

J. WALDHEIM.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 6, 1912.

1,064,403.

Patented June 10, 1913.

3 SHEETS—SHEET 1.

FIG. 1.

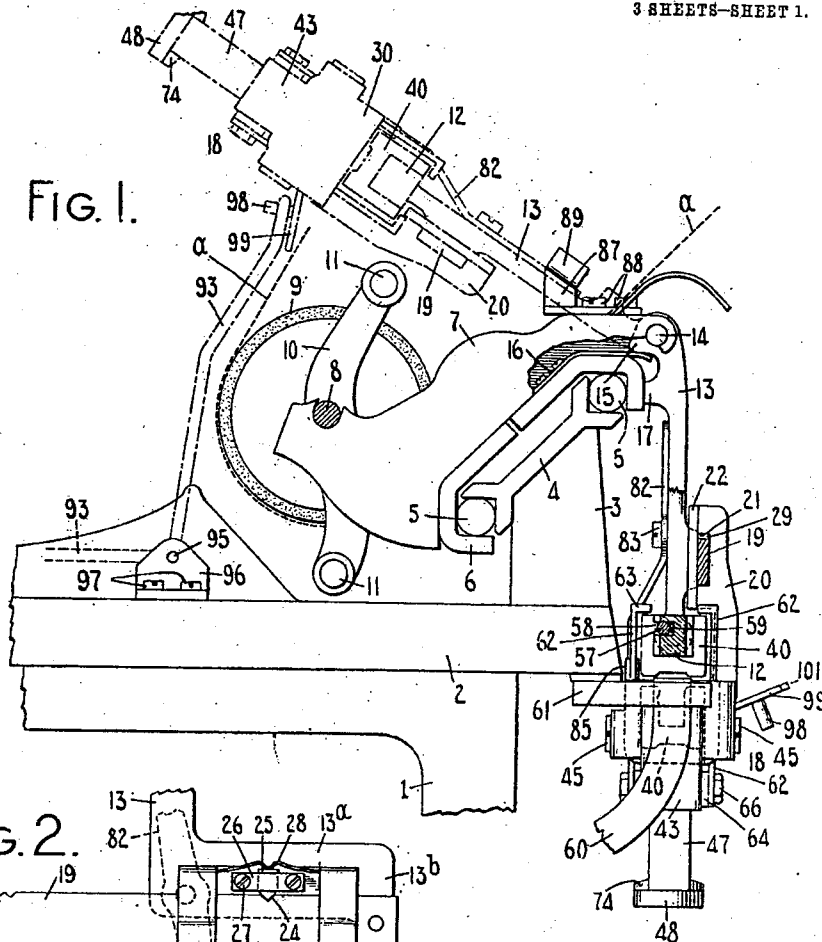


FIG. 2.

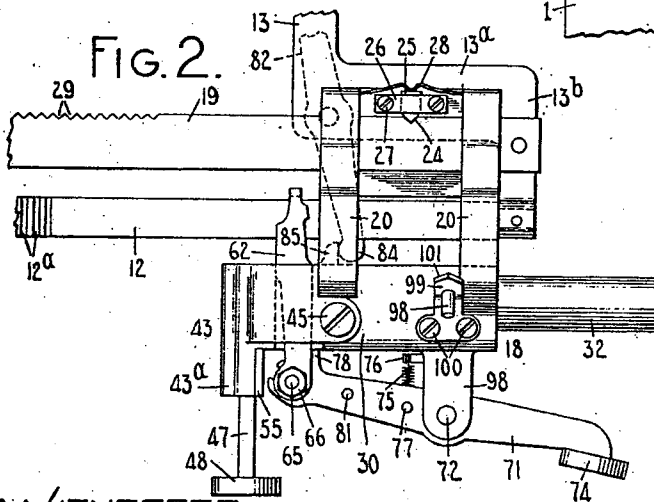
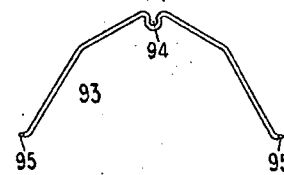


FIG. 3.



WITNESSES:

E. M. Wells
M. W. Poe

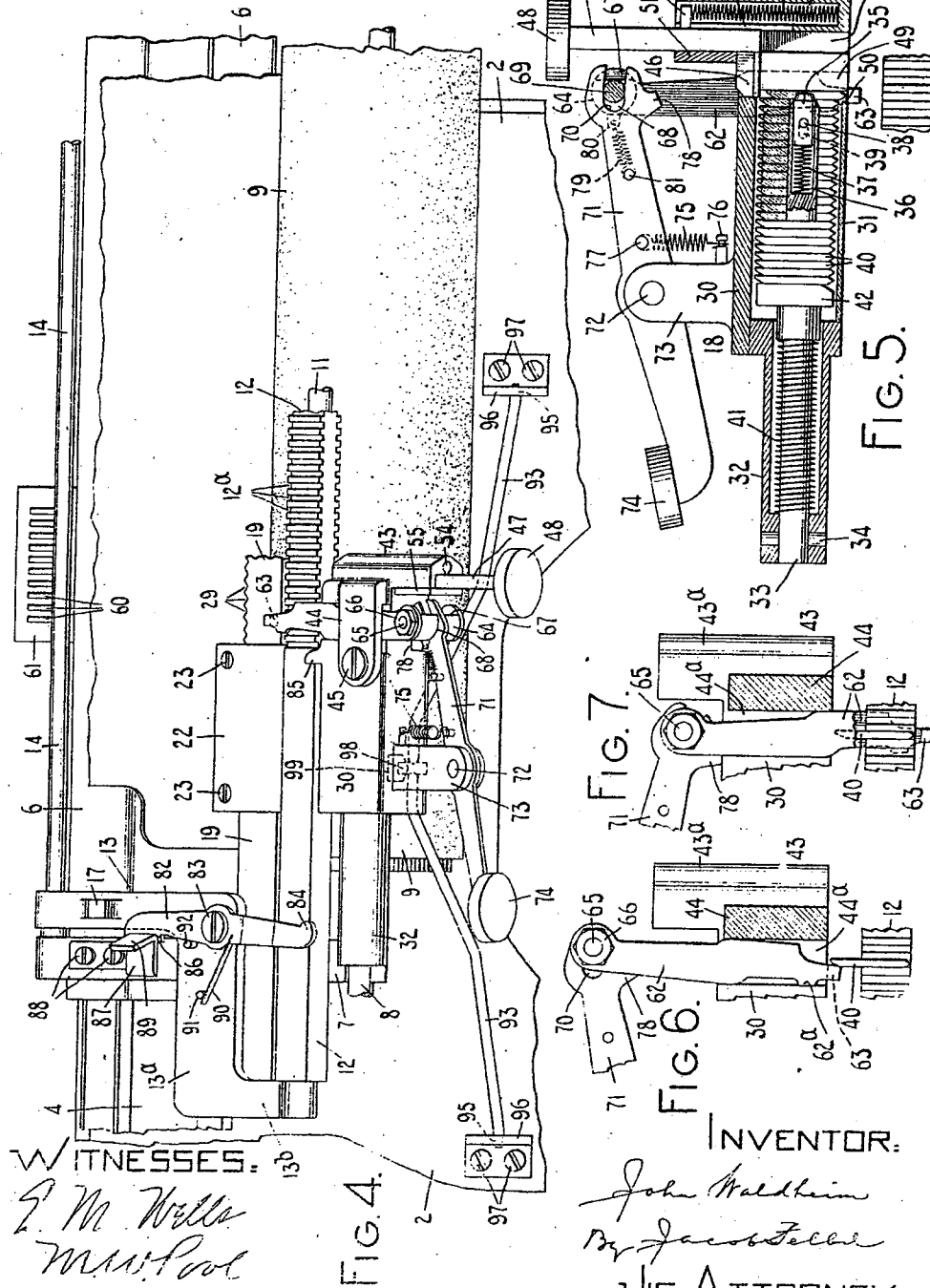
INVENTOR:

John Waldheim
By Jacob F. Felt
HIS ATTORNEY

1,064,403.

