

941,120.

O. WOODWARD.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 26, 1908.

Patented Nov. 23, 1909.

4 SHEETS—SHEET 1.

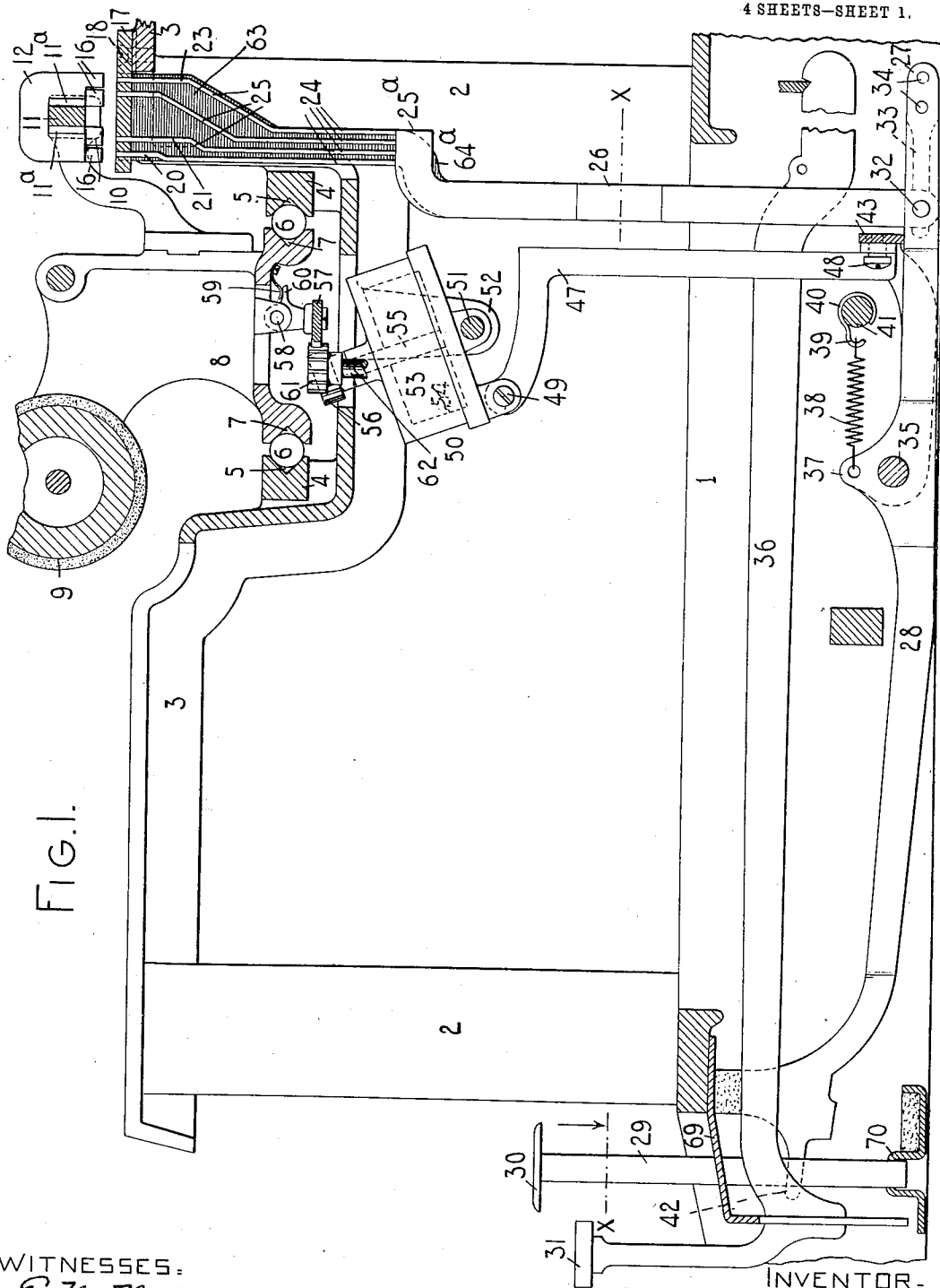


FIG. 1.

WITNESSES.

E. M. Wells
Wm. E. Smith

INVENTOR.

Oscar Woodward

My Jacob F. F. F.

