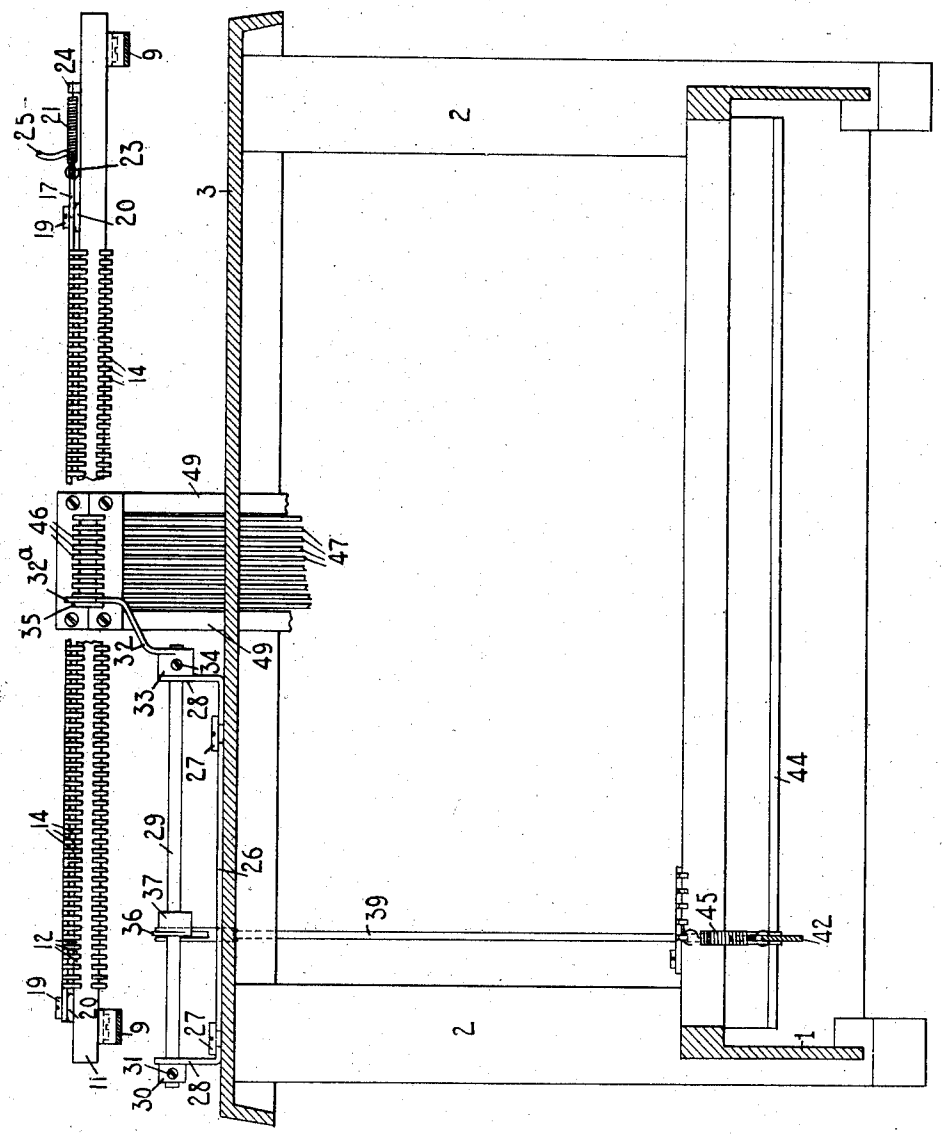


FIG. 2.

WITNESSES.

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4 SHEETS—SHEET 3.

