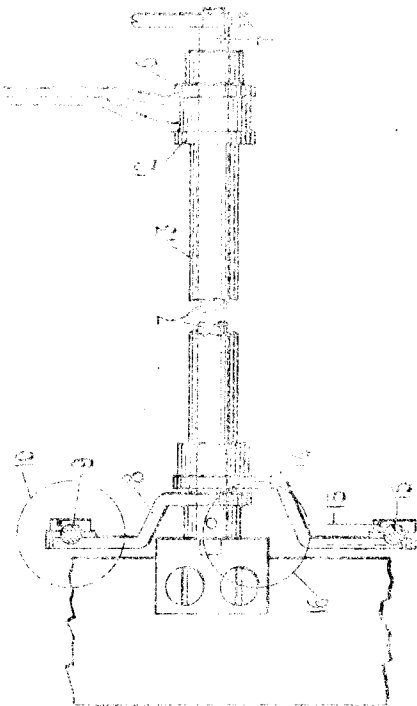
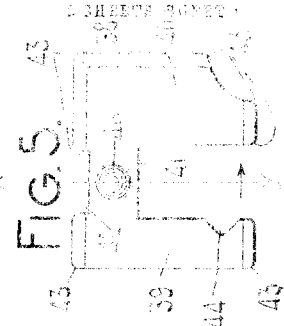
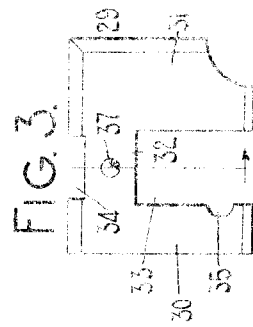
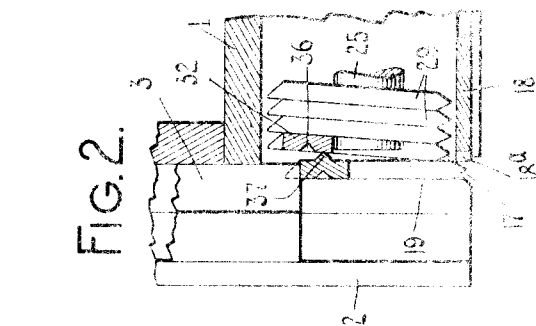


1,060,592.



L. Nelson

END

Arthur, P. M.

Aug 9 - 1904

HIS ATTORNEY

1,060,592.

Patented May 6, 1913.

2 SHEETS—SHEET 2.

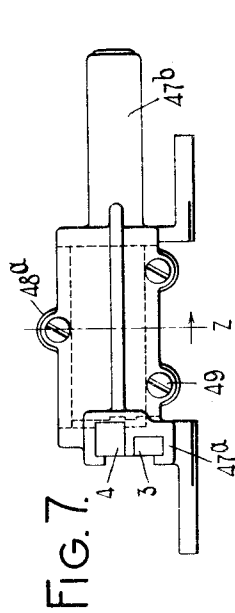


FIG. 7.

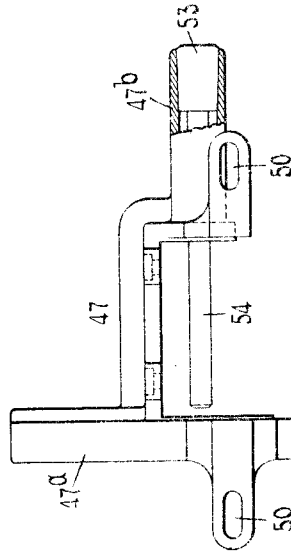


FIG. 9.

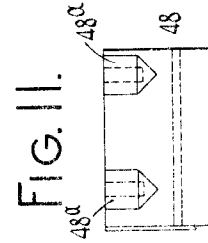


FIG. 11.

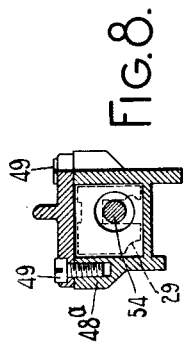


FIG. 8.

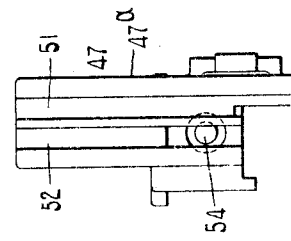


FIG. 10.