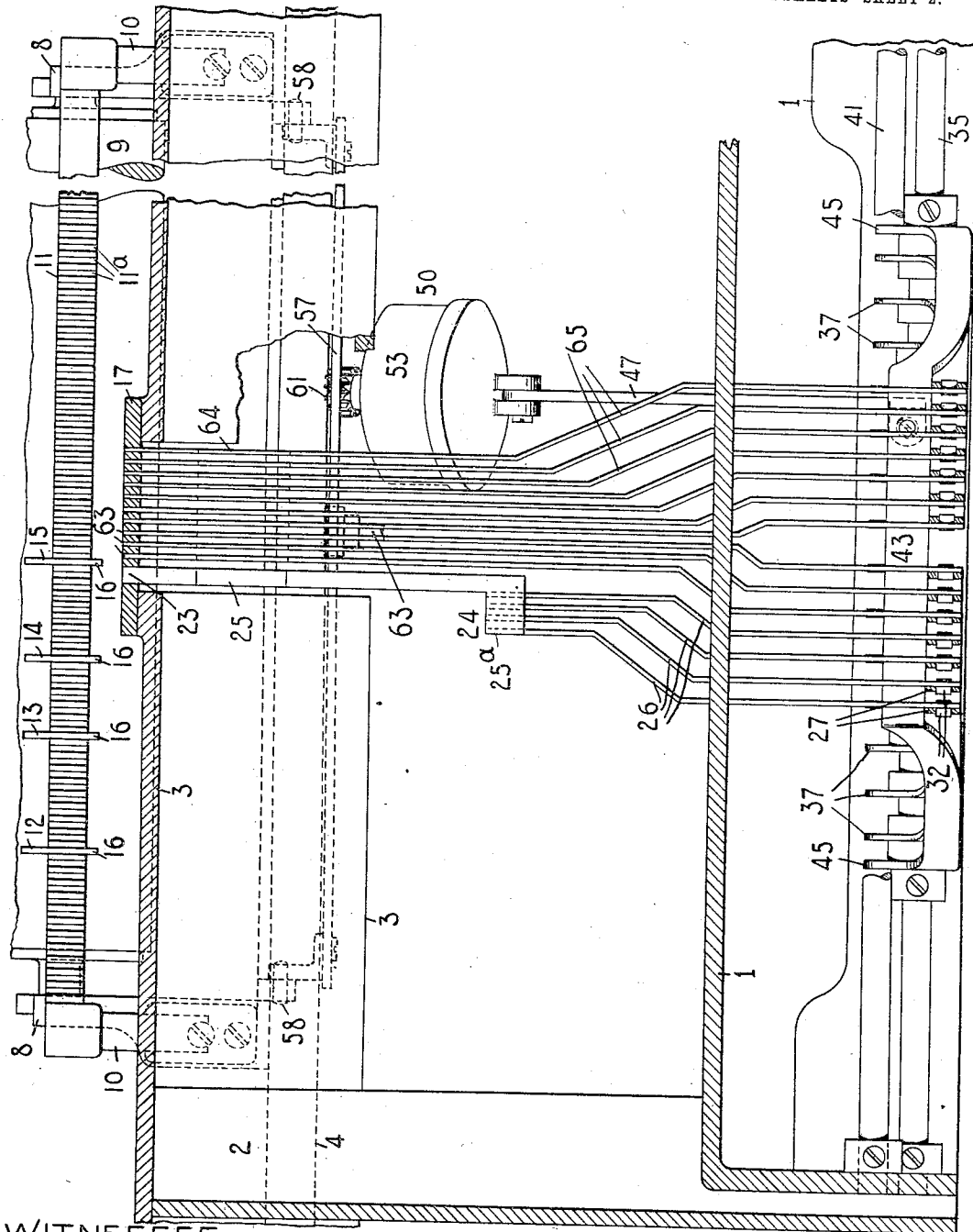
HIS ATTORNEY

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4 SHEETS—SHEET 2.



WITNESSES.

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FIG. 2.

INVENTOR.