Patented June 10, 1913.

3 SHEETS-SHEET 2.



WITNESSES:
J. M. Wells
M. W. Pool

FIG. 4.

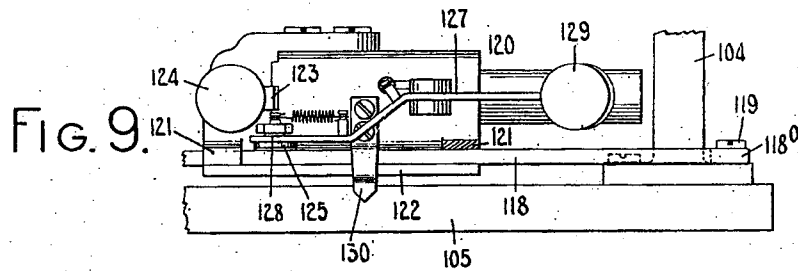
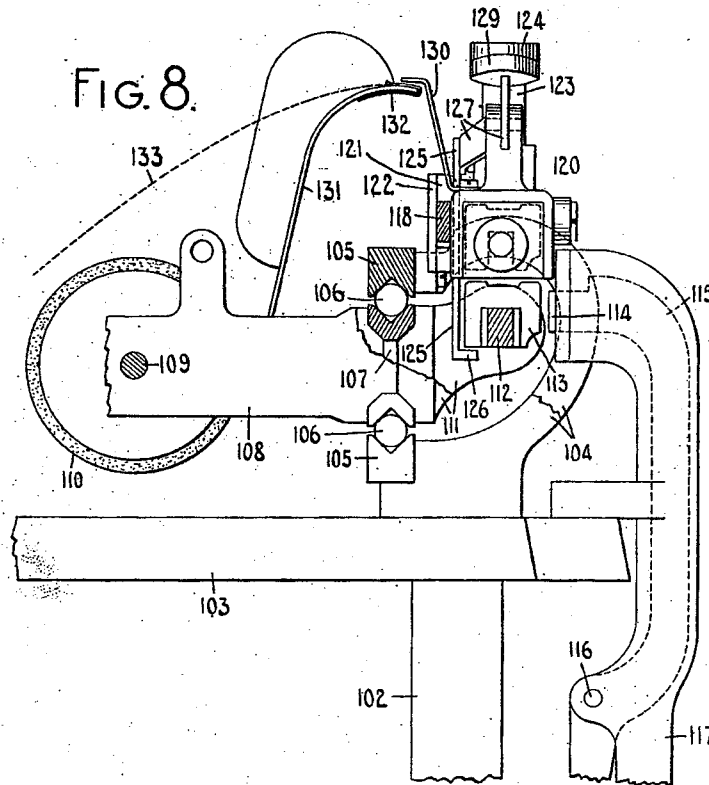
INVENTOR:
John Waldheim
By Jacob S. Heller
HIS ATTORNEY

J. WALDHEIM.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 6, 1912.

1,064,403.

Patented June 10, 1913.

3 SHEETS-SHEET 3.



WITNESSES:

E. M. Wells
m. w. Pool

INVENTOR:

John Waldheim
By Jacob Stebbins
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN WALDHEIM, OF NEWARK, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,064,403.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed May 8, 1912. Serial No. 895,399.

To all whom it may concern:

Be it known that I, JOHN WALDHEIM, citizen of the United States, and resident of Newark, 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 key set tabulating mechanism for typewriting machines and especially to that class of key set tabulators comprising a stop magazine or container.

The chief object of the invention is to provide an improved tabulating mechanism of the character specified.

One of the special objects of the present invention is to provide a stop magazine movable transversely of the printing line on the paper carrying element or platen, enabling the magazine to be brought close to the platen so that the stops may be ejected on to the stop receiving element or bar with direct reference to the paper on the platen.

Another object is to provide a stop magazine which is movable lengthwise of the printing line, enabling the stops to be ejected from the stop receiving element or bar in the proper positions without any movement of the traveling carriage of the machine and of the stop receiving element, as has heretofore been necessary.

Another object is to provide in combination with a stop magazine of the character specified locking devices which prevent the magazine from being moved or swung back from abnormal position to normal position until after the magazine has been moved to one side or in a non-working position.

Another object is to provide means for locking or fixing a slidable or movable stop magazine, enabling the stop receiving element or bar and the traveling carriage to be moved while the stop magazine is held from movement.

Another object is to provide improved stop ejecting and retracting devices.

Another object is to provide means for positively limiting relative movement between the magazine and the stop receiving element and mechanically positioning the parts so that the stop to be retracted is in register with the receiving slot or entrance way into the magazine.

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 will be more particularly described in connection with the accompanying drawings wherein—

Figure 1 is a fragmentary end view, partly in section, of the upper-rear portion of a No. 10 front-strike Smith Premier typewriting machine embodying my invention, the abnormal position of the tabulator magazine and associate parts being shown in dotted lines. Fig. 2 is a fragmentary rear elevation of the tabulator stop magazine and associate parts in normal position. Fig. 3 is a face view of a locking device or bail for the stop magazine, said locking device being shown detached. Fig. 4 is a fragmentary plan view of the upper part of said typewriting machine showing the magazine mechanism in abnormal position. Fig. 5 is a sectional view taken longitudinally of the stop magazine. Figs. 6 and 7 are fragmentary operating views, partly in section, illustrating stages of the stop retracting operation. Fig. 8 is a fragmentary side view, partly in section, of a Monarch typewriting machine embodying a modification of my invention. Fig. 9 is a plan view of the modified tabulator mechanism shown in Fig. 8.

Referring first to the form of my invention illustrated in Figs. 1 to 7, inclusive, the main frame of the Smith Premier No. 10 typewriting machine comprises, as shown, frame posts 1 supporting a top plate 2 on which are mounted standards 3. Secured to said standards is an inclined trackway 4 having grooves which cooperate through antifriction balls 5 with a two-piece slide bar 6 comprised in a carriage truck which further includes end plates or pieces 7 at the ends of the bar 6 and rigidly secured thereto. The plates 7 provide bearings for the axle 8 of a paper carrying element or platen 9 which is mounted in a rectangular frame or carrier comprising end bars 10 and connecting cross bars 11, the platen and platen frame being detachably supported on the truck or traveling carrier which is impelled leftward by a power device or spring motor (not shown), the leftward movements being

controlled by escapement devices operative from the printing keys as is well understood.