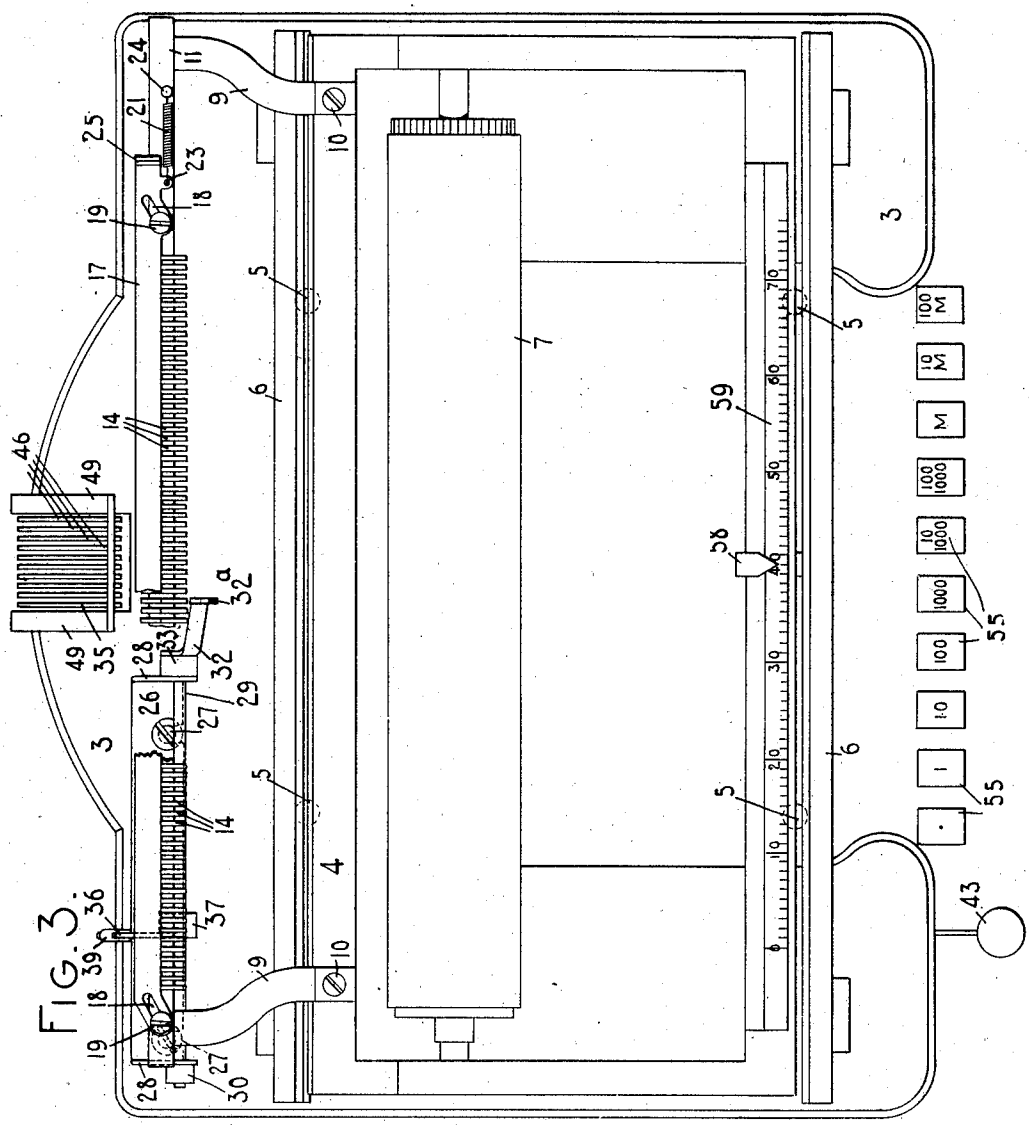


FIG. 3.

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TYPE WRITING MACHINE.

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4 SHEETS—SHEET 4.

FIG. 5.

