

988,013.

C. P. MOSHER.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 29, 1909.

Patented Mar. 28, 1911.

3 SHEETS-SHEET 1.

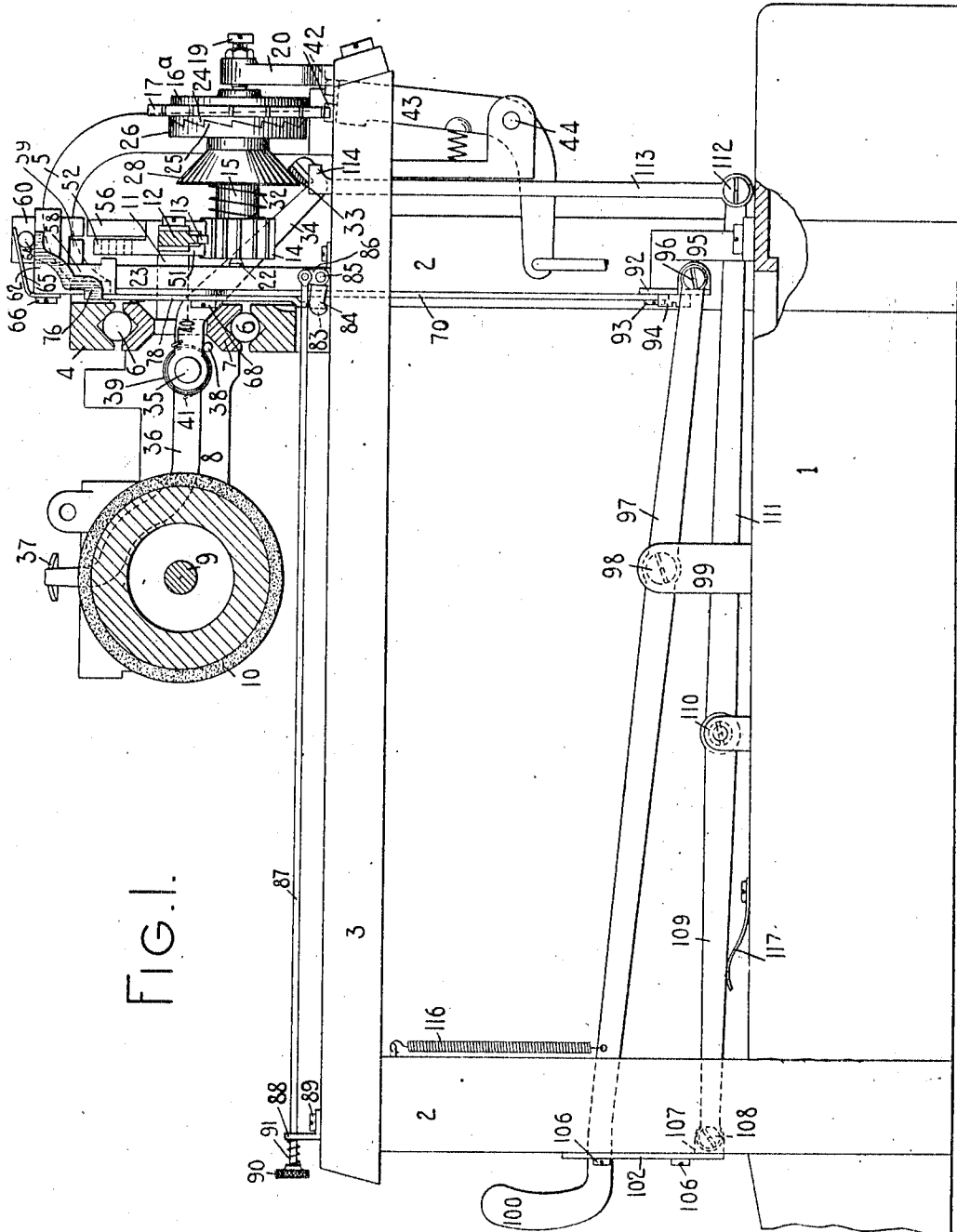


FIG. 1.

WITNESSES:

E. M. Wells
Wm. Smith

INVENTOR

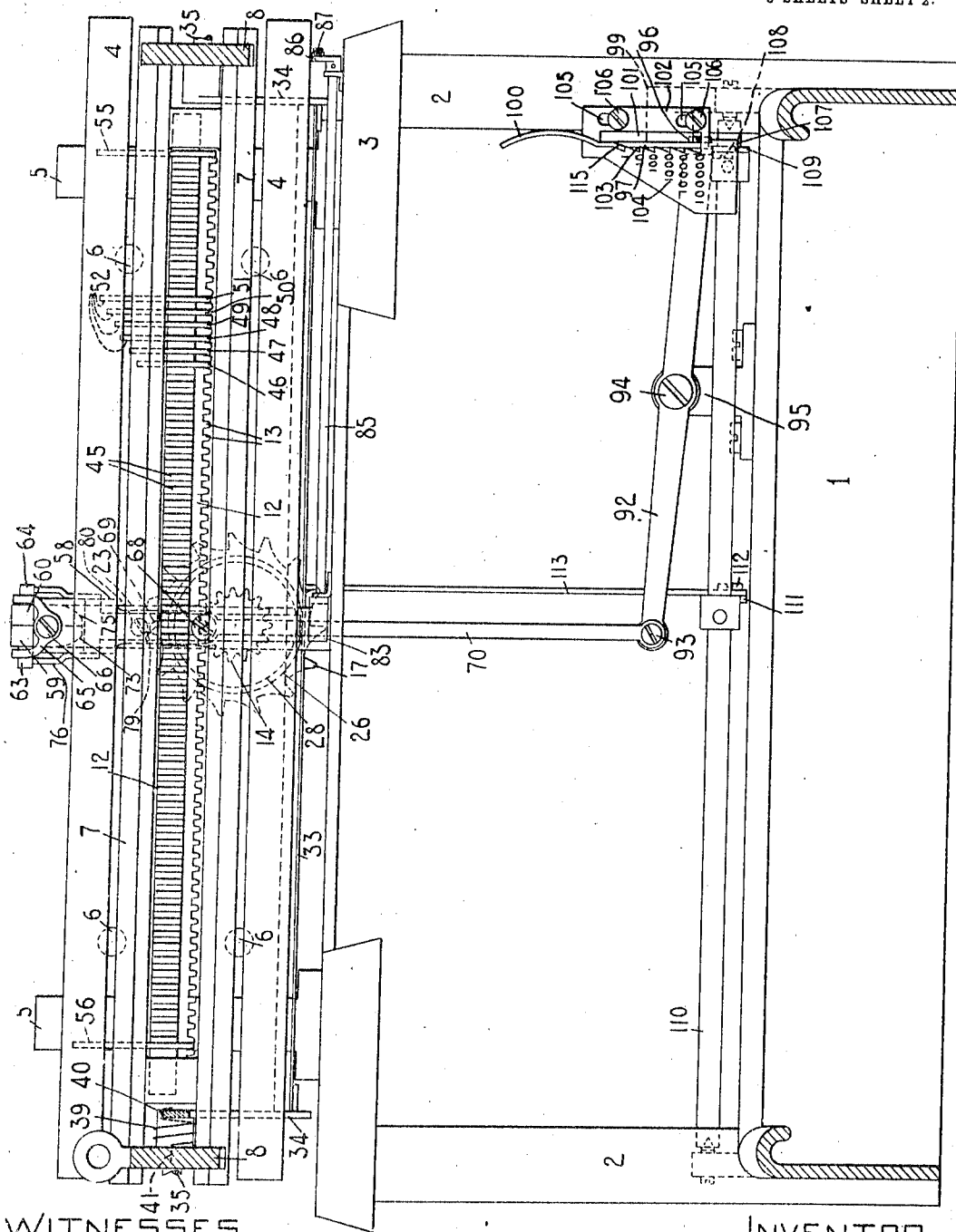
Charles P. Mosher
By Jacob F. Felt
HIS ATTORNEY

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WITNESSES:

E. M. Wells
Walter Smith

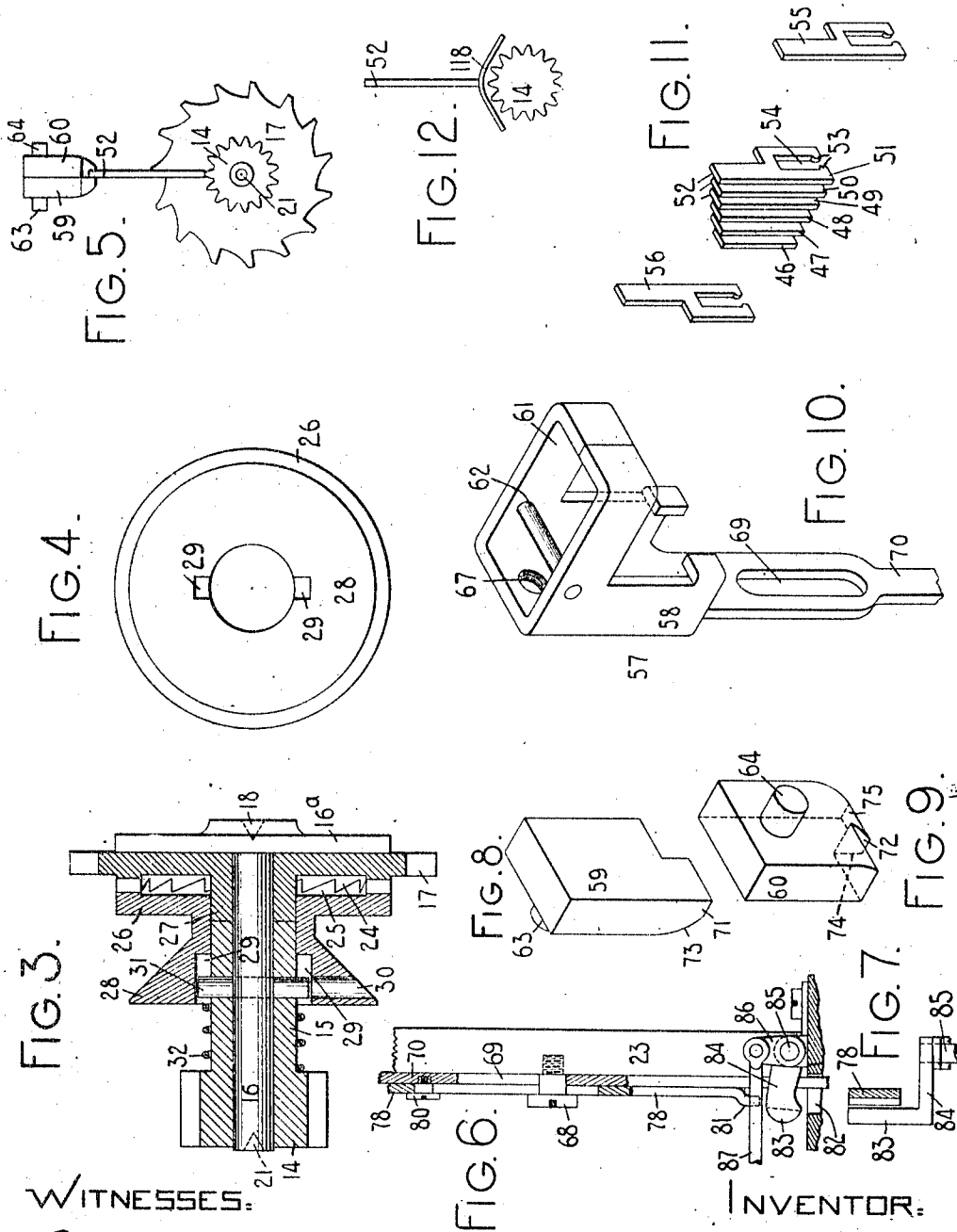
FIG. 2.

INVENTOR:

Charles P. Mosher
By Jacob F. Bell

HIS ATTORNEY

988,013.



WITNESSES:

E. M. Wells
Charles Smith

INVENTOR:

Charles P. Mosher
My James F. Felt
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES P. MOSHER, OF SYRACUSE, NEW YORK, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

988,013.

Specification of Letters Patent.

Patented Mar. 28, 1911.

Application filed October 29, 1909. Serial No. 525,303.

To all whom it may concern:

Be it known that I, CHARLES P. MOSHER, a citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 and to margin stop mechanism.

The object of said invention is to provide efficient mechanism of the character specified.

To the above and other ends, my invention consists in the features of construction, combinations of devices, and arrangements of parts to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters designate corresponding parts in the various views, Figure 1 is a side elevation, with parts broken away, of one form of typewriting machine embodying my invention, sufficient number of parts of a typewriting machine being shown to illustrate my invention in its embodiment therein. Fig. 2 is a front elevation of the same with parts sectioned away. Fig. 3 is an enlarged detail sectional view showing the escapement wheel and some of the associated parts. Fig. 4 is an end view showing some of the parts illustrated in Fig. 3. Fig. 5 is a diagrammatic front elevation showing the escapement wheel and pinion and certain of the tabulator stops. Fig. 6 is an enlarged detail, fragmentary, side elevation with parts sectioned away, showing a portion of the releasing mechanism for enabling the margin stops to be released. Fig. 7 is a fragmentary, detail plan view showing some of the parts illustrated in Fig. 6. Figs. 8 and 9 are detail perspective views of the stops carried by the frame of the machine. Fig. 10 is a fragmentary detail perspective view showing the carrier for the stops illustrated in Figs. 6 and 7. Fig. 11 is a diagrammatic perspective view of certain of the stops to be hereinafter described. Fig. 12 is a detail front view showing a modified form of construction for elevating the stops during the travel of the carriage.

While I have illustrated my invention in a front strike machine, it will be understood that the invention may be embodied in various styles of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and top plate 3. Fixed guide rails 4 are mounted on the top plate of the machine, the upper rail being carried by brackets 5. The guide rails are grooved on opposite sides for cooperation with anti-friction balls or rollers 6 which are likewise received in oppositely grooved faces of a rear guide bar 7 which constitutes the rear cross bar of the carriage. End bars 8 project forwardly from the rear cross bar 7 and are apertured to receive a platen shaft 9 which supports a cylindrical platen 10. The carriage is thus mounted to move in the usual manner from side to side of the machine across the top plate. Arms 11 extend rearwardly from the cross bar 7 at or near the ends thereof and support a feed rack 12. This rack has downwardly projecting gear teeth 13 for cooperation with a feed pinion 14 fixed to or forming part of a sleeve 15, as shown in Fig. 3. A shaft 16 extends through the feed pinion and its sleeve and is provided at its rear end with a disk 16^a. An escapement rack, which in the present instance is circular or in the nature of an escapement wheel 17 turns freely on the shaft 16 and bears at its rear side against the disk 16^a. The disk 16^a is provided with a bearing 18 for cooperation with a coned bearing screw 19 carried by a bracket 20 secured to the top plate of the machine. The forward end of the shaft is likewise provided with a bearing 21 for cooperation with a bearing screw 22 carried by an upright bracket arm or post 23 secured to the top plate.

