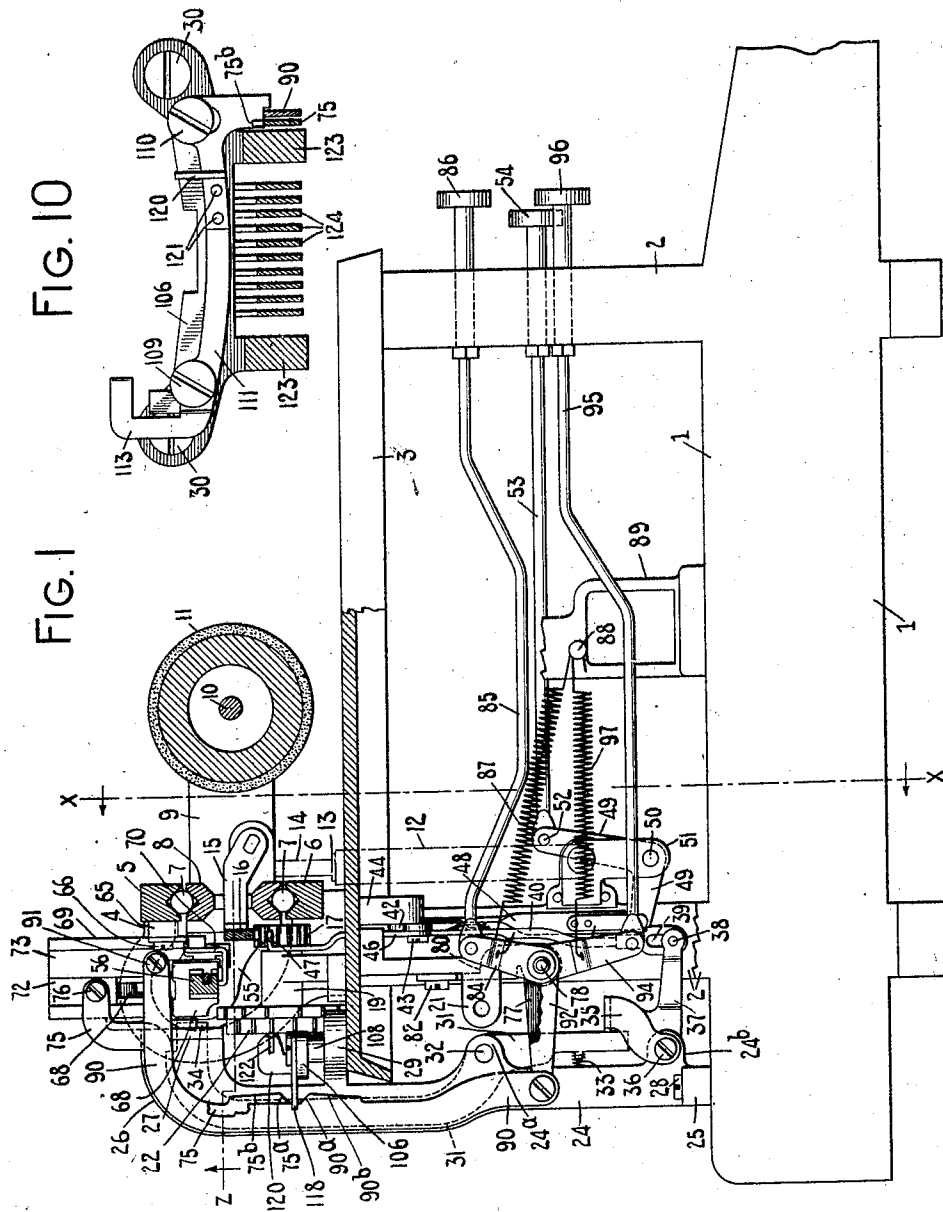


H. H. STEELE.  
TYPE WRITING MACHINE.  
APPLICATION FILED JUNE 27, 1912.

1,044,100.

Patented Nov. 12, 1912.  
3 SHEETS—SHEET 1.



WITNESSES:

*E. M. Waller*  
*M. W. Pool*

INVENTOR:

*Herbert H. Steele*  
*By Jacob Felsch*

HIS ATTORNEY

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3 SHEETS-SHEET 2.

