(No Model.)

L. F. CLARK.

TYPE WRITING MACHINE.

No. 471,785. Patented Mar. 29, 1892.

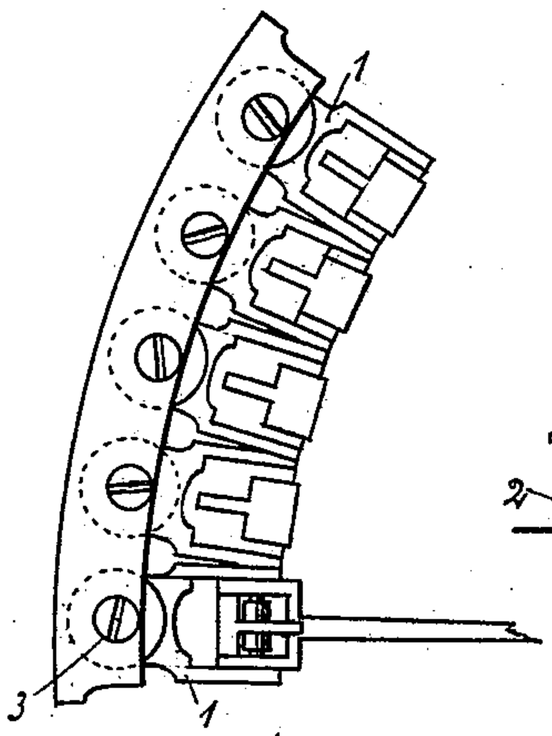


Fig. 1.

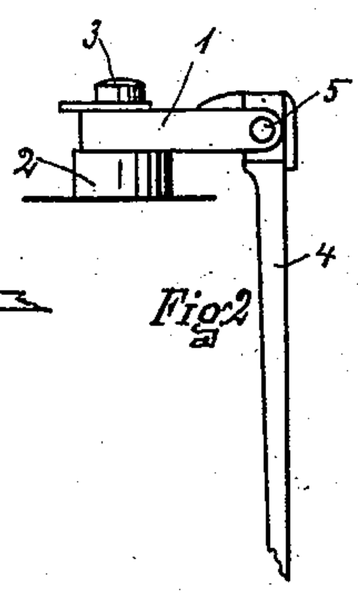


Fig. 2

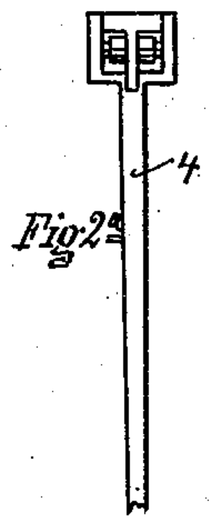


Fig. 2a

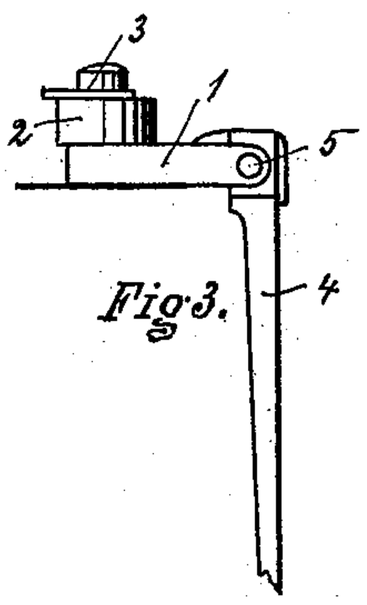


Fig. 3.

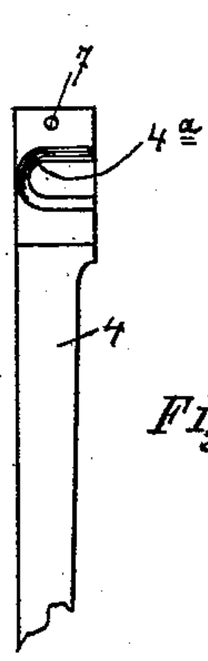
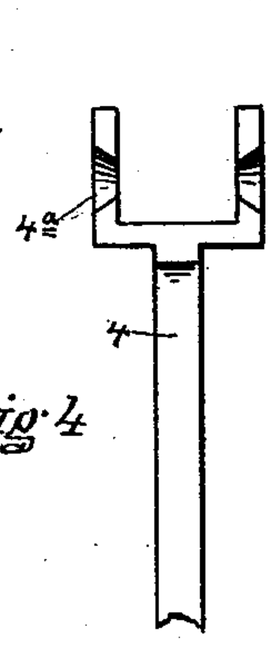


