June 16, 1936. H. N. BLISS 2,044,201

KEY STROKE COUNTER

Filed Jan. 10, 1930

Fig.1.

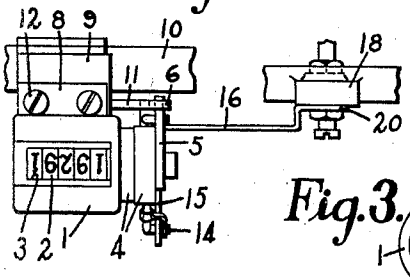


Fig.2.

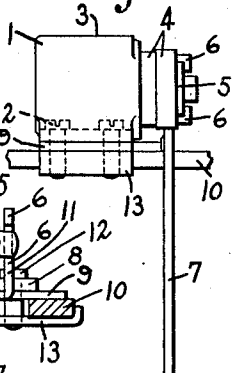


Fig.3.

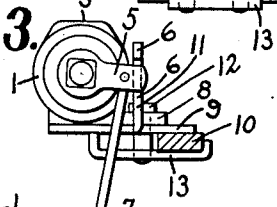


Fig.4.

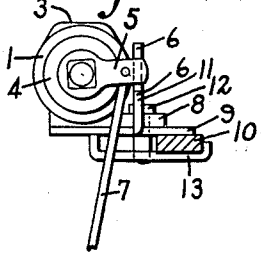


Fig.5.

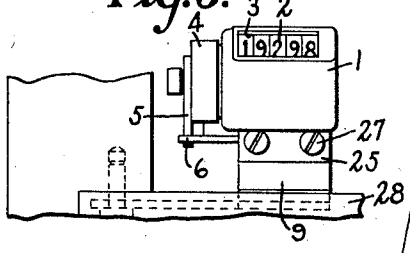
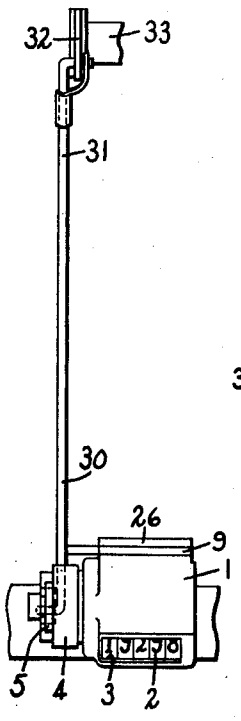


Fig.6.



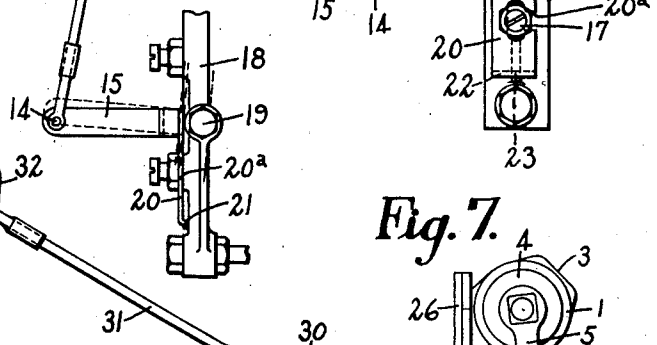


Fig.7.

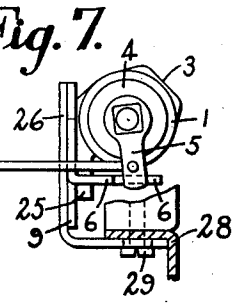
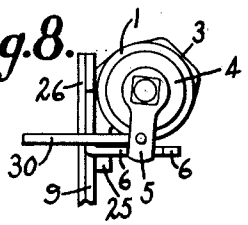


Fig.8.



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By

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Patented June 16, 1936 2,044,201

UNITED STATES PATENT OFFICE

2,044,201

KEY STROKE COUNTER

Harvey N. Bliss, Hartford, Conn., assignor to Veeder-Root, Incorporated, a corporation of Connecticut

Application January 10, 1930, Serial No. 419,935

8 Claims. (Cl. 235—102)

My invention relates to key stroke counters.

It has for its object to provide an improved key stroke counter especially adapted to be applied to a typewriter, tabulator, or the like where in there is but a slight difference in the length of stroke of the keys and space bar. A further object of my invention is to provide such a key stroke counter which is operable with a minimum load on the keys and which is accurate in its operation irrespective of variations in the stroke of the keys or the connected mechanism or of variations in the touch of different operators. Other objects include the provision of improved and simplified actuating and over-travel means between the counter and the key stroke operated mechanism of the machine and improved means for supporting the counter on the machine. These and other objects and advantages of the improved construction will hereafter more fully appear.

In my accompanying drawing I have shown for purposes of illustration two embodiments which my invention may assume in practice.

In the drawing,—

Figure 1 is a plan view of one form of my improvement applied to a typewriter, only portions of the frame and of the mechanism of the machine being shown in order to simplify illustration.

Fig. 2 is a front elevation of the mechanism shown in Figure 1.

Fig. 3 is a side view of the same mechanism, with another position of the key stroke operated mechanism indicated in dotted lines.