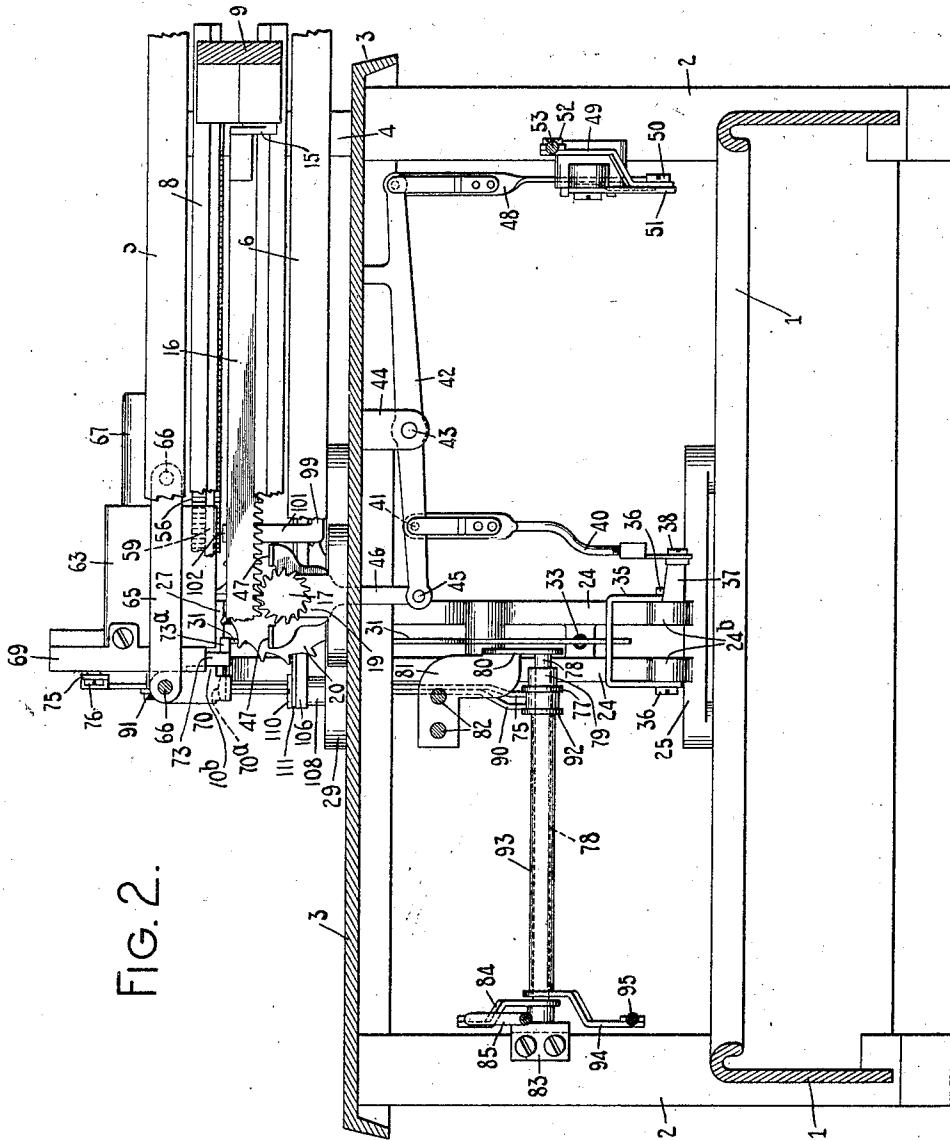


FIG. 2.

WITNESSES:

*E. M. Wells*  
*M. W. Pool*

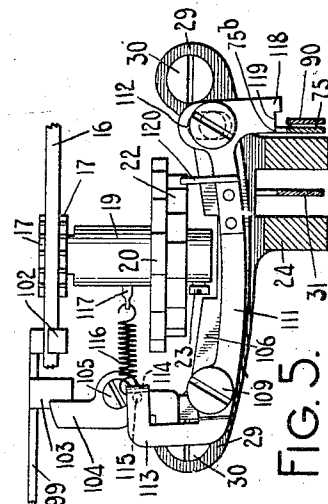
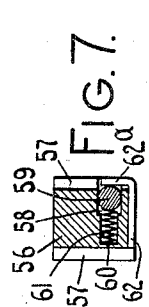
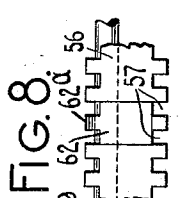
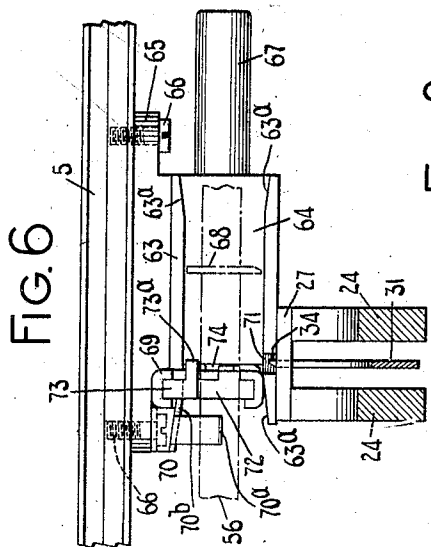
INVENTOR:

*Herbert H. Steele*  
*By Jacob Felber*  
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1,044,100.

Patented Nov. 12, 1912.

3 SHEETS-SHEET 3.



## UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF MARCELLUS, NEW YORK, ASSIGNOR TO THE MONARCH  
TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW  
YORK.

TYPE-WRITING MACHINE.

1,044,100.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed June 27, 1912. Serial No. 706,129.

*To all whom it may concern:*

Be it known that I, HERBERT H. STEELE, citizen of the United States, and resident of Marcellus, 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 key set tabulating mechanism for typewriting machines and its general object is to provide improved mechanism of the character specified.

More particularly my present invention relates to key set tabulating mechanism embodying a stop magazine of the general character disclosed in my co-pending application Serial No. 686,575, filed March 27th, 1912, and specific objects of the present invention are to improve the prior construction aforesaid in respect of the means for guiding the set stops during their movements with the carriage; to provide an improved guide for the stop bar; and also to improve stop locking devices associated with said stop bar.