Fig. 4



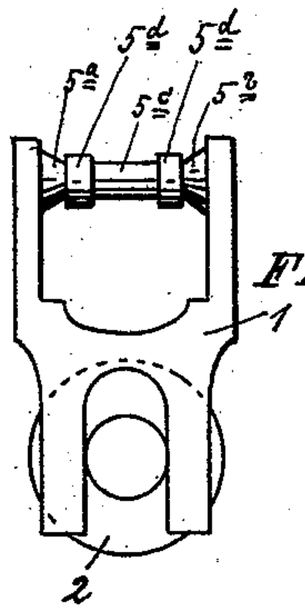
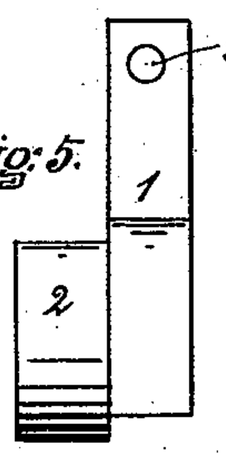


Fig. 5.



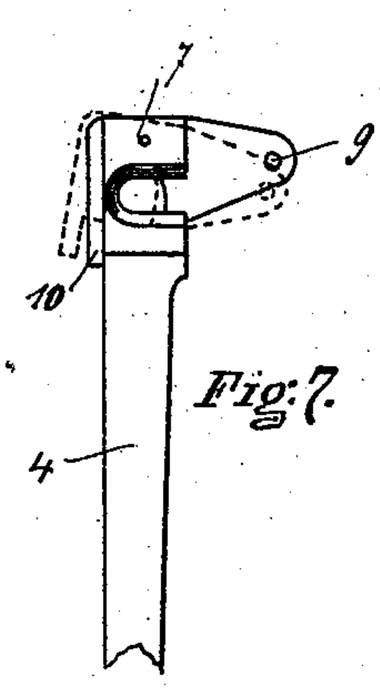
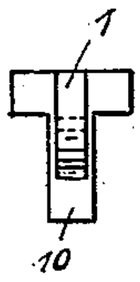


Fig. 7.



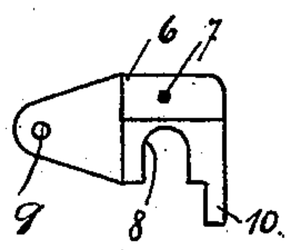
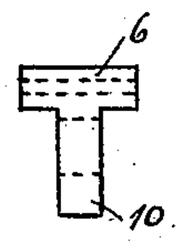


Fig. 6.



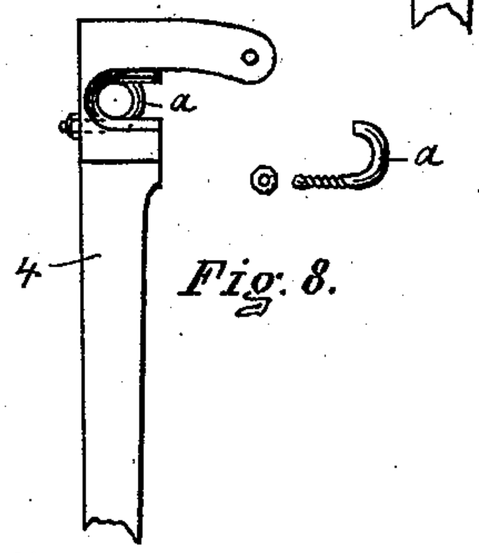


Fig. 8.

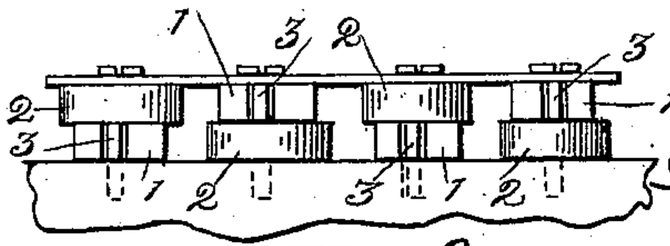


Fig. 9.

WITNESSES.
Rich. A. George.
M. C. Robinson

INVENTOR.
Lourdes F. Clark
By Risley & Perry
attys

UNITED STATES PATENT OFFICE.

LEONIDAS F. CLARK, OF ILION, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 471,785, dated March 29, 1892.

Application filed October 6, 1890. Serial No. 367,150. (No model.)

