Dec. 9, 1941. L. B. HILL 2,265,483

TYPEWRITING MACHINE

Filed June 28, 1940

Fig. 1.

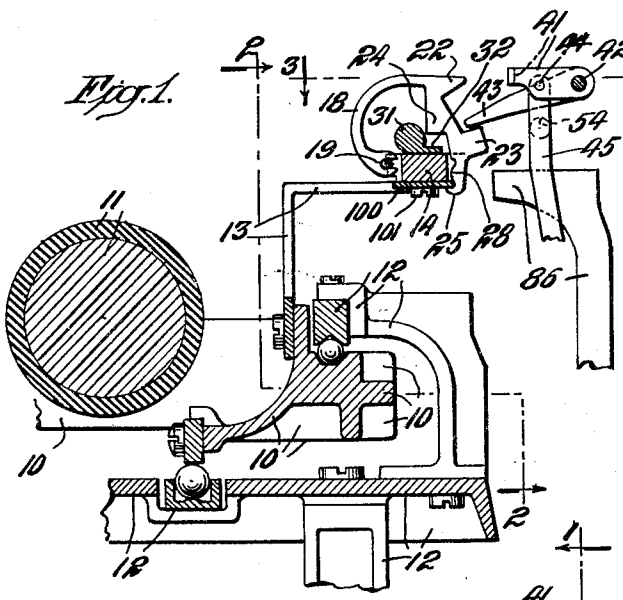


Fig. 4.

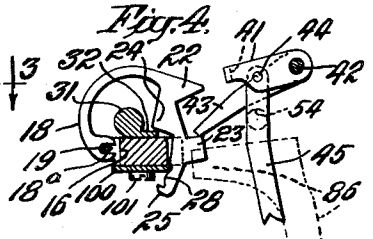


Fig. 5.

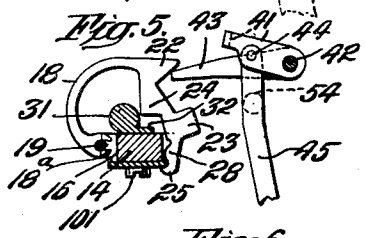


Fig. 6.

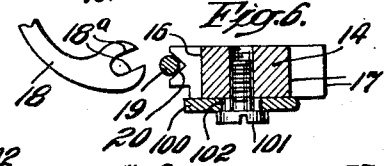


Fig. 2.

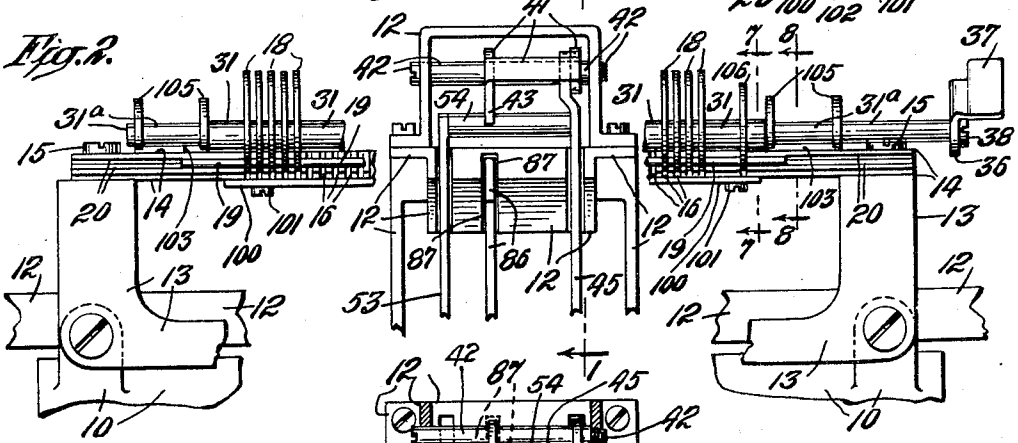


Fig. 3.