I have preferred to show my invention associated with tabulating mechanism of the character found in the No. 10 Smith Premier typewriting machine and disclosed in the patents to A. T. Brown No. 939,537, patented Nov. 16, 1909; and No. 939,836, patented Sept. 13, 1910. Said tabulating mechanism includes a stop bar 12 which is mounted on a movable frame comprising arms 13 rigidly secured at their upper ends to a rock shaft 14 journaled at its ends on the end plates 7 of the carriage or carrier, the arms 13 being arranged just inside said end plates. One or both of the arms 13 is provided at its hub portion with a nose or projection 15 which is engaged by a flat spring 16 secured to the carriage slide bar 6. The tension of the spring or springs 16 normally tends to hold the arms 13 in their normal depending position, as illustrated in Fig. 1 from which it will be observed that the spring maintains a stop projection or lug 17 extending forward from each arm 13 in engagement with the rear part of the slide bar 6. The construction is such that the frame may be elevated or swung up and forward transversely to the platen and of the printing line thereon to a nearly horizontal position, as shown by dotted lines in Fig. 1.

The swinging frame 13, 14, in addition to carrying the stop bar or stop receiving element 12, also supports a stop magazine holder or container, designated as a whole by the numeral 18, which magazine is movably mounted or slidably supported on a cross bar or trackway 19 by means of two parallel supporting arms 20 which are rigid with the magazine and extend normally upward therefrom, as shown in Figs. 1 and 2, being notched or slotted, as indicated at 21, to fit over or embrace the bar 19. A plate 22 is arranged at the forward side of said bar and is secured to the arms 20 by screws 23 (Fig. 4). The bar 19 is thus inclosed so that the magazine can only be detached by unscrewing the screws 23 or by detaching the supporting trackway. As viewed from the rear (Fig. 2) the right-hand arm 13 of the swinging frame is provided with a lateral off-set 18^a terminating in a downward extension 18^b to which the end portions of the stop bar 12 and the bar or trackway 19 for the stop magazine are secured. This construction provides a space enabling the magazine to be maintained in non-working position at one side of the supporting frame so that the stop bar 12 throughout the working length thereof is unobstructed when the tabulating mechanism is in use for tabulating operations. It will be understood that by "working

length" is meant the length of the bar throughout which the column stops may be adjusted thereon, this being practically determined by the length of the platen. The stop magazine 18 is adapted to be positively latched in the non-working position by devices comprising a V-shaped notch 24 with which coöperates a vertically slidable detent or latching device 25 pointed at its lower end to coöperate with the notch 24 and bearing in an opening in a guide plate 26 secured to the face of the off-set 18^a by screws 27. A leaf spring 28 coöperates with the top of the detent to force it downward and maintain it in latching engagement with the notch 24. By pressing inward against the magazine or its supporting arms 20 toward the middle of the machine, the detent 25 may be forced upward out of the notch, thus unlatching the magazine and enabling it to be slid or moved inward along its trackway 19 and relatively to the stop receiving element 12. The upper face of the trackway or supporting bar 19 is formed with a series of saw teeth 29, thus providing corresponding notches with which the spring detent or latching device 25 is adapted to engage to latch the magazine temporarily and hold it stably in any one of a plurality of working positions corresponding with the stop receiving notches in the bar 12 so as to enable the tabulator or column stops in the magazine to be ejected therefrom on to the stop bar 12 at predetermined points or to be retracted from said stop bar into the magazine, as hereinafter described.

The stop magazine 18 comprises a body portion 30 with which the supporting arms 20 are preferably integral. Said body portion is U-shaped in cross section and has a floor plate 31 (Fig. 5), suitably secured in place as by dove-tailing. Rigid with the body portion is a barrel 32 and extending through the body portion and barrel is a stop supporting rod or bar 33 which is secured at one end to the barrel by a cross pin 34 and is provided at its opposite or free end with a spring plunger or locking device 35 which fits in a depression 36 in the rod 33 and is pressed outward by a spring 37. Outward movement of the plunger is limited by a cross pin 38 which coöperates at its end portions with slots 39 in the rod 33. Supported on the rod 33 are a set, series or plurality of tabulator or column stops 40 which are notched to fit over the stop bar 12 when ejected. The column stops are pressed constantly rightward along the bar 33 by a spring 41 which surrounds the rod 33 within the barrel or extension 32 and acts through a follower 42 which is mounted slidably on the rod 33 and transmits the pressure of the spring 41 to the column stops. Connected to the right-hand end of

the body 30 is a member or casting 43 which is provided with ears 44 that embrace the sides of the body 30 and are fixedly secured thereto by screws 45. Some of the details of the magazine and stop controlling devices are the invention of Herbert H. Steele and disclosed in his Patent No. 1,037,076, granted Aug. 27, 1912, and therefore are not claimed *per se* by me.

Associated with the magazine or stop carrying and supporting element are key controlled means for shifting or transferring the tabulator stop or column stops back and forth between said stop supporting element and the stop receiving element or stop bar 12. Said means in the present instance comprise ejecting devices for ejecting the stops from the magazine on to the stop bar and retracting devices for retracting the stops from the stop bar within the magazine, both sets of devices being key controlled. The member 43 supports and guides the key controlled ejecting devices comprising a slide block or ejecting device proper 46 and an integral stem portion 47 which terminates in a finger piece or key 48. Fig. 5, which best illustrates the details of the ejecting devices, shows the parts inverted from the normal position. Normally it will be understood by reference to Fig. 2 that the stem 47 instead of extending upward, as shown in Fig. 5, extends downward from the slide or ejecting device 46. The slide 46 cooperates at its sides with guide faces 49 formed in the guide member 43 and these guide faces near their lower ends are separated from the end of the floor plate 31, providing therewith a slot or entrance way 50 through which the column stops may pass singly out of and into the magazine during stop shifting or transferring operations. The member 43 is provided with an extension 43^a, which as shown in Fig. 5, extends upward above the surface of the magazine body 30 and at its inner end or face is closed by a vertical bridge plate 51 suitably secured to the extension 43^a. This bridge plate together with guiding surfaces 52 formed in the sides of the member 43 and its extension provide a track or guideway for the stem 47. The ejector is normally maintained with the slide 46 out of the path of the column stops by a coiled expansion spring 53 which is arranged in a depression 54 in the member 43 and cooperates with a pin or lug 55 projecting from the same; a slot way 56 in the member 43 providing for the unobstructed reciprocatory movement of the pin. By pressing inward on the key 48 the spring 53 is overcome and the ejector caused to slide in its ways, cooperating with the top of the outermost or right-hand column stop 40 and forcing the same downward through the slot 50, overcoming the plunger or retaining or locking device 35,

which normally maintains the outermost stop in place within the magazine. The stop is forced out of the magazine by the ejector and on to the stop receiving element or stop bar 12, engaging with the particular stop receiving notches 12^a which are at the time in register with the slot 50. As soon as the stop has been ejected as described, the plunger 35 snaps outward again and after the ejector has been retracted to normal position, the remaining column stops are forced rightward along the rod 33 by the spring 41. The slide 46 is wider than the notches in the column stops so that the remaining column stops cannot move as described until the slide has been retracted past them. Preferably a locking bar 57 is seated in a depression 58 in the stop bar 12 and pressed outward by springs 59, said locking bar retaining the ejected column stops in place on the stop bar 12. The stops are preferably ejected as hereinafter described, after the stop magazine has been swung upward and forward to the dotted line position shown in Fig. 1; but after the stops have been ejected from the magazine and located at the proper positions along the stop bar 12 the swinging frame 13, 14 is returned to normal position at which time the ejected and adjusted column stops are in the position shown in full lines in Fig. 1 where they are adapted to cooperate with denominational stops 60, said stops extending upward through suitable openings in a guide plate 61 secured at the rear of the top plate 2. The key connections by which the cooperating stops 60 are controlled or projected and drawn back and through which the release of the carriage is effected during tabulating operations are not disclosed herein but preferably are like those found in the No. 10 Smith Premier typewriting machine and shown essentially in the patent to Brown No. 939,587 aforesaid, although any other suitable style of cooperating stop mechanism may be employed.