To all whom it may concern:

Be it known that I, LEONIDAS F. CLARK, of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Type-Writing Machines; 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

My invention relates to an improvement in type-writers, and more particularly to the type-bar and hangings of the bar.

In the drawings which accompany and form a part of this specification, and in which similar letters and figures of reference refer to corresponding parts in the several views, Figure 1 shows a top view of a section of the circle in a type-writing machine in which the type-bars are hung and a top view of four of the hangers. Fig. 2 shows a side view of a portion of the type-arm and a hanger. Fig. 2^a shows a front view of the same part shown in Fig. 2. Fig. 3 shows the part shown in Fig. 2 with the washer applied above the hanger. Fig. 4 shows a side and bottom view of my improved type-arm removed and freed of all other parts and showing only the one piece. Fig. 5 shows the top and edge view of my hanger and a washer used in connection therewith in arranging the hangers in two planes, one above the other, as hereinafter pointed out. Fig. 6 shows a piece of the arm which carries the short arm or bell-crank. Fig. 7 shows the part shown in Figs. 4 and 6 combined, and is intended to show the operation of the parts, as hereinafter described. Fig. 8 shows a modified form of construction, being one of the simplest forms of the device. Fig. 9 shows a number of the washers and hangers as they are arranged in the circle of the machine, the hangers being shown in section.

Heretofore difficulty has been found in the way of pivoting the type-bar in the class of machines to which my invention is adapted, so that the type will strike truly in the same place and continue to do so after the machine has been used and the parts become somewhat worn, and it is particularly to this purpose that this invention relates.

Referring more specifically to the reference numerals and letters marked on the drawings, 1 indicates the type-hanger, which is provided with a fork on each end, one fork carrying the pivot-pin on which the arm is mounted, and the other fork spanning the screw by which the hanger is secured to the machine in the "circle" thereof. In connection with my hanger 1, I provide washers 2, which are placed alternately above and below the hanger as they are located in the circle of the machine, (see Fig. 1,) and thus locating the hangers alternately in a higher and lower plane, whereby a wider hanger with a longer pivot than could otherwise be used is permitted. It will be understood from Fig. 1 how the inner ends of the hangers will overlap each other somewhat when a wide fork with a long pivotal pin is used.

The fork spanning the screw 3, by which the hanger is secured to the machine, permits of the ready removal of the hanger and type-bars from the machine without entirely removing the screw, and this is made possible without so weakening the hanger as to make it useless by reason of the pivotal pin of the hanger being secured in the hanger instead of in the type-bar, as is now common.

4 indicates the type bar or arm on the lower end of which the type is mounted in the ordinary manner. The type-arm is mounted upon pivot 5 and has a bearing near each end of the pivot. The type-arm engages the pivot at two bearing-points having a space between them, as will be understood from Figs. 3 and 4. The pivot 5, as shown in Fig. 5, is provided with three bearing-points, as 5^a, 5^b, and 5^c, which may be separated by projecting rings or lugs 5^d. The bearings 5^a and 5^c are conical and the portions of the type-arm adapted to engage thereon are made corresponding in form.

6 indicates the bell-crank piece, which is pivoted at 7 in the end of the type-arm, and is provided with a bearing 8, adapted to engage on the bearing 5^c of the pivotal pin.

9 is the opening or point to which the connecting-rod extending to the key for operating the type is connected.

10 indicates an arm forming a part of piece

6, which is adapted to engage on the front face of the type-arm and limit the movement of the piece 6 with reference to the type-arm, and prevent the piece 6 from bearing on pivot 5 from the front side of the type-bar, and also causes it to retain the type-arm upon its pivot.

Referring to Fig. 4, 4^a indicates the U-shaped bearings having beveled walls adapted to engage on the conical bearings 5^a or 5^b. The purpose of the bearing at each end of the pivotal pin is to get a wider range of base to the type-arm and the bearing being at two points only the wear, if any, is such that the type-arm will always swing in the same place and is not so liable to vary as where a pivot extends through a continuous hole or bearing in the type-arm.