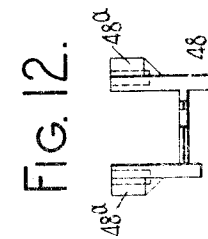


FIG. 12.

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UNITED STATES PATENT OFFICE.

WALTER L. GALE, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,060,592.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed November 25, 1912. Serial No. 733,373.

To all whom it may concern:

Be it known that I, WALTER L. GALE, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to tabulator stops employed in tabulating mechanism for type-writing machines and particularly to stops used in connection with stop holders, containers or magazines.

The main object of the invention is to provide a stop construction which insures that the stop or stops will be retained in position on or in the holder or magazine prior to the transfer of the stop or stops to predetermined positions or places on a stop receiving element or stop bar.

More specifically the object of the invention is to provide each stop with means which interlock with corresponding means on the associate stops when the stops are arranged and maintained face to face, such means effecting an interseating of the stops so that the stops are self-retained on the holder, thus enabling special mechanism heretofore employed for retaining the stops in position or place to be dispensed with.

To the above and other 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.

In the accompanying drawings illustrating the practical application of my invention, Figure 1 is a skeletonized fragmentary front view partly in section of a stop holder or magazine containing a plurality of tabulator stops, of ejecting and retracting mechanism for said stops, and a stop bar or stop receiving element, the longitudinal section through the magazine being taken on a vertical plane passing centrally there-through. Fig. 2 is a fragmentary view on a larger scale, showing the position of the parts just after the ejection of the stop has begun. Fig. 3 is an enlarged face view of one of the tabulator stops detached. Fig. 4 is a sectional view showing two of the stops interseated, the section through each stop corresponding with that designated by the dotted line *x* in Fig. 3 and looking in the direction of the arrow at said line.

Figs. 5 and 6 are views of a modification, said views corresponding respectively to Figs. 3 and 4, Fig. 6 being a sectional view taken on a plane designated by the dotted line *y* in Fig. 5. Fig. 7 is a top plan view showing a preferred form of stop magazine or holder comprising two parts. Fig. 8 is a transverse sectional view taken on a plane indicated by the dotted line *z* in Fig. 7 and looking in the direction of the arrow at said line. Figs. 9 and 10 are respectively side and end elevations of one part of the stop holder shown in Fig. 7. Figs. 11 and 12 are corresponding views of the other part of the Fig. 7 stop holder.

The stop holder or magazine shown in Fig. 1 and the ejecting and retracting mechanism correspond substantially with the construction disclosed in the patent to Steele, No. 1,037,076, patented August 27, 1912, and therefore need be only briefly described herein.

Referring first to the construction shown in Figs. 1 to 4, the box-like holder or magazine 1 is secured to a stationary part of a Monarch typewriting machine in a manner not shown herein and is provided with a head or end piece 2 in which are guide-ways for an ejector 3 and a retractor 4. The ejector is operative by key controlled mechanism comprising a link 5 connected to a bell crank 6 secured to one end of a rock shaft 7, having stationary bearings, a second crank arm 8 being secured to the opposite end of said rock shaft, said crank arm 8 having pivoted to its rear end a push rod 9, the front of which is provided with a key 10. The retractor 4 is connected to a similar train of devices comprising a link 11, bell crank 12 and a sleeve 13 to which said bell crank is connected, said sleeve being free to turn on the rock shaft 7. A second crank arm 14 secured to the opposite end of said sleeve is pivotally connected to a push rod 15 provided at its front end with a key 16. The ejector operates at each actuation of the key 10 to eject one of the stops from the holder or magazine downward through an opening or slot-way 17 provided in the bottom face thereof between the floor plate 18 of the magazine and the inner face 19 of the head 2 on to an underlying stop receiving element. Said face 19 forms a closure for the left-hand end of the magazine. The retractor when properly actuated through

the key 16 operates to retract the stops from said element into the magazine through the slot 17. In the present case said stop receiving element is a stop-bar 20 mounted on a carriage (not shown). The front and rear faces of said stop bar 20 are formed with stop receiving notches 21 and said bar is grooved to receive a locking rod 22 for retaining the stops in adjusting position on the stop bar. Secured at its right-hand end by a cross pin 23 to the barrel or extension 24 of the holder or magazine 1, is a stop support or rod 25, which extends leftward through the barrel 24 and the body or main portion of the magazine 1 and terminates a short distance to the right of the inner face 19 of the head 2. Slidably mounted on said support or rod 25 is a pressure device or follower 26 having a hub 27 bearing on the rod. A coiled spring 28 surrounds the rod 25 and the hub 27 and is confined between the body portion of the follower and the end of the barrel 24, said spring constantly exerting leftward pressure on the follower and tending to slide it leftward along the rod 25.