The forward side of the escapement wheel is provided with clutch teeth 24 which engage teeth 25 on a companion clutch member 26 mounted to slide along the sleeve 15 and the hub 27 of the escapement wheel. The clutch member 26 is provided with a forwardly extending cone 28 having splined grooves 29 therein. This cone has a hole through which a pin 31 may be inserted to connect the sleeve 15 and the feed pinion with the shaft 16. The pin 31 as shown in Fig. 3 projects beyond the sleeve 15 and constitutes a spline which is received in the

splined groove 29 so as to connect the feed pinion and the clutch section 26 and cone 28 to turn together and to afford a movement of the clutch section 26 toward and away from the teeth 24 of the companion clutch section on the escapement wheel. A coiled expansion spring 32 surrounds the sleeve 15 and bears at one end against the end of the clutch section 26 and at its opposite end against the feed pinion so as to force the clutch section 26 to engage the companion clutch section on the escapement wheel and thus connect the escapement and thus connect the escapement wheel to the feed pinion. An inclined bar 33 extends throughout the length of the carriage and cooperates with the coned face of the member 28. This bar is carried by downwardly and rearwardly extending arms 34 pivoted at 35 in the end plates of the carriage, one of the pivots 35 being in the nature of a rock shaft which extends beyond an end plate of the carriage and is provided with an arm 36 terminating in a finger piece or release key 37. A stop pin 38 projects from one of the end plates of the carriage into the path of the associated depending arm 34 to limit its downward motion and arrest it and the parts connected therewith in their movement to normal position. A coiled spring 39 (see Fig. 2) is connected at one end as indicated at 40 to one of the arms 34, the other end of the spring being anchored in an opening in an adjacent end plate of the carriage. The pressure of this spring is exerted to normally maintain the release key 37 in the elevated position and to maintain the release bar 33 in the position shown in Fig. 1. A depression on the release key is effective to elevate the bar 33, thus camming the clutch section 26 forwardly against the pressure of the spring 32, thereby disengaging the clutch to free the carriage from the escapement wheel. Feed dogs 42 cooperate with the escapement wheel in the usual manner to effect a step-by-step forward feed of the carriage. These feed dogs are carried by a dog rocker 43 pivoted at 44 on a bracket secured to the top plate of the machine. The dog rocker is actuated in the usual or any desired manner by the type actions.

The feed rack 12 is grooved on opposite sides to provide teeth 45 with interdental spaces between the teeth, the spaces being situated a letter space distance apart. A series of plate-like tabulator stops 46-47-48-49-50-51 are each formed with a bifurcated portion at the lower end thereof to straddle the bar or feed rack 12. The plate-like stops are received in the interdental spaces between the teeth 45 so that the stops may be situated if desired a letter space distance apart, as indicated in Fig. 9.

These stops project varying heights or varying distances from the stop bar and the stopping portions 52 are all arranged in the same vertical plane, but traveling in different paths. The lower ends of these stops are provided with inwardly directed projections 53 to contract the opening 54 adjacent to the projections so that the distance between the projections will be less than the thickness of the body portion of the bar 12. From an inspection of Fig. 1 it will be seen that the length of each of the openings 54 in the stops is greater than the height of the bar 12 at that portion thereof which carries the teeth 45, in order that the stops may have a free up-and-down movement on the bar 12 in the interdental spaces for a limited distance, the upward movements of the stops being limited by the inwardly directed projections 53 thereon engaging the body portions of the bar 12. The stops may be adjusted to various points along the stop bar 12 by slightly spreading or springing the arms forming the bifurcated portion of each stop apart so that the projections 53 will clear the body portion of the bar, when the stops may be withdrawn from the bar and adjusted to different points along the same. By rounding the projections 53 in the manner shown in Fig. 9 they may act as cams to force the arms apart when the stops are moved upwardly with unusual force, thus facilitating the removal of the stops. In a like manner the rounded corners of the projections 53 may be effective to separate the arms when placing the stops in position on the stop bar.

From the foregoing description it will be understood that the bar 12 in addition to constituting the feed rack for the carriage likewise constitutes a stop bar for the tabulator stops. This bar also constitutes a stop carrying bar for margin stops 55 and 56, the stop 56 limiting the movement of the carriage from left to right and the stop 55 limiting the movement of the carriage to the left, as will hereinafter more clearly appear.

