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TYPE WRITING MACHINE.

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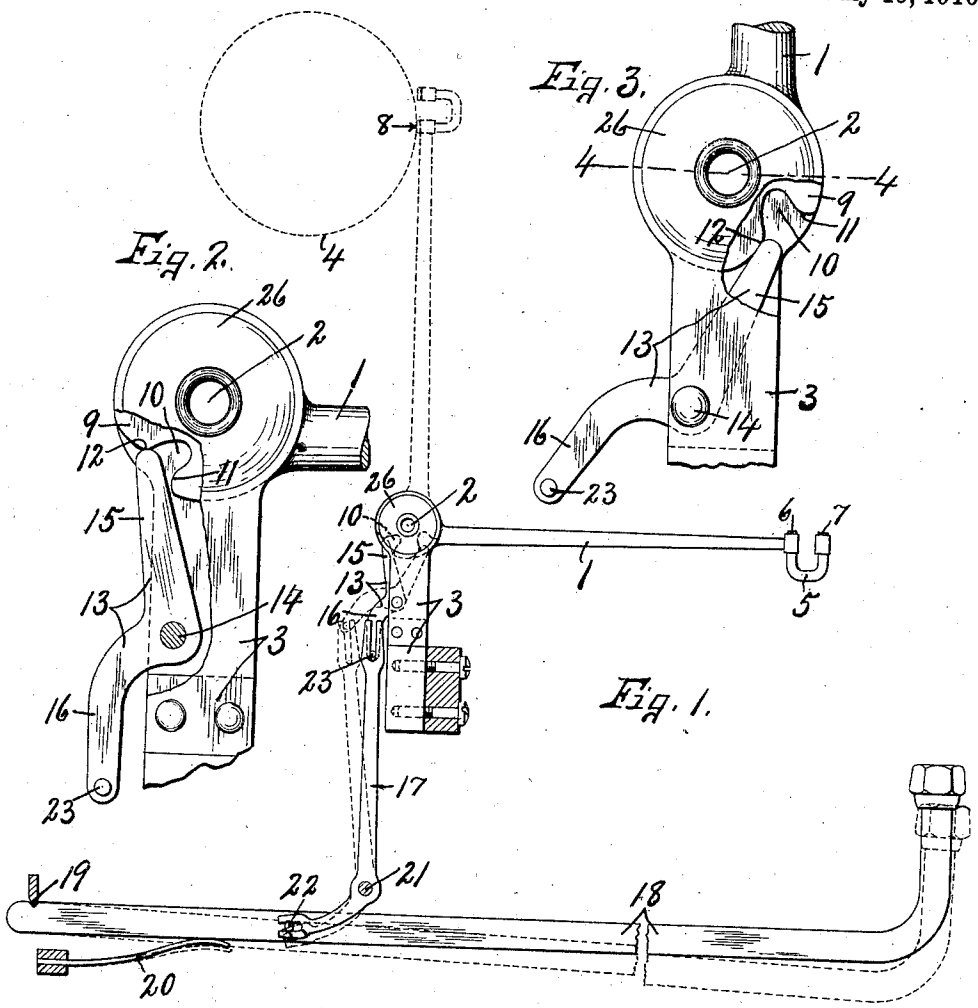
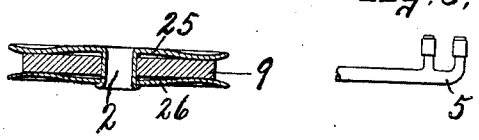
964,822.

Patented July 19, 1910.





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TYPE-WRITING MACHINE.

964,822. Specification of Letters Patent. Patented July 19, 1910.

Application filed May 6, 1904, Serial No. 206,647. Renewed January 19, 1907. Serial No. 353,140.

To all whom it may concern:

Be it known that I, GEORGE F. STILLMAN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in typewriting machines and refers more particularly to the type-bar and its actuating mechanism.

The objects are—First—to lock the type-bar from rebound in its position of rest. Second—to throw the type-bar to its printing position by a variable leverage device acting directly upon the type-bar. Third—to enable one of the two type of each bar to be readily and easily adjusted or spaced relative to its companion and properly placed upon its feet relative to the printing point.

Other objects and uses will appear in the following description.

In the drawings—Figure 1 is an elevation of a type-bar and its actuating mechanism showing the supporting hanger for the type-bar, and also showing the platen in dotted lines. Fig. 2 is an enlarged elevation, partly broken away, of the hanger and the adjacent ends of the type-bar and operating mechanism, the type-bar being shown in its normal position of rest, as seen in full lines in Fig. 1. Fig. 3 is a view similar to Fig. 2 showing the type bar and its operating member in their printing positions. Fig. 4 is a sectional view taken on line 4—4, Fig. 3. Fig. 5 is a detail view of the type-end of a modified construction of type-bar.