Oscar Woodward

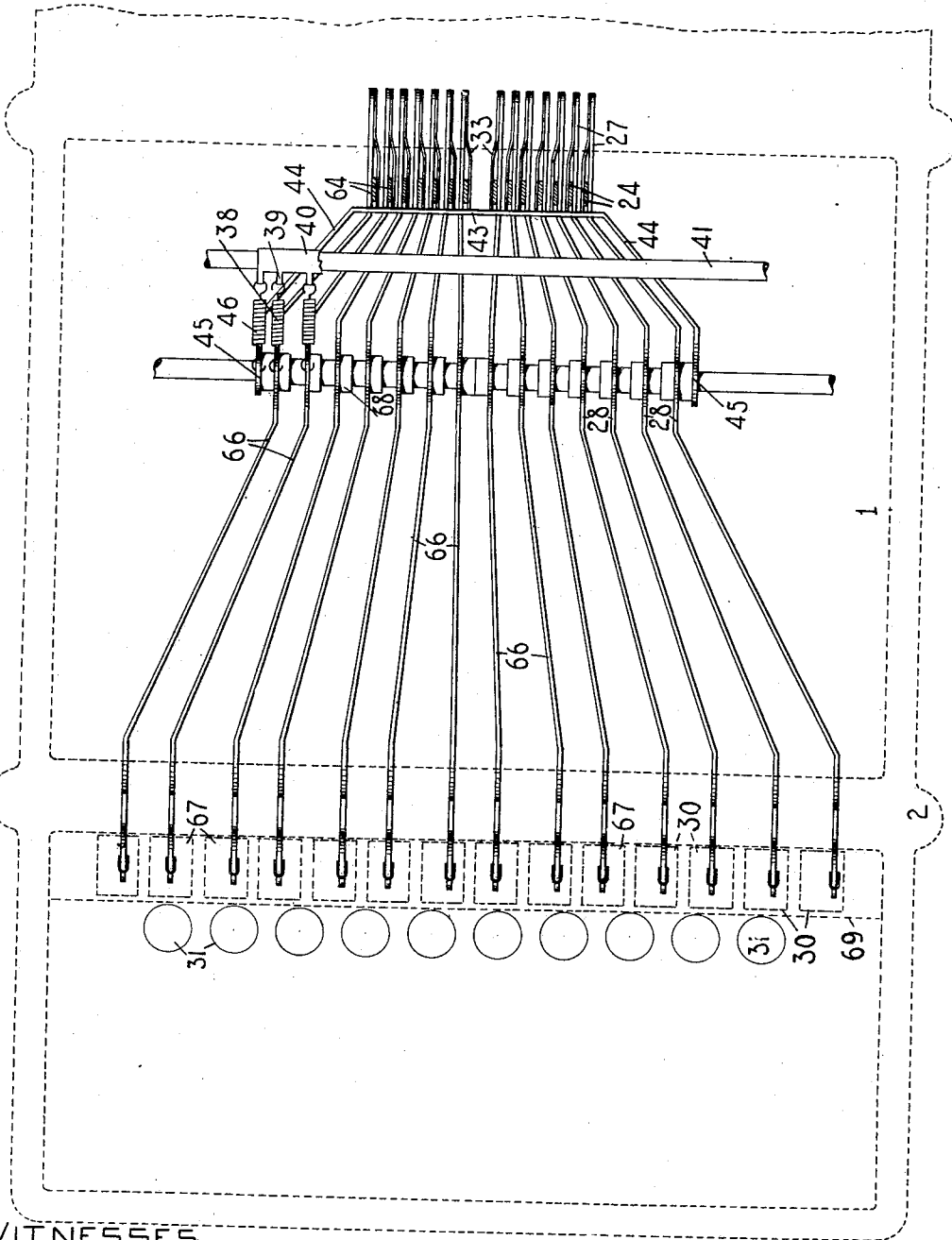
By Jacob F. Schell

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4 SHEETS—SHEET 3.



WITNESSES:

E. M. Wells

Wm. E. Smith

FIG. 3.

INVENTOR.