The bracket arm or post 23 constitutes a support for guiding a stop-carrying member, designated as a whole by the reference numeral 57 and shown in detail in Fig. 10. This stop-carrying member may be made of sheet metal and is provided with a portion 58 which partly surrounds the upright post 23 to guide the member 57 in its up and down movements and to form a firm support therefor to resist the impact of the carriage. Stops 59 and 60 are received within an opening 61 in the stop carrier 57 and project downwardly beyond the lower edge of that portion of the carrier in which the opening 61 is provided. A cross pin or rivet 62 extends from side to side of the carrier 57 to confine and guide the stops 59 and 60 in

their vertical movements in the carrier. The stop 59 is provided with an outwardly projecting pin 63 which overlaps the carrier and limits the downward movement of the stop 59 with reference to the carrier. A like pin 64 is carried by the stop 60 and likewise overlaps the side of the stop carrier 57 to limit the downward movement of the stop 60 with reference to its carrier. A leaf spring 65 is secured in place by a screw 66 threaded into an opening 67 in the stop carrier. This spring is a double spring, as shown in Fig. 2, one arm thereof pressing downwardly upon the stop 59 and the other pressing downwardly upon the stop 60 to normally maintain the stops 59 and 60 in fixed relation with reference to the stop carrier 57. A shouldered screw 68 passes through a slot 69 formed in the upright stem 70 of the stop carrier 57, the threaded end of the screw being received in a tapped opening in the guide post or bracket 23. In this manner the stop carrier is effectively guided in its vertical movements. The stop 59 has a depending engaging portion 71 in one vertical plane and the stop 60 has a depending engaging portion 72 in another parallel vertical plane. The stop 59 on its right-hand face is flat, the engaging portion being a flat vertical face, whereas the opposite face of the engaging portion is beveled as indicated at 73. On the other hand, the depending engaging portion 72 of the stop 60 has its left-hand face in a vertical plane as indicated at 74 whereas the right-hand face of the engaging portion is beveled as indicated at 75.

A sheet metal slide or releasing member 76 is provided with arms 77 which straddle the carrier 57 and is formed with a depending stem 78 which, as shown in Fig. 6, is slotted at 79 to receive a shouldered screw 80 to connect the sheet metal releasing slide 76 to the depending actuating arm 70 of the carrier 57, the construction being such that the releasing member 76 moves up and down with the stop carrier 57 but is free to receive an independent upward motion by reason of the pin and slot connection 80—79 connecting the releasing member with the stop carrier. The screw 68 which passes through an opening 69 in the stop carrier likewise passes through the opening 79 in the depending arm 78 of the releasing member, as shown in Fig. 6. The lower end 81 of the releasing member is bent forward slightly and arranged above an opening 82 in the top plate of the machine and is arranged above an actuating cam 83 carried by a crank arm 84 on a rock shaft 85 mounted in bearings on the top plate of the machine. The rock shaft 85, as will be seen from an inspection of Fig. 2, terminates at its inner end where it carries the cam about midway of the machine and extends to the right-hand end of

the top plate where it is provided with a crank arm 86 to which an actuating rod 87 is connected. This rod is mounted at its forward end to move in a bearing opening in a bracket 88 secured by a screw 89 to the top plate of the machine. The rod is provided at its forward end with a key or finger piece 90. A coiled spring 91 surrounds the actuating rod 87 and bears at one end against the bracket 88 and at its opposite end against the finger piece 90 to maintain the rock shaft 85 and the parts connected therewith in the normal position shown in the drawings.

From an inspection of Figs. 6 and 7 it will be seen that in the normal positions of the parts the depending stem 78 of the releasing device may be moved downwardly with the stop carrier 57, the cam 83 at this time being clear of the stem 78. When, however, the finger piece 90 of the releasing mechanism is moved rearwardly the rock shaft 85 is turned, thus effecting an upward and rearward movement of the cam 83 around the axis of the shaft 85. The effect of this movement is to bring the cam into engagement with the lower end 81 of the stem 78, thereby elevating the stem and moving the releasing device 76 upwardly. From an inspection of Fig. 1 it will be seen that the arms 77 are situated beneath the pins 63 and 64 on the stops 59 and 60 respectively, so that an upward movement of the releasing device or slide 76 is effective to move the stops 59 and 60 upwardly in the stop carrier against the pressure of the spring arms 65. This upward movement of the stops 59 and 60 by the releasing device is effective to move said stops out of the paths of the margin stops 55 and 56, as will hereinafter more clearly appear. From an inspection of Figs. 1 and 5 it will be seen that the lower ends of all of the stops which are carried by the combined stop-carrying bar and feed rack 12 are situated so that they will be brought into contact with the teeth of the feed pinion 14 during the travel of the carriage, and during the rotation of the feed pinion, and as the teeth of the feed pinion move upwardly they are engaged successively by and are effective to slightly elevate the stops on the stop-carrying bar, and the stops are thus all successively and automatically elevated during the travel of the carriage. The successive upward movements of the stops effected by the travel of the carriage in the manner described are effective to render them operative, as will presently appear, and constitute an important feature of my invention. From an inspection of Figs. 2 and 11 it will be seen that the margin stops 55 and 56 are longer than the stops 46 to 51. The length of the stops 55 and 56 is such that when they are moved upwardly by the co-