Arranged on the support or rod 25 to the left of the follower are a set or plurality of tabulator stops of novel construction. These stops, each designated as a whole by the reference numeral 29, are shown detached in Figs. 3 and 4. Each stop is bifurcated having an inverted U-shape and comprising two legs 30 and 31 and a cross bar 32 connecting the legs at their tops. The space 33 thus formed between the legs enables the stops to fit over the rod 25 and into the notches 21 in the stop bar 20. To facilitate the engagement of the stops with the bar 20 the lower ends of the legs 30 and 31 are sharpened or provided with double bevels as illustrated; also the upper edge of the cross bar 32 is beveled to facilitate reentrance into the magazine. The top of the cross bar is formed with a notch 34 for coöperation with the ejector 3, while the leg 30 is formed with a rounded or circular depression 35 for coöperation with the locking rod 22. The left-hand face of each stop at about the middle of the cross bar 32 is formed with a depression 36 and the opposite face is formed with a corresponding conical projection 37.

As will be plain from Figs. 1 and 4 the stops in the magazine are mounted face to face and the projection 37 of one stop fits into or engages with the depression 36 of the next stop to the right, the projection 37 of said next stop in turn engaging with the depression 36 of the stop to the right of it and so on. The spring-pressed follower 26 maintains the stops under pressure so that the devices 36 and 37 of the stops are maintained interseated as described and become effective to interlock the stops.

It will be understood from an inspection

of Fig. 1 that the left-hand stop in the magazine is always disengaged from the rod 25, said rod terminating short of the right-hand face of said stop but said stop being pressed between the face 19 and the next stop to the right is held from dropping downward through the slot 17 by the engagement or interlocking of the projection 37 with the depression 36 of said next stop. When the actuator 3 is operated by the key 10 it forces the left-hand stop 29 downward through the slot 17 on to the stop bar 20. At the beginning of this downward movement the projection 37 acts as a cam against the depression 36 of the next stop to the right, forcing said stop and all the other stops to yield slightly so that the projection 37 will disengage from the depression 36 as illustrated in Fig. 2. As soon as this projection 37 has passed below the cross bar 32 of the stop to the right, said stop, together with such other stops as remain in the magazine, will be straightened again on the supporting rod 25 by the spring pressed follower and after the left-hand stop has been ejected far enough so as to separate entirely from the stop to the right, the entire set of stops remaining in the magazine will be pushed leftward by the follower until the next stop in turn is pressed against the face 19. The left-hand end of the floor plate 18 is notched out as indicated at 18^a so as to provide a passage for the projections 37 during the ejecting operations. The follower or pressure device 26 is thus effective to maintain the stops interlocked and also to force them leftward along the rod 25 so that they may be successively ejected. Said follower, it will be observed from Fig. 1, is formed with a hole or opening 26^a which receives the projection 37 of the right-hand stop of the set, the construction enabling the follower to evenly engage with the right-hand face of said stop; also when all of the other stops have been ejected and this right-hand stop is pressed against the face 19 it will be held from accidental ejection by the engagement of its projection 37 with the lower side of the hole 26^a. When the stops are retracted within the magazine by the retractor 4 the projections 37 will act as cams against the stops within the magazine, forcing them to yield to the right to permit the upward movement of the stop being retracted, which stop will finally interlock with the next stop to the right. This operation is repeated until all of the stops have been thus retracted.