Oscar Woodward

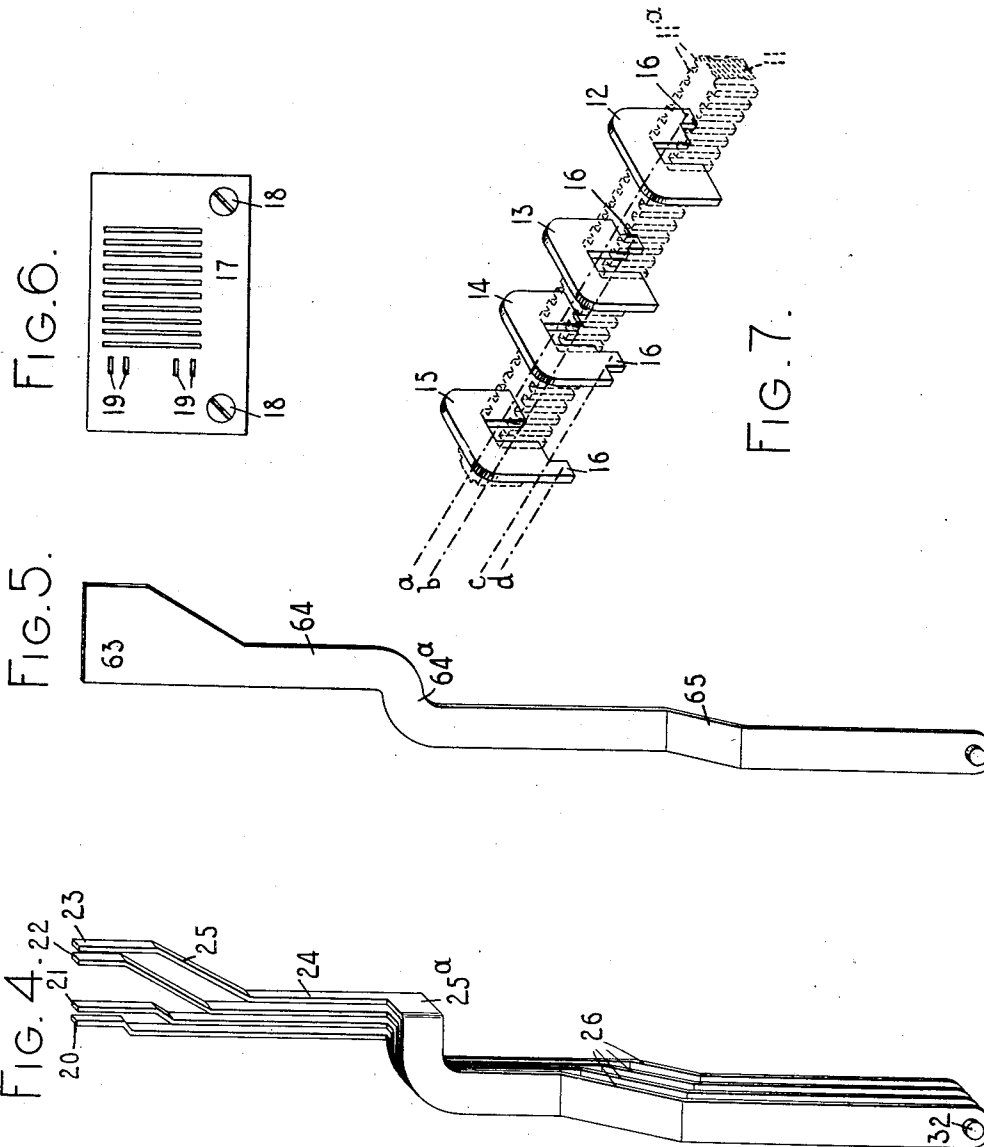
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4 SHEETS—SHEET 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO REMINGTON TYPE-WRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

941,120.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed October 26, 1908. Serial No. 459,592.

To all whom it may concern:

Be it known that I, OSCAR WOODWARD, a citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

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

The main object of my invention is to provide efficient column selecting mechanism which is convenient, positive and certain of operation.

A further object of my invention is to combine with said column selecting mechanism a convenient and efficient denominational selecting mechanism.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and more 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 vertical central sectional view extending fore and aft of the machine of one form of typewriting machine embodying my invention, so much only of the machine being shown as is required to illustrate my invention in its embodiment therein. Fig. 2 is a fragmentary rear elevation of the same with the parts in section. Fig. 3 is a horizontal sectional view taken on the line $x-x$ of Fig. 1 and looking in the direction of the arrow at said line. Fig. 4 is a detail perspective view of the group of column selecting members. Fig. 5 is a detail perspective view of one of the denominational selecting members. Fig. 6 is a detail top plan view of the guide plate for the denominational and column selecting members. Fig. 7 is a perspective view showing the stops on the carriage.

I have shown my invention in the present instance embodied in a front-strike machine although it should be understood that the invention may be embodied in other styles of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. Fixed guide rails 4 are carried by the top

plate and have oppositely disposed grooved faces 5 in which anti-friction balls or rollers 6 are received, said balls or rollers being also received in grooved tracks 7 in a carriage 8 which supports a cylindrical platen 9. Extending upwardly and rearwardly from the carriage 8 are arms 10 which support a stop bar 11 provided with teeth 11^a on opposite sides thereof forming interdental spaces between the teeth for the reception of bifurcated substantially U-shaped stops 12, 13, 14 and 15 shown in detail in Fig. 7. These stops have depending engaging or arresting portions 16 which project downwardly equal extents. The different stops have their engaging portions on opposite sides of the stop bar and each engaging or arresting portion has an independent path of movement with the carriage as indicated for example by the four dotted lines a , b , c and d in Fig. 7. Thus, the stops 14 and 15 have their depending engaging portions on one side of the stop bar, whereas the stops 12 and 13 have their engaging portions on the opposite side of the bar for purposes which will hereinafter more clearly appear.