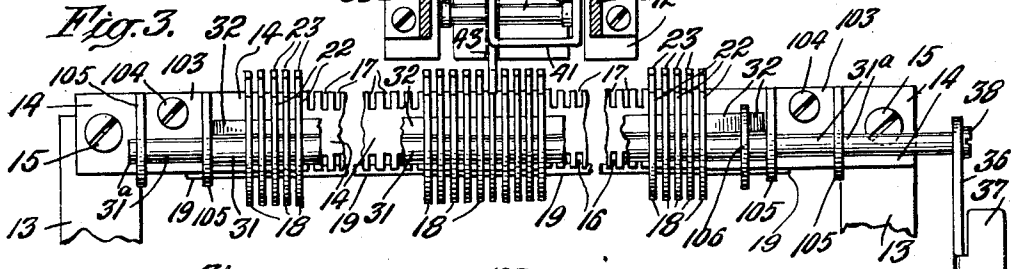


Fig. 7.

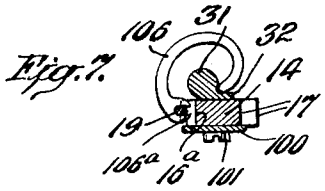
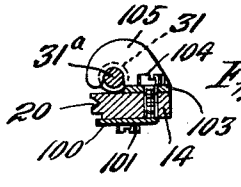


Fig. 8.



INVENTOR

Laurence B. Hill

BY

ATTORNEY

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TYPEWRITING MACHINE

Laurence B. Hill, Syracuse, N. Y., assignor to L. C. Smith & Corona Typewriters, Inc., Syracuse, N. Y., a corporation of New York

Application June 28, 1940, Serial No. 342,863

14 Claims. (Cl. 197—179)

The invention relates to improvements in typewriting machines, and more particularly to the tabulating mechanism of such machines.

The principal object of the invention is to provide in a typewriting or like machine an improved tabulating mechanism of the key-set type which is of simple and inexpensive construction.

Other objects are to provide in a key-set tabulating mechanism settable and unsettable column stops of simplified and improved construction, to provide an improved universal unsetting or clearing means for the stops and an improved compact assembly of said clearing means and column stops, to provide an improved mounting for said stops, and to provide an improved assembly of the universal clearing means and the settable stops and a stop-carrying bar, the stops and their mounting being so constructed that the stops are readily detachable and attachable individually and the stops are self-held in assembled position and are self-latched releasably in their set and unset positions.

A further object of the invention is to improve and simplify the key-set tabulating mechanism disclosed in U. S. Patent No. 2,099,011 issued November 16, 1937, to Carl Gabrielson et al., and particularly to provide therein a compact assembly of the column stop bar, column stops and universal unsetting means for the column stops in which the several parts may be readily assembled and disassembled.

To the foregoing and other ends which will hereinafter appear, the invention consists of the improved devices, features of construction, and arrangements and combinations of parts and devices hereinafter particularly described and particularly pointed out in the appended claims.

In the accompanying drawing illustrating the preferred embodiment of the invention,

Fig. 1 is a fragmentary vertical longitudinal sectional view of the improved machine taken on the line 1—1 of Fig. 2;

Fig. 2 is a fragmentary transverse sectional view of the machine taken approximately on the line 2—2 of Fig. 1, certain parts being broken away for clarity of illustration of the stop-setting means;

Fig. 3 is a fragmentary top plan view partly in section approximately on the line 3—3 of Fig. 1;

Figs. 4 and 5 are detail sectional views similar to Fig. 1 illustrating, respectively, the setting of a selected column stop individually in operative position, and the unsetting of a selected set column stop individually into inoperative or cleared position;

Fig. 6 is a detail view showing how any column stop may be detached from and attached to the column stop bar and the column stop pivot wire;

Fig. 7 is a detail sectional view on the line 7—7 of Fig. 2; and

Fig. 8 is a detail sectional view on the line 8—8 of Fig. 2.