operation of the feed pinion 14 therewith, they will always contact with the cooperating stops 59 and 60. Thus the margin stop 56 in the movement of the carriage from left to right will be elevated by its engagement with the feed pinion and while in the elevated position will be brought into engagement with the stops 60; whereas the stop 55, which is in the same path as the stops 46 to 51 (see Fig. 11) will, when it reaches the feed pinion, be elevated to coast with the depending engaging portion of the stop 59. If it is desired to pass beyond either of these margin stops it is simply necessary to push the finger piece 90 rearwardly to effect an upward movement of the releasing device 76, which movement is effective to elevate the stops 59 and 60 against the pressure of the spring 65, thus carrying these stops out of the path of the stops 55 and 56 to enable the carriage to move beyond the limit of travel ordinarily defined by the cooperation of the stops 55 and 56 with the co-acting stops 59 and 60 respectively. After the stop 60 has passed to the left beyond its co-acting stop 56, through the actuation of the release key 90 in the manner described, a return movement of the carriage is effective, by reason of the bevel 75, to elevate the stop 60 against the pressure of its spring 65, so that the carriage is unobstructed in its movement from left to right. In a like manner the stop 59 is elevated against the pressure of its spring 65 when the stop 59 has passed beyond its co-acting stop 55 and a movement of the carriage from right to left is effected. At this time the bevel 73 co-acts with the stop 55 to cause the stop 59 to be elevated against the pressure of its spring 65.

As hereinbefore pointed out, the tabulator stops 46 to 51 may be adjusted as indicated in Fig. 2 at letter space distances apart and in this adjustment of the stops they will be set for denominational work, the position of the group of stops along the stop bar in this arrangement determining the columnar position of arrest. The means for interposing the stop 59 to select a denominational position of arrest and for releasing the carriage consists of a lever 92 pivoted at 93 to the depending stem 70 of the stop carrier, this stem extending down through the opening 82 in the top plate to the lower portion of the machine. The lever 92 is pivoted at 94 to a bracket 95 secured to the frame of the machine. The right-hand end of the lever 92 is pivoted at 96 to an actuating lever 97 which extends fore and aft of the machine and is pivoted at 98 to a bracket 99 secured to the frame of the machine. The forward end of the lever 97 is provided with a finger piece 100 by which it and the lever and parts controlled thereby may be actuated. The lever

97 passes through a slot 101 formed in an index plate and actuating device 102. This plate is provided with notches or teeth 103 corresponding to the number of tabulator stops 46 to 51 employed, six being shown in the present instance. Indices 104 are provided opposite each of the teeth or notches 103 in order to aid the operator in determining the proper positioning of the hand actuated lever with reference to the index plate. The marks "1," "10," "100," "1,000," "10,000" and "100,000" shown in the present instance, designating the denominational positions corresponding to the arrangement or setting of the stops 46 to 51 shown in the drawings. The index plate 102 is slotted at 105 to receive headed shouldered screws 106 which are received in threaded openings in the front right-hand corner posts 2 of the machine and thus guide the plate 102 in its vertical movements. The index plate is provided with a rearwardly extending ear 107 (see Fig. 1) to which is pivotally connected at 108 a rearwardly extending crank arm 109 secured to a rock shaft 110 mounted in bearings in the frame of the machine. The rock shaft carries intermediate its ends a rearwardly directed crank arm 111 pivoted at 112 to an upright link or arm 113 which extends through an opening in the top plate of the machine and is provided at its upper end with a contact shoe 114 which engages the lower edge of the release bar 33. The body of the lever 97 is sufficiently resilient to afford a slight lateral movement of the lever at its forward end in the slot 101 of the index plate. A tooth 115 is formed on the lever, the tooth being received in the index plate and adapted to engage the teeth 103 on the plate. The operator to select a proper denominational position of arrest moves the finger piece 100 slightly to the right to clear it from engagement with the teeth 103 and then depresses the forward end of the lever until the tooth 115 is opposite the tooth 103 on the plate which is to be engaged. The relaxation of the lateral pressure exerted on the finger piece enables the tooth 115 to seat itself in the proper notch and engage the tooth 103 which has been selected. After the index plate has been engaged in the manner specified, a downward pressure exerted on the finger piece 100 is effective to move the plate 102 downwardly and this motion is transmitted to the arm 109, rock shaft 110 and arm 111, which is effective to elevate the rod or link 113 to swing the release bar 33 upwardly. The upward movement of the bar 33 cams the member 28 forwardly, carrying the clutch section 26 out of engagement with the line spacing wheel. This is effective to release the carriage from the control of the escapement mechanism and enable the carriage to