A comb or guide plate 17 is secured to the top plate of the machine by screws 18. This guide plate has four openings 19 which receive and guide the column selecting stops 20, 21, 22 and 23, the contact edges or faces of which are in a single vertical plane which extends fore and aft of the machine and therefore transversely of the direction of the travel of the carriage. The column selecting stops are each of a sufficient width so that when projected it will coöperate only with the depending projection 16 of the particular stop 12 to 15 with which it is intended to coöperate. Thus, the foremost stop when projected extends into the path of the depending projection on the first stop 15 of the series carried by the carriage and only with the stop 15, whereas the stops 21, 22 and 23 co-act respectively with the depending projection on the stops 14, 13 and 12. It will thus be understood that each of the column selecting stops 20 to 23 co-acts only with a given one of the column stops to determine the columnar position of arrest of the carriage and that the positions of the different columnar fields may be determined by adjusting the stops 12 to 15 to different positions on the stop bar 11.

The column selecting stops are prefer-

ably formed as part of members comprising upstanding longitudinally movable bars or sheet metal strips 24 which are shown in the present instance as off-set at 25 near the upper ends thereof in order to bring the stops thereon into their proper positions relatively to the paths of movement of the stops 12 to 15 on the carriage. The column selecting stops are presented edgewise for contact with the depending portions 16 on the carriage stops and are bent as at 25^a to bring the upper and lower portions of the stop members in planes at substantially right angles to each other so that the planes of the lower portions of the stop members extend fore and aft of the machine whereas the planes of the upper portions extend transversely of the machine.

From an inspection of Fig. 2 it will be seen that the column selecting stop members are fanned outwardly as at 26 in order that the lower ends thereof may properly cooperate with the rear end portions 27 of substantially horizontally disposed actuating levers 28. From an inspection of Fig. 3 it will be seen that these levers fan outwardly as they approach the front of the machine so as to bring them into coöperation with the comparatively widely separated stems 29 carrying column selecting keys 30. These key stems and keys are arranged in a straight row across the machine in the key-board thereof just above the printing keys 31 at a position where they may be readily actuated by the operator. Each of the levers 28 has an opening therein for the reception of an outwardly extending pivot pin 32 riveted to the lower end of the associated column selecting member, in order to pivotally connect the actuating lever to said member. A leaf spring 33 is riveted at 34 to each of said levers and extends at its free end over the outside of the associated column selecting member in order to maintain the pivotal connection between each key lever and its associated column selecting member and at the same time to afford a ready disconnection between the parts when desired. A pivot rod 35 extends beneath the printing key levers 36 and constitutes a fulcrum for the various actuating levers 28, said pivot rod being secured at its ends to the frame of the machine. Each actuating lever has an upwardly extending projection 37 apertured to receive one end of a contractile spring 38 secured at its opposite end to a hook-like projection 39 on a sleeve 40 which surrounds a rod 41 secured at its ends to the frame of the machine. These springs 38 restore the levers 28 and the parts connected therewith to normal positions. The forward end of each of the levers 28 may be connected to its associate key stem 29 in any suitable manner. In the present instance each of the key stems is formed of folded sheet metal sub-

stantially into U-shape in cross section and each stem is apertured to enable a finger 42 on the associated actuating lever to be projected therethrough so as to form a connection between the key stem and lever.

A universal bar 43 extends above the rear end portions of the actuating levers 28 and is turned at its ends to provide arms 44 which are likewise pivoted on the rod 35. One or both of these arms may be provided with an upwardly extending projection 45 like the projections 37 on the actuating levers 28 so that one or more restoring springs 46, like the springs 38, may be connected therewith to restore the universal bar and the parts connected therewith to normal positions. A link 47 is loosely connected at its lower end by a pin 48 to the universal bar, the upper end of said link being pivoted at 49 to a combined carriage releasing and retarding device 50 pivoted at 51 to a bracket 52. This combined releasing and retarding device may be of any suitable construction, that shown in the present instance being similar to the construction disclosed in my application Serial No. 415,372 filed February 11, 1908.

The retarding and releasing device comprises a drum 53 containing a rotative retarding device 54 connected through a shaft 55 with a pinion 56. The pinion 56 is normally out of engagement with a feed rack 57 pivoted at 58 to the carriage and moved to and normally held in the position shown in Fig. 1 by a spring 59 which bears against an arm 60 connected with said feed rack. A feed pinion 61 is connected through a shaft 62 with suitable carriage escapement mechanism such, for instance, as that shown in my application Serial No. 415,373 filed February 11th, 1908. When the combined retarding and releasing device 50 is turned on its pivot 51 through an actuation of any of the levers 28, the pinion 56 is thrown into mesh with the feed rack 57, moving it on its pivots 58 out of engagement with the feed pinion 61, thus releasing the carriage from its feed mechanism and at the same time throwing and maintaining the pinion 56 of the retarding device into mesh with the rack so that in the movement of the carriage the retarding device 54 will be rotated.