The invention has been shown embodied in an L. C. Smith typewriting machine having a tabulating mechanism constructed as shown in the patent above referred to except as said mechanism is modified by the present improvements. Only so much of the known machine as is necessary for a clear understanding of the present invention has been shown and will be described.

The platen carriage 10 of the machine has the usual roller platen 11 journalled therein and is mounted as usual on the main framework 12 of the machine to travel back and forth transversely of the machine, and is letter-spaced from right to left under control of the usual carriage escapement mechanism (not shown). The carriage 10 is releasable from control of the carriage escapement mechanism by the usual escapement-releasing or carriage-releasing mechanism (not shown) for tabulating jump or running movement of the carriage from right to left in the known manner. Fixedly held to the carriage adjacent opposite ends of the carriage are two brackets 13 which rigidly support the opposite ends of a column stop carrying bar 14 which extends horizontally transversely of the machine, said stop bar being fixedly held at each of its ends to the adjacent bracket 13 by a screw 15.

The parts heretofore described are constructed as described in the prior patent above mentioned, except for simplification of the structure of brackets 13. The improvements made by the present invention in the tabulating mechanism of the machine of said prior patent will now be described.

The column stop carrying bar 14 is of oblong cross-section and is held to the brackets 13 with its two wider faces disposed in superposed horizontal planes. This bar is slotted inward from top to bottom thereof along both its front and rear edges at letter-space intervals to provide a row of column stop guiding and spacing slots 16 along the front edge of the bar and a row of column stop guiding and spacing slots 17 along the rear edge of the bar. Each slot 16 is directly opposite a different one of the slots 17 and the slots of each row are spaced a letter space apart, there being one slot 16 and an opposed slot 17 for each letter-space position of the platen carriage.

Settable column stops 18 of novel construction, one for each letter-space position of the carriage, are rockably mounted on the stop bar 14, certain of the stops 18 being omitted from the drawing for clarity of illustration. These novel stops have also a novel mounting on a supporting means including the bar, and have a

novel coaction with their novel mounting means to detachably hold themselves to the mounting means and to arrest and detain each stop in either of two positions relatively to the bar, one position being the operative or set position of the stop and the other being the inoperative unset or cleared position of the stop.

The improved stops are pivotally held to a straight pivot wire 19 which, in the improved construction, is insertible in and removable from a groove 20, which groove is of V-shape in cross-section and extends longitudinally of the stop bar 14 and is formed in the front vertical edge face of the bar. With the improved stop bar, the wire 19 may be moved transversely of the wire or fore-and-aft of the machine bodily for disengaging the wire from and engaging it in the groove. Ready engagement of the pivot wire with the bar and disengagement of the wire from the bar is thus provided for and also the expense of cutting an undercut wire-holding groove of key-hole cross-section is avoided. The depth of groove 20 transversely of the bar 14 is substantially less than that of slots 16.

The improved stops are adapted to hold the pivot wire 19 in the groove 20 as hereinafter explained, and each of the improved stops is of substantially C-shape in side elevation and consists of a single piece of sheet metal. The stops are so formed as to be readily stamped in quantity by inexpensive dies from a sheet of metal, and are formed of sheet metal which is slightly resilient or springy, and each stop is so formed as to be slightly resiliently expansible and contractible edgewise of the stop. The improved stops are adapted as hereinafter described to hold themselves and the pivot wire 19 assembled with the stop-carrying means for positively limited pivotal setting and unsetting movements of the stops about the pivot wire and prevent accidental disconnection of any stop and of the pivot wire from the stop bar, while permitting ready assembly of the wire and stops with the bar and disassembly of the stops and wire from the bar, and permitting individual detachment and attachment of any stop from and to the wire and the remainder of the stop-carrying means. The improved springy one-piece sheet metal stops include integral parts thereof which are coactive with the stop-carrying means as hereinafter explained to positively arrest pivotal movement of each stop in a set or operative position and in an unset or inoperative "cleared" position, as well as to prevent accidental disassembly of the stops and pivot wire from the stop-carrying means. The improved stops are also formed with integral means coactive with a universal stop-unsetting or clearing device, and said stops are provided with integral means coactive with a device for individually setting and unsetting the stops, the last-mentioned one of which two devices may be, and preferably is, identical with the device provided in the machine of the prior patent above referred to for individually setting and unsetting any selected column stop. The improved stops are also provided with integral means coactive when the stops are set with a suitable counter stop on the machine frame, which frame-carried counter stop may be, and preferably is, identical with the frame stop of the machine of said prior patent and is similarly controlled.