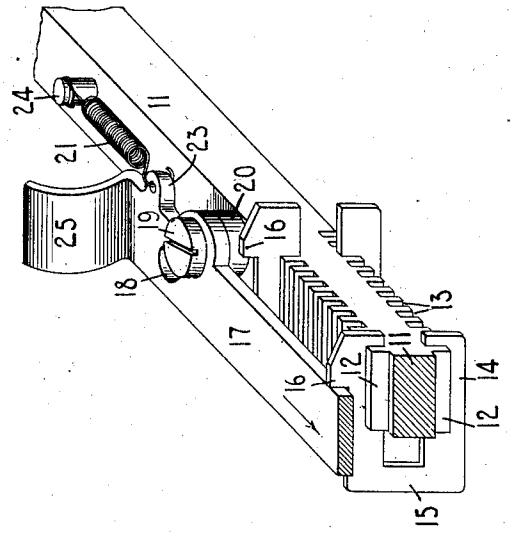
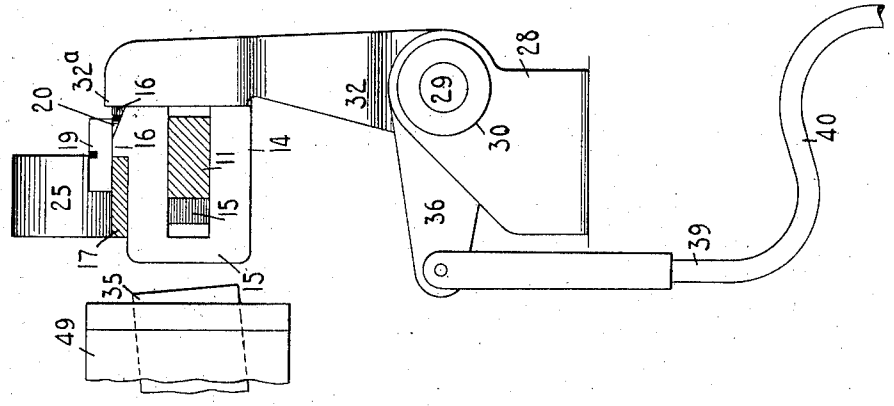


FIG. 4.



WITNESSES:

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Walter E. Smith

INVENTOR.

George H. Smith

By Jacob Fehlt

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UNITED STATES PATENT OFFICE.

GEORGE H. SMITH, OF NUTLEY, NEW JERSEY, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

973,226. Specification of Letters Patent. Patented Oct. 18, 1910.

Application filed December 17, 1909. Serial No. 533,717.

To all whom it may concern:

Be it known that I, GEORGE H. SMITH, citizen of the United States, and resident of Nutley, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Type-writing Machines, of which the following is a specification.

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

In tabulating mechanism heretofore employed it has been customary to use a column stop rod or rack with a space or notch for each index on the carriage scale or for each letter space position of the carriage in its line of travel. The column stops were ordinarily adjustable along the column stop bar, being seated in different notches and arranged for coöperation with one or more tabulating stops so that when the carriage was released certain of the tabulating stops would coöperate to arrest it. In the use of such column stops considerable time was required to set them or adjust them when a change from one character of work to another was made and the work involved in determining where to set the stops was somewhat troublesome.

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

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 specification and particularly pointed out in the appended claims.

In the drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a side view, partly in section and with parts broken away, of one form of typewriting machine embodying my invention, sufficient number of parts of the machine being shown to illustrate my invention in its embodiment therein. Fig. 2 is a transverse sectional view of the same taken on the line *x*—*x* of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is a plan view of the machine with parts broken away. Fig. 4 is an enlarged detail diagrammatic side elevation, partly in section, of parts of the tabulating mechanism and the means for setting the stops. Fig. 5 is an enlarged detail perspective view of the column stop bars and some of the associated parts.

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

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

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. A carriage 4 is mounted to travel from side to side of the machine upon anti-friction rollers 5 which are likewise received in fixed grooved guide rails 6 secured to the top plate of the machine. A platen 7 is carried by the carriage and the type bars 8 are arranged to strike upwardly and rearwardly against the front face of the platen, the type bars being controlled by the usual key actuated means (not shown).