Various changes of construction may be made without departing from the principles of my present invention. For example, in Figs. 5 and 6 there is shown a form of tabulator stop different from 29. The Figs. 5, 6 form designated as a whole by the reference numeral 38 is of the same general shape as the stop 29 comprising legs 39 and 40 and

a connecting cross bar 41 provided with an ejector receiving notch 42. However, all of the outside corners of said stop are rounded as indicated at 43 to facilitate smooth and easy engagement of the stop with associate parts during the ejecting and retracting operations. Also the upper and lower sides of the depression 44, formed in the leg 39 for engagement with the locking rod 22, are angularly inclined to each other instead of being parts or arcs of a circular curve as at 35 in the prior construction. By shaping the depression 44 angularly as described the stop is adapted to engage just as effectively with the locking rod 22 but the disengaging operation is facilitated because the upward pull against the lower side of the notch 44 is not so direct as in the prior construction. Furthermore, it will be observed that the conical depression 36 and projection 37 of the prior construction are replaced by a shallow rounded depression 45 and a corresponding rounded projection 46 in the Figs. 5, 6 construction. These projections and depressions or interlocking devices 45 and 46 are found to be entirely effective for the purpose designed and also have the advantage of a comparatively easy disengagement from and reengagement with the corresponding devices of adjacent stops. A further important advantage of the last described construction is that in practice the interlocking devices 45, 46 may be formed by pressure only, whereas in the formation of the conical or sharp interlocking devices 36 and 37 of the prior construction, some machining is necessary which, of course, adds to the expense of production.

It will be observed that in both forms 29 and 38 of the stop as described interlocking means are associated, connected, or in the present instance form part of, the stop; that the interlocking means is interseated or interlocked with corresponding means of contiguous stops, the plurality of stops being thus each provided with self-retaining means as distinguished from means extraneous to the stops which would effect the same result.

The stop magazine 1 illustrated in Figs. 1 and 2 is like that of the patented construction disclosed in the patent to Steele No. 1,037,076, aforesaid. I prefer, however, to employ my present invention in connection with a stop magazine or holder of the construction or style illustrated in Figs. 7 to 12, inclusive. This preferred construction comprises essentially two parts 47 and 48, the part 47 being shown detached in Figs. 9 and 10 and the part 48 being similarly shown in Figs. 11 and 12. These two parts are made of cast metal of suitable composition and all machine work is eliminated, thus greatly reducing the expense of manufacture. The part 47 may be said to be the main part

comprising a body portion and a head 47^a as well as a barrel portion 47^b. The part 48 is U-shaped in cross section and forms the bottom and sides of the magazine proper. The two parts after being cast are ready for assembling without requiring any finishing or other work; and when assembled or interseated as illustrated in Figs. 7 and 8 are secured together by screws 49, said screws passing through holes in the sides of the part 47 and being received in tapped holes formed in lugs 48^a on the part 48. The two-part magazine after being assembled may be attached to the machine (as for example to the carriage rail 5 in the patent aforesaid) by screws passing through slots 50. The part 47 has guide-ways 51 and 52 cast in its head 47^a, these guide-ways receiving respectively the slidable ejector 3 and retractor 4, and being found in practice to provide for a smooth and effective control and guidance of these slidable parts or pieces. Further the barrel portion 47^b is open at its right-hand end and is slightly flared to receive and hold by a drive fit a tapered plug or end piece 53 which is rigid on the supporting rod 54, said rod 54 corresponding with the rod 25 of the Fig. 1 construction. The rod 54 and plug 53 may be and preferably are of steel.

Various changes besides those hereinbefore specified may be made without departing from my invention.

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

1. In tabulating mechanism for typewriting machines, the combination of a plurality of tabulator stops and interlocking means associated therewith and operating normally to interlock the stops with each other.

2. In tabulating mechanism for typewriting machines, the combination of a stop holder, a tabulator stop, self-retaining means associated with said tabulator stop, and devices for moving said stop on said stop holder, said means remaining constantly effective during such movement.

3. In tabulating mechanism for typewriting machines, the combination of a stop holder, a plurality of tabulator stops, and individual means for each stop, said means cooperating with the corresponding means of associate stops to prevent accidental displacement of the stops in respect of each other and of the stop holder.

4. In tabulating mechanism for typewriting machines, the combination of a stop holder, a tabulator stop having a device for retaining it on said holder, and means for moving said stop relatively to said holder, said device remaining constantly effective during such movement.

5. In tabulating mechanism for typewriting machines, the combination of a stop holder, a plurality of tabulator stops, and

individual means for each stop, said means of one stop cooperating directly with the corresponding means of the associate stops to retain the stops in position.

5 6. In tabulating mechanism for typewriting machines, the combination of a holder, a plurality of tabulator stops, and means on one stop interseated with corresponding means on associate stops for retaining the stops in position.