Each of the improved one-piece sheet metal stops 18 is constructed as follows in the preferred embodiment shown in the drawing. Each stop 18 consists of a substantially C-shaped piece of sheet metal which is resilient edgewise of the stop and of the sheet of metal. Adjacent one end of the stop is formed a pivot bearing in the form of a slot 18ª which is open at one end. The slot 18ª is wide enough for passage of wire 19 through the open end of the slot to the closed end of the slot, and the open end of said slot 18ª faces approximately toward the opposite or free end of the C-shaped stop 18. Each stop is formed at its outer edge with two integral projections or lugs 22 and 23 spaced apart along the stop and extending outwardly substantially radially to the pivotal axis of the stop. At its inner edge each stop 18 is formed with two integral projections or lugs 24 and 25 extending inwardly substantially toward the pivotal axis of the stop, projection 25 being formed at the free end of the stop. Between projections 24 and 25 and close to projection 25, each stop 18 is formed at its inner edge with a stop-latching projection or cam hump 28 which projects inwardly a lesser distance than projections 24 and 25.

A flat metal latching and retaining bar 100 for all of the column stops 18 is held flatwise against the under face of the stop-carrying bar 14 by clamping screws 101 threaded into the bar 14. Bar 100 is provided with slots 102 extending transversely of the bar, and the shanks of the screws 101 extend through these slots to permit bar 100 to be clamped to bar 14 in different fore-and-aft adjusted positions of the bar 100 with the rear edge of bar 100 protruding rearward slightly beyond the root ends or foremost ends of the slots 17, but not to the rear or open ends of slots 17, as shown. The rear edge of bar 100 is preferably rounded as shown most clearly in Fig. 6. Bar 100 extends longitudinally of bar 14 past all stops of the set of column stops 18, and the cam hump 28 of each stop 18 is adapted to snap above and below said edge to releasably lock the stop in unset and set positions respectively. Projection 25 of each stop 18 is adapted to engage under said bar 100 to arrest unsetting movement of the stop.

A novel universal unsetting device, operable to simultaneously unset or move to cleared inoperative position all stops 18 which may be set at any time, is detachably mounted on the top of the stop-carrying bar 14 and extends through the entire set of stops 18 which straddle both said universal unsetting device and the bar 14.

The universal unsetting device comprises a rock shaft 31 of circular cross-section having reduced coaxial bearing end portions 31ª to the outer end of one of which is removably fixed at 38 a forwardly extending operating rock arm 36 formed with a key or finger-piece 37, said arm and key being located at the right-hand side of the carriage outwardly beyond the adjacent bracket 13. Between its reduced bearing end portions the rock shaft 31 is formed with an integral flat fin 32 which projects rearwardly from the shaft and extends past all of the stops 18 and normally lies flatwise against the top face of bar 14. Fin 32 is substantially tangential to the periphery of the main part of the rock shaft 31, and said shaft and its fin overlie the unslotted medial portion of the bar 14.

To detachably and rockably hold the rock shaft 31 to the bar 14, a pair of sheet metal bearing brackets 103 are detachably held to the top face of bar 14 by screws 104. Each bracket has a pair of integral upstanding forwardly extending hook-shaped arms 105 hooked over the adjacent reduced bearing end portion 31ª of shaft 31 to

hold the main portion of said shaft rockably to and against the top face of bar 14 with fin 32 underlying the projections 24 of the several column stops, which projections are engageable with the top face of the fin to positively arrest setting movement of stops 18. The innermost arms 105 of the brackets 103 abut the ends of the main portion of shaft 31 to hold the shaft against axial movement, as is most clearly shown in Figs. 2 and 3.