Bracket arms 9 are secured by screws 10 to the carriage and project rearwardly therefrom and support a column stop bar 11. The column stop bar is provided with teeth 12 which project therefrom on opposite sides, forming spaces 13 between the teeth on the upper and lower sides of the bar. Bifurcated plate-like column stops 14 straddle the column stop bar and are received and adapted to slide fore and aft of the machine in the interdental spaces 13 between the teeth on the stop bar. The rear portion 15 which connects the arms of each stop 14 constitutes the contact portion with which the coöperative stops are adapted to engage. Each column stop is provided with an upwardly extending projection 16 formed with a vertical face with which a flat sheet metal restoring bar 17 is adapted to coöperate. Inclined cam slots 18 are formed in the restoring bar near the ends thereof and shouldered screws 19 pass through these cam slots and through the spacing washers 20 and en-

gage in tapped openings in the stop bar 11. The restoring bar 17 is arranged parallel with the column stop bar and is mounted to slide endwise and transversely of the stop bar by reason of the inclined cam slots 18 and the screws 19 by which the restoring bar is connected to the column stop bar. A contractile spring 21 is connected at one end to an ear 23 which projects from the restoring bar and is connected at its other end to a pin 24 which projects upwardly from the column stop bar. A finger piece 25 is formed on the bar 17 to provide means by which it may be moved by hand against the pressure of the spring 21. The position of the bar 17 is such that it is adapted to cooperate with the projections 16 on the column stops, so that when the restoring bar is moved in the direction of the arrow in Fig. 5 said bar is effective to move any of the column stops 14 which may project rearwardly from the column stop bar back to the inoperative position as will hereinafter more clearly appear. Moreover, the position of the bar 17 is such that it coöperates with the projections 16 on the column stops to prevent their removal or accidental detachment from the column stop bar. I preferably provide as many column stops 14 as there are interdental spaces 13 in the column stop bar. In other words, I preferably provide as many column stops as there are letter space positions in the travel of the carriage, it being understood that adjacent interdental spaces 13 in the column stop bar are situated a letter space distance apart.

A bracket 26 is secured by screws 27 to the top plate of the machine, the bracket having upwardly extending arms 28 provided with bearing openings in which a rock shaft 29 is received. A sleeve 30 is secured by a set screw 31 to the left-hand end of the rock shaft where it projects beyond the left-hand bracket arm 28. A projecting or selecting device in the nature of a crank arm or finger 32 is formed with a hub 33 which is secured to the rock shaft 29 by a set screw 34, the hub being secured to the right-hand end of the shaft outside of the right-hand bracket arm 28. The hub 33 and the sleeve 30 prevent the longitudinal movement of the rock shaft on the bracket. The free end or contact portion 32^a of the arm 32 is off-set to the right to bring it into a position where it will register with one of the column stops 14 at each letter space position of the carriage and preferably where the contact portion 32^a is just to the right of the decimal stop 35, as shown in Figs. 2 and 3. The thickness of the contact portion 32^a of the finger or arm 32 is such that it will contact with only one of the column stops at a time, the particular column stop with which the finger is adapted to co-act depending on the letter space position of the carriage at the time the finger is actuated. A rearwardly extending crank arm 36 is provided with a hub 37 fixed to the rock shaft 29. The rear end of this crank arm is pivoted at 38 to a downwardly extending link 39 bent at 40 to clear the top plate of the machine and pivoted at its lower end as at 41 to a key lever 42 provided with a finger key 43 arranged in the keyboard of the machine. The key lever 42 is fulcrumed on the usual fulcrum plate 44 and is provided with a restoring spring 45. The key 43 is a special key which may be referred to as a selecting key and the only purpose of which is to actuate the link 39, and through this link the crank arm 36 and rock shaft 29 and thus control the movement of the finger 32. A depression upon the key 43 is effective to rock the shaft 29 and thus effect a rearward movement of the selecting arm or device 32 to bring it into contact with one of the column stops 14 and force the latter rearwardly in its spaces in the column stop bar in order to move the column stop to operative position, or to a position where it is adapted to coöperate with one of the denominational or coöperative tabulator or denominational stops 35 or 46 when any of them is moved forwardly by the keys which control them. The various denominational stops 35 or 46 are formed as parts of stop levers 47 pivoted at 48 in a tabulator frame 49 secured by screws 50 to the frame of the machine. The lower ends of the stop levers are pivotally connected to links 51 which in turn are connected at their forward ends to angular levers 52 pivoted upon a rod 53 secured to the frame of the machine. Key stems 54 cooperate with the forwardly projecting arms of the angular levers 52 to actuate them and the stop levers controlled thereby, to move the denominational stops forward into the path of such of the column stops as may have been moved rearwardly to operative position. The key stems 54 are provided with the usual tabulator keys 55. Contractile springs 56 are connected to the angular levers and to a guide plate 57 to restore the angular levers, tabulator keys, stop levers and denominational stops to normal position. The key stems 54 are guided in suitable guide plates 57.