The operation of the device is substantially as follows: When the power is applied to the bell-crank at 9 of the type-arm to effect its movement, the tendency is to move piece 6 from the position shown in full lines to the position shown in dotted lines in Fig. 7. At this movement the pivotal pin (not shown in Fig. 7) is grasped as in a pair of tongs—that is, the two bearings 4^a 4^a on the arm engage on parts 5^a and 5^b of the pivotal pin on one side and the opposing bearing at 8 on the movable piece 6 engages the pivotal pin at part 5^c on the opposite side—and thus while the type-arm is being swung up by the bell-crank 6, connected to it at 7, to strike the blow, the bearings are held very accurately to the pivot, no matter if they are somewhat worn, and the type is sure to deliver its blow in exactly the same and correct position every time it is operated. When the blow has been delivered, the pressure being relieved from the operating-key, the bearing is free—that is, the pivotal pin is not grasped from both sides, as heretofore described—and there is no danger of the type-arm binding on the pivot and failing to return to its normal or lower position. The arm 10 of the bell-crank piece of the type-arm is adapted to engage on the front of the type-arm and prevent the piece 6 from swinging with reference to the type-arm 4, so as to allow the type-arm to become disengaged from its pivotal pin, and also prevents undue amount of movement in the bell-crank piece and makes the arm as near like a one-piece rigid arm as may be and still accomplish the purpose of this construction.

In Fig. 8 is shown one of the simplest forms in which my construction can be embodied, in which is shown the type-arm 4, having the bell-crank formed integral therewith, and U-shaped bearings adapted to engage upon the pivotal pin, as in the construction heretofore described, and being secured upon the pin by clamp *a*, engaging the pivotal pin on the opposite side, as does the piece 6 in the construction shown in Fig. 7. The clamp is secured to the arm by nut and screw.

It is evident that modifications and alterations in and from the construction described may be made without departing from the spirit or features of this invention or the equivalents of the construction.

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

1. The combination of a forked type-arm and hanger, the pivotal pin spanning the fork and secured therein and having a conical bearing at each end, and the type-arm mounted on the pin, having two bearing-points on the pin and the space between, substantially as set forth.

2. The combination of a type-arm and hanger, the pivotal pin, and a movable bell-crank connected with the type-arm and adapted to grasp the pivotal pin between the bearings of the type-arm, substantially as set forth.

3. A type-arm hanger having a pivotal pin mounted therein, a type-arm having two bearing-points adapted to engage on the pivotal pin, with a space between them, and a movable bell-crank connected to the type-arm, adapted to engage the pivotal pin between the bearings of the arm, substantially as set forth.

4. The combination, with a type-arm carrier and pivot, of a type-arm and a movable bell-crank connected to the type-arm, adapted to grasp or bind the arm onto the pivot on which it is mounted, substantially as set forth.

5. The combination of the type-arm having a bearing to engage the pivotal pin, the pivotal pin having a plurality of bearing-points, a movable binder or clamp piece to engage the pivotal pin on the opposite side from the type-arm, and the connection between the type-arm and the clamp or binder, substantially as set forth.

6. The combination of a type-arm hanger, a pivotal pin mounted thereon, a type-arm having U-shaped bearings adapted to engage on the pivotal pin, and a movable bell-crank piece pivoted to the type-arm and adapted to engage the pivotal pin and bind the arm onto the pivotal pin, substantially as set forth.

7. The combination of a type-arm hanger, a pivotal pin, a type-arm having a bearing on the pivotal pin, and a movable bell-crank piece having a bearing on the pivotal pin and pivoted to the type-arm, substantially as set forth.

8. The combination of a type-arm hanger having a pivotal pin, a type-arm having two bearings on the pivotal pin with a space between them, and a movable bell-crank piece pivoted in the type-arm and having a U-shaped bearing adapted to engage the pivotal pin, substantially as set forth.

9. The combination of a type-arm hanger, a pivotal pin, a type-arm having two bearings on the pin, a movable bell-crank piece pivoted in the type-arm and having a U-shaped bearing on the pivotal pin, and a projecting arm engaging on the front of the type-arm to prevent displacement, substantially as set forth.

10. The combination, with two or more type-arm hangers, of two or more duplicate washers engaging alternately on the top and bottom of the hangers, and the screw for securing the hanger to the machine, substantially as set forth.

11. The combination of the type-arm having bearings adapted to engage the pivotal pin, the pivotal pin having a plurality of bearings, a clamp for binding the bearings of the type-arm to the pivotal pin, and the connection between the clamp and type-arm, substantially as set forth.

12. The combination of the type-arm having open bearings adapted to engage upon the pivotal pin with a space between the bearings, a pivotal pin having a plurality of bearings, a clamp or binder engaging the pivotal pin between the bearing and securing the arm to the pivotal pin, and the connection between the clamp or binder and the type-arm, substantially as set forth.

In witness whereof I have affixed my signature in presence of two witnesses.

LEONIDAS F. CLARK.

Witnesses:

M. E. ROBINSON,

JOSIAH PERRY.