To restore and normally yieldingly hold the universal stop unsetter 31—32 in the normal position thereof above described and shown in the drawing, there is provided a novel self-holding but readily detachable return spring 106 which, like the column stops, is stamped of substantially C-shape from resilient sheet metal for edgewise resilient expansion and contraction of the spring transversely of the shaft 31 and bar 14. This C-shaped spring 106 has an open-ended pivot slot 106a in one end thereof similar to the slot 18a in each of the column stops 18 for detachable pivotal engagement of the spring 106 with the stop pivot wire 19. The stop bar 14 is provided with a slot 16a (Fig. 7) similar to slots 16 for receiving and guiding the pivoted slotted end of spring 106. The spring 106 is arched over the shaft 31 and its free end is engaged with and yieldingly presses constantly against shaft 31 and fin 32 above the fin substantially at the juncture of the fin with said shaft. Spring 106 is thus detachably and resiliently self-held in an assembled position in which it normally yieldingly holds the universal stop unsetter in the normal idle position of the latter shown in the drawing.

From the foregoing it will be observed that the column stops 18 and spring 106 are resiliently and detachably self-held in operative relation with the supporting means therefor, and that any stop 18, or the spring 106, may be readily detached from the supporting means by first abnormally resiliently expanding the desired stop or, in the case of spring 106, by first abnormally expanding the spring, and then pulling either the stop or the spring (as the case may be) edgewise from its operative position.

It will also be obvious from the foregoing that the common pivot wire 19 for the stops 18 and spring 106 is releasably held in the groove 20 by the contractive spring pressures constantly exerted by the stops and by said spring 106 while any of said stops and said spring are operatively assembled on the stop and spring-supporting means. In all operative working positions of spring 106 and of any stop 18 the opposite ends of the spring or of the stop, as the case may be, are preferably spring-urged substantially toward each other by the inherent resilience of the spring or of the stop, as the case may be. In other words, in all working positions both spring 106 and all stops 18 are preferably at least slightly resiliently expanded and tend constantly to contract. Each stop 18 preferably when assembled on its supporting means constantly exerts substantially opposite pressure on wire 19 and bar 100.

The spacing of the projections 24, 25 and 28 of each stop 18 are such, as shown, that upon rocking of any stop 18 from its unset or cleared inoperative position of Figs. 1, 2, 3 and 5 to its set or operative position of Fig. 4, the cam hump or latching projection 28 will be forced down past the rear edge of bar 100 and engage under the latter as projection 24 engages the top face of fin 32 of the universal unsetter 31—32 to positively arrest the pivotal setting movement of the stop 18. Upon rocking of any stop 18 from its set position to its unset position, the cam hump 28 will be forced upward past the rear edge of bar 100 and engage over the latter as projection 25 engages the under face of the bar 100 adjacent the rear edge of bar 100 to positively arrest unsetting pivotal movement of the stop 18.

It will also be obvious that by pressing down on the key or finger-piece 37 the fin 32 of the universal unsetter 31—32 may be rocked upward and forward to unset any one or more of the stops 18 which may be set at the time of depression of the finger-piece, said fin in this operation thrusting against the projection 24 of any set stop to move the stop to unset position.

By abnormally resiliently expanding any stop 18 it may be pulled off its supporting means. By abnormally resiliently expanding spring 106 it may be pulled off its supporting means.

Each stop 18 is arched over bar 14 and universal unsetter 31—32, and projections 22 and 23 of each stop extend generally rearwardly from the downwardly extending rear portion of the C-shaped stop for coaction with an individual stop setter and unsetter 41—43 by means of which stops 18 may be individually set and unset selectively. This individual stop-setting and unsetting means is only partly shown and described herein as it is the same as that disclosed in the prior patent above referred to. So much of said means as is necessary to full understanding of the advantages of the present invention and its relation to the new features, is shown and will be now briefly described.

