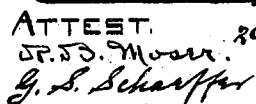


A. R. BAILEY.
TYPE WRITER.

Patented July 27, 1897.



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TYPE-WRITER.

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To all whom it may concern:

Be it known that I, ARTHUR R. BAILEY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Type-Writers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention has reference to type-writers; and the object of the invention is to provide means for operating a type-writer whereby the actual labor of the machine, in so far as manipulating the type-bars is concerned, is performed through outside and auxiliary power, and the operator has nothing more to do than indicate the particular type-bar to be actuated by an easy touch and a slight movement of the key, and the power mechanism does rest.

To this end the invention consists in the construction of a machine with power connections responsive to and connected with the key-levers and serving to complete the action initiated by the movement of a key-lever and to actuate the type-bar and make an impression, all substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved machine, having a portion broken out and showing the operating parts in a position of rest and ready to operate. Fig. 2 is a horizontal plan view on a line corresponding to 2-2, Fig. 1, and looking down on the operating-roll and the auxiliary levers shown in elevation in Fig. 1. Fig. 3 is a sectional and detail view of a single type-bar and its connections, said bar being down, as occurs when the operating parts are actuated, as in Fig. 2. Fig. 4 is a cross-section of a pair of levers and an edge view of their keeper and its connection, as herein-after fully described.

The invention herein shown and described is not designed to be used with some particular make of machine and none other, but is adaptable to any of the standard machines with a comparatively slight modification of parts to make room for the introduction of the extra mechanism.

In the accompanying drawings I have shown a suitable frame A with what may be termed the usual keyboard and keys B and the main or key levers C running to the rear of the machine and pivoted on a common pivoted rod 2. These key-levers C are understood to be constructed after the manner of the usual key-lever in material and form and have in addition to the usual construction a right-angled arm or bell-crank arm 3 at their ends, and to the upper ends of these arms are attached the auxiliary or power levers D. These power-levers are partially supported at their front ends by rods or wires 5, connected to the short ends of the finger-pieces or type-arms 6, behind the pivot-points 7 thereof. These wires or rods 5, through which the type-arm is actuated and thrown into working position, are the usual rods or wires which in the ordinary machine are connected directly with the key-lever C. In this case the said wires 5 are attached to the upper ends of the metal straps or keepers 8. (Shown in edge view in Fig. 4.) These straps are bent as shown in Fig. 4, so as to inclose the key-lever C and keep it within certain limits and free to move up and down independently of the strap, and the ends of the strap are fixed to the auxiliary or power lever D. This is the same in effect as attaching the rods 5 directly to the power-levers.

It will be seen in Figs. 1 and 2 that the said straps or keepers 8 are arranged alternately at the front and rear of the transverse guide-frame for both said sets of levers and consist in this instance of three horizontal bars 9, 10, and 11, through which pass the guide-rods 12, that serve as guides or stays for the said levers and confine them laterally, so that they will only have an up-and-down movement. Any other suitable means than the cross-bars and separating-wires 12 here shown may be substituted for these parts, if desired.

A suitable retracting-spring 14 is connected with each auxiliary lever D at its rear in this instance, though it may be elsewhere connected and is made with sufficient tension to hold the said lever and its key-lever in the position relatively as shown in Fig. 1, which is the normal position for said parts. Now in order that power may be employed to actuate the machine as already described I in-

5 introduce a cylinder E transversely of the machine immediately at the rear of the keyboard and in close proximity of the ends or extremities of the power-levers D. This cylinder or
 10 tube E is supported in any suitable bearings at its ends, and it may be made of any suitable material, the purpose thereof being to make frictional actuating engagement with the extremity of the power-lever D momentarily and
 15 instantaneously with the depression of the corresponding lever C. When contact between said power-lever and cylinder is made, the power-lever D is down at its front end, and this operation throws the corresponding type-bar 6 into printing position. Hence the free
 20 end of lever D and the surface of the tube or cylinder E may one or both be faced with rubber or other material, or be of such material themselves as to make certain frictional contact and avoid slipping.

In operation, to effect contact between a power-lever and the cylinder it is only necessary to depress the key B sufficiently to carry the lever D forward into touch with the cylinder E. Obviously this action of the operator
 25 will be a very easy one for the reason that the levers C themselves are long and have a very short arm 3 to operate the swinging power-lever D. The space between the extremity 16 of lever D and the cylinder E is very slight, it only being necessary that there should be separation at this point and nothing more. Hence a very slight movement comparatively and a very easy one of any one of the key-levers will throw its power-lever D into contact
 30 with the said cylinder, and since the said cylinder is supposed to be rotating at a sufficient rate of speed to give an instantaneous action to the type-bar when touch by lever D has been effected it will be seen that the operator will no sooner have caused a depression of a key than that the corresponding character will respond and make its impression. To operate said cylinder of tube E, I
 35 have shown here a cord 18, which passes over a sheave 19 upon the end of the cylinder, which cord is connected with any suitable driving power. This power may be a permanent power-shaft or it may be a motor of some kind, or even be a treadle. In fact it is not material what the power is if it be sufficient to drive the said cylinder at a suitable and uniform rate of speed, say one hundred (100) revolutions a minute. The instant that
 40 a sufficient depression of a key has occurred to make contact with the cylinder by any one of the power-levers it follows that in the same instant the said cylinder actuates the lever D and draws it down sufficiently to throw the printing-characters into printing position. The two operations of depressing a key and making an impression are simultaneous and instantaneous. This not only effects a very great saving of labor and strength to the operator, but it greatly facilitates the work, because, in the first place, the actual work is done by the power mechanism and only an

initial or starting touch is required upon the key. In the next place the distance to which the key is depressed in this improved operation is considerably less than in the old style of machine, and hence the act of depressing the key requires less time and facilitates speed of operation. Obviously as soon as the operator withdraws his touch from the key
 75 the spring 14 at the rear of the levers asserts itself and draws the power-lever D out of contact with the cylinder. The parts are then not only released at that point, but the power-lever D is instantly restored to its normal position, where it awaits further use, and in the same instant the actuated type-bar drops back out of use and out of the way.