Similar reference characters indicate corresponding parts in all the views.

This type bar and its operating mechanism are adapted for use in connection with visible writing machines, in which the type bars, as —1—, are fulcrumed at —2— on suitable hangers as —3—, below a platen, as —4—, and each type bar is provided with a U-shape head, as —5— having a pair of type, as —6— and —7—, which are so arranged as to strike at the printing point, as —8—, on the front face of the platen —4—.

The heel —9— of the type-bar —1— is made in the form of a circular disk substantially concentric with the pivot or fulcrum —2— and is provided with a recess —10— opening inwardly from its periphery for forming opposed bearing faces —11— and —12—.

An operating member, as a lever 13— is fulcrumed at 14— upon the hanger —3— and has the end of one arm, as 15, projecting into the recess —10— and normally abutting against the bearing face 12— when the type-bar is in its normal position of rest, as seen in full lines in Figs. 1 and 2, for the purpose of locking the type-bar from rebound when in such position. The other arm of the lever, as 16— is flexibly connected by a lever 17— to a suitable manual or key-lever 18—. This manual or key-lever is fulcrumed at —19— and is yieldingly held in its elevated position by a spring —20—. The lever —17— is fulcrumed at —21— above the key-lever and has pivotal connection at —22— with said key-lever at the rear of its fulcrum so that if the key-lever is depressed the upper arm of the lever —17— is rocked rearwardly and has a pivotal sliding connection at —23— with the lower arm —16— of the operating member 13— whereby the arm 15— of the operating member 13— is thrown forwardly when the key-lever is depressed. This action of the operating member 13— causes the front face of the arm 15— to engage the bearing face 11— and to rock the type-bar —1— to the printing position shown by dotted lines in Fig. 1.

The bearing —11— and operating member 13— are arranged so that the operating member first engages the outer end of the bearing face —11— and this point of engagement gradually shifts toward the fulcrum of the type-bar during the depression of the key-lever and while the type bar is moving to the printing point so as to afford a variable leverage between the arm 15— and type-bar whereby the movement of the type-bar is accelerated as it approaches the printing point. Moreover, the connection between the levers 17 and 13 is such that said lever 17 acts on the lever 13 with a constantly decreasing leverage. This is due to the fact that the pin 23 slides in the slotted end of the lever 17, the initial position of said pin being such as to afford the greatest leverage of the lever 17 on the lever 13 and the final position being such as to

afford a much decreased leverage. It will thus be seen that the motion of the type bar is an accelerated motion due partly to the form of the connection between the type bar and the lever 13 and partly to the form of the connection between said lever 13 and the sub-lever 17. In some of the claims, in order to distinguish between these two levers, I have referred to the lever 13 as an operating lever and to the lever 17 as a sub-lever.

It will be apparent by an inspection of Figs. 2 and 3 that the lever 13 is operative on the type bar to throw the latter toward printing position during only a part of its positive stroke. In the latter part of the stroke the contact face 11 on the heel of the type bar moves entirely away from the lever arm 15 so that the stroke of the type bar is completed by momentum alone. The construction is such that the lever 13 is incapable of throwing the type bar entirely to the printing point except by momentum and such that even though the key be held firmly down the type bar is nevertheless free to rebound from the platen until the contact face 11 again strikes the end of the arm 15 of the operating lever. It will also be evident from an inspection of Fig. 3 that, although the contact 11 has moved away from the operating lever, said lever is nevertheless operative on the contact surface 12 to assist in restoring the type bar to normal position. The operating lever is itself impelled toward normal position by the spring 20.

The hanger —3— is provided with opposed spring bearing parts —25— and —26—, which frictionally engage the opposite faces of the heel of the type-bar to hold said type-bar from lateral vibration, as best seen in Fig. 4.

The U-shape head —5— of the type-bar —1— has its open side toward the printing point and the ends of the arms of said head are provided with suitable type —6— and —7— and while this U-shape bar is sufficiently rigid to withstand the strain incidental to the impact of the type against the platen it is sufficiently pliable or bendable to permit one of the arms to be adjusted by a suitable tool relative to the other arm so as to properly space the type and place them in correct position for printing at the printing point —8—. This U-shape head, as seen in Fig. 1, has the type end of one of its arms secured directly to the end of the bar, but in Fig. 5 I have shown the arms as both projecting from the bar toward the platen so that both arms may be adjusted relatively to each other for the purpose of placing the type upon their feet and permitting them to be properly spaced apart.