Said last-mentioned means comprises the individual stop-setter and unsetter 41—43 rockable by key-applied force either to the position shown in Fig. 4 or to the position shown in Fig. 5 from the normal idle intermediate position of said setter and unsetter shown in Figs. 1, 2 and 3, and automatically returned to said last-mentioned position from either of the first two mentioned positions upon release of the key-applied force. The setter and unsetter comprises a yoke 41 having its two legs pivoted at their rear ends on a fixed pin 42, one leg of said yoke being formed with a stop-setting and unsetting finger 43. Pin 42 extends horizontally transversely of the machine and is fixed in the main frame 12 of the machine above and behind the stop bar 14.

The key-controlled means for so shifting the stop setter and unsetter 41—43 from, and restoring it to, idle position includes a vertically reciprocable link 45 connected at 44 to the right-hand leg of yoke 41, and a vertically reciprocable link 53 connected to link 45 by a cross-pin or cross-rod 54 rigid with both links. Shifting of the link device 45—53—54 upward by key-applied force from a normal position thereof to which it is automatically restored upon release of key force rocks the stop setter and unsetter from normal position to that of Fig. 5 to unset a single set stop 18 aligned with the finger 43, the finger thrusting against projection 22 of said stop to unset the stop. Shifting of the link device downward by key-applied force from its normal idle position to which it is restored upon release of the applied key force rocks the stop setter and unsetter from its normal idle position to that of Fig. 4 to set a single stop 18 aligned with finger 43, the finger thrusting against projection 23 of the stop to set the stop.

Restoration of the rigid link device 45—53—54 to normal position restores the stop setter and unsetter 41—43 to normal position.

The finger 43 of the device 41—43, which swings the stops individually about their pivotal axis to set or unset a single selected stop at a time, extends forwardly from the yoke 41 and is located substantially in the medial vertical longitudinal plane of the machine. The thickness of finger 43 transversely of the machine is substantially equal to that of each column stop 18 and in each letter-space position of travel of the carriage a different one of the stops 18 is located in the same vertical fore-and-aft plane through the machine in which the finger 43 lies. The finger 43 normally projects in between the projections 22 and 23 of any stop 18 aligned therewith. The spacing apart of the two projections 22 and 23 of each stop 18 is such that during travel of the carriage, while the stop setter and unsetter 41—43 is in idle or neutral position, the projections 22 of all stops 18 will pass above the finger 43 and the projections 23 of all stops 18 will pass below finger 43 whether the stops be set or unset. The spacing apart of the projections 22 and 23 of each stop 18 is also such that, when said stop is registered with finger 43, downward swinging of the finger from idle position will set that stop by thrust of the finger on projection 23 and upward swinging of the finger from idle position will unset the stop by thrust of the finger against projection 22, but return movement of the finger to idle position will not shift the stop.

The projections 23 of the column stops 18 also serve as abutment elements of said stops for coaction with a suitable settable counter stop 86 on the machine frame in tabulating operations. The counter stop 86 shown, and the means for setting it, correspond to those disclosed in the prior patent above mentioned. This counter stop 86 is located substantially midway the sides of the machine and is guided at its upper end adjacent the stop bar 14 in a fore-and-aft extending slot 87 in a part of the main frame 12. Suitable key-controlled means as set out in said prior patent are provided for releasing the carriage for a tabulating jump from right to left and shifting the counter stop 86 from a normal idle position of said stop shown in Figs. 1 and 2 to an active position of said stop 86 shown in Fig. 4.

When counter stop 86 is in idle position stops 18 will freely pass it whether stops 18 are set or unset. When counter stop 86 is in active position all unset ones of the stops 18 will pass it but no set stop 18 will pass it. The projections 23 of set stops 18 will collide sidewise with the active or set counter stop 86 in successive tabulating jumps or runs of the carriage. The projection 23 of each set stop 18 is substantially directly behind and close to the stop bar 14 so that it will be firmly supported laterally by the side walls of slot 17 in which the set stop 18 is engaged.