Another object of the invention is to provide for locking the carriage against movement during stop ejecting and retracting operations.

A further object is to provide an improved single key tabulator construction which may be readily interchanged with a decimal tabulator construction embodying a plurality of keys, this interchangeable single key tabulator mechanism being, of course, adapted for use either with the stop magazine devices or with hand set column stops or with tabulator stops of any other suitable construction and mode of operation.

Other objects will hereinafter appear.

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

My invention is shown as applied to a Monarch typewriting machine but it is to be understood that said invention may be adapted readily in whole or in part to other styles of writing machines.

In the accompanying drawings, Figure 1 is a fragmentary side elevation, partly in section, of a Monarch typewriting machine embodying my invention, parts of the ma-

chine being omitted and parts broken away. Fig. 2 is a vertical transverse sectional view taken on a plane represented by the dotted line  $x-x$  in Fig. 1 and looking in the direction of the arrows at said line. Fig. 3 is a fragmentary rear elevation showing the carriage locking devices and associate parts. Fig. 4 is a horizontal sectional view taken on a plane indicated by the dotted line  $y-y$  in Fig. 3 and looking in the direction of the arrows at said line. Fig. 5 is an operating view corresponding to Fig. 4. Fig. 6 is a horizontal sectional view taken on planes indicated by the broken dotted line  $z$  in Fig. 1 and looking upward in the direction of the arrow. Figs. 7 and 8 are detail views of the stop locking devices associated with the column stop bar, Fig. 7 being a transverse section and Fig. 8 a bottom view of said bar. Fig. 9 is a perspective view of an element hereinafter referred to as a guide bracket. Fig. 10 is a view corresponding to Fig. 4 but showing a modification adapted to a decimal tabulator embodying a plurality of key controlled stops.

As shown in Fig. 1, the main frame comprises a base 1, posts 2 and a top plate 3, said top plate supporting goose necked standards 4 which are secured to fixed grooved trackways 5 and 6, the latter co-operating through anti-friction rollers 7 with the rear bar 8 of a platen carrier or carriage which also includes end bars 9. Said end bars provide bearings for the axle 10 of a rotary platen 11 with the front face whereof coöperate printing instrumentalities (not shown) of the usual or other suitable description. The carriage is constantly urged leftward by a motor or spring drum 12 which is connected by a strap 13 with an arm 14 depending from the carriage. Pivoted to the end bars 9 are arms 15 which support a carriage feed rack 16 that is normally maintained in spring-pressed engagement with a feed pinion 17 secured to the front end of a shaft 18 (Figs. 3 and 4) which bears in a bracket 19 fixed to the top plate 3. Operatively connected to the shaft 18 is an escapement wheel 20 with which coöperate escapement dogs mounted on a rocker which is pivotally supported on a bracket 21 secured to the top plate, the dog rocker being actuated from the universal bar which underlies the printing key levers of the machine. The escape-

ment devices last referred to are omitted from the drawings but preferably are of the usual character found in the Monarch typewriter. Mounted on the shaft 13 behind the escapement wheel 20 is a toothed back spacing wheel 22 of the ordinary construction, said wheel being provided with a hub 22<sup>a</sup> which receives a set screw 23, said screw engaging the shaft 18 and securing the back spacing wheel 22 in fixed relationship to said shaft (Figs. 3 and 4).

My present invention embodies tabulating mechanism comprising a single key-operated tabulator stop which is especially adapted for use with stop magazine devices and which mechanism is designed so that it may readily replace the ordinary decimal tabulating mechanism with which it is interchangeable.

The novel tabulating mechanism comprises a detachable supporting frame or bracket which is similar in construction to the supporting bracket of the regular decimal tabulator but is somewhat narrower. The novel bracket is illustrated in Figs. 1 to 4 and comprises parallel upright arms 24 which are connected at the bottom by a cross piece 25 and at their tops curve forward and are connected by a hood or roof 26. A slotted guide plate 27 is secured to the front upper end of the supporting frame. Said frame is detachably secured to the base 1 by screws 28 which pass through holes in the cross piece 25 and enter tapped openings in the base. The cross piece 25 is of the same width as the standard cross piece of the decimal tabulator so that the same screw holes in the base 1 serve for both the supporting brackets. An upper cross piece 29, integral with the arms 24, receives screws 30 which enter holes in the top plate 3, the same holes receiving the screws of the decimal tabulator bracket. The arms 24 are spaced apart a short distance only and receive between them a single upright stop lever 31, said lever being fulcrumed to the bracket at 32 on lugs 24<sup>a</sup> projecting forward from the arms 24 and provided with a restoring spring 33 coöperative with its lower arm. The upper arm of said lever 31 curves forward and terminates in a stop proper 34 which is adapted to be projected forward and backward through the slotted guide plate 27 to coöperate with the column or tabulator stops hereinafter described. The stop 34 is operative by key controlled devices, said devices comprising a bail 35 which coöperates with the front of the lever 31 near its lower end, said end terminating above the cross piece 25 of the bracket. The bail has side arms which embrace between them ears 24<sup>b</sup> on the supporting bracket, said side arms being pivoted on screws 36 which engage in said ears. Projecting forward from the right-hand side arm of the