I preferably locate the selecting key 43 in the keyboard of the machine to the left of the denominational keys 55, as indicated in Fig. 3.

In the use of the devices it may be assumed, for instance, that a letter is to be written in which vertical rows of names or items and amounts are to appear, which items and amounts in different lines are to be placed exactly under each other. The carriage is moved to the position where the first letter of the first name or item is to be

written. This may be assumed to be at "15" which is indicated by the pointer 58 on the carriage scale 59. The selecting key 43 is then depressed and this effects a rearward movement of the finger projecting or selecting device 32 and effects a rearward movement of the coöperative column stop which is opposite the contact portion 32ª of the column selecting finger. The said column stop is thereby moved into operative position where it is retained by frictional engagement with the teeth of the column stop bar until replaced or restored to inoperative position. Thereafter, and during the tabulating operation, the projected column stop will co-act with the decimal stop 35 at the same point, "15," in the travel of the carriage where the carriage was arrested to select the column stop, and in the desired position where the first name or item to be written is to be started. If the operator desires to set the next column stop to write, for instance, an amount in the same line so that the decimal point will be at, say, "55" on the carriage scale, it is only necessary to press down the selecting key 43 when the carriage is moved to a position where the decimal point may be written in a position which corresponds to "55" on the carriage scale. This projects a column stop at "55" to arrest the carriage at such position when the decimal key is depressed. If in the next and subsequent lines a name or item and an amount are to be written exactly under the first ones no further setting of the stops is required and only those column stops are effective which have been moved to operative position by the actuation of the selecting key 43 in the manner described. When the tabulator is to be set for a different character of work, requiring the use of different column stops, those formerly in use may be cleared or simultaneously moved to inoperative position by simply moving the finger piece 25 to the left. This is effective to produce a movement of the bar 17 to the left and forwardly against the pressure of the spring 21, the bar 17 being in engagement with the projections 16 on the operative column stops 14 will simultaneously move all of the operative stops forwardly to inoperative position. When pressure is released upon the finger piece 25 it will be restored to normal position by its spring 21. New column stops may then be individually and successively selected and set in the manner hereinbefore pointed out.

It will be understood that a material advantage of the invention is that column stops are by pressure on the selecting key 43 individually set up while writing the first line so as to avoid calculating beforehand the positions where the stops are to be set, the position of the carriage in the present structure aiding in determining the selection of the column stop to be used for that particular point of arrest.

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

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 stop bar provided with teeth which project therefrom, stops mounted on said bar to slide in the spaces between said projecting teeth and to slide into and out of operative position, hand actuated selecting means coöperative with said stops to move any desired one of said stops to operative position, and a coöperative tabulating stop, the stop bar and selecting means being carried one by the carriage and the other by the frame of the machine.

2. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar provided with teeth which project therefrom, stops mounted on said bar to slide in the spaces between said projecting teeth and to slide into and out of operative position, hand actuated selecting means coöperative with said stops to move any desired one of them to operative position, a coöperative tabulating stop, the stop bar and selecting means being carried one by the carriage and the other by the frame of the machine, and means for restoring all of the operative stops on the stop bar to inoperative position.

3. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar provided with teeth which project therefrom, stops mounted on said bar to slide in the space between said projecting teeth and to slide into and out of operative position, hand actuated selecting means coöperative with said stops to move any desired one of them to operative position, a coöperative tabulating stop, the stop bar and selecting means being carried one by the carriage and the other by the frame of the machine, and means for restoring all of the operative stops on said bar to inoperative position, said last mentioned means comprising a bar mounted to receive a bodily movement parallel with said stop bar and to contact with the stops carried thereby.

4. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and

move transversely of the bar in spaces between the teeth on the bar, a coöperative tabulator stop, and key actuated means for moving the bifurcated stops on the stop bar to operative position, the key actuated moving means and the stop bar being carried one by the carriage and the other by the frame of the machine.

5. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and move transversely of the bar in spaces between the teeth on the bar, a coöperative tabulator stop, and a key actuated projecting device coöperative with said bifurcated stops to project them to operative position, the bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage.

6. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and move transversely of the bar in spaces between the teeth on the bar, a coöperative tabulator stop, a key actuated projecting device coöperative with said bifurcated stops to project them to operative position, the bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage, and a sliding bar coöperative with said bifurcated stops to move all of the operative bifurcated stops to inoperative position.

7. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and move transversely of the bar into and out of operative position in spaces between the teeth on the bar, a projection on each of said stops, a key actuated projecting device coöperative with said bifurcated stops, the bifurcated stop with which said projecting device coöperates depending on the letter space position of the carriage, and a movable bar coöperative with said projections for simultaneously moving all of the operative bifurcated stops to inoperative position and for preventing the disconnection of said bifurcated stops from the stop bar.

8. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops received and adapted to slide in the spaces between the teeth on said stop bar, such sliding movement of the stops carrying them into and out of operative position, a key actuated finger coöperative with but one bifurcated stop at a time to move it in its spaces to operative position, the bifurcated stop with which the finger coöperates depending on the letter space position of the carriage, a coöperative tabulator stop, and key actuated means for projecting said coöperative stop into coöperative relation with the projected bifurcated stops.

9. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops which straddle the stop bar and which are received and slide transversely of the bar in the spaces between the teeth thereon so that said bifurcated stops may be moved separately on the stop bar transversely thereof into and out of operative position and may be retained in either of the positions to which they are moved, a coöperative tabulator stop, and key actuated means for projecting said coöperative stop into the path of the operative bifurcated stops.

10. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops which straddle the stop bar and which are received and slide transversely of the bar in the spaces between the teeth thereon so that said bifurcated stops may be moved separately on the stop bar transversely thereof into and out of operative position and may be retained in either of the positions to which they are moved, a key actuated projecting device carried by the frame of the machine and coöperative with but one bifurcated stop at a time to move it to operative position, the particular bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage, a coöperative tabulator stop, and key actuated means for projecting the coöperative stop into the path of the operative bifurcated stops.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops which straddle the stop bar and which are received and slide transversely of the bar in the spaces between the teeth thereon so that said bifurcated stops may be moved separately on the stop bar transversely thereof into and out of operative position and may be retained in either of the positions to which they are moved, a key actuated projecting device carried by the frame of the machine and coöperative with but one bifurcated stop at a time to move it to operative position, the particular bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage, a sliding bar

