

W. E. MARK.
 TABULATOR FOR TYPE WRITING MACHINES.
 APPLICATION FILED MAY 29, 1909.

946,245.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

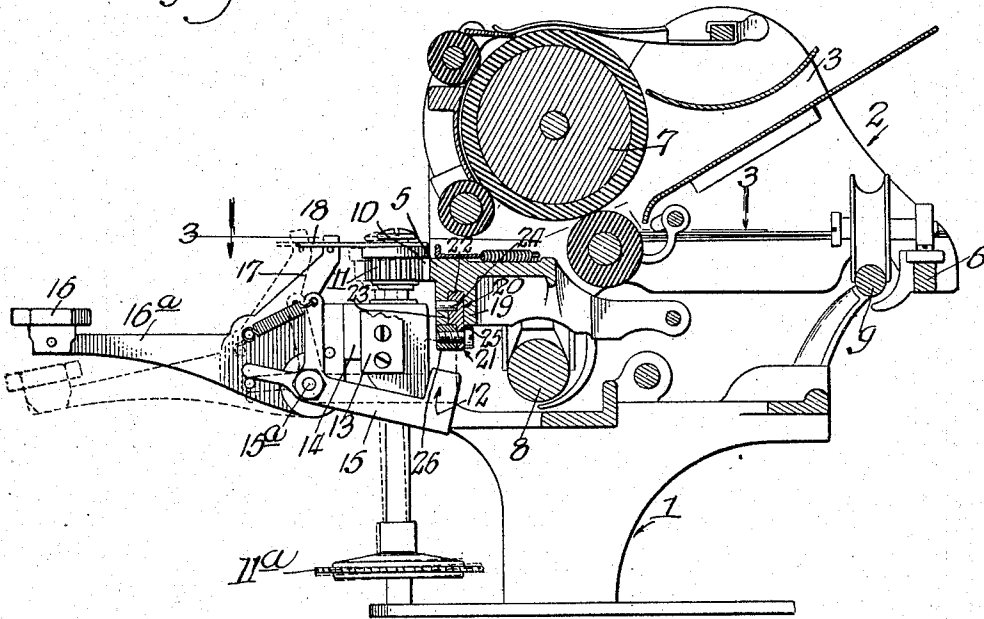


Fig. 4.

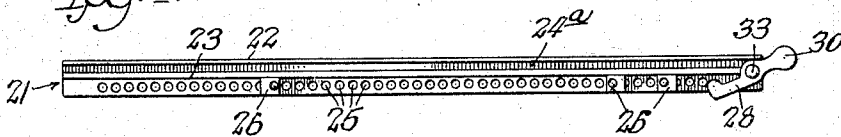
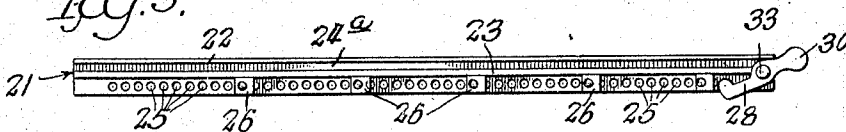


Fig. 5.



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946,245.

2 SHEETS—SHEET 2.

UNITED STATES PATENT OFFICE.

WILLIAM E. MARK, OF WOODHULL, ILLINOIS, ASSIGNOR TO THE OLIVER TYPEWRITER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TABULATOR FOR TYPE-WRITING MACHINES.

946,245.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed May 29, 1909. Serial No. 499,081.

To all whom it may concern:

Be it known that I, WILLIAM E. MARK, a citizen of the United States, and a resident of Woodhull, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Tabulators for Type-Writing Machines; and I, WILLIAM E. MARK, do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an improved tabulating or column-stop mechanism for typewriting machines by means of which the carriage is released from the control of the usual letter-spacing mechanism to permit of its movement under the force of its actuating spring to a predetermined point or points where its movement is arrested for the purpose of printing items or numbers in one or more vertical columns.

The invention relates particularly to the manner in which the stop-members are mounted on the carriage or the frame of the machine, and to an improved mechanism by which the stop-members, adjusted for columns of certain widths, may be readily replaced by a similar mechanism having other stop-members adjusted in columns of other widths.

Prior to my invention, it has been usual to adjustably secure the stop-members to a fixed bar on the machine, but where a great variety of work is done as, for example, in large offices requiring tabulating in columns of different widths, the readjustment of these stop-members, when it is desired to change the spacing of the columns, is tedious and consumes considerable time.