bail is an arm or extension 37, said arm being off-set outwardly toward the right and having at its free end a screw or pin 38 which engages in a slot 39 at the lower end of a link 40, the upper end of said link being pivotally connected at 41 to the inner or left-hand arm of a lever 42 fulcrumed at 43 to a bracket 44 depending from the top plate. Pivotally supported at 45 to the left-hand end of the lever 42 is a rack lifter or release member 46 of the usual style, said lifter being bifurcated at its upper end and terminating in shoes 47 which underlie the feed rack 16. Pivotally connected to the right-hand end of the lever 42 is a depending link 48, the lower end whereof is pivoted to the horizontal arm of a bell crank 49 fulcrumed at 50 to a bracket 51 secured to the right-hand rear post 2. The vertically disposed arm or bell crank 49 has pivotally connected to it at 52 the rear end of a push rod 53; said rod extending horizontally forward and bearing in a right-hand front post terminating forward of said post in a finger button or tabulator key 54. When the key 54 is pushed in it rocks the bell crank 49, lowering the link 48 and turning the lever 42 on its fulcrum, raising the inner arm of said lever and causing the rack lifter 46 to engage the rack 16 to swing said rack upward and release the carriage so that it may be drawn leftward by the spring drum 12. Concurrently the lifting of the inner arm of the lever 42 also raises the link 40 and swings the bail 35 rearward, said bail acting against the stop lever 31 to swing the upper arm of said lever forward and project the stop 34 into operative position. On releasing the key 54 the parts will be returned to normal position by suitable restoring devices including the spring 33. It will be understood that when the stop 34 is projected forward it will coöperate with column stops on the carriage to arrest said carriage at predetermined points. Projecting rearward from the slide bar 8 are arms 55 which provide a support for a column stop bar 56 notched at its front and rear faces as indicated at 57. The front face of the bar is formed with a longitudinal groove 58 (Fig. 7) which receives a circular stop-locking rod 59, said rod being pressed forward by springs 60 seated in depressions 61 in said rod and tending constantly to force it out of its seat. Forward movement of the rod, however, is limited by devices comprising headed screws (not shown), one near each end of the rod and by a central restraining finger of novel construction and mounting.

Referring to Figs. 7 and 8 the horizontal portion or body 62 of the finger is seated in a groove or depression cut in the bottom of the stop bar 56, the bottom face of the body 62 being substantially flush with the bottom of the bar so as not to interrupt the surface

thereof which is practically continuous, the finger being suitably secured in its groove or seat as by soldering so as not to leave any projection. The forward end 62<sup>a</sup> of the finger is narrow and is turned vertically upward, extending transversely of the locking rod 59 and providing a stop therefor, said end portion 62<sup>a</sup> being midway between two of the notches 57 and being of the same width as the tooth between said notches; said tooth at its lower end being cut away to provide space for the end portion 62<sup>a</sup>, which is substantially in the same vertical plane as the upper portion of said tooth. Thus the limiting device 62 is confined within the surfaces of the stop bar and does not project beyond said stop bar at any point. The column stop magazine or container 63 is of an inverted U-shape in cross section and has a detachable bottom or floor plate 64. The sides of the magazine extend downward below the floor plate and the ends of the extended portions, except the left-hand front end, are beveled as indicated at 63<sup>a</sup> to provide mouth-like guide ways for the set column stops (Fig. 6). The magazine 63 has rigidly connected to it a bracket 65, said bracket being secured to the upper guide rail 5 by screws 66 in such position that the magazine overhangs the column stop bar 56. At the right-hand end of the magazine proper is a barrel 67 which houses the follower spring as described in my application aforesaid.

The magazine, container or holder stores or houses a set or series of column stops 68 notched or bifurcated to fit into the grooves or notches 57 of the column stop bar when ejected from the magazine and set on said bar. The forward edge of the notch in each column stop is provided with a slight depression to cooperate with the locking bar 59. The left-hand end of the magazine is closed by a head 69, said head being fixed rigidly to the magazine proper. To the left of the head 69 and forward of the stop bar 56 is arranged a combined guiding and supporting member or bracket piece 70 which is preferably formed of sheet metal and bent to the shape most clearly shown in Fig. 9. The member 70 is secured to the bracket 65 by the left-hand securing screw 66. Said member extends downward from the securing screw and has a hook-like portion 70<sup>a</sup> which underlies the column stop bar 56 and is adapted to engage with the bottom surface thereof; the end of said hook-like portion being rounded so as to minimize the friction. This hook-like portion 70<sup>a</sup> provides a support and restraining guide for the column stop bar which is liable to be bent or flexed downward during the stop setting operations. A rightward extension 70<sup>b</sup> on the member 70 terminates contiguous to the stop retractor hereinafter

described. The portion 70<sup>b</sup> is inclined at an angle corresponding with the angle of the beveled face 63<sup>a</sup> opposite thereto; and cooperating with said opposite beveled face to provide a flaring mouth, which guides the column stops which may be set on the column stop bar, during rightward traveling movements of the carriage. The oppositely beveled faces 63<sup>a</sup> at the right of the magazine perform a similar function during leftward movements of the travel of the carriage. In the prior construction where no such guiding mouths were provided the column stops set on the bar were liable to contact with the ends of the magazine during traveling movements of the carriage, this contact being due to slight flexure of the column stop bar which is inevitable when a long stop bar is in use. This contact of the stops with the ends of the magazine impeded or obstructed movements of the carriage and resulted in annoying clicks. By providing flaring mouths at opposite ends of the magazine as described the column stops are guided smoothly into the space between depending portions of the magazine side walls and even if there be a slight flexure or bend in the column stop bar toward the front or toward the rear, the flaring mouths are wide enough to allow for such bending or flexure and will take in the column stops without noise or any impediment of the movement of the carriage. The rear lower side of the magazine is slotted as at 71 (Fig. 6) to provide a passage for the cooperating stop 34.