What I claim is:

1. A typewriting or like machine of the kind having a platen carriage supported for travel back and forth in a path extending transversely of the machine, and a tabulating mechanism for controlling tabulating movements of said carriage, characterized in that said tabulating mechanism comprises supporting means for a set of column stops, and a set of one-piece sheet metal column stops separably straddling said supporting means and separably pivotally held to said supporting means for individual setting and unsetting of the stops and individual separation and attachment of any stop respectively from and to the supporting means, each stop being rockable about its pivotal axis to set said stop and being resiliently contractible and expansible transversely of the path of travel of the carriage and normally resiliently gripping said supporting means, and each stop having integral spaced projections for positively limiting pivotal setting and unsetting movements of the stop, one of which projections of each stop is engageable with the supporting means to prevent accidental disassembly of the stop from the supporting means and is disengageable from the supporting means by intentional abnormal resilient expansion of the stop to permit detachment of the stop from the supporting means.

2. A typewriting or like machine as claimed in claim 1, characterized in that each column stop is of substantially C-shape and has at one of its ends a pivot-bearing aperture which is open at one side for separable engagement of the stop edgewisely thereof with a stop pivot member.

3. A typewriting or like machine of the kind having a platen carriage supported for travel back and forth, and a tabulating mechanism for controlling tabulating movements of said carriage, wherein said tabulating mechanism comprises a supporting means for a set of column stops, a universal unsetting or clearing device simultaneously operable upon all set column stops to unset or shift said stops to a cleared inoperative position, and a set of column stops each of which straddles said supporting means and said universal unsetting device and is pivotally mounted on said supporting means for opposite rocking of the stops individually transversely of the supporting means and universal unsetting device to set and unset the stops.

4. A typewriting or like machine as claimed in claim 3, characterized in that each column stop is individually resiliently self-held to the supporting means for positively limited setting and unsetting movements, is individually resiliently self-held to the supporting means against accidental detachment therefrom, and has separated ends resiliently abnormally spreadable for intentional detachment of the stop from the supporting means.

5. A typewriting or like machine as claimed in claim 3, characterized in that the universal unsetting device for the column stops is detachably and rockably mounted on the column stop supporting means for rocking of said device about an axis parallel with the pivotal axes of the column stops.

6. A typewriting or like machine of the kind having a platen carriage supported for travel back and forth, and a key-set tabulating mechanism for controlling tabulating movements of the carriage, wherein said key-set tabulating mechanism comprises stop-carrying means mounted on the carriage to travel therewith, a row of column stops, one column stop for each letter-space position of the carriage, the column stops being spaced along the path of travel of the carriage and pivotally held to said stop-carrying means for rocking of the stops individually transversely of said path into set and unset positions, each column stop rockably straddling the stop-carrying means and having a pair of spaced internal projections, and each stop also having a pair of

spaced external projections for alternate engagement by an individual stop setter and unsetter to set and unset the stop, and a universal stop unsetter mounted on the carriage and straddled by all of the column stops and operable upon one of the internal projections of any set column stop to unset the latter, said last-mentioned internal stop projection of each column stop being engageable with the universal unsetter to limit setting movement of the column stop and the remaining internal projection of each column stop to limit unsetting movement of the column stop. being engageable with the stop-carrying means

7. A typewriting or like machine as claimed in claim 6, wherein each column stop releasably straddles and resiliently grips the stop-carrying means and is individually releasably pivotally held to the stop-carrying means, each stop being detachable upon intentional abnormal resilient expansion of the stop.

8. A typewriting or like machine as claimed in claim 6, wherein each stop is formed of a single piece of metal, is of arched form in side view and is edgewisely resiliently expansible and contractible.

9. A typewriting or like machine as claimed in claim 6, wherein each stop is of arched form in side view, is edgewisely resiliently expansible and contractible, and is slotted inward from one edge adjacent one end to provide an open pivot bearing, and wherein the stop-carrying means includes a common pivot wire for all the column stops, which wire extends through the pivot bearing slots of the several column stops.