Fig. 4 is a partial side view of the upper end of the mechanism, with the parts in the position corresponding to the dotted position of the other parts shown in Figure 3.

Fig. 5 is a front elevation similar to Figure 1, showing a modified construction.

Fig. 6 is a plan view of the structure shown in Figure 5.

Fig. 7 is a side view with the left-hand end of the mechanism also shown in dotted lines in another position.

Fig. 8 is a partial side view showing the parts at the right-hand end of Figure 7 in the position corresponding to the dotted line position shown in Figure 7.

In each of these illustrative constructions, I have shown mechanism of the general type illustrated and claimed in my co-pending application Serial No. 419,934, filed January 10, 1930, the present application covering modifications and improvements of that construction whereby the latter is adapted to use in connection with other machines.

As in that application, I have shown herein a counter 1 comprising a series of usual numeral wheels 2 visible through an aperture 3 in the counter casing. Also, I have associated with this counter mechanism as described therein a combined ratchet actuating and friction retaining clutch mechanism generally indicated at 4, and an actuating lever 5 having its free end movable within limits established by a notch having abutment forming lugs 6, supported adjacent the counter, while an actuating connection 7 is pivotally connected to the lever 5 between the axis of the latter and the lugs 6 and operatively connected at its opposite end to the key stroke operated mechanism of the machine.

Referring more particularly to Figures 1 to 4, it will be noted that the aperture 3 is disposed upon the top of the casing 1 and that the latter is provided with an underlying laterally extending projection 8. The latter in turn is supported on a bracket 9 which is supported on a portion 10 of the machine frame. It also has at one end thereof an upstanding projection 11, carrying the lugs 6. Herein, it will also be noted that screws 12 extend down through the projection 8 and the bracket 9 in alignment on one side of the path and axis of the lever 5 and that the projection 11 is also in substantial alignment with these screws and has its lugs 6 on its outer edge in the path of the lever. It will also be noted that a clamp 13 underlying the frame member 10 has one flanged edge extending upward along the latter and a longer flanged edge underlying the member 9 at a point spaced from the frame 10, while the screws 12 extend down through the members 8, 9, and 13 between this longer flange and the frame member 10 and act to clamp the parts securely to the latter.

Attention is also directed to the fact that herein, as distinguished from the relatively short member pivotally connected to the lever 5 and shown in my other application mentioned, I have provided a longer member 7. Herein I have also extended a lateral extension 14 on the lower end of this member 7 through an unslotted or fixed pivotal connection in a right angled extension 15 on a light resilient member 16. This member 16, which is preferably of steel, is herein also suitably attached as by a screw 17 to the escapement dog bracket 18 of the machine which, as usual, is adapted to move about a pivot 19 on the machine from the full to the dotted line positions shown in Figure 3 whenever a key or the

space bar is operated. Here it will also be noted that the member 16 is provided with a downwardly extending portion 20 and with a slot 20a extending inwardly from one edge thereof and then up and down longitudinally of the portion 20, and that the lower end of this portion also carries a short right angled extension 21 having lugs 22 thereon providing a slot 23 which is adapted to fit over the escapement dog bracket to prevent relative movement.

In the operation of this mechanism, it will be evident that whenever the escapement dog bracket 18 is moved about its axis 19 by a key or space bar operation, the member 16 will be moved from the position shown in full lines in Figure 3 to the position indicated in dotted lines therein, and in such manner as to move the counter lever 5 from the position shown in Figure 3 to the position shown in Figure 4, ready upon its return to actuate the counter within the fraction of a unit advance permitted by the stop means 6. When, however, the escapement dog bracket 18 automatically returns to initial position upon a release of the key or space bar, the member 5 will be moved down to actuate the counter and the parts will again assume the full line position shown in Figure 3. Herein it will also be noted that due to the resiliency of the connection 16, means providing a certain amount of over-travel of the key stroke operated member or bracket 18 is provided.

Considering the construction shown in Figures 5 to 8, it will be noted that the mechanism illustrated is substantially similar. Here, however, it will be observed that the numeral aperture 3 is disposed at an angle of 45 degrees to the plane of a depending bracket member 25, and that the bracket 9 heretofore described and carrying the projection 11 and lugs 6, is so disposed that the lugs are under the axis of the member 5, which in this construction is also normally depending as shown. Herein also a supplementary bracket 26, corresponding in general function to the member 13, is provided, the same herein having a vertically disposed portion receiving screws 27 (Fig. 5) passing through the bracket 25, the member 9 and this portion 26, and attaching the counter to the latter. As illustrated, the supplementary bracket 26 also has a horizontal portion disposable beneath the machine frame 28 and slotted to receive a suitable holding means threaded into the latter, as for example a screw 29.

Operatively connected to the member 5 at a point between its axis and the lugs 6 is also a member 30 corresponding in general to the member 7 herein above described, but bent substantially midway between its ends to provide a laterally deflected portion 31. This, in turn, is connected at its outer extremity to an arm 32, forming the left-hand ribbon reverse link of the machine, and operable with the ribbon feed tube 33, being moved from the full to the dotted line position indicated in Figure 7 whenever a key or the space bar is depressed, and consequently operative to move the lever 5 from the position shown in Figure 7 to the position shown in Figure 8.