The magazine head 69 is formed with vertically grooved guide ways which receive reciprocatory slides 72 and 73, the functions of which are respectively to eject and retract the column stops through an opening or mouth 74 in the magazine, this magazine mouth 74 being between the floor plate 64 and the head 69. The slide or ejector 72 is adapted to engage successively with the column stops as they are forced leftward by the follower spring and brought into register with the opening 74. Normally the slide 73 is maintained at the top of the guide head 69 and above the underlying column stop. The slide or retractor 73 is arranged forward of the stop bar and has a lug or toe piece 73<sup>a</sup> which is below the set column stops and is adapted to engage with them during stop retracting operations. The ejector 72 is operated by key controlled devices comprising a link 75 connected to the slide at 76, said link extending downward alongside the tabulator supporting frame and being connected at its lower end to a crank arm 77 which is fixed to a rock shaft 78 by means of a hub 79, which fits over the rock shaft and is pinned thereto. The rock shaft is reduced at its right-hand end and bears in an ear 80 of a bracket 81 which is secured by 130

screws 82 to the bracket 21. The left end of the rock shaft 78 is reduced and bears in an angular bracket 83 secured to the left-hand rear post 2. A crank arm 84 is fixed to the left-hand of the rock shaft 78 and is bent upward therefrom, being pivotally connected with a push rod 85 which extends forward and bears at its front end in the left-hand front post 2, terminating forward thereof in a button or key 86. A draw spring 87 connected to the crank arm 84 and to a pin 88 on a post 89 operates as a restoring spring to restore the parts to the normal or Fig. 1 position after the key 86 has been pushed in to lower the ejector and thereafter released. It will be apparent that the actuation of the key 86 operates through the rod 85 and crank arm 84 to turn the rock shaft 78, swinging down the crank arm 77 and pulling down the link 75 which in turn operates to slide the ejector 72 to eject the column stops from the magazine and position or set it on the stop rod 56.

For operating the retractor, key controlled devices are provided comprising a link 90 pivotally connected at 91 to the retractor and extending downward alongside the link 75, said link 90 being pivotally connected at its lower end to a crank arm 92 which is fixed to a sleeve 93 that surrounds and bears on the rock shaft 78. Fixed to the left-hand end of the sleeve is a crank arm 94 which extends downward and has pivoted to it a push rod 95, said push rod extending forward and bearing in the left-hand front post 2, terminating in front of the post in a button or finger key 96. A coiled restoring spring 97 is connected to the crank arm 94 and to the pin or anchor 88. The actuation of the key 96 operates through the rod 95 and crank arm 94 to rotate the sleeve 93 on the rock shaft 78, which shaft remains motionless during such rotation. The movement of the sleeve is transmitted through the crank arm 92 to the link 90, the link thereby being raised to operatively lift the retractor 73, causing the toe 73<sup>a</sup> thereof to cooperate with the column stops when brought into register therewith and operating to detach the column stops from the stop bar one by one and lift them upward through the opening 74 into the magazine. The stop transferring devices, that is, the devices for ejecting the column stops from the stationary element or magazine on to the traveling element or carriage and for retracting said stops from the traveling element to the stationary element are substantially the same as those disclosed and claimed in my prior application aforesaid.

Locking devices are provided to hold the carriage against movement during ejecting and retracting operations. Said devices in the present instance cooperate with the back spacing wheel and other back spacing mech-

anism or devices, said mechanism being illustrated in Figs. 1 to 5 and including an angular member or lever 99 pivoted at 100 to the lower carriage rail 6 and having an upright arm or portion 101 terminating in a tab or lip 102 which overlies the feed rack 16. The horizontal portion of the member 99 is provided with a tab or ear 103 and adapted to cooperate with said tab 103 is a lever 104 having a fixed pivot 105 and provided with a spring (not shown) which tends to maintain it in the position illustrated in Fig. 4 which shows the forward arm of said lever to the left of the tab 103. A stationary guide 106 is spaced above the cross bar 29 of the tabulator frame by washers 108 and is secured to said cross piece by headed screws 109 and 110. The guide frame 106 cooperates with a back spacing pawl (not shown) but preferably of the usual Monarch style, said pawl being key controlled and cooperating with the back spacing wheel 22 and operating to turn said wheel and space the carriage backward and also operating the lever 104, causing it to swing rightward and overlie the tab 103, thus locking the member 99 and rendering the tab 102 operative to lock the feed rack against upward movement during back spacing operations. The back spacing mechanism above briefly described is found in the Monarch machine. The novel locking devices which cooperate with said back spacing mechanism comprise a lever member 111 (Figs. 1 to 5) said member being fulcrumed on the screw 109 and confined loosely between the head of said screw and the upper face of the guide member 106. Said member 111 is provided with a guide slot 112 which cooperates with the shank of the screw 110 immediately below the head thereof and between it and the guide member 106. The screws 109 and 110 are preferably shouldered at their upper portions and are screwed down until the shoulders engage with the top of the guide member 106, thus providing a fixed space between the screw heads and said guide member, this space being such that the lever member 111 may swing freely on the guide member 106 under the screw heads. The member 111 is provided with an extension 113 which terminates in a downward lip 114, said lip cooperating with an upstanding pin 115 on the lever 104. A draw spring 116 connects the lip 114 with a lug 117 on the bracket 19 and tends to maintain the lever 111 in the normal position shown in Fig. 4, said spring restoring said lever to the Fig. 4 position after operation. To the rear of the guide slot 112 the lever 111 is provided with an extension 118 terminating in an edge 119 which is acted on by cam faces 75<sup>a</sup> and 90<sup>a</sup> formed respectively on the links 75 and 90 which actuate the ejector and the retractor.