In carrying out my invention I provide a removable bar upon which the stop-members are adjustably mounted, which bar may be readily attached to, or withdrawn from, the machine. I also provide a latching member at one end of the bar by means of which it may be locked in position or unlocked when it is to be removed. By using this device it is possible to provide a number of bars in advance, each with the stop-members thereon adjusted to suit different classes of work. Thus, when the operator desires to tabulate in a different way, he simply removes the bar already in the machine and replaces it by one with the stop-members ad-

justed thereon for the desired spacing of the columns.

In illustrating and describing my invention I have shown it as applied to a typewriting machine of the kind known as the "Oliver," but it will be apparent that it may, with equal readiness, be applied to other machines. I have also shown the same general arrangement and construction of the shift-frame and the key-actuating stop for controlling the tabulating mechanism as that shown and described in Letters Patent No. 916,720, granted March 30th, 1909, to T. L. Knapp and C. C. Harting, with my removable stop-bar mounted on the frame of the paper-carriage.

In the drawings:—Figure 1 shows a vertical section through the shift-frame and paper-carriage of a typewriting machine. Fig. 2 shows a front elevation of the paper-carriage. Fig. 3 is a horizontal section through the paper-carriage along the line 3—3 of Fig. 1. Fig. 4 is a front elevation of my improved removable stop-bar, showing the stop-members thereon in one position. Fig. 5 is a similar view showing the stop-members adjusted thereon in another position. Figs. 6, 7 and 8 are all detail sections through Fig. 2, on the lines respectively indicated by the numerals 6, 7 and 8.

1 represents the shift-frame; 2 the paper-carriage comprising the end plates 3, 4, and the front and rear bars 5 and 6; 7 the platen and 8 and 9 the rods supported by the shift-frame upon which the paper-carriage rides. 10 is a rack on the front of the bar 5 engaged by a pinion 11 operated by the escape gear 11^a which provides for the usual letter-spacing. 12 is the key-actuated stop constructed to move upwardly to engage the stop-member, the said stop being limited in its upward movement by means of a block 13 secured to a bracket 14 which is attached to the shift-frame 1. The lever 15, at the end of which the stop 12 is formed, is pivoted on a pin 15^a projecting from the bracket 14. The stop 12 is actuated by a key 16 at the end of a lever 16^a which is also pivoted on the pin 15^a. The lever 16^a is provided with an upwardly projecting arm 17 which, through the link 18, disengages the pinion 11 from the rack 10 when the stop 12 is raised into its operative position. These parts are all as described in the Letters Patent above referred to, that is to say, Patent No. 916,720 and need no fur-

ther description here as they form no part of my invention. Their operation and construction are apparent from an inspection of Fig. 1. It is to be understood, of course, that my invention may be applied to typewriters in which other mechanism is used to operate the stop and I have simply selected this particular type of machine as readily illustrating my invention.

The front bar 5 of the paper-carriage has a downwardly extending flange 19, bifurcated throughout its length to form a groove 20, preferably rectangular in section and open at each end (see Figs. 1 and 8). Within this groove is located the stop-bar 21. The stop-bar 21 consists of a flat bar provided on its front face with a shoulder 22 along its upper edge and another shoulder 23 running parallel to the first shoulder and a short distance below it. These shoulders form a long groove 24^a extending the length of the bar.

24, 24 represent short pins of such a diameter that they may ride easily in the groove 24^a of the stop-bar 21. Said pins are secured in the front bifurcation of the flange 19 with their inner ends projecting into the groove 24^a of the stop-bar. As illustrated, two of the pins 24 are shown, one near each end of the slot or groove 20, and they serve as a support for the bar 21 and also as a guide. Below the shoulder 23 of the bar 21, and extending the length of the bar, are located a series of holes 25 which serve as a means for attaching and adjusting the position of the stop-members. The holes are preferably located a distance between centers equal to double the pitch of the teeth on the rack-bar 10.

26 indicates the stop-members which consist of blocks each provided with a screw-threaded hole to receive a screw by means of which they are secured on the face of the stop-bar. To provide for adjustment at every letter-space each stop-block or member is made of the length of three of said spaces or three times the pitch of the rack-teeth with the screw-threaded hole located one-third of the distance from one end. This causes one end of the stop-block or member when secured to the bar to register with the center of the hole on one side of the one by means of which it is secured, while the other edge falls half way between the latter hole and the adjacent hole at its other side. As the holes are a distance apart equal to double the pitch of the teeth of the rack 10, it is readily apparent that provision is thus made to bring one edge of the stop-block or member to correspond with any particular tooth on the face of the rack-bar. The stop-members abut at their top edges against the lower side of the shoulder 23 and project beyond the face of the stop-bar so as to come out flush with the front face of the flange 19 on

the bar 5 when the stop-bar is in position. The stop 12 actuated by the key 16 is operated to engage the stop-member 26 just as in the patent hereinbefore referred to.