To the left of the column selecting stops is arranged a plurality of independently operable denominational selecting stops 63, the contact faces of which are arranged in parallel planes fore and aft of the machine. The breadth of each of these stops is such that when projected to operative position it extends into the paths of all of the depending projections 16 on the stops 12 to 15 and will co-act with any of these stops to arrest the carriage. The breadth of the stop 63 corresponds substantially to the breadth of the stops 12 to 15 so that none of said last

mentioned stops is capable of passing the stop 63 when the latter is in the projected position. The denominational determining stops 63 are preferably formed as a part of sheet metal strips, bars or members 64 which stand upright in the machine and which are individually movable in the direction of their lengths. The members 64 are off-set forwardly at 64^a (Fig. 5) to bring the lower ends thereof into alinement transversely of the machine with the lower ends of the members 24 and the members 64 are also fanned outwardly at the lower end portions thereof as indicated at 65 in order that their lower ends may coöperate with levers 66. These levers are constructed like the levers 28 hereinbefore referred to and are connected to their respective denominational stop members in the same manner as are the column selecting members and further detail description of these parts is deemed unnecessary. Moreover, the forward ends of the levers 66 are connected to denominational keys 67 arranged in the same row across the machine with the column selecting keys 30. The universal bar 43 extends above the denominational stop actuating levers 66 as well as above the levers 28 so that an actuation of any of the denominational stop levers will likewise effect a release of the carriage. Suitable spacing sleeves or collars 68 may be provided to properly maintain the rear end portions of the levers 28 and 66 separated. The forward ends of the levers as hereinbefore stated are connected to key stems and these key stems are guided in openings in guide plates 69 and 70 so that the forward ends of the levers are thus maintained properly spaced apart.

In the operation of the machine the operator first presses the requisite column selecting key 30 in order to interpose the associated column selecting stop in the path of the particular column stop 12 to 15 with which it coöperates, at the same time effecting a release of the carriage so that the carriage will be arrested after a single movement at the proper column without first arresting the carriage in preceding columnar positions. The columnar position having been thus selected the operator releases the column selecting key and presses the proper denominational key to select the proper denominational position within the selected columnar field. The effect of this movement is to project the selected denominational stop into the path of the column stop which has just been arrested by the column selecting mechanism, the carriage making a short movement from the position of arrest by the column selecting mechanism to the position selected by the actuation of the denominational key.

From an inspection of Fig. 1 it will be understood that the construction is such

that the printing key levers 36 may extend between the column selecting and denominational selecting members 24 and 64 respectively and that the actuation of the printing mechanism is in no manner affected by the tabulating mechanism nor is the tabulating mechanism in any manner affected by the printing mechanism, although the parts are compactly arranged and the devices of one mechanism pass through or between devices of the other mechanism.

Various changes may be made without departing from the spirit and scope of the invention.

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

1. In a typewriting machine, the combination of a carriage; and column determining mechanism comprising a series of independently operable levers having keys in the keyboard of the machine and in the rear of the printing keys, and a plurality of independently operable column selecting stops controlled by said levers, said column selecting stops having their contact surfaces in a single plane transverse to the direction of travel of the carriage.

2. In a typewriting machine, the combination of a carriage; and column determining mechanism comprising a series of independently operable levers having keys in the keyboard of the machine, and a plurality of independently operable column selecting stops controlled by said levers, each of said selecting stops being formed as a part of an upwardly movable strip or bar pivoted at its lower end to and moved bodily upward by the associated lever, said column selecting stops having their contact surfaces in a single plane transverse to the direction of travel of the carriage.

3. In a typewriting machine, the combination of a carriage; and column determining mechanism comprising a series of independently operable levers of the first order having keys in the keyboard of the machine, and a plurality of independently operable column selecting stops pivoted directly to and controlled by said levers, said column selecting stops having their contact surfaces in a single plane transverse to the direction of travel of the carriage.

4. In a typewriting machine, the combination of a carriage; and column determining mechanism comprising a series of independently operable levers having keys in the keyboard of the machine, and a plurality of independently operable column selecting members each of which comprises a strip of metal bent so that the opposite end portions thereof are in planes at substantially right angles to each other but extend longitudinally in the same general direction, one end of each strip forming a column selecting stop presented edgewise for contact, said column se-

lecting stops having their contact surfaces in a single plane transverse to the direction of the travel of the carriage.

5. In a typewriting machine, the combination of a carriage; and column determining mechanism comprising a series of independently operable levers of the first order having keys in the keyboard of the machine, and a plurality of independently operable column selecting members pivoted directly to and movable bodily by said key levers, each of said members comprising a strip of metal bent so that the opposite ends thereof are in planes at substantially right angles to each other, one end of each strip forming a column selecting stop presented edgewise for contact, said column selecting stops having their contact surfaces in a single plane transverse to the direction of the travel of the carriage.