10. A tabulating mechanism, comprising a column stop assembly including, in combination, a column stop carrying bar having along each of two opposite longitudinal edges thereof a row of inwardly extending slots, a set of arched column stops inherently resiliently expansible and contractible straddling said bar and each engaged in two opposite ones of the slots in said bar, a universal unsetter for the column stops straddled by all the column stops and shiftably mounted on said bar at one face of the bar between the two rows of slots for movement to simultaneously unset any set column stops, and a pivot wire for the column stops extending across the slots of one of said rows of slots and held to said bar.

11. A tabulating mechanism as claimed in claim 10, wherein each column stop is formed adjacent one end with a pivot slot open at one end and detachably embracing the pivot wire, each column stop has two inwardly extending projections engageable respectively with the universal unsetter and the opposite face of the stop-carrying bar to limit setting and unsetting rocking movements of the column stops about the pivot wire, there is held to said opposite face of the stop-carrying bar a column stop latching bar which is adjustable transversely of the bar and overlaps the row of slots through which the free ends of the column stops extend, and each column stop has a cam hump between its said two inwardly extending projections adapted to snap over the adjacent edge of said latch bar to releasably latch the column stop in set and unset positions.

12. A tabulating mechanism comprising a column stop carrying bar, a pivot wire extending longitudinally of said bar, a set of column stops rockable about said wire to set and unset the stops and each having a pivot slot open at one end to receive said wire, a universal unsetter for said stops comprising a rock shaft held to one face of said bar and formed with a longitudinal stop-unsetting fin substantially tangential to said shaft and normally abutting said bar face, a finger piece connected to said shaft for rocking the shaft, and an arched sheet metal return spring for said unsetter having a pivot slot open at one end to receive said pivot wire, said spring having its free end engaged against the fin at the junction of the fin and rock shaft to normally urge the fin against the bar, each column stop having a shoulder overhanging the fin for engagement by the fin upon rocking of the shaft by the finger piece to unset all set ones of the column stops.

13. In a typewriting machine, the combination of a column stop bar provided at each of two opposite edges thereof with a row of inwardly extending slots, a set of resiliently expansible one-piece column stops of arched form in side view to releasably straddle and grip the column stop bar, each stop having portions engaged in one slot of each row of slots, and a pivot wire for the set of stops extending across all the slots of one of said rows of slots, each of the stops having an open slot pivotal engagement with the said wire and a shiftable and releasable engagement with the bar adjacent the opposite slotted edge of the bar by which the stops are releasably held to the pivot wire and to the bar and the stops may be rocked about the pivot wire for setting and unsetting the stops, said stops being resiliently expansible to individually free the stops from the bar and detach them from the pivot wire.

14. In a key set tabulating mechanism, a rockably settable and unsettable column stop formed of a single narrow sheet metal strip inherently springy and edgewisely resiliently expansible, said stop being of substantially arched form in side view to straddle a stop-carrying bar, one end of said stop being formed with a pivot-bearing slot which is at the inner edge of the stop and opens toward the other end of the stop to receive a pivot wire, the other end of the stop having inwardly extending spaced projections adapted to engage the stop-carrying bar for positively limiting the pivotal setting and unsetting movement of the stop, one of which projections is engageable with the stop-carrying bar to prevent accidental disassembly of the stop from the stop-carrying bar, said stop being resiliently expansible between its ends for attachment to and detachment from the stop-carrying bar and the pivot wire, and resiliently contractible to exert substantially opposed pressures on the pivot wire and the stop-carrying bar while assembled on the bar in straddling position to hold the stop connected to the pivot wire and to the bar and to prevent accidental disassembly of the stop from the bar and to yieldingly hold the stop in its set and unset positions, said stop having projections for coaction with stop-setting and unsetting means and for engagement with a counter-stop.

LAURENCE B. HILL.