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MECHANISM FOR ACTUATING PIVOTED TYPE BARS

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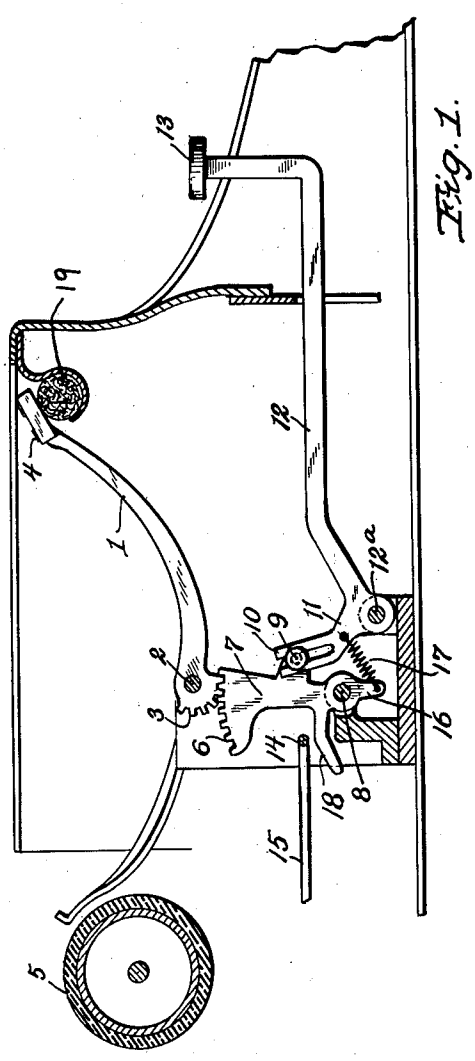

Fig. 1.

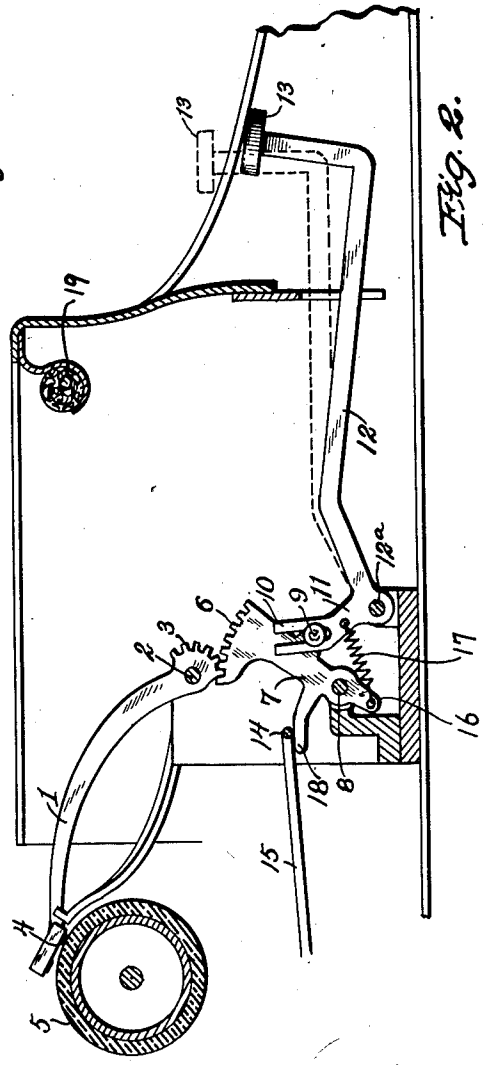

Fig. 2.

Witness:
Carl Marx.

Inventor:
Max Garbell
By Jones, Addington, Ames & Seibold
Attorneys.

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MAX GARBELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO VICTOR ADDING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

MECHANISM FOR ACTUATING PIVOTED TYPE BARS

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My present invention concerns itself with an improved form of mechanism for actuating pivoted type-bars in typewriting machines, and is particularly applicable to such machines as have a top-strike type of platen.

This invention is an improvement upon that disclosed and claimed in my co-pending application, Serial No. 720,255, filed June 16, 1924, for typewriting machines, and assigned to the assignee of the present application.

One of the objects of my invention is to provide a type-bar actuating mechanism which, by virtue of the particular arrangement of the parts, will have a smooth and positive movement of the type-bar, and comprises a method of linkage between the key-levers and the said type-bars which makes the mechanism operate with a very slight shock to the fingers of the operator, and in which the action is characterized by a peculiar resilience, very much desired especially in such machines that are to operate with a minimum of effort and of noise.

The typewriter action which forms my present invention comprises a pivoted key-lever having the general shape of a bell-crank, the longer shank of which constitutes the key-lever and the shorter shank of which is bifurcate and is connected with an intermediate lever by means of a pin and roller thereon, and which intermediate lever is provided with a gear segment intermeshing with a gear on a pivoted type-bar so that by depression of the key-lever the type-bar and characters borne thereby may be propelled toward and make contact with the platen of the typewriter.