I have shown the operating member 13— as flexibly connected to the manual or key lever —18— by specific form of lever 17—, but I do not wish to limit myself to this form of connection, nor to the exact form of the lever 13—, as it is evident that the means for carrying out the objects of my invention may be modified in many ways from that shown and described, the essential feature of the invention being to provide an operating member which engages the heel of the type-bar with a variable leverage to move it to the printing point, and at the same time to utilize this same operating member to engage and lock the type-bar in its position of rest; another feature of the invention being to mount two type on the bar so that one may be adjusted relatively to the other.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. In a typewriting machine, a type bar having a circular disk-heel, spring metal bearing plates pressing against opposite sides of the disk-heel, and a pivot for the type bar connecting said plates.

2. In a front strike typewriting machine, a pair of spring plates spaced apart and receiving between them a type bar which is pivotally mounted thereon, the spring plates pressing against opposite sides of the type bar, and means for actuating the type bar.

3. In a front strike typewriting machine, a pair of spring plates, a type bar having a circular heel fulcrumed between the plates, said plates pressing against opposite sides of said circular heel, a lever fulcrumed between said plates and engaging the type bar to throw the latter to its printing position, and means for actuating said lever.

4. In a front strike typewriting machine, a pair of spring plates, a type bar having a circular heel fulcrumed between the plates, and having a recess in its periphery, a lever fulcrumed between the plates and engaging said heel to throw the type bar to its printing position, and means to actuate said lever.

5. In a typewriting machine, a hanger comprising two concavo-convex spring plates spaced apart and having their concave sides facing each other, a type bar having a circular heel centrally pivoted between said plates, and means for actuating the type bar.

6. In a typewriting machine, a hanger, comprising two concavo-convex spring plates spaced apart and having their concave sides facing each other, a type bar having a circular heel centrally pivoted between said plates, and provided with a recess in its periphery, a lever having one end entering the recess and engaging one side thereof to throw the type bar to its printing position, and means to actuate said lever.

7. In a typewriting machine, a hanger comprising two concavo-convex spring plates

spaced apart and having their concave sides facing each other, a type bar having a circular heel centrally pivoted between said plates, and provided with a recess in its periphery, a lever fulcrumed between the plates and having one end entering the recess and engaging its front side to throw the type bar to its printing position, and means for actuating said lever.

8. In a typewriting machine, a hanger comprising two concavo-convex spring plates spaced apart and having their concave sides facing each other, a type bar having a circular heel centrally pivoted between said plates, and provided with a recess in its periphery, an upright lever of the first order having its upper end bearing against the front side of the recess to throw the type bar to its printing position, a key lever and connections for transmitting motion from the key lever to the first named lever.

9. In a front strike typewriting machine, the combination of a platen; a type bar arranged to strike against the front face of said platen; an individual hanger to which said type bar is pivoted; an operating lever pivoted in said individual hanger and directly engaging the heel of said type bar to actuate the same; an upstanding sub-lever for actuating said operating lever; and means for actuating said sub-lever.

10. In a typewriting machine, the combination of a type bar having a notch in the heel thereof, an operating lever that works in said notch and a key for actuating said lever, the type bar having a part that engages said lever when the type bar returns to normal position and locks said type bar against rebound, and said notch and lever being so related that the type bar makes the last part of its motion toward the platen independently of the lever and is free to rebound from the platen independently of the lever even if the key be held down.

11. In a typewriting machine, the combination of a type bar having a notch in the heel thereof, an operating lever that works in said notch and a key for actuating said lever, the type bar having a part that engages said lever when the type bar returns to normal position and locks said type bar against rebound, and said notch and lever being so related that the type bar makes the last part of its motion toward the platen independently of the lever and is free to rebound from the platen independently of the lever even if the key be held down, and said type bar having a part that is engaged by said lever when the type bar is in printing position whereby said lever is operative to restore said type bar toward normal position.

12. In a typewriting machine, the combination of a key lever; a type bar; and an operating lever actuated by said key lever and arranged to act directly on said type bar, said operating lever and type bar having contacting surfaces, one part of the contacting surface of the type bar being arranged to be acted on by the lever during the down stroke of the key and to move in the latter part of the stroke of said type bar away from the contacting surface of said operating lever, whereby said type bar completes its stroke through momentum alone and whereby said type bar is free to rebound from the platen independently of said operating lever, even if the key be held down.

13. In a front-strike typewriting machine, the combination of an upwardly and rearwardly striking type bar, an operating lever for said type bar; a sub-lever for actuating said operating lever; and a key lever for actuating said sub-lever, said operating lever having a pin which plays in a slot in said sub-lever, whereby said operating lever is moved by said sub-lever with an accelerated velocity.

14. In a front-strike typewriting machine, the combination of an upwardly and rearwardly striking type bar; an operating lever which acts on said type bar with a decreasing leverage; a sub-lever which acts on said operating lever with a decreasing leverage; and a key lever for operating said sub-lever.

In witness whereof I, have hereunto set my hand this 2 day of May 1904.

GEO. F. STILLMAN.

Witnesses:
M. M. NOTT,
HOWARD P. DENISON.