Said cams are normally disposed as shown in Fig. 1, the cam 75<sup>a</sup> being above the edge 119 and in position to cooperate therewith as the link 75 is lowered. On the other hand, the cam 90<sup>a</sup> is normally below the cam edge 119 and cooperates therewith when the link 90 is raised or lifted. The cam operates to force the extension 118 forward and swing the lever 111 on its pivot, causing the lip 114, acting on the pin 115, to swing the lever 104 to operative position, overlying the tab 103. An angular arm 120 is suitably secured, as by rivets 121, to the lever 111 and is clearly shown in Fig. 1, said arm 120 being provided with a slot 122 which, when the lever 111 swings forward, as in Fig. 5, engages at opposite sides of one of the teeth of the back spacing wheel 22. It will be understood then that the actuation of either the stop ejector or stop retractor automatically operates the locking device or lever 111 and causes the slotted arm 122 to effect a locking engagement with the back spacing wheel 22 (Fig. 5). The locking or back spacing wheel also operates to lock the pinion 17 since the pinion is rigid with the back spacing wheel, both being fixedly secured to the shaft 18. Also the operation of the lever 111 renders the locking lever 99 effective, the tab 102 thereon preventing the lifting of the feed rack 16 from the pinion 17 (Fig. 5). Said pinion being at this time rigid operates through the rack 16 on the platen carriage to prevent any movement thereof. Thus it will be seen that the actuation of either the ejector key 86 or the retractor key 96 automatically actuates the locking devices and causes them to lock the carriage against movement during ejecting and retracting operations, enabling the column stops to be ejected from one rigid element or part, that is, the magazine on to another element or part temporarily rigid, that is, the carriage, and vice versa. After being moved to the abnormal positions shown in Fig. 5, the locking devices are maintained in such position so long as the key 86 or the key 96, whichever may be in use, is under pressure, by dwells 75<sup>b</sup> and 90<sup>b</sup>, the dwell 75<sup>b</sup> being formed on the link 75 above the cam 75<sup>a</sup>; and the dwell 90<sup>b</sup> being formed below the cam 90<sup>a</sup> on the link 90.

Fig. 10 shows a modification in which the tabulator bracket comprising the parallel uprights 24 is replaced by a tabulator bracket of the kind usually employed with the decimal tabulator of the Monarch machine, the latter bracket comprising parallel uprights 123 spaced apart a sufficient distance to embrace between them the usual set of denominational stop levers 124. Otherwise the bracket comprising the arms 123 is similar in construction to the first described bracket and may be secured in place by the same screws. The carriage locking devices

first described may be mounted on the Fig. 10 bracket without change in any of the parts since, viewed from the rear, the right-hand arm 123 is located in the same position as the corresponding arm 24 of the first bracket, the difference in the two brackets being due to spacing the left-hand arm different distances to the left from the right-hand arm. In other words, the left-hand arm 24 is but a short distance to the left of its associate right-hand arm 24 while the left-hand arm 123 is a greater distance from its associate arm. The rear side of the magazine must be provided with a wider slot than 71 to accommodate the set of denominational stops.

Various changes besides those described may be effected without departing from my present invention and parts of said invention may be used without other parts.

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

1. In a typewriting machine and in tabulating mechanism, the combination of a stop, a stop holder therefor, a stop receiving element, said holder and said element being relatively movable, means for transferring said stop from said holder to said element, means for retaining said stop on said element comprising a part located within one of the surfaces of said element, and means cooperative with said surface for preventing flexure of said element in the direction of movement of said stop during the operation of the stop transferring means.
2. In a typewriting machine and in tabulating mechanism, the combination of a stop, a stop holder therefor, a stop receiving bar, said holder and said bar being relatively movable, means for transferring said stop from said holder to said bar, means comprising a part fixed in a recess in one of the surfaces of said bar for retaining said stop on said bar, and means cooperative with said one of the surfaces for preventing flexure of said bar during the operation of the stop transferring means.

3. In a typewriting machine and in tabulating mechanism, the combination of a stop holder, notched column stops thereon, a column stop bar, said holder and said bar being relatively movable, stop transferring means, a spring pressed rod extending lengthwise of said bar and seated in a groove therein, said rod being cooperative with depressions in said stops, limiting means for said rod comprising an angular finger seated in a depression in one face of said bar, and a stationary guiding finger which cooperates with said face of said bar to prevent flexure thereof during the operation of said stop transferring means.