6. In a typewriting machine, the combination of a carriage; column determining mechanism comprising a series of independently operable levers having keys in the keyboard of the machine, and a plurality of independently operable column selecting stops controlled by said levers, the column selecting stops being separate from said levers, said column selecting stops having their contact surfaces in a single plane transverse to the direction of travel of the carriage; and carriage releasing mechanism co-operative directly with said levers.

7. In a typewriting machine, the combination of a carriage; denominational tabulator mechanism comprising a plurality of independently operable denominational stops, and denominational keys situated above the printing keys and in the keyboard of the machine and operatively connected with said denominational stops for actuating them; and column selecting mechanism comprising a plurality of independently operable column selecting stops, and column selecting keys situated above the printing keys and in the keyboard of the machine and operatively connected with said column selecting stops for actuating them, said column selecting stops having their contact surfaces in a single plane transverse to the direction of travel of the carriage.

8. In a typewriting machine, the combination of a carriage; denominational tabulator mechanism comprising a plurality of independently operable denominational stops, denominational keys situated above the printing keys and in the keyboard of the machine, and substantially horizontally disposed actuating levers between said denominational keys and stops; and column selecting mechanism comprising a series of independently operable levers having keys in the keyboard of the machine, and substantially horizontally disposed actuating levers between said column selecting keys and

stops, said column selecting stops having their contact surfaces in a single plane transverse to the direction of travel of the carriage.

9. In a typewriting machine, the combination of a carriage, denominational tabulator mechanism comprising a plurality of independently operable denominational stops, denominational keys situated above the printing keys and in the keyboard of the machine, and substantially horizontally disposed actuating levers between said denominational keys and stops; column selecting mechanism comprising a series of independently operable levers having keys in the keyboard of the machine, and substantially horizontally disposed actuating levers between said column selecting keys and stops, said column selecting stops having their contact surfaces in a single plane transverse to the direction of the travel of the carriage; and carriage releasing mechanism comprising a universal bar co-acting directly with and actuated directly by any of said actuating levers.

10. In a typewriting machine, the combination of a carriage; denominational tabulator mechanism comprising a plurality of independently operable denominational stops, denominational keys situated above the printing keys and in the keyboard of the machine, and substantially horizontally disposed actuating levers between said denominational keys and stops; and column selecting mechanism comprising a series of independently operable levers having keys in the keyboard of the machine, and substantially horizontally disposed actuating levers between said column selecting keys and stops, said column selecting stops having their contact surfaces in a single plane transverse to the direction of the travel of the carriage, said actuating levers fanning outwardly towards the sides of the machine as the front of the machine is approached.

11. In a typewriting machine, the combination of a carriage; column selecting stop mechanism comprising a plurality of upstanding longitudinally and independently movable column selecting stop members which fan outwardly at their lower ends, and key actuated levers operatively connected with said upstanding column selecting stop members, said column selecting stop members having their contact surfaces in a single plane transverse to the direction of travel of the carriage; and carriage releasing mechanism actuated at each actuation of any of said key actuated levers.

12. In a typewriting machine, the combination of a carriage; column selecting stop mechanism comprising a plurality of upstanding longitudinally and independently movable column selecting stop members which fan outwardly at their lower ends,

and key actuated devices connected with said column selecting members, said column selecting members having their contact surfaces in a single plane transverse to the direction of travel of the carriage; and denominational mechanism comprising upstanding longitudinally and independently movable denominational selecting members which fan outwardly at their lower ends, and key actuated devices operatively connected with said denominational selecting members.

13. In a typewriting machine, the combination of a carriage; column selecting stop mechanism comprising a plurality of upstanding longitudinally and independently movable column selecting stop members which fan outwardly at their lower ends, and key actuated devices connected with said column selecting members, said column selecting members having their contact surfaces in a single plane transverse to the direction of travel of the carriage; denominational mechanism comprising upstanding longitudinally and independently movable denominational selecting members which fan outwardly at their lower ends, and key actuated devices operatively connected with said denominational selecting members; and carriage releasing mechanism comprising a universal bar cooperative directly with all of said key actuated devices.

14. In a typewriting machine, the combination of a carriage; column selecting stop mechanism comprising a plurality of upstanding longitudinally and independently movable column selecting stop members which fan outwardly at their lower ends, and key actuated devices connected with said column selecting members, said column selecting members having their contact surfaces in a single plane transverse to the direction of travel of the carriage; denominational mechanism comprising upstanding longitudinally and independently movable denominational selecting members which fan outwardly at their lower ends, and key actuated devices operatively connected with said denominational selecting members; and printing key levers which pass between said denominational and column selecting members.

