O. PETERMANN.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 16, 1914.

1,194,419. Patented Aug. 15, 1916.

Fig. 1.

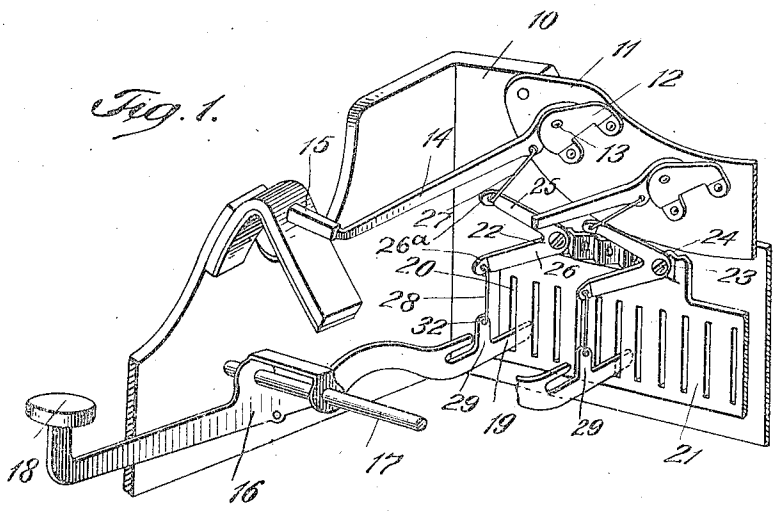


Fig. 2.

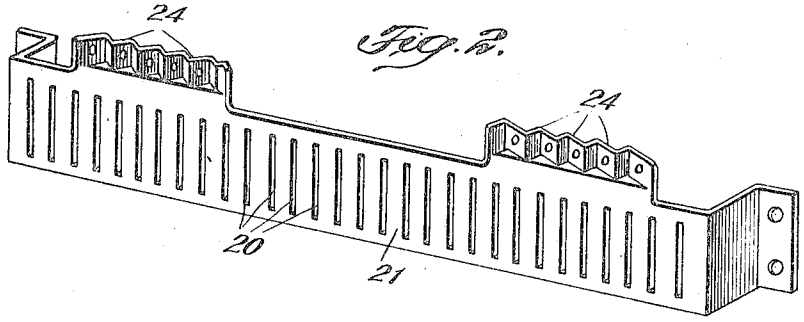
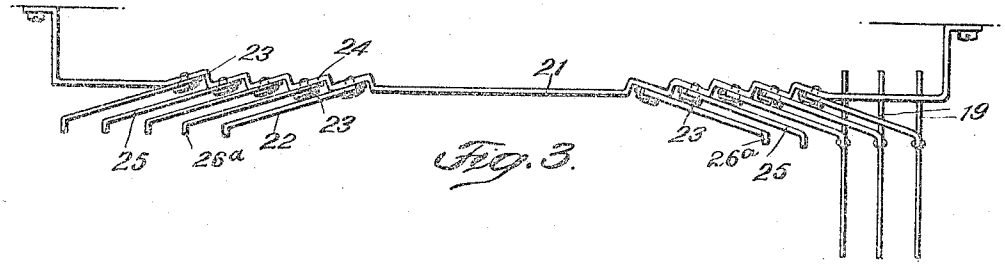


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,194,419. Specification of Letters Patent. Patented Aug. 15, 1916.

Application filed May 16, 1914. Serial No. 839,074.

To all whom it may concern:

Be it known that I, OTTO PETERMANN, a citizen of the Republic of Switzerland, and a resident of Groton, county of Tompkins, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description.

This invention relates more particularly to the key action of foldable front strike or visible typewriting machines.

In typewriting machines of the character referred to in which the type-bars are moved upward and rearward for printing purposes and where the type-bars each have a type head or block having a plurality of characters thereon and particularly where it is desired to make the parts light and compact, it has been found that under certain conditions the outer type-bars when actuated will be given a twisting movement which often results in affecting the alinement while printing. The type-bars are arranged in a curved path or basket and the said type-bars are successively arranged at different angles with respect to the printing point, and at the printing point in this class of machines, there is usually placed an aliner having outwardly projecting prongs or guides between which the type heads pass while printing. The key-levers are usually connected by links to the type-bars at a point adjacent to and below each pivot of the type-bar with its hanger or support. Under this arrangement the outer type-bars move at a considerable angle with respect to the line of movement of the links and key-levers connected thereto so that as the key-lever is depressed, a twisting upward movement is imparted to the outer type-bars. This will make the type head hit either side of the guide prongs of the guide or aliner resulting in the type being often forced considerably out of alinement either by striking the paper too high or too low. That is, if the type of an extreme left side type-bar hits the right side guide prong of the aliner just before reaching the printing point, the type will be raised and print a little higher than it ought to and in other instances the type will print a little below where it ought to print.