This stop retracting devices preferably employed in the present instance comprise a retracting member consisting of two forks or bifurcations 62 which embrace between them the sides of the magazine body 30 and are guided as best shown in Figs. 2 and 4 in slots or inclosed ways 44^a formed between the sides of the body 30 and the ears 44 of the guide member 43. At their free ends the arms or bifurcated portions 62 are narrowed and bent inward to provide lugs or retracting devices proper 63 which register with the slot entrance 50 but are separated far enough to pass freely up and down at the sides of the stop bar 12 and so as to cooperate at opposite sides of said bar with the portions of the stops that are to be retracted. At their upper ends the arms 62 are rigidly connected to a cross rod or bar 130

64 which at its ends is reduced in diameter, as indicated at 65, enabling the arms 62 to fit over the same and be secured in place by locking nuts 66, the reduced end 65 being threaded to cooperate with said nuts. The side of the cross rod 64 opposite the plate 51 is flattened, as indicated at 67, so as not to be obstructed by said plate during reciprocal movements of the retracting devices. At its middle the cross rod is slotted, as indicated at 68, forming a reduced neck 69 (Fig. 5) which cooperates with the sides of the open slot 70 formed at the free end of a lever 71, this free end being received in the slot 68. The lever 71 is fulcrumed at 72 on a lug or standard 73 integral with the magazine body 30. The opposite end or arm of the lever is provided with a key or finger piece 74 by which the lever and the connected retracting devices may be operated. The retracting devices and lever are maintained in the normal positions shown in Figs. 2 and 4 by a spring 75 connected at one end to a pin 76 on the standard 73 and at the other end to a lateral pin 77 on the lever 71. In this normal position the lugs 63 or retracting devices proper are below or at the under side of the stop rod 12. The movement of the lever 71 under the action of the spring 75 is limited by a stop lug 78 on the lever, said lever cooperating with the magazine body 30. The coiled spring 79 connected to a projection 80 on the cross bar 64 and at its opposite end to a pin 81 on the lever 71 tends constantly to draw the neck 69 toward the bottom or closed end of the slot 70.

When it is desired to eject the column stops from the magazine and locate them in adjusted positions on the stop bar 12 in accordance with the work in hand, the operator swings the frame 13, 14 upward and forward to the dotted line position in Fig. 1. This brings the stop magazine close to the upper face of the platen. Assuming that a work sheet *a*, having printed on it a blank form of the character that is to be filled in, has been adjusted around the platen past the printing point and extending a short distance above the same, it will be plain that the heads of the columns on said work sheet are in close proximity to the abnormally positioned stop bar or stop receiving element 12 so that the column stops may be ejected from the magazine and adjusted on said stop bar with direct reference to the paper or work sheet on the platen. The adjustment may be facilitated by a pointer on the magazine, as hereinafter described. In ejecting the stops from the magazine the magazine may first be slid rightward from its non-working or inoperative position and moved lengthwise of the stop bar and of the platen as well as of the printing line thereon while the platen and its carriage remain mo-

tionless, in this respect differing from prior constructions wherein the relative motion between the stop receiving element and the magazine has been effected by moving the stop receiving element instead of the magazine. When by reference to the heading of the work sheet 81 the magazine has been brought to the position for ejecting the first column stop, the key 48 is pressed in, causing the next column stop to be ejected out of the magazine and on to the stop bar 12, and pressure is then removed from the key 48, allowing it to return to normal position under the action of the spring 53. Then the magazine is slid farther to the right until it is brought to the next position at which a column stop is to be adjusted on the stop bar 12, after which the ejecting operation is repeated; and so on until all of the necessary column stops have been ejected and properly adjusted along the stop bar 12. The magazine is then slid back to the extreme left to non-working position and the swinging frame is restored from the dotted line position in Fig. 1 to the full line position after which the mechanism is in position to enable the usual printing and tabulating operations to be effected.

In order to insure that the magazine and the parts mounted to move therewith are restored to the non-working or left-hand position where they will not interfere with proper tabulating and carriage feeding operations, locking devices are provided which automatically lock the swinging frame in the abnormal or dotted line position and maintain it thus locked until the magazine is moved to the non-working position, this movement of the magazine serving to automatically unlock the locking devices. Said locking devices are illustrated in Figs. 1, 2 and 4 and comprise a lever or latching device 82 pivoted at 83 to the offset 13^a. One arm of the lever terminates in a rounded nose 84 which is adapted to cooperate with a lug or projection 85 on the magazine body 30, while the other end terminates in a beveled edge or knife portion 86 which is adapted to engage with the under side of a cooperating latching member 87 secured by screws 88 to the truck at the left-hand side thereof, a laterally bent portion 89 on said member 87 assisting to insure an easy co-operation between the beveled blade 86 of the latch member. A leaf spring 90 secured to the lever 82 and cooperating at its free end with a pin 91 on the off-set 13^a tends to maintain the lever constantly engaged with a stop pin 92 on said off-set. With the latching devices cooperating as in Fig. 4 it will be apparent that the swinging frame will be locked in its abnormal position. When the magazine is slid leftward to non-working position the lug 85 will engage with the nose 84 and swing the lever 82 on its

fulcrum, overcoming the spring 90 and causing the latching blade 86 to move from under the locking device 87, thus unlocking the swinging frame and enabling it to be returned to normal position. When the frame is again swung forward it will remain unlocked until the magazine is slid rightward from non-working position, permitting the spring 90 to operate on the lever 82 to move the blade 86 under the part 87. Assuming that this second forward swinging movement of the frame is for retracting purposes the operator, prior to sliding the magazine rightward, depresses the retracting key 74 which causes the retracting device 62, 63, 64 to move transversely of the stop bar 12 until the lugs 63 engage with the under side of the magazine body 30. Next, the operator, maintaining the key 74 depressed, slides the magazine bodily rightward until it is arrested by the engagement of the lugs 63 with the right-hand column stop 40 on the bar 12. The pressure applied by the operator overcomes the spring 79 and causes the retracting device to swing so that the angle between it and the lever 71 decreases while at the same time the cross rod 64 slides outward in the slot 70 away from the fulcrum 72 of the lever 71. This movement of the retractor continues until it is finally arrested by the engagement of projections or lugs 62* on the arms 62 with the sides of the slots 44* (Fig. 6). It will be seen that the retracting mechanism comprises devices 63 which cooperate with the column stops 40 to positively limit and determine the extent of relative movement between the stop magazine and the stop receiving member, operating prior to a stop shifting or transferring operation and in the present case to positively arrest the magazine in position to receive the stop to be retracted. The parts are constructed and arranged so that when the magazine is thus positively arrested the slot or entrance 50 is in register with the tabulator stop to be retracted. After the magazine has been thus arrested the operator releases the key 74, enabling the springs 75 and 79 to restore the parts to the position shown in Fig. 7, the spring 75 swinging the arms 62 longitudinally until the lugs 63 have passed the stop bar 12, and the spring 79 swinging the arm 62 pivotally, the lower ends of said arms swinging rightward until the lugs 63 are in register with or underlie the column stop 40. With the parts in the Fig. 7 position the operator again depresses the key 74, causing the lugs or retracting devices 63 to engage with the column stop and force it off the stop bar and back through the opening 50 into the magazine, the advancing beveled edge of the column stop acting on the locking plug 65 to force it inward until the stop has been retracted past said plug, which