run free until arrested by the coöperation of the tabulator stops. The same movement of the finger piece 100 which released the carriage was effective to elevate the rear end of the lever 97, thus effecting a corresponding elevation of the right-hand end of the lever 92. This resulted in pulling down the stop carrier connected to the left-hand end of the lever 92 and to effect a predetermined extent of downward movement of the stop 59 to bring it into the path of the proper stop 46 to 51, determined by the coaction of the tabulating lever 97 with the index plate 102. It will be observed that the first part of the motion transmitted to the lever 97 is effective to transmit the selecting movement to the stop 59 and that this movement takes place before the tabulator lever 97 is engaged with the releasing or index plate 102. The slight additional movement given the lever 97 after it engages the releasing plate 102 is sufficient to position the stop 59 where it will be in the path of the stop 46 to 51 which has been selected when the said selected stop 46 to 51 is elevated to operative position by coöperation with the feed pinion. It will thus be seen that it requires the automatic actuation of one of the stops 46 to 51 and the actuation of the key controlled stop 59 to bring about a coöperation of the tabulator stops whereas the automatic elevation of the stops 55 and 56 in itself is sufficient to bring about their coöperation with the stops 59 and 60. After pressure is released on the finger piece 100 a spring 116 is effective to move the lever 97 and the parts connected therewith to normal position, the plate 102 and the parts controlled thereby being restored to normal position by a spring 117. The clutch members will then be reengaged by the spring 32, thus restoring the carriage to the control of the escapement mechanism and the tabulator stop 59 will be elevated beyond the path of the tabulator stops 46 to 51 when the latter are in operative position.

In Fig. 12 I have shown a modified form of construction in which a fixed cam 118 is arranged above the feed pinion 14 to coact with the stops carried by the combined feed rack and stop bar 12 so that the stops are automatically elevated to operative position by the cam during the travel of the carriage. This means may be employed as a substitute for those previously described in which the rotation of the feed pinion is effective to move the stops on the carriage to operative position or to a position where they are operative to coact with the stop 59 when the latter is moved downwardly by the selecting means controlled by the finger piece 100.

It will be understood that if the stops 46 to 51 are arranged along the stop rod at great intervals they determine the columnar

position of arrest of the carriage and that in this manner the device may be employed as a column selecting mechanism, each stop 46 to 51 in this case determining the columnar position of arrest of the carriage instead of the denominational position as when the stops are grouped at letter space distances apart, as shown in the drawings.

Various changes may be made without departing from the spirit and scope of my 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 tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a key actuated stop; a stop coöperative with the key actuated stop to arrest the carriage, and means for automatically projecting said coöperative stop to operative position.

2. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a key actuated stop; a series of stops coöperative with the key actuated stop to arrest the carriage, and means for automatically projecting said series of coöperative stops to operative position.

3. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a key actuated stop; a series of stops coöperative with the key actuated stop to arrest the carriage, and means for automatically and successively projecting said coöperative stops to operative position during the travel of the carriage.

4. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism including a series of independently movable stops, and means for successively moving said stops to operative position during the travel of the carriage.

5. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism including a series of adjustable column determining stops, and means for successively moving said stops to operative position by the travel of the carriage.

6. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism including a series of independently movable stops that vary in length, means for successively moving said stops to operative position during the travel of the carriage, and a variably movable key actuated stop coöperative with said first mentioned stops to arrest the carriage.

7. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a stop carried by and movable on the carriage, a cooperating key actuated stop carried by the frame of the machine, and means for automatically projecting said first mentioned stop to operative position during the travel of the carriage.

8. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a series of independently movable stops carried by and movable on the carriage, a cooperating key actuated stop carried by the frame of the machine, and means for automatically and successively projecting said first mentioned stops to operative position by the travel of the carriage.

9. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a stop carried by and movable on the carriage, a cooperating key actuated stop carried by the frame of the machine, means for automatically projecting said first mentioned stop to operative position during the travel of the carriage, and means for releasing the carriage when said key actuated stop is actuated.

10. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a series of independently movable stops carried by and movable on the carriage, a cooperating key actuated stop carried by the frame of the machine, means for automatically and successively projecting said first mentioned stops to operative position by the travel of the carriage, and means for releasing the carriage when said key actuated stop is actuated.

11. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a stop bar carried by said carriage and extending longitudinally in the direction of the travel thereof, a stop carried by and movable transversely of said stop rod and adjustable to different positions along the rod, a cooperative key actuated stop carried by the frame of the machine, and means for automatically moving the first mentioned stop to operative position during the travel of the carriage.

12. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a stop carried by said carriage and extending longitudinally in the direction of travel thereof,

a series of stops carried by and individually movable transversely of said rod and each adjustable to different positions along the rod, a cooperative key actuated stop carried by the frame of the machine, and means for automatically and successively moving the first mentioned stops to operative position during the travel of the carriage.

13. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a stop rod carried by said carriage and extending longitudinally in the direction of the travel thereof, a series of stops carried by and individually movable transversely of said rod and each adjustable to different positions along the rod, said stops projecting different distances from the stop rod, a cooperative key actuated stop carried by the frame of the machine and movable variable distances to bring it into cooperation with said first mentioned stops, and means for automatically and successively moving the first mentioned stops to operative position during the travel of the carriage.