10 7. In tabulating mechanism for typewriting machines, the combination of a holder, a plurality of tabulator stops, and a plurality of devices one for each stop, said devices cooperating with each other to retain said stops in position.

15 8. In tabulating mechanism for typewriting machines, the combination of a holder, a plurality of tabular stops, each stop being provided with means to cooperate with the stop in front of and the stop behind it, said means being effective to interlock the stops.

20 9. In tabulating mechanism for typewriting machines, the combination of a magazine provided with an opening, a tabulator stop in said magazine and adapted to be ejected through said opening, and means on said stop for preventing accidental ejection.

25 10. In tabulating mechanism for typewriting machines, the combination of a holder, and a plurality of tabulator stops arranged face to face, each stop being provided with a projection that is adapted to be interseated with a depression in the adjacent stop.

30 11. A tabulator stop for typewriting machines provided with a depression in one face and a projection on the opposite face, said depression and said projection assisting to interlock the stop with associate tabulator stops.

35 12. A tabulator stop for typewriting machines formed with a circular depression in one face and a corresponding rounded projection on the opposite face, said depression and said projection cooperating with corresponding projections and depressions in contiguous tabulator stops to interlock the stops with one another.

40 13. In tabulating mechanism for typewriting machines, the combination of a magazine provided with a narrow slot-way, a plurality of tabulator stops in said magazine adapted to be ejected successively through said slot-way, and cooperating means on said stops for preventing accidental displacement thereof.

45 14. In tabulating mechanism for typewriting machines, the combination of a stop-receiving bar, a stop magazine located above said bar and provided with a slot-way in its under side, a plurality of tabulator stops arranged in said magazine, stop ejecting means, and a device for each stop, said device operating when its stop is opposite said slot to prevent accidental ejection of the stop.

15. In tabulating mechanism for typewriting machines, the combination of a stop magazine, a stop receiving bar, a supporting rod within said magazine, a key controlled stop ejector, a series of bifurcated column stops on said rod, a spring pressed follower, and devices one for each stop to prevent displacement of the stops from said rod except when said ejector is actuated.

70 16. In tabulating mechanism for typewriting machines, the combination of a stop magazine, a supporting rod within said magazine arranged to provide a space between the end of said rod and the opposite face or wall of the magazine, a stop receiving bar outside the magazine, a series of column stops on said rod, an ejecting device for ejecting the stops successively downward through said space, a spring pressed follower, and individual means for each stop, the means for the associate stops cooperating with the stops for preventing them from dropping down accidentally through said space when in register therewith.

75 17. In tabulating mechanism for typewriting machines, the combination of a stop magazine, a supporting rod therein, a stop receiving bar outside said magazine and independent thereof, key controlled stop ejecting and retracting mechanism, a series of column stops within said magazine and on said rod arranged face to face, each stop being provided with a depression in one face and a projection in the opposite face, the projections and depressions of the stops operating to interlock them one with another, and means for normally pressing the stops together to render the interlocking effective.

80 18. In tabulating mechanism for typewriting machines, the combination of a stop holder, a plurality of tabulator stops arranged face to face, interlocking means for said stops, and means for exerting a constant pressure against said stops to render said interlocking means effective.

85 19. In tabulating mechanism for typewriting machines, the combination of a stop holder, a plurality of tabulator stops arranged face to face, interlocking means for said stops, and pressure devices for rendering said interlocking means effective and for moving said stops within said magazine.

90 20. In tabulating mechanism for typewriting machines, the combination of a stop magazine provided with a slot, a plurality of tabulator stops in said magazine, interlocking means for said stops, and pressure devices for rendering said interlocking means effective and for successively moving said stops opposite said slot.

95 21. In tabulating mechanism for typewriting machines, the combination of a stop holder, a plurality of tabulator stops arranged face to face and provided with interlocking depressions and projections, and a

spring-pressed stop-follower formed with an opening to receive the projection of the contiguous stop.

22. A tabulator stop for writing machines having two leg portions and a connecting cross bar portion, one of the legs being provided with a recess and the cross bar portion being provided with a notch, the recess having its sides inclined at an angle to each

other and all the outside corners on said stop being rounded. 10

Signed in Syracuse, in the county of Onondaga, and State of New York, this 21 day of November, A. D. 1912

WALTER L. GALE.

Witnesses:

H. H. STEELE,
HARRY BARRY.