Provision is also made in accordance with my invention for the actuation of one or more universal bars that operate the escapement and the ribbon mechanism of the typewriter, and, furthermore, I also provide for so-called "dead" keys, which, while they will actuate the type-bar, will not actuate the escapement universal bar all of which will be plainly shown in connection with the drawings and description which is to follow hereinbelow.

The figures in the drawing accompanying the present specification show:

Figure 1 as a transverse sectional elevational view of my improved type-bar actuating mechanism in the initial position; and

Fig. 2 showing the same mechanism in the position it assumes when the type are making contact with the platen of the typewriter.

Referring to Fig. 1, I have provided a type-bar 1 having a pivot 2 and provided with a number of teeth 3 at the end nearest the pivot and provided with a plurality of type characters 4 at its free end so arranged as to be capable of striking a suitable platen 5. A gear segment 6 borne on an intermediate lever 7 having a pivot 8 intermeshes with the aforesaid gears 3. The said intermediate lever 7 also is provided with a pin and roller 9 which are in engagement with the bifurcate end 10 which latter forms the terminus of the shank 11 of the key-lever 12, which said key-lever has a pivot 12^a, and is provided with a suitable key 13. There is also provided a universal bar 14 carried upon suitable arms 15 and which universal bar actuates the carriage escapement mechanism, not shown on the drawing. It will be seen that the said intermediate lever 7 has a laterally projecting lug 18 and which lug 18, upon the movement of the intermediate lever 7, will raise the universal bar 14 and as a result thereof will actuate the carriage escapement mechanism, as is well understood in the typewriter art.

The downwardly projecting lug 16 of the intermediate lever 7 is connected with the shank 11 of the bell-crank key-lever 12 by a spring 17.

The action of my present mechanism is substantially as follows, namely; the depression of the key-lever 12 will cause the same to turn on its pivot 12^a and by reason of the engagement of the roller 9 with the bifurcate end 10 of the said lever arm 11 will compel the movement of the intermediate lever 7 about its pivot 8 and as a result thereof and by reason of the intermeshing of the gears 6 and 3 will cause the rotation of the type-bar 1 about its pivot 2 until it strikes the platen 5. At the same time, as plainly shown

in Fig. 2, the lower projecting lug 16 of the intermediate lever 7 will have moved further away from the shorter shank 11 of the bell-crank constituted by the key-lever 12.

As the spring 17 re-acts between the extremity of the projection 16 and the shank 11, the said spring 17 will be extended so as to tend to retract not only the key-lever 12 but also the intermediate lever 7 into its original positions. A suitable cushioned stop 19 being provided to retain the type-bar 1 at its lowest position, or normal position at rest, there will be a slight tension between the downwardly projecting lug 16 and the shank 11 at all times, so that although the pin and roller 9 which engage the bifurcate end 10 of the key-lever 12 is not necessarily a very tight joint, there will, by virtue of the tension exerted by the spring 17, be obtained the effect of a non-rattling type action, which nevertheless yields at a slight touch, and provides a resilient and snappy action differing both in its feel and effect from the ordinary type action already known.

The form of construction shown in my present invention also makes it possible to render the type-bar action practically noiseless. The general principle underlying the production of a relatively noiseless printing action is so to proportion the sizes and shapes of the various levers in a type-bar action so as to arrest the type-bar at the exact point where it makes contact with the paper or the platen. In other words, this is accomplished by providing inherent stopping means that prevent the type-bar from moving any further than required even though the platen were removed.

In my present invention this desirable feature is present, and resides in the peculiar configuration of the key-lever 12 and the relative position of the bifurcate end 10 of said lever and the location of the pin and roller 9 on the intermediate gear segment lever 7. As will be seen from Fig. 2, the movement in space of the pin and roller 9 on the gear segment lever 7 will be on a circle having its center at the pivot 8. As the bifurcate end of the key-lever describes a circle having its center at 12^a, and as this circle intersects the circle having its center at 8, it will be obvious then as soon as the roller 9 and the bifurcate end 10 of the key-lever 12 begin receding from each other, as they would if the key-lever were further depressed, this movement would be stopped by the engagement of the roller with said bifurcate end. A study of Figs. 1 and 2 will render this self-evident.

The spring 17 takes up the shock incidental to the stopping of the mechanism occasioned by the roller 9 reaching the lowest possible point of its engagement with the bifurcate end of the key-lever so that the mechanism will stop quietly and without any great shock. At the same instant the type 4 on the type-bar 1 contact with the platen, so that there will be a quiet contact instead of a hammer blow which latter is the cause of the clattering noise made by the ordinary typewriter action.