14. In a typewriting machine, the combination of a carriage, and tabulating mechanism for arresting the carriage, said tabulating mechanism comprising a stop rod carried by said carriage and extending longitudinally in the direction of the travel thereof, a series of stops carried by and individually movable transversely of said rod and each adjustable to different positions along the rod, said stops projecting different distances from the stop rod, a cooperative stop carried by the frame of the machine and movable variable distances to bring it into cooperation with said first mentioned stops, means for automatically and successively moving the first mentioned stops to operative position during the travel of the carriage, a single key for variably moving said cooperative stop, and means controlled by said key for releasing the carriage.

15. In a typewriting machine, the combination of a carriage, and tabulating mechanism comprising a stop carried by the carriage and movable thereon into operative position, means carried by a fixed portion of the machine and with which said movable stop is brought into cooperation by the travel of the carriage to force the movable stop into operative position, and a key-actuated stop cooperating with said first mentioned stop to arrest the carriage.

16. In a typewriting machine, the combination of a carriage, and tabulating mechanism comprising a plurality of stops carried by the carriage and individually movable thereon into and out of operative position, means carried by a fixed portion of the machine and with which said stops are

brought successively into coöperation to force the said stops successively into operative position, and a key actuated stop co-operative with said first mentioned stops to arrest the carriage.

17. In a typewriting machine, the combination of a carriage, a combined feed rack and tabulator stop bar carried thereby, a tabulator stop carried by and adjustable along said combined rack and bar, a feed pinion meshing with said combined rack and bar, an escapement wheel operatively connected with said feed pinion, a feed dog coöperative with said escapement wheel, and a coöperative-tabulating stop separate from said feed dog.

18. In a typewriting machine, the combination of a carriage, a combined feed rack and tabulator stop bar carried thereby, a tabulator stop carried by and adjustable along said combined rack and bar, a coöperative stop, a feed pinion meshing with said combined rack and bar, an escapement rack operatively connected with said pinion, and a releasable clutch between said escapement rack and pinion.

19. In a typewriting machine, the combination of a carriage, a combined feed rack and tabulator stop bar carried thereby, a tabulator stop carried by and adjustable along said combined rack and bar, a co-operative stop, a feed pinion meshing with said combined rack and bar, an escapement rack operatively connected with said pinion, a releasable clutch between said escapement rack and pinion, and means for releasing said clutch when said coöperative stop is actuated.

20. In a typewriting machine, the combination of a carriage, a combined feed rack and tabulator stop bar carried thereby, a tabulator stop carried by and adjustable along said combined rack and bar, a co-operative stop, a feed pinion meshing with said combined rack and bar, an escapement rack operatively connected with said pinion, a releasable clutch between said escapement rack and pinion, means for releasing said clutch when said coöperative stop is actuated, carriage retarding means, and means for rendering the carriage retarding means effective when the carriage is released.

21. In a typewriting machine, the combination of a carriage, a combined feed rack and toothed stop bar fixed against swinging movement, a plurality of stops carried by said combined rack and stop bar, each of said stops being adjustable to different positions along said bar, a key operated co-operative stop, a feed pinion with which the feed rack meshes, an escapement wheel, a

disengageable clutch between the escapement wheel and feed pinion, and means operative on the actuation of said key operated stop for releasing said clutch.

22. In a typewriting machine, the combination of a carriage, and margin stop mechanism comprising a stop projected to operative position by the travel of the carriage, a coöperative stop and means for moving said coöperative stop to a position where it is out of the path of the first mentioned stop when the latter is projected to operative position.

23. In a typewriting machine, the combination of a carriage, tabulator and margin stops, a coöperative stop, means for moving said coöperative stop in one direction to coöperate with the tabulator stops, and means for moving said coöperative stop in the opposite direction to carry it to a position where it is maintained out of co-operative relation with the margin stop.

24. In a typewriting machine, the combination of a carriage, a plurality of tabulator stops of varying lengths, a margin stop, a stop coöperative with said tabulator and margin stops, means for moving said coöperative stop varying distances in one direction to coöperate with said tabulator stops, and means for moving said coöperative stop in the opposite direction to clear the margin stop.

25. In a typewriting machine, the combination of a carriage, a carriage feed rack carried by the carriage, stops carried by and adjustable to different positions along said feed rack, means separate from the escapement mechanism and coöperative with said stops to effect an arrest of the carriage, said separate means being normally coöperative with certain of said stops, and key controlled means for rendering said separate means coöperative with other of said stops.

26. In a typewriting machine, the combination of a carriage, a feed rack carried thereby, margin and tabulator stops carried by and adjustable to different positions along said feed rack, stopping means coöperative with said margin and tabulator stops to effect an arrest of the carriage, said stopping means being normally coöperative with said margin stops, and key actuated means for rendering said stopping means coöperative with said tabulator stops.

Signed at Manhattan borough, in the county of New York and State of New York, this 27th day of October, A. D. 1909.

CHARLES P. MOSHER.

Witnesses:

CHARLES E. SMITH,
E. M. WELLS.