then snaps outward again. The parts may now be assumed to be in the position shown in Fig. 3 and the operator still maintaining the key 74 depressed slides the magazine bodily rightward on its supporting bar until it is again positively arrested by the cooperation of the lugs 63 with the next succeeding column stop 40, whereupon the operations above outlined are repeated. Thus by successive depressions of the key 74 and sliding movements of the magazine devices, the stop bar 12 may be readily cleared of all of the column stops so that a fresh adjustment of the column stops on the bar may be made in accordance with a different work form by operating the ejector key 48 and manipulating the parts as has been described.

Various changes in construction and mode of operation may be made without departing from my invention. For example, it may be preferred, after the magazine has been swung to abnormal position, to retain it against sliding movement and hold it in fixed relationship with the frame of the machine, and then to cause the relative movement between the magazine and the stop receiving member or bar 12 to take place by moving the paper supporting device or platen and its carriage and the stop receiving member lengthwise of the magazine instead of vice versa as above described. For such an operation I provide locking devices for holding the magazine in fixed relationship with the machine frame, said devices comprising a locking bail 93 which is preferably formed of wire and shaped as in Fig. 3, the bail being provided centrally with a depression or bight 94. The ends of the bail are reduced, as indicated at 95, and bear pivotally in holes in angular brackets 96 secured by screws 97 to the top plate (Figs. 1 and 4). When in use the bail is swung up to the position shown in the last named figures and so that the bight 94 may receive and frictionally engage a pin or lug 98 which projects from a bracket 99 secured by screws 100 to the side of the magazine body 30. The free end of the bracket may be beveled as indicated at 101 to provide a pointer for cooperation with the paper to facilitate relative adjustment of the stop carrying and stop receiving parts. A pointer such as 101 is especially useful in machines like the Smith Premier No. 10 where the denominational stops, instead of being at the middle of the machine, are offset to one side. In such case the pointer 101 may be adjusted with respect to the stop entrance to the magazine so as to compensate for the off-setting of the denominational or cooperating stops. Then it is only necessary to bring the pointer and the desired columnar position on the paper in proper registration and thereupon to eject

the column stop, the result being that said stop will be properly adjusted on the stop bar for cooperation with the off-set denominational or frame stop or stops. Thus positioned, the stops are adapted to co-act to arrest the carriage so as to bring the desired point in the selected column to the printing point. When the pin 98 is in locking engagement with the bail 93, as shown in dotted lines in Figs. 1 and 4, it will be apparent that the magazine will be fixed and will be held motionless during the traveling movements longitudinally of the printing line of both the carriage and the stop bar 12. When the bail 93 is not to be used it may be swung forward and downward to a horizontal position, or may be detached from the machine.

Some of the principles of my present invention may be made use of in other constructions besides that shown and as an example of this fact I have illustrated in Figs. 8 and 9 a form of the invention applied to the Monarch front-strike typewriting machine. In said Monarch machine the main frame comprises uprights or posts 102 supporting a top plate 103 from which rise goose necked standards 104 to which are secured fixed grooved guide ways 105 co-operating through anti-friction balls 106 with the slide bar 107 of a carrier or carriage which further includes end bars 108, said end bars providing bearings for the axle 109 of a platen 110. Brackets 111 on the slide bar 107 support a column stop bar 112 which is toothed or notched as usual to receive column stops 113 with which are adapted to cooperate denominational stops 114 at the forward ends of stop levers 115 pivoted at 116 in a frame 117 detachably secured to the main frame. The levers 115 are common to the tabulating mechanism of the Monarch machine and their connections and mode of operation need not therefore be described. Instead of being mounted on the carriage as in the first described construction the magazine for the stops 113 in the construction now being described is slidably mounted on the machine frame, being preferably supported by a trackway or bar 118 which is secured to the standards 104 by the same screws 119 which secure the upper guide rail. The outermost screw 119 of each pair only is used for this purpose, the bar 118 extending over and beyond the standards 104 and its ends being bent downward, as indicated at 118', providing ears which receive the outer screws 119. The stop magazine 120 which is preferably of the construction heretofore described is provided with slotted arms or lugs 121 which embrace the rod 118, a plate 122 being arranged at the forward side of said bar and secured to said lugs to maintain the magazine in place. A stop ejector 123 is operative by a key 124,

which is provided as in the prior construction, to eject the column stops 113 from the magazine on to the underlying stop bar. A retracting member 125 having a lug or retracting device proper 126 is also slidably mounted on the magazine and as in the prior construction is operative by a lever 127 having one arm pivotally connected at 128 with the retractor and provided at the other arm with an operating key 129.

As in the first described construction it will be understood that the relative movement between the stop supporting and stop receiving elements is alternative, that is, either the magazine may be moved lengthwise of the carriage and stop bar prior to a shifting or transferring of the column stops back and forth from one member to the other, or else the stop bar and carriage may be moved to effect this relative movement of the parts while the magazine is held from movement as by retaining or locking devices similar to those heretofore described.

In the present construction, as in the first described construction, while the proper amount of relative movement between the stop carrying and stop receiving elements may be facilitated by the employment of various scale devices, as in prior constructions, yet it is preferable to effect the adjustment by direct reference to the paper. To aid in this method of adjustment in the present instance, I provide a pointer 130 secured to the top of the magazine and extending forward and overlying the rear end portion of the usual paper table 131. The paper table may be provided with clips 132 which receive and retain the upper end portion of a work sheet 133 so that the pointer may cooperate directly with the headings on said sheet. It will be understood that the sheet may be fed around the platen in its usual way and its upper end portion inserted under the clips or in some cases preferably it may be applied directly to the clips from the front of the machine prior to the insertion in the regular way. In both constructions the mechanism is simplified and rendered compact by mounting the ejector and retractor keys and operating connections on the stop magazine.