15. In a typewriting machine, the combination of a carriage; a series of stops carried by the carriage, the arresting portion of each of said stops having a separate path of movement; a plurality of independently movable column selecting stops each of which is of a breadth sufficient only to co-act with a given one of the stops which are carried by the carriage and all of which column selecting stops have their contact faces in a single plane transverse to the direction of the travel of the carriage; and a plurality of key actuated independently

movable denominational selecting stops each of which is of a breadth sufficient to obstruct the paths of the said arresting portions of all of said stops carried by the carriage.

16. In a typewriting machine, the combination of a carriage; a series of stops of a uniform breadth carried by the carriage and the arresting portion of each of said stops having a separate path of movement; a plurality of independently movable column selecting stops each of which is of a breadth sufficient only to co-act with a given one of the stops which are carried by the carriage, all of said column selecting stops having their contact faces in a single plane transverse to the direction of the travel of the carriage; and a plurality of key actuated independently movable denominational selecting stops each of which is of a breadth corresponding to the breadth of the stops carried by the carriage so as to contact with the arresting portions of all of them.

17. In a typewriting machine, the combination of a carriage; a stop rod carried by the carriage; bifurcated stops carried by said stop rod and each having a depending arresting portion, the arresting portions of different stops being on different sides of the stop rod, each stopping portion having a different path of movement with the carriage; denominational stops each of which is of a breadth sufficient to obstruct the paths of all of the stops on the carriage; column determining stops, each of which is of a breadth sufficient to co-act only with the arresting portion of a given stop on the carriage; and carriage releasing mechanism operable by an actuation of any of the denominational or column selecting stops.

18. In a typewriting machine, the combination of a carriage; a series of stops carried by the carriage, the arresting portion of each of said stops having a separate path of movement; a plurality of independently movable column selecting stops each of which is of a breadth sufficient to co-act only with a given one of the stops which are carried by the carriage, all of said column selecting stops having their contact faces in a single plane transverse to the direction of the travel of the carriage; a plurality of independently movable denominational selecting stops each of which is of a breadth sufficient to obstruct the paths of the said arresting portions of all of said stops carried by the carriage; a plurality of independently and longitudinally movable upstanding bars which carry said column denominational selecting stops; and key actuated levers for actuating said bars.

19. In a typewriting machine, the combination of a carriage; a series of stops carried by the carriage, the arresting portion of each of said stops having a separate path

of movement; a plurality of independently movable column selecting stops each of which is of a breadth sufficient to co-act only with a given one of the stops which are carried by the carriage, all of said column selecting stops having their contact faces in a single plane transverse to the direction of the travel of the carriage; a plurality of independently movable denominational selecting stops each of which is of a breadth sufficient to obstruct the paths of the said arresting portions of all of said stops carried by the carriage; a plurality of independently and longitudinally movable upstanding bars which carry said column and denominational selecting stops and which fan outwardly at the lower ends thereof; and substantially horizontally disposed key actuated levers for actuating said bars, said key actuated levers fanning outwardly as the front of the machine is approached.

20. In a typewriting machine, the combination of a carriage; a series of stops carried by the carriage, the arresting portion of each of said stops having a separate path of movement; a plurality of independently movable column selecting stops each of which is of a breadth sufficient to co-act only with a given one of the stops which are carried by the carriage, all of said column selecting stops having their contact faces in a single plane transverse to the direction of the travel of the carriage; a plurality of independently movable denominational selecting stops each of which is of a breadth sufficient to obstruct the paths of the said arresting portions of all of said stops carried by

the carriage; a plurality of independently and longitudinally movable upstanding bars which carry said column and denominational selecting stops and fan outwardly at the lower ends thereof; substantially horizontally disposed key actuated levers for actuating said bars, said key actuated levers fanning outwardly as the front of the machine is approached; and carriage releasing mechanism comprising a universal bar co-operative with all of said key actuated levers.

21. In a typewriting machine, the combination of a stop bar, a series of bifurcated stops each having an arresting member depending from one of the arms thereof, certain of the arresting members being staggered and in different paths on the lower side of the bar, and arresting means co-acting with said stops.

22. In a typewriting machine, the combination of a plurality of independently operable denominational stops, and a plurality of independently operable column selecting stops with their working faces set at right angles to the denominational stops and situated to the left of the denominational stops.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 23rd day of October A. D. 1908.

OSCAR WOODWARD.

Witnesses:

CHARLES E. SMITH,
J. B. DEEVES.