All of the keys and type bars or arms are similarly connected, so that a description of
 85 the operation of a single key and its connected and coacting parts serves for all.

Sometimes it may occur that the operator will want to run the machine without the power connections. In that event he simply
 90 has to throw the power-cylinder E out of possible engagement with the ends 16 of the levers D and depress all the levers C in their keepers 8 to the bottom thereof, so that when the operator touches any one of the keys it
 95 will act directly upon its type-bar through the lever C, keeper 8, and operating-rod 5. Thus, for example, referring to both Figs. 1 and 4, it will be seen that in the said keeper the lever C normally is slightly above the
 100 bottom of the loop thereof. Now assuming that the power is not to be used the operator simply throws the arms 20 of the pivoted cylinder-bearing pieces 21 toward the rear of the machine and thereby depresses all the levers
 105 C through the cross-rod 22, connected to the lower ends of the said bearing-pieces 21. These pieces are pivoted on the main frame at 23, and they have suitable bearings for the cylinder E, as hereinbefore described, as well
 110 as the other features of construction shown, to move the cylinder from one position to another and to depress the key-levers. When this occurs, all the levers C will be down to the bottom of the loop in the keepers 8, and
 115 then the cylinder E will not only be withdrawn from the ends of the levers D to prevent possible contact, but the depression of a key B will at once act directly upon its type-arm. Springs 24 at the sides of the machine serve to keep the cylinder E normally
 120 raised to acting position.

Obviously the construction for hanging and operating the cylinder E and for depressing the levers C might be very considerably
 125 changed from what is shown here and still serve the same purpose. I do not, therefore, deem my invention as being limited by the construction of parts as here shown and described so far as this cylinder is concerned.
 130 Indeed, there may be modifications and changes in all parts of the machine in which the invention occurs without departing from the spirit thereof.

The power-cylinder might be fluted or corrugated longitudinally and the ends of the power-levers constructed to engage therewith, so that there would be positive power engagement at this point instead of frictional engagement.

Having thus described my invention, what I claim is—

1. In type-writers, a key-lever having a rigid annular extension near its pivot-point, a power-lever connected to said extension, a type-bar and a support for the free end of the power-lever connected with the said type-bar, and a power-communicating medium for the power-lever arranged to contact with the same at its front end, substantially as set forth.

2. In type-writers, the key-levers and the type-bars, the power-levers for the type-bars connected at one end with the key-levers and having their outer ends arranged to be engaged by the power mechanism, and power mechanism arranged to engage the said power-levers, substantially as set forth.

3. In a type-writer, the key-levers, the power-levers and the type-bars, arranged substantially as shown, and a rotating part constructed and arranged to make momentary contact with said power-levers, and thereby actuate the type-bars, substantially as set forth.

4. The mechanism described, comprising the depressible key-lever and the depressible power-lever pivoted on the key-lever at its rear end, a pivoted type-bar and suspensory means from said bar to said power-lever, and a power-communicating member for the power-lever at the front end thereof, substantially as set forth.

5. A pivoted key-lever and a power-lever connected thereto and a revolving cylinder at the free end of the power-lever having frictional contact therewith, substantially as set forth.

6. The key-lever having a bell-crank arm, a power-lever attached to said arm, a type-bar and connection between said bar and said power-lever and a power-cylinder arranged to be moved to and from the power-lever, substantially as set forth.

7. In a type-writer, a key-lever, a power-actuated lever secured thereto, a transverse cylinder arranged to be brought into frictional touch with the free end of said power-lever, a type-bar connected to the said power-lever and means to withdraw the power-lever after an action, substantially as set forth.

8. The key-lever having an arm at its rear end, a power-lever pivoted on said arm and parallel to the key-lever, power mechanism to actuate the power-lever independently of the key-lever, and a connection from said power-lever to the corresponding type-bar, substantially as set forth.

9. In a type-writer, a key-lever and a power-lever parallel therewith and operated thereby, a type-bar connected with the said power-lever and rotating power mechanism to engage the free end of the power-lever, substantially as set forth.

10. In a type-writing machine, a key-lever, a power-lever, and connections between the said levers at their rear ends to move the power-lever longitudinally, a type-bar, a suspensory connection between the said type-bar and the front end of the power-lever, power mechanism to depress the front end of the power-lever and means to withdraw the power-lever from contact with the power mechanism, substantially as set forth.

11. In a type-writer, a power-lever and a type-bar connected therewith, in combination with a line of mechanism to depress said lever at one end, and a separate line of mechanism to move said lever to depressible position, substantially as set forth.

12. The parallel key-levers and power-levers, one above the other and pivotally connected at their rear ends, type-bars connected with said power-levers, and means to connect the said levers to operate the type-bars by depressing the key-levers, substantially as set forth.

Witness my hand to the foregoing specification this 3d day of October, 1894.

ARTHUR R. BAILEY.

Witnesses:

GEORGIA SCHAEFFER,
JAMES SHEA.