Various changes besides those hereinbefore specified 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 and in tabulating mechanism, the combination of a paper supporting element or platen, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in the direction of the printing line on the platen, means for effecting a relative movement transversely

- of the printing line between the magazine and the paper supporting element, and means for ejecting said stop from said magazine on to said stop receiving element.
2. In a typewriting machine and in tabulating mechanism, the combination of a paper supporting element or platen, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in the direction of the printing line on the platen, means for affording movement of the magazine toward and from the paper supporting element, and means for ejecting said stop from said magazine on to said stop receiving element.
3. In a typewriting machine and in tabulating mechanism, the combination of a frame element, a carriage element, a plurality of tabulator stops, means for moving said stops to operative position, and means for moving said stops to inoperative position, both of said means being supported by said carriage element and both being normally ineffective on said tabulator stops.
4. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop, a magazine for said stop, a stop receiving element, said magazine and said element having a relative movement in the direction of the printing line on the platen, means for effecting a movement of the magazine transversely of the printing line, means for ejecting said stop from said magazine on to said stop receiving element, and means for retracting said stop from said stop receiving element to said magazine.
5. In a typewriting machine and in tabulating mechanism, the combination of a platen or paper carrying element, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in a direction lengthwise of the printing line on the platen, means for effecting a relative movement transversely of the printing line between the magazine and the paper carrying element, and means controlled by a key on said magazine for ejecting said stop from said magazine on to said stop receiving element.
6. In a typewriting machine and in tabulating mechanism, the combination of a platen or paper carrying device, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in a direction of the printing line on the platen, means for effecting a relative movement transversely of the printing line between the magazine and the paper carrying device, key controlled devices connected with said magazine for ejecting said stop from said magazine on to said element, and key controlled devices for retracting said stop to said magazine.
7. In a typewriting machine and in tabulating mechanism, the combination of a paper supporting element or platen, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in the direction of the printing line on the platen, means for affording movement of the magazine toward and from the paper supporting element, a key controlled slide connected with said magazine for ejecting said stop from said magazine on to said stop receiving element, and a key controlled retractor connected with said magazine for retracting said stop from said stop receiving element to said magazine.
8. In a typewriting machine and in tabulating mechanism, the combination of a paper supporting element or platen, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in the direction of the printing line on the platen, means for affording movement of the magazine toward and from the paper supporting element, and means controlled by a key connected to said magazine for ejecting said stop from said magazine on to said stop receiving element.
9. In a typewriting machine and in tabulating mechanism, the combination of a paper carrying element, a stop, a magazine for said stop, a stop receiving element, said magazine and said element being relatively movable in the direction of the printing line on the platen, means for affording movement of the magazine toward and from the paper carrying element, keys connected to said magazine, devices operative by certain of said keys for ejecting said stop from said magazine on to said stop receiving element, and devices operative by certain of said keys for retracting said stop from said stop receiving element to said magazine.
10. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording movement of the magazine lengthwise of the printing line, and means for ejecting said stop from said magazine on to said stop receiving element.
11. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording a movement of the magazine lengthwise of the printing line, and means for securing said stop on said stop receiving element.
12. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording movement of the magazine lengthwise of the printing line, means for ejecting said stop

from said magazine on to said stop receiving element, and means for retracting said stop from said element to said magazine.

13. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording movement of the magazine lengthwise of the printing line, and means controlled by a key connected to said magazine for ejecting said stop from said magazine on to said stop receiving element.

14. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording movement of the magazine lengthwise of the printing line, keys connected to said magazine, devices operative by certain of said keys for ejecting said stop from said magazine on to said stop receiving element, and devices operative by certain of said keys for retracting said stop from said element to said magazine.

15. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording movement of the magazine lengthwise of the printing line, means connected to said magazine for moving said stop from said magazine on to said stop receiving element, and means for restoring said stop to said magazine.

16. In a typewriting machine and in tabulating mechanism, the combination of a paper receiving element or platen, a stop magazine, a stop, a stop receiving element, means for affording movement of said magazine toward and away from said paper receiving element, means for affording movement of said magazine lengthwise of said stop receiving element, means for locking said magazine against such lengthwise movement, and means for ejecting said stop from said magazine on to said stop receiving element.

17. In a typewriting machine and in tabulating mechanism, the combination of a paper carrying device or platen, a stop magazine, a stop, a stop receiving element, means for affording movement of said magazine toward and away from said device, means for affording movement of said magazine lengthwise of said element, means for locking said magazine against such lengthwise movement, means for ejecting said stop from said magazine on to said stop receiving element, and means for retracting said stop from said element to said magazine.

18. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, a stop receiving element, means for affording move-

ment of said magazine toward and away from said platen, means for affording movement of said magazine lengthwise of said element, means for locking said magazine against such lengthwise movement, keys connected with said magazine, devices controlled by certain of said keys for ejecting said stop from said magazine on to said element, and devices operative by certain of said keys for retracting said stop from said element to said magazine.

19. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop receiving element, a stop magazine mounted to swing transversely of the printing line and to slide lengthwise of said line, a stop in said magazine, and means for ejecting said stop from said magazine on to said stop receiving element.

20. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop receiving element, a stop magazine mounted to swing transversely of the printing line and to slide lengthwise of said line, a stop in said magazine, means for ejecting said stop from said magazine on to said stop receiving element, and means for retracting said stop from said element to said magazine.

21. In a typewriting machine and in tabulating mechanism, the combination of a stop receiving element, a stop magazine slidable lengthwise of said element, a stop in said magazine, and means for ejecting said stop from said magazine on to said element.

22. In a typewriting machine and in tabulating mechanism, the combination of a stop receiving element, a stop magazine slidable lengthwise of said element, a stop in said magazine, stop ejecting means, and means for locking said magazine against sliding movement.

23. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine disposed normally at one side of the platen, means for affording movement of said magazine to the opposite side of the platen, a stop in said magazine, and means for ejecting said stop from said magazine.

24. In a typewriting machine and in tabulating mechanism, the combination of a stop receiving element, a stop magazine slidable lengthwise of said element, a stop in said magazine, stop ejecting means, and means for locking said magazine against sliding movement and for affording longitudinal movement of said element to vary its relationship with said magazine.

25. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop, a stop receiving element, means for ejecting said stop from said magazine on to said element, and means for at

will affording movement of said magazine lengthwise of said element and of said element lengthwise of said magazine.

32. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop, a stop receiving element, means for ejecting said stop from said magazine on to said element, means for at will affording movement of said magazine lengthwise of said element and of said element lengthwise of said magazine, and means for locking said magazine against such lengthwise movement.

27. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, stop ejecting devices, a stop receiving element, said magazine being slidable lengthwise of said platen, and means for retaining said magazine near one end of said platen out of working position.

28. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine, a stop, stop ejecting devices, a stop receiving element, said magazine being slidable lengthwise of said platen, means for retaining said magazine near one end of said platen out of working position, and means for retaining said magazine in working position.

29. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop in said magazine, stop retaining devices in said magazine, a stop receiving element, other stop retaining devices on said element, means for moving said magazine lengthwise of said element, and means for overcoming said stop retaining means and ejecting said stop from said magazine on to said element.

30. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop in said magazine, stop retaining devices in said magazine, a stop receiving element, other stop retaining devices on said element, means for moving said magazine lengthwise of said element, means for overcoming said stop retaining means and ejecting said stop from said magazine on to said element, and means for overcoming the stop retaining means on said element and retracting said stop from said element into said magazine and into control of the stop retaining devices in said magazine.

31. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a swinging bar mounted on said platen carrier, a stop magazine movable on said bar, means for fixing the position of said magazine on said bar, a stop in said magazine, stop ejecting devices, and a stop receiving element.