In the key action where there is a single link or connection between the type-bar and its coöperating key-lever it will be evident that the link end of the key-levers on both sides of the machine move at a considerable angle to the path of the corresponding type-bar, this angle gradually decreasing toward the center of the machine. On the other hand, the link hole or aperture of the type-bar is considerably outside and below the center of the type-bar in its normal position. As the link is at an angle to both key-lever and type-bar, the line of force is also at an angle to both of them. This action has a tendency also to twist the inner end of the key-lever and if the said end of the key-lever is guided in a comb, it will tend to twist or press the end of the key-lever to one side of the slot in the comb due to the unfavorable action of the link and the initial resistance of the bar when moved. This twisting tendency decreases the nearer the type-bar is located to the center of the machine and consequently only the outer type-bars have the objections referred to. That is, about one-sixth of the type-bars at each side of the machine only has a twisting effect for the reason that the line of force of the link coincides with the line of motion of the type-bar and consequently the key-lever in such instances can be connected direct to the type-bar by a link without such twisting effect.

One of the principal objects of the present invention is to overcome the objections referred to by providing means interposed between the key-levers and the type-bars which will compensate for the variation of the angular movement of the type-bars with respect to the movement of the key-levers so that the twisting action of the type-bars in their printing movement will be effectually eliminated.

Another object of the invention is to provide a simple and efficient support for the compensating means and which support may be formed as a separate element or as a part of a comb plate or member serving as guiding means for the inner end of the key-levers.

A further object of the invention is to provide simple and efficient means which may be easily made and which may be readily applied to typewriting machines as ordinarily constructed.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of

this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a fragmentary perspective view, showing one means for connecting a key-lever and type-bar, the carriage and other parts of the machine not being shown. Fig. 2 is a detail perspective view of the comb plate and support for the compensating means; and Fig. 3 is a detail plan view of the support showing the arrangement of the compensating connections at each side of the machine.

The machine frame 10 may be of any suitable form and of any suitable material and may have a plate 11 held thereto at the rear portion thereof on which the type bar hangers 12 are mounted. These type-bar hangers may be of any suitable construction and pivotally held thereto, as at 13, are type-bars 14. The type-bars each have a type head or block 15 on which may be arranged a plurality of characters in the usual way indicating upper case, lower case and figures or other suitable characters, and which in its printing movement moves upward and rearward against the work sheet on the platen as is usual in machines of this class.

A number of key-levers 16 of any suitable construction are mounted on one or more transversely extending rods 17. Only a couple of key-levers are shown, though a number are employed, one for each type-bar, and said key-levers each have a key 18 for operating purposes and form a part of a universal or standard keyboard. Each key-operated lever 16 has a suitable bearing to properly hold the same on its supporting rod 17 and extends inward in substantially a horizontal direction and has its inner end, as 19, guided in a vertical slot 20 in a comb plate 21. The parts as thus described may be of the usual or of any preferred construction.

As a means to prevent a twisting action during the angular upward movement of the type-bar as each key-lever is depressed, various means may be employed. As shown, I provide an angular or bell-crank lever 22 one for each of the outer type-bars and key-levers. These levers 22 each are pivoted by a screw 23 or otherwise to a support 24. The support 24 may be formed as a part of the comb plate or member 21 and each support 24 for each lever 23 is angularly arranged with respect to the body of the comb plate 21 and extends crosswise of the key-lever to which it is connected. The bell-crank levers 22 on one side of the machine extend in an opposite direction to those on the other side of the machine so that their angle of inclination tends to converge at the rear of the machine. Each lever 22 has two arms 25 and 26 which lie in substantially the same vertical plane and each arm has its end 26^a bent at an angle with respect to the arm. The end 26^a of each arm is provided with an aperture and connecting the arm 25 of each lever with a type-bar is a link 27. A link 28 connects the arm 26 of each lever with its coöperating key-lever, the latter being provided with a projecting lug or part 29 and an aperture 32 therein for the link 28.