4. In a typewriting machine and in tabulating mechanism, the combination of a stop container, a stop bar, said container having

portions extending at opposite sides of said stop bar, guiding devices on said extended portions, and column stops on said stop bar with which said guiding devices cooperate during relative movement between the container and the stop bar.

5. In a typewriting machine and in tabulating mechanism, the combination of a stop container, a stop bar, said container having portions extending at opposite sides of said stop bar, the inner faces of said extended portions being beveled off to provide flaring guides, and column stops on said stop bar cooperative with said guides.

6. In a typewriting machine and in tabulating mechanism, the combination of a stop bar, column stops thereon, a magazine overhanging said stop bar and having portions extending downward at the front and rear sides of said bar, and flaring guiding devices at the ends of said downwardly extending portions, said guiding devices cooperating with the column stops to guide them between the extended portions of said magazine during relative movement between said magazine and said stop bar.

7. In a typewriting machine and in tabulating mechanism, the combination of a stop bar, column stops thereon, a magazine overhanging said stop bar and having portions extending downward at the front and rear sides of said bar, flaring guiding devices at the ends of said downwardly extending portions, said guiding devices cooperating with the column stops to guide them through the extended portions of said magazine during relative movement between said magazine and said stop bar, and a guiding device cooperative with the bottom surface of said stop bar to prevent downward flexure thereof.

8. In a typewriting machine and in tabulating mechanism, the combination of a stop bar, column stops thereon, a magazine overhanging said stop bar and having portions extending downward at the front and rear sides of said bar, three of the ends of said extended portions being beveled at their inner faces to provide flaring guide mouths, and a detachable device having a portion inclined oppositely from one of said beveled inner faces and having another portion extending under said stop bar and adapted to engage with the bottom face of said stop bar to prevent downward flexure thereof.

9. In a typewriting machine and in tabulating mechanism, the combination of a carriage, a column stop bar thereon, column stops, a magazine, screws for attaching said magazine to a stationary part, and a detachable guiding device secured by one of said screws, said guiding device cooperating with one of the faces of said stop bar to prevent flexure thereof and having a por-

tion also which is adapted as a side guide for the column stops on said stop bar.

10. In a typewriting machine and in tabulating mechanism, the combination of a stop bar, column stops thereon, a magazine overhanging said stop bar and having portions extending downward at the front and rear sides of said bar, said downwardly extending portions being provided with guiding devices, and a key controlled cooperating stop, one of said downwardly extending portions being notched to provide a passage for said cooperating stop.

11. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a column stop thereon, a detachable frame secured to the machine frame, a single cooperating stop lever pivoted on said detachable frame, and key controlled actuating devices for said lever, said actuating devices comprising a bail pivoted on said detachable frame.

12. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a column stop thereon, a detachable frame at the rear of the machine frame, a single cooperating stop lever pivoted on said detachable frame, and means for actuating said lever comprising an actuator pivoted to said detachable frame, a second lever on the machine frame, a link connecting said actuator with said second lever, and a key lever connected to said second lever.

13. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage; a column stop thereon; a detachable frame at the rear of the machine frame; a single cooperating stop lever pivoted on said detachable frame; and means for actuating said lever comprising an actuator pivoted to said detachable frame, a second lever on the machine frame, a link connecting said actuator with said second lever, a key lever, and a second link connecting said key lever with said second lever.

14. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage; a column stop thereon; a detachable frame; a single cooperating stop lever pivoted on said detachable frame; means for actuating said lever comprising an actuator pivoted to said detachable frame, a second lever on the machine frame, a link connecting said actuator with said second lever, a key lever, a second link connecting said key lever with said second lever, and carriage releasing devices connected to said second lever.

15. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a column stop thereon, a detachable frame, a single cooperating stop lever pivoted thereon, means for actu-

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ating said lever comprising an actuator pivoted to said detachable frame, a second lever on the machine frame, a link connecting said actuator with said second lever, a key lever connected to said second lever, and carriage releasing devices connected to said second lever.

16. In a typewriting machine and in tabulating mechanism, the combination of a carriage, escapement devices comprising a releasable feed rack, a column stop on said carriage, a cooperating stop lever, a pivoted actuator for said lever, a key controlled lever having a fixed pivot and connected to said actuator, and a rack lifter connected to said key controlled lever.

17. In a typewriting machine and in tabulating mechanism, the combination of a releasable carriage, a column stop thereon, a pivoted cooperating stop lever, means for actuating the same comprising a second lever having a fixed pivot, and carriage releasing devices connected to said second lever.

18. In a typewriting machine and in tabulating mechanism, the combination of a traveling element or carriage, back spacing devices therefor, a stationary element, a tabulator stop, means for shifting said tabulator stop from one of said elements to the other, and means cooperating with said back spacing devices for locking the traveling element until the stop has been shifted from the element on which it was first supported.

19. In a typewriting machine and in tabulating mechanism, the combination of a traveling element or carriage, back spacing devices therefor, a stationary element, a tabulator stop, means for shifting said tabulator stop from one of said elements to the other, and automatic means including said back spacing devices for locking the traveling element until the tabulator stop has been shifted from one element to the other.