32. In a typewriting machine and in tabulating mechanism, the combination of a

platen, a platen carrier, a swinging bar mounted on said platen carrier, a stop magazine movable along said bar, a stop in said magazine, stop ejecting devices, and a stop receiving element.

33. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a swinging bar mounted on said platen carrier, a stop magazine on said bar, means for fixing the position of said magazine on said bar, means for retaining said swinging bar against swinging movements, a stop in said magazine, stop ejecting devices, and a stop receiving element.

34. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a swinging member pivoted thereon and swingable from a normal to an abnormal position and back again, a stop magazine movable on said member, means for retaining said magazine located on said member out of working position, and means for preventing the return movement of said member from abnormal to normal position when said magazine is in working position on said member.

35. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a swinging member pivoted thereon and swingable from a normal to an abnormal position and back again, a stop magazine movable on said member, means for retaining said magazine so located on said member as to be out of working position, and means for preventing the return movement of said member from abnormal to normal position when said magazine is in working position on said member, said preventive means comprising a retaining latch, and a cooperative engaging device, said retaining latch being controllable by said magazine.

36. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a swinging member pivoted thereon and swingable from a normal to an abnormal position and back again, a stop magazine movable on said member, means for retaining said magazine located on said member out of working position, and means for preventing the return movement of said member from abnormal to normal position when said magazine is in working position on said member, the preventive means comprising a spring pressed lever pivoted on said swinging member and a cooperative engaging device on the frame of the machine.

37. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a swinging member pivoted thereon and swingable from a normal to an abnormal position and back again, a stop magazine movable on said

member, means for retaining said magazine located on said member out of working position, and means for preventing the return movement of said member from abnormal to normal position when said magazine is in working position on said member, the preventive means comprising a spring pressed lever pivoted on said swinging member, and a cooperative engaging device on the frame of the machine, said magazine when moved to one side being effective to swing said lever on its pivot to disengage it from said engaging device.

38. In a typewriting machine and in tabulating mechanism, the combination of a carriage, a stop magazine containing one or more tabulator stops, a supporting frame on the carriage on which frame said magazine is mounted, stop ejecting and retracting devices, said frame being normally in relatively inaccessible position, and supporting means for said frame arranged to allow the frame to be moved to an abnormal and more accessible position to afford access to said stop ejecting and retracting means.

39. In a front-strike typewriting machine and in tabulating mechanism, the combination of a platen carrier, a frame mounted on said carrier and normally behind the platen, a stop magazine on said frame containing one or more tabulator stops, stop ejecting and retracting devices, and supporting means for said frame arranged to allow the frame to be elevated to facilitate the actuation of said devices from the front of the machine.

40. In a typewriting machine and in tabulating mechanism, the combination of a platen carrier, a stop magazine, and a frame mounted on said carrier and carrying said magazine, said frame being mounted to be swung toward the front of the machine when it is desired to eject stops from said magazine or to retract stops into said magazine.

41. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a stop magazine containing one or more tabulating stops, stop ejecting devices connected with said magazine, and means for bringing said magazine and the platen in such relationship that a stop or stops may be ejected from the magazine at a predetermined point or points by direct reference to the paper.

42. In a front-strike typewriting machine and in tabulating mechanism therefor, the combination of a platen carrier, a stop receiving bar mounted on said carrier and normally behind the platen, supporting means for said bar arranged to allow the bar to be elevated to facilitate the adjustment of tabulator stops thereon and the removal of the tabulator stops therefrom, a stop magazine containing one or more tab-

ulator stops and connected to be moved with said bar when the same is elevated and returned to normal position, and devices for ejecting said tabulator stops from said magazine on to said stop bar and for retracting said stops from said stop bar into said magazine.

43. In a typewriting machine and in tabulating mechanism, the combination of a carriage, a stop magazine containing one or more tabulator stops, a frame on which said magazine is mounted, stop ejecting and retracting devices connected with said magazine, a stop receiving element on said frame, and supporting means on the carriage for said frame, said means being arranged to allow the frame to be moved from a normal and relatively inaccessible position to an abnormal position where said devices may be readily actuated to move the tabulator stops back and forth between said magazine and said stop receiving element.

44. In a typewriting machine and in tabulating mechanism, the combination of a carriage, a stop magazine containing one or more tabulator stops, a carriage stop bar adapted to receive said stops, said stop bar being normally and relatively in accessible position, supporting means for said bar arranged to allow it to be moved to an abnormal and more accessible position, and devices for ejecting tabulator stops one at a time from said magazine on to said bar.

45. In a typewriting machine and in tabulating mechanism, the combination of a platen, a stop magazine containing one or more tabulator stops, ejecting devices, a carriage stop bar adapted to receive said stops and mounted behind said platen, and supporting means for said bar arranged to allow the bar to be elevated to facilitate the actuation of said devices to eject the stops from said magazine on to said bar.

46. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a supporting frame pivoted thereon, a stop magazine on said frame containing one or more tabulator stops, a stop bar on said frame, devices connected to said magazine for ejecting tabulator stops therefrom on to said stop bar, and means for affording movement of said frame to facilitate the ejection of said stops and their adjustment on said bar by direct reference to the paper on the platen.

47. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a supporting frame pivoted thereon, a stop magazine on said frame containing one or more tabulator stops, a stop bar on said frame, devices connected to said magazine for ejecting tabulator stops therefrom on to said stop bar, and means for affording movement of said frame to facilitate the ejection of said stops

and their adjustment on said bar by direct reference to the paper on the platen, said frame being normally arranged behind the platen.

5 48. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a supporting frame pivoted thereon, a stop magazine on said frame containing one or more tabulator stops, a stop bar on said frame, devices connected to said magazine for ejecting tabulator stops therefrom on to said stop bar, means for affording movement of said frame to facilitate the ejection of said stops and their adjustment on said bar by direct reference to the paper on the platen, said frame being normally arranged behind the platen, and retaining means for retaining said frame in normal and abnormal positions.

20 49. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a supporting frame pivoted thereon, a stop magazine on said frame containing one or more tabulator stops, a stop bar on said frame, devices connected to said magazine for ejecting tabulator stops therefrom on to said stop bar, means for affording movement of said frame relatively to the platen, said stop magazine being slidable on said frame lengthwise of said stop bar, and latching means for fixing the relationship between said magazine and said stop bar.

50 50. In a typewriting machine and in tabulating mechanism, the combination of a platen, a platen carrier, a supporting frame pivoted thereon, a stop magazine on said frame containing one or more tabulator stops, a stop bar on said frame, devices connected to said magazine for ejecting tabulator stops therefrom on to said stop bar, means for affording movement of said frame relatively to the platen, said stop magazine being movable on said frame, and means for fixing the relationship between said magazine and the frame of the machine so that the stop bar may travel with the carriage while the magazine is held from movement.

50 51. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a stop magazine on said carriage containing one or more tabulator stops, a stop receiving bar on said carriage, means for affording movement of said stop magazine relative to said bar, and means for fixing the relationship between said magazine and the frame of the machine during traveling movements of said carriage and of said bar.

60 52. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a stop magazine containing one or more tabulator stops, said maga-

zine being mounted on said carriage, stop 65 ejecting devices, a stop receiving element connected to travel with said carriage, and means for holding said magazine against traveling movements, enabling said carriage and said stop receiving element to travel 70 independently of said magazine.

53. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a stop magazine containing one or more tabulator stops, a stop receiving element, said magazine and said element being connected to travel with said carriage, devices for transferring the tabulator stop from the magazine to said element, devices for transferring the stop from 80 said element to said magazine, means for affording independent movement of said magazine on said carriage, and means for locking said magazine against movement, enabling said carriage and said element to 85 travel independently of said magazine.

54. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a stop magazine containing one or more tabulator stops, a stop receiving element, said magazine and said element being connected to travel with said carriage, devices for transferring the tabulator stop from the magazine to said element, devices for transferring the stop from said 95 element to said magazine, means for affording independent movement of said magazine on said carriage, and means for locking said magazine against movement, enabling said carriage and said element to travel independently of said magazine, said locking means comprising a bail pivotally supported on the frame of the machine and co-operative with a pin on said magazine.

55. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop receiving element, a slidable stop ejector, a key directly connected to said ejector, a stop retractor, and a lever pivotally connected with said retractor and 110 provided with a key.

56. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop receiving element, a slidable stop ejector, a key directly connected to 115 said ejector, a stop retracting device bifurcated to straddle said stop receiving element and engage with portions of said stops at opposite sides of said element, and a key lever pivotally connected with said retracting 120 device.

57. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine, a stop receiving element, a slidable stop ejector, a key directly connected 125 to said ejector, a stop retracting device bifurcated to straddle said stop receiving element and engage with portions of said stops

at opposite sides of said element, and a key controlled lever having a loose connection with said retractor.

58. In a typewriting machine and in tabulating mechanism, the combination of a traveling carriage, a stop magazine adapted to store one or more tabulator stops, a stop receiving element, said magazine and said element being relatively movable in the direction of the travel of the carriage, stop ejecting devices, and a key controlled stop retractor having a portion coöperative with said stops to limit the relative movement between said magazine and said element prior to a stop retracting operation.

59. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine for storing one or more tabulator stops, a stop receiving element, said magazine and said element being relatively movable, and stop ejecting and retracting devices for transferring the tabulator stops back and forth between said magazine and said element, said devices comprising means for positively determining the relative movement prior to a transferring operation.

60. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine for storing one or more tabulator stops, a stop receiving element, said magazine and said element being relatively movable, and stop ejecting and retracting devices for transferring the tabulator stops back and forth between said magazine and said element, said devices comprising means for positively determining the relative movement prior to a transferring operation, said means comprising a part coöperative with the column stops when in position on said element.

61. In a typewriting machine and in tabulating mechanism, the combination of a stop magazine for storing one or more tabulator stops, a stop receiving element, said magazine and said element being relatively movable, and stop ejecting and retracting devices for transferring the tabulator stops back and forth between said magazine and said element, said devices comprising means for positively determining the relative movement prior to a transferring operation, said means comprising a part coöperative with the column stops when in position on said element, said part being controlled by the key by which the stop retracting operation is effected.

62. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, two relatively movable parts each adapted to support said stop independently of the other at different times, means for shifting said stop from one part to the other, and means for positively determining the extent of relative movement between said parts prior to the shifting operation.

63. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a tabulator stop support provided with a stop entrance, a stop bar, said stop bar and said stop support being relatively movable, means for moving said tabulator stop from said support to said stop bar, and a key controlled retractor for retracting said stop from said stop bar to said support, said retractor being operative first to coöperate with said stop to positively limit the relative movement between said support and said stop bar, thus bringing the stop in register with the entrance to said support and being subsequently operative to retract said stop through said entrance.

64. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a stop magazine provided with an entrance slot, a stop receiving element, said magazine and said element being relatively movable, key controlled devices for shifting said stop back and forth between said magazine and said element, and means controlled by certain of said devices for coöperating with any stop prior to its retraction so as positively to limit and determine the relative movement between said magazine and said element when said stop has been brought into register with the entrance slot in said magazine.

65. In a typewriting machine and in tabulating mechanism, the combination of a carriage, a stop bar, a tabulator stop, means carried by the carriage for moving said tabulator stop lengthwise of said stop bar, and means for adjusting said tabulator stop to said stop bar at any letter space position.

66. In a typewriting machine and in tabulating mechanism, the combination of a stop bar, a tabulator stop, means for moving said tabulator stop lengthwise of said stop bar, and means for adjusting said tabulator stop to said stop bar, said last mentioned means being separate from said tabulator stop.

67. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a stop magazine element, a stop receiving element, a key for moving said stop from one of said stop magazine and stop receiving elements to the other, said key being carried by the stop magazine.

68. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a stop magazine, a stop receiving element, a key for moving said stop from the stop magazine to said stop receiving element, and means for restoring said tabulator stop to the magazine, said key and restoring means being carried by the stop magazine.

69. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a stop magazine, a stop receiving element, a key for moving said stop

from the stop magazine to said stop receiving element, and a key for retracting said tabulator stop from said stop receiving element to said stop magazine, said keys being
5 carried by the stop magazine.

70. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a stop magazine element, a stop receiving element, means for shifting said
10 tabulator stop from one of said stop magazine and stop receiving elements to the other, said means being normally in an inaccessible position, and means for shifting said means to an accessible position.

71. In a typewriting machine and in tabulating mechanism, the combination of a tabulator stop, a stop magazine, a stop receiving element, a key for moving said stop
15 from said magazine to said stop receiving element, a key for retracting said stop from said stop receiving element to said stop magazine, said keys being normally in an inaccessible position, and means for shifting said keys to an accessible position.

72. In a typewriting machine and in tabulating mechanism, the combination of a movable stop magazine, a stop, an element having stop receiving notches in the length
25 thereof, means for moving said stop from said stop magazine to said element, and means for positioning said stop magazine with respect to said element so as to bring the stop to be ejected in exact register with any notch on the said element.

73. In a typewriting machine and in tabulating mechanism, the combination of a movable stop magazine, a stop, a pointer on said
30 magazine, a stop receiving element, and means for shifting said stop to said stop receiving element.

74. In a typewriting machine and in tabulating mechanism, the combination of a carriage, a stop carrier, a stop normally in in-
operative position, a stop bar, said stop being shiftable lengthwise of said stop bar, 45 and a key carried by the carriage for moving said stop to operative position on the stop bar.

75. In a typewriting machine, the combination of a tabulator stop, a stop support, 50 a stop receiving element, means for adjusting said stop to and at any letter space position on said stop receiving element, a co-operative stop, and means for moving said tabulator stop after it has been adjusted to
55 said stop receiving element in a plane at an angle to said stop receiving element to a position where it may co-act with said co-operative stop.

76. In a typewriting machine, the combination of a stop magazine element, stops, a
60 stop receiving element, means for shifting said stops from one of said stop magazine and stop receiving elements to the other, said stop receiving element being swingable
65 to an abnormal position where said stops can be shifted thereto and swingable back to a normal position to carry the stops to operative position.

Signed at the borough of Manhattan, city
70 of New York, in the county of New York, and State of New York, this 4th day of May, A. D. 1912.

JOHN WALDHEIM.

Witnesses:

E. M. WELLS,
M. F. HANNWEBER.