It will be noticed that when the type-bar 1 is in the printing position that the sidewardly projecting lug 18 of the intermediate lever 7 will contact with and raise the universal bar 14. In order to provide "dead" keys, namely such as shall actuate only the type-bar without releasing the carriage escapement it suffices to leave off the projection 18 for such levers, in which case, obviously, the universal bar 14 will not be actuated.

This is an extremely simple way of providing for a "dead" key, as it does not require a single extra part, and as also any key on the typewriter may be rendered a "dead" key by the simple expedient of cutting off the lug 18 so that it will not even be necessary to carry special parts, such as an intermediate lever, in stock; all of which contribute to the simplicity of the assembly of the typewriting machine.

A further advantage accruing from the construction as shown in my present invention, is the elimination of the comb usually employed for attaching the retracting spring as in the present case both ends of the spring are attached to parts that also perform other functions.

If the spring is made strong enough it will obviate the necessity for any further retracting means for returning the mechanism to its normal position after a stroke.

Obvious modifications in the shape and location of the various parts of the mechanism are to be understood as being within the scope of my present invention for which I claim:

1. In a type-bar mechanism for typewriters, a pivoted type-bar having gears at its pivoted end, a gear segment intermeshing with said gears, said gear segment being provided with a pin and roller and a projecting arm extending in a direction opposite to that of the teeth on said gear segment, a key-lever having a bifurcate end, connection between said pin and roller and bifurcate end, and resilient means connecting said projection and said key-lever.

2. In a type-bar mechanism for typewriters, a pivoted key-lever having a bifurcate end, an intermediate gear segment having a roller and pin thereon, a pivoted type-bar having gears intermeshing with said gear segment, a universal bar, an arm projecting laterally from said gear segment and capable of contacting with said universal bar, a downwardly projecting arm on said gear segment, and resilient means connecting said latter arm with the said key-lever.

3. In a type-bar action mechanism for typewriters, the combination of a bell-crank

bifurcate at one end and an intermediate lever of the third class actuated by engagement of a pin thereon with said bifurcate end, and resilient means connecting one end of said intermediate lever with the bifurcate end of said bell-crank and acting to retain in, and to return to, normal position both said intermediate lever and said bell-crank.

4. In a type-bar action mechanism for typewriters, the combination of a bell-crank bifurcate at one end and an intermediate lever of the third class actuated by engagement of a pin thereon with said bifurcate end, and a spring connecting one end of said intermediate lever with the bifurcate end of the bell-crank and acting to retain in, and to return to, normal position both said intermediate lever and said bell-crank.

5. In a type-bar mechanism for typewriters, the combination of a pivoted type-bar, a pivoted key-lever and a pivoted gear segment providing a connection between the key-lever and the type-bar, the pivot of the key-lever and said gear segment being arranged adjacent to each other, the key-lever being connected to said gear segment between the ends of said gear segment, said gear segment having an arm extending downwardly therefrom, and a spring connected to said arm and reacting between said arm and said key-lever.

6. In a type-bar action mechanism for typewriters, the combination of a pivoted gear driven type-bar, a pivoted key-lever bifurcate at one end and having a key at the other end, an intermediate gear segment intermeshing with said geared type-bar, a downwardly extending arm on said gear segment, a pin and roller on said gear segment engaging the bifurcate end of the said key-lever, a spring connecting the key-lever and the said downwardly extending arm, and a laterally extending arm on said intermediate lever.

7. In a type-bar action mechanism adapted to be used in a typewriter embodying carriage escapement means, the combination of a universal bar, a pivoted gear-toothed type-bar, a pivoted key-lever bifurcate at one end and having a key at the other end, an intermediate gear segment intermeshing with said gear-toothed type-bar, a downwardly extending arm on said gear segment, a pin and roller on said gear segment engaging the bifurcate end of said key-lever, a spring connecting said key-lever and said downwardly extended arm, and an arm extending laterally from said intermediate lever for engaging and actuating said universal bar upon depression of said key.

8. In a type-bar action mechanism adapted to be used in a typewriter embodying carriage escapement means, the combination of a universal bar, a pivoted gear-toothed type-bar, a pivoted key-lever bifurcate at one end and having a key at the other end, an intermediate gear segment intermeshing with said gear-toothed type-bar, a downwardly extending arm on said gear segment, a pin and roller on said gear segment engaging the bifurcate end of said key-lever, a spring connecting said key-lever and said downwardly extending arm, and an arm extending laterally from said intermediate lever for engaging and actuating said universal bar upon depression of said key, said laterally extending arm being adapted to be removed so that depression of said key will not effect actuation of said universal bar means.

In witness whereof, I have hereunto subscribed my name.

MAX GARBELL.