20. In a typewriting machine and in tabulating mechanism, the combination of a traveling element or carriage, back spacing devices therefor, a stationary element, a tabulator stop, means for shifting said tabulator stop from one of said elements to the other, automatic means including said back spacing devices for locking the traveling element until the tabulator stop has been shifted from one element to the other, and key controlled stop shifting means operative on said back spacing devices to lock said traveling element during the stop shifting operation.

21. In a typewriting machine and in tabulating mechanism, the combination of a traveling element or carriage, back spacing devices therefor, a stationary element, a tabulator stop, means for shifting said tabulator stop from one of said elements to the other, and means operated by said shifting

means and co-acting with said back spacing devices to lock said traveling element during the stop shifting operation.

22. In a typewriting machine and in tabulating mechanism, the combination of a carriage, carriage feeding devices including an escapement wheel, a back spacing wheel on the escapement wheel shaft, a stationary element, a column stop thereon, transferring means for transferring said stop to said carriage, and automatically actuated locking devices cooperative with said back spacing wheel.

23. In a typewriting machine and in tabulating mechanism, the combination of a carriage, carriage feeding devices including an escapement wheel, a back spacing wheel on the escapement wheel shaft, a stationary element, a column stop thereon, transferring means for transferring said stop to said carriage, and locking devices operative by said stop transferring means and cooperating with said back spacing wheel.

24. In a typewriting machine and in tabulating mechanism, the combination of a carriage, carriage feeding devices including an escapement wheel, a back spacing wheel on the escapement wheel shaft, a stationary element, a column stop thereon, transferring means for transferring said stop to said carriage, and a locking lever automatically operative to engage with said back spacing wheel.

25. In a typewriting machine and in tabulating mechanism, the combination of a carriage, carriage feeding devices including an escapement wheel, a back spacing wheel on the escapement wheel shaft, a stationary element, a column stop thereon, transferring means for transferring said stop to said carriage, and a locking lever for said back spacing wheel and operative by said stop transferring means.

26. In a typewriting machine and in tabulating mechanism, the combination of a traveling element, carriage feeding devices comprising a separable rack and pinion, a back spacing wheel on the pinion shaft, a stop holder, a stop, transferring means for transferring the stop from the holder to the carriage, and locking devices cooperative with said back spacing wheel and with said rack during stop transferring operations.

27. In a typewriting machine and in tabulating mechanism, the combination of a traveling element, carriage feeding devices comprising a separable rack and pinion, a back spacing wheel on the pinion shaft, a stop holder, a stop, transferring means for transferring the stop from the holder to the carriage, and locking devices cooperative with said back spacing wheel and with said rack during stop transferring operations, said locking devices being automatically controlled by the stop transferring means.

28. In a typewriting machine and in tabulating mechanism, the combination of a traveling element, carriage feeding devices comprising a separable rack and pinion, a back spacing wheel on the pinion shaft, a stop holder, a stop, transferring means for transferring the stop from the holder to the carriage, and locking devices coöperative with said back spacing wheel and with said rack during stop transferring operations, said locking devices being automatically controlled by the stop transferring means and comprising a locking lever engageable with the teeth of said back spacing wheel.
29. In a typewriting machine and in tabulating mechanism, the combination of a traveling element, carriage feeding devices comprising a separable rack and pinion, a back spacing wheel on the pinion shaft, a stop holder, a stop, transferring means for transferring the stop from the holder to the carriage, and locking devices coöperative with said back spacing wheel and with said rack during stop transferring operations, said locking devices being automatically controlled by the stop transferring means and comprising a locking lever engageable with the teeth of said back spacing wheel and also comprising a second locking lever engageable with said rack to prevent its separation from said pinion.
30. In a typewriting machine and in tabulating mechanism, the combination of a traveling element, carriage feeding devices comprising a separable rack and pinion, a back spacing wheel on the pinion shaft, a stop, a stop holder, and transferring means for transferring the stop from the holder to the carriage, said means comprising a link, a cam and a dwell connected to said link, and locking devices coöperative with said

back spacing wheel and with said rack during stop transferring operations, said locking devices being operatively controlled by said cam and dwell.

31. In a typewriting machine and in tabulating mechanism, the combination of a traveling element, a stationary element, a tabulator stop, means for transferring said stop from one of said elements to the other, said means comprising a link, means for re-transferring said stop, said re-transferring means comprising a second link, cams on said links, back spacing devices for said traveling element, and locking devices coöperative with said back spacing devices to lock said traveling element against movement, said locking devices being operatively controlled by said cams.

32. In a typewriting machine and tabulating mechanism, the combination of a carriage, escapement devices comprising a releasable feed rack, a column stop on said carriage, a stop lever adapted to coöperate with said column stop, a pivoted actuator for said stop lever, a second lever pivoted between its ends, a connecting means between said pivoted actuator and said second lever, a rack lifter also connected to said second lever, both said connecting means and said rack lifter being on one side of the fulcrum of said second lever, and key actuated means for operating said second lever connected on the opposite side of the fulcrum of said second lever.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 24th day of June, A. D. 1912.

HERBERT H. STEELE.

Witnesses:

BERNICE E. FOX,  
HARRY BARRY.