To lock the bar in place I provide a notch 27 near one end of the front face of the flange 19, preferably as illustrated, at the right-hand end. This notch is adapted to be engaged by a latch or detent 28 pivotally attached near the end of the stop-bar 21. Said latch has a handle 30 which projects beyond the end of the bar to permit of its ready operation. In order that the latch may remain in either its closed or open position as desired, it is preferably pivoted to the stop-bar in the following manner (Fig. 6). 31 represents a rivet which passes through the stop-bar and is riveted against the front face of the latch 28 at 33. In order to provide friction between the engaging faces of the latch and stop-bar, a dish-shaped washer 34 is interposed between the head 32 of the rivet 31 and the rear face of the stop-bar. When the rivet is drawn up the elasticity of the washer permits the latch 28 to be operated but takes up any wear between the engaging faces of the latch and bar 21, and thus maintains the necessary friction to prevent the latch from becoming loose. It is of course to be understood that other ways of providing sufficient friction between the engaging faces of the latch and stop-bar may be used, but I prefer this one as the simplest.

From the above description the advantages of my improved removable stop-bar are apparent. The stop-members on one bar may be adjusted to accommodate columns of one width as, for example, shown in Fig. 4, while those of another bar may be adjusted to accommodate columns of an entirely different width as shown in Fig. 5. By providing a number of such bars it is apparent how the work of an office in which a great deal of tabulating is done may be economized and time saved.

I claim as my invention:—

1. In a typewriting machine, in combination with the machine frame, the paper-carriage, the letter-spacing mechanism, the tabulating-key, the key-operated stop actuated thereby, and means for releasing the carriage from the letter-spacing mechanism actuated by said tabulating-key, a stop-bar slidably mounted in the frame of the paper-carriage and removable in an endwise direction therefrom, stop-members adjustably mounted on said stop-bar, and means for locking said stop-bar in position.

2. In a typewriting machine, in combination with the machine-frame, the paper-carriage provided with a rack-bar, the letter-spacing mechanism, the tabulating key, the key-operated stop actuated thereby, and means for releasing the carriage from the

letter-spacing mechanism actuated by said tabulating key, a bifurcated flange formed on said rack-bar and extending the length thereof, a stop-bar slidably mounted in the 5 groove formed by said bifurcation, stop-members adjustably mounted on said stop-bar, and means for locking said stop-bar in position.

3. In a typewriting machine, in combination with the machine-frame, the paper-carriage provided with a rack-bar, the letter-spacing mechanism, the tabulating key, the key-operated stop actuated thereby, and means for releasing the carriage from the 10 letter-spacing mechanism actuated by said tabulating key, a bifurcated flange formed on said rack-bar and extending the length thereof, said bifurcations being separated by a groove, pins secured to one of said bifurcations projecting into said groove, a stop- 15 bar having a groove formed on the face thereof adapted to slide in the groove of said bifurcated flange in engagement with the said pins, stop-members adjustably mounted on said bar, and means for locking said bar in said groove of the paper-carriage. 20

4. In a typewriting machine, in combination with the machine-frame, the paper-carriage provided with a rack-bar, the letter-spacing mechanism, the tabulating key, the key-operated stop actuated thereby, and means for releasing the carriage from the 25 letter-spacing mechanism actuated by said tabulating key, a bifurcated flange formed on said rack-bar below the teeth thereof, said bifurcations being separated by a groove, pins secured to one of said bifurcations and projecting into said groove, a stop-bar hav- 30

ing a groove on the face thereof adapted to slide in the groove of said bifurcated flange 40 in engagement with said pins, stop-members adjustably mounted on said stop-bar, and a latch pivotally mounted at one end of said stop-bar adapted to lock the same in position.

5. A removable stop-bar for typewriting 45 machines comprising a flat bar, shoulders formed on the face of said bar extending the length thereof to form a groove, stop-members adjustably secured on the face of said bar, and a pivoted latch secured at one end 50 thereof.

6. A removable stop-bar for typewriting machines comprising a flat bar, shoulders formed on the face of said bar extending the 55 length thereof to form a groove, a series of holes spaced at equal distances apart formed in said bar, stop-members adapted to be removably secured against the face of said stop-bar with one edge in engagement with one of said shoulders, said stop-members 60 being of a length equal to one and a half times the spacing of the holes in said stop-bar and themselves having holes a third way of their length to correspond with the holes in said stop-bar, means for securing said 65 stop-members in place, and a latch pivotally connected to one end of said bar having a handle projecting beyond the same.

In testimony, that I claim the foregoing as my invention I affix my signature in the 70 presence of two witnesses, this 24 day of May, A. D. 1909.

WILLIAM E. MARK.

Witnesses:

HENRY C. STICKNEY.

AMOS A. MACKEY.