It will be evident from the construction shown that the link 28 as the key-lever 16 is depressed will remain in its normal vertical position to act upon the arm 26 to force the same upward. The arm 25 by reason of the angular arrangement of the lever and through the link 27 will move toward the center and in substantial alinement with the movement of the type-bar in its upward and rearward printing movement, thus the key action divides the power transmitting line of force in two sections each one following the line of motion of the corresponding part. That is, the link 28 moves with slight variations up and down in substantially a straight line, and the link 27 moves with slight variations in the direction of travel of the type-bar. All side or twisting motion imparted by a single link connection is therefore eliminated and the alinement of the end bars will be just as good and permanent as the more centrally located bars. It will be noticed further that the bell-cranks or angular levers 22 are staggered so that they swing at an angle to the comb plate. This is done in order that they may be spaced closer and that any desired number of end bars on either side of the machine may be fitted with this special flexible link connection.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a typewriting machine, the combination of a support having pivotal portions, bell-crank levers having forwardly extending arms pivotally held to said portions to move up and down thereon, type-bars located above the upper forwardly extending arms of said bell-crank levers, links connecting said upper arms to said type-bars, key-operated levers located under the lower forwardly extending arms of the bell-crank levers, means for guiding said levers at their inner ends, and links connecting the key-operated levers with the forward ends of the lower arms of the bell-crank levers, the arrangement of the links and arms of the bell-crank levers being such that each transmitting line of force is divided into two sections one of which follows the direction of travel of the type-bar and the other the direction of travel of the key-operated lever.

2. In a typewriting machine, the combination of a vertically arranged support having pivotal portions at opposite sides of the machine, said portions being angularly ar-

ranged with respect to the body of the support and those on one side of the machine angularly arranged with respect to those on the other side, bell-crank levers having forwardly extending arms pivotally held to said portions to move up and down thereon, type-bars located above the upper forwardly extending arms of said bell-crank levers, upwardly and rearwardly extending links connecting said upper arms to said type-bars, key-operated levers located under the lower forwardly extending arms of the bell-crank levers, and vertically disposed links connecting the key-operated levers with the forward ends of the lower arms of the bell-crank levers.

3. In a typewriting machine, the combination of a support having pivotal portions, bell-crank levers having forwardly extending arms pivotally held to said portions to move up and down thereon, type-bars located above the upper forwardly extending arms of said bell-crank levers, upwardly and rearwardly extending links connecting said upper arms to said type-bars, key-operated levers located under the lower forwardly extending arms of the bell-crank levers, said support being slotted to guide said levers at their inner ends, and vertically arranged links connecting the key-operated levers with the forward ends of the lower arms of the bell-crank levers, the arrangement of the links and arms of the bell-cranks being such that the transmitting line of force for each type action is divided into two sections one of which follows the direction of travel of the type-bar and the other the direction of travel of the key-operated lever.

4. In a typewriting machine, the combination of a support having its body provided with slots forming a comb plate and having integral staggered pivotal portions at opposite sides of the vertical center thereof, bell-crank levers pivotally held to said pivotal portions and extending in substantially parallel relation to each other and projecting inwardly at an angle intersecting the center of the machine, type-bars connected to the bell-crank levers, and key-operated levers having their ends guided in the slots of the comb plate and connected to said bell-crank levers.

5. In a typewriting machine, the combination of a support having its body provided with slots and with angularly disposed integral pivotal portions, a plurality of bell-crank levers located on opposite sides of the machine and angularly arranged with respect to the support and the levers on one side of the machine angularly arranged with respect to those on the other and pivoted to said angular portions of said support, type-bars pivoted to swing upward and rearward at an angle, key-operated levers having ends guided in the slots of the support, and links connecting the angularly arranged bell-crank levers to the type-bars and other links connecting the key-operated levers to said bell-crank levers.

6. In a typewriting machine, the combination of a type-bar, a key-operated lever, a comb plate forming a guide for said key-operated lever at the inner end thereof, a support integral with said comb plate, a lever pivotally held to said support, and links connecting the lever to the type-bar and to the key-operated lever.

This specification signed and witnessed this 28th day of April, A. D. 1914.

OTTO PETERMANN.

Witnesses:
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H. M. IVES.