The operation of this mechanism is essentially similar to that above described save that it will be noted that the counter will register on the initial or down stroke of the key when lever 5 is moved into its right hand position (Figure 7) and that instead of resiliency in the member 32, which corresponds in general to the member 16 heretofore described, the member 30 and more particularly the bent end 31 thereof provides the necessary resiliency above referred to in such manner as to enable over-travel whenever the stroke of the connected elements is longer or the touch of the operator is heavier. It will thus be noted that while utilizing the part 32 provided on the machine, my improved results may be obtained. Attention is further directed to the fact that by providing a member 30 which is readily bent and varying the point at which it is bent, I am able to make further adjustments taking care of variations in different machines.

In each of the above constructions, it will be evident that the mechanism is especially adapted to function where there is but slight difference in the length of the stroke of the keys and space bar. In operation, it will be noted that it will operate in an essentially similar manner to that described in my application mentioned above as regards the actuation of the lever 5 to advance the counter through a predetermined part of a unit for each key stroke movement. It will further be evident that through the provision of the resilient connection provided in the actuating connections for the member 5, over-travel will be permitted as necessary, but without the necessity for slotting the key stroke operated member forming a part of that connection and carried on the machine, or of providing a slot and spring connection such as previously described. In the construction shown in Figures 5 to 8, it is also made possible to utilize the ribbon reverse link already provided on the machine. These and other advantages will, however, be clearly apparent to those skilled in the art.

The term writing machine occurring in the claims is used in a generic sense to include typewriters, computing machines or the like, and is intended to cover any machine in which manually operated keys are utilized for performing operations on a machine regardless of whether the manual operations are for actuating character forming keys, space bars, or for other operative functions of the machine.

While I have in this application specifically described two forms which my invention may assume in practice, it will be understood that these forms of the same are shown for illustrative purposes and that the invention is not limited thereto.

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

1. Actuating means for a counter applied to a key operated writing machine and having an operating arm element limited in its travel, said means comprising a direct linkage between said arm element and an actuating reversely swinging element of the machine, said linkage having fixed operating connections with both of said elements and having therein an angular offset portion of resilient material which flexes laterally to permit overtravel of said second named element with respect to said arm element.

2. Actuating means for a counter applied to a key operated writing machine and having an operating arm element limited in its travel, said means comprising a linkage constructed at least in part of resilient material and extending between and wholly supported by said arm element and an actuating reversely swinging element of the machine and permitting overtravel of said last named element, said linkage having fixed connections at opposite ends with the respective elements and having portions forming an angle

with each other intermediate of the ends of the linkage, one of said portions being flexed by said actuating element upon overtravel thereof.

3. Actuating means for a counter applied to a key operated writing machine and having a swinging operating arm element limited in its travel, said means comprising a direct connecting linkage between said arm element and an actuating reversely swinging element of the machine, said linkage including a resilient member fixed to one of said elements and adapted to flex, and link means pivoted to said member and to the other swinging element.

4. Actuating means for a counter applied to a key operated writing machine and having an operating arm element limited in its travel, said means connecting said arm element with an actuating reversely swinging element of the machine and comprising a member applied to said actuating element and having a resilient portion projecting laterally from said element, and a link pivoted to the end of said resilient projecting portion and to said arm element.

5. Actuating means for a counter applied to a key operated writing machine and having an operating arm element limited in its travel, said means connecting said arm element with an actuating reversely swinging pivoted element of the machine and comprising a member having a portion fixed to said actuating element at one side of the pivot of the latter and a resilient projecting portion extending in the direction of the pivoted axis of said element, and a link pivoted to said resilient projecting portion and to said arm element.

6. Actuating means for a counter applied to a key operated writing machine and having an operating arm element limited in its travel, said means connecting said element with an actuating reversely swinging pivoted element of the machine and comprising a resilient member having a portion fixed to said actuating element at one side of its pivot, a portion extending in line with the pivot of said element, and a lateral extension at the end of said last named portion, and a link pivoted at one end to said lateral extension and at the opposite end to said arm element.

7. Actuating means for a counter applied to a key operated writing machine and having an operating arm element limited in its travel, said means connecting said arm element with an actuating reversely swinging element of the machine and comprising a resilient link pivoted at one end to said arm element and at the other end to said actuating element and having an angularly offset portion therein permitting overtravel of said key actuated element.

8. Actuating means for a counter having an operating arm element limited in its travel, said means comprising a reversely swinging actuating element and an obtusely angled resilient rod connecting said actuating element with said arm element and permitting overtravel of said actuating element.

HARVEY N. BLISS.

CERTIFICATE OF CORRECTION.

Patent No. 2,044,201. June 16, 1936.

HARVEY N. BLISS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 18, for the article "the" read my; line 21, for "my" read the; and second column, line 10, before "lever" insert the words arm or; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of September, A. D. 1936.

(Seal)

Henry Van Arsdale
Acting Commissioner of Patents.

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