which is mounted and has a bodily sliding movement on the column stop bar and cooperates with the operative bifurcated stops to simultaneously move them to inoperative position, a coöperative tabulator stop, and key actuated means for projecting it into the path of the operative bifurcated stops.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops which straddle the stop bar and which are received and slide transversely of the bar in the spaces between the teeth thereon so that said bifurcated stops may be moved separately on the stop bar transversely thereof into and out of operative position and may be retained in either of the positions to which they are moved, a key actuated projecting device carried by the frame of the machine and coöperative with but one bifurcated stop at a time to move it to operative position, the particular bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage, a restoring bar having cam slots therein, headed screws which pass through the cam slots in the restoring bar and connect it with said column stop bar, a spring for returning the restoring bar to normal position, said restoring bar being coöperative with the bifurcated column stops for simultaneously moving all of the operative bifurcated stops back to inoperative position, a coöperative tabulator stop, and key actuated means for projecting it into the path of the operative bifurcated stops.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops which straddle the stop bar and which are received and slide transversely of the bar in the spaces between the teeth thereon so that said bifurcated stops may be moved separately on the stop bar transversely thereof into and out of operative position and may be retained in either of the positions to which they are moved, engaging projections on said bifurcated column stops, a key actuated projecting device carried by the frame of the machine and coöperative with but one bifurcated stop at a time to move it to operative position, the particular bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage, a spring returned hand actuated sliding restoring bar which coöperates with the projections on said bifurcated column stops to simultaneously move all of the operative column stops back to inoperative position and which prevents the removal of said column stops from the column stop bar, a coöperative tabulator stop, and key actuated means for projecting it into the path of the operative bifurcated stops.

14. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, said bar being provided with projecting teeth on opposite sides thereof, bifurcated column stops which straddle the stop bar and which are received and slide transversely of the bar in the spaces between the teeth thereon so that said bifurcated stops may be moved separately on the stop bar transversely thereof into and out of operative position and may be retained in either of the positions to which they are moved, engaging projections on said bifurcated column stops, a key actuated projecting device carried by the frame of the machine and coöperative with but one bifurcated stop at a time to move it to operative position, the particular bifurcated stop with which the projecting device coöperates depending on the letter space position of the carriage, a restoring bar having cam slots therein, headed screws which pass through the cam slots in the restoring bar and connect it with said column stop bar, a spring for returning the restoring bar to normal position, said restoring bar being coöperative with the said projections on the bifurcated column stops for simultaneously moving all of the operative column stops back to inoperative position and for preventing the removal of the column stops from the stop bar, a coöperative tabulator stop, and key actuated means for projecting it into the path of the operative column stops.

15. In a typewriting machine and tabulating mechanism, the combination with a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and move transversely of the bar into and out of operative position in spaces between the teeth on the bar, a projection on each of said stops, and means coöperative with said projections to limit the movement of the tabulator stops in one direction; said limiting means being also adapted to move transversely of the bar and return all of said stops simultaneously to their normal positions.

16. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and move transversely of said bar into and out of operative position in spaces between the teeth on the bar, a projection on each of said stops, and a bar extending parallel with the stop bar and coöperative with said projections to prevent the removal of the tabulator stops from the stop bar; said bar being also

movable transversely of the stop bar and adapted to return all of said stops simultaneously to their normal positions.

17. In a typewriting machine and tabulating mechanism, the combination of a carriage, a stop bar having teeth, bifurcated tabulator stops which straddle said bar and move transversely of said bar into and out of operative position in spaces between the teeth on the bar, a projection on each of said stops, a bar extending parallel with the stop bar and coöperative with said projections to prevent the removal of the tabulator stops from the stop bar, hand actuated selecting means coöperative with said stops to move any desired one of said stops to operative position, and a coöperative tabulating stop, the stop bar and selecting means being carried one by the carriage and the other by the frame of the machine.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York this 16th day of December, A. D. 1909.

GEORGE H. SMITH.

Witnesses:

CHARLES E. SMITH,

E. M. WELLS.