(No Model.)

# E. M. HAMILTON.

## LEVER MOVEMENT FOR TYPE WRITERS.

No. 357,668. Patented Feb. 15, 1887.

*Fig. 1.*

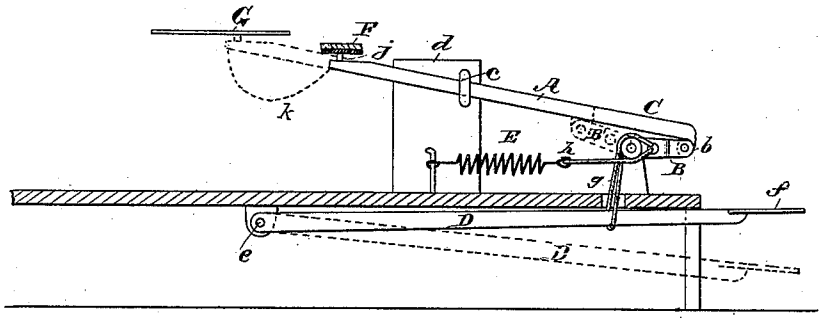



*Fig. 2.*

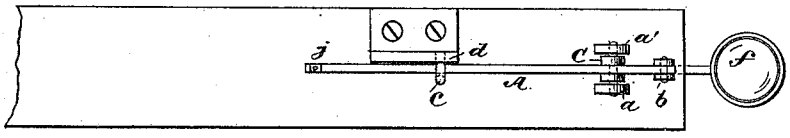



*Fig. 3.*

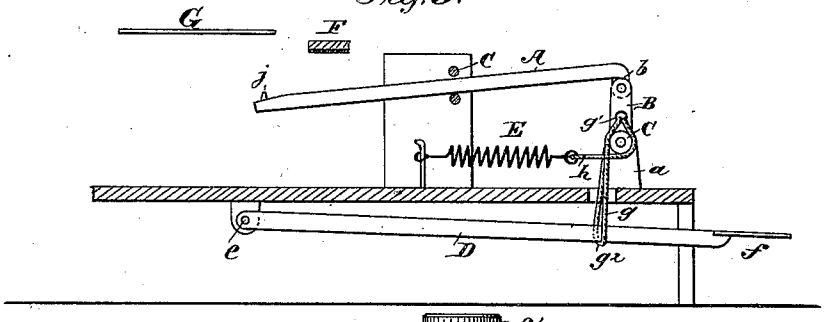
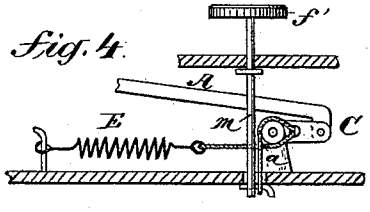



*Fig. 4.*




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# UNITED STATES PATENT OFFICE.

EMERY M. HAMILTON, OF NEW YORK, N. Y.

## LEVER-MOVEMENT FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 357,668, dated February 15, 1887.

Application filed April 1, 1886. Renewed December 2, 1886. Serial No. 220,529. (No model.)

*To all whom it may concern:*

Be it known that I, EMERY M. HAMILTON, of the city of New York, in the county and State of New York, and a citizen of the United States of America, have invented a new and useful Lever-Movement for Type-Writers, of which the following is a specification, reference being had to the accompanying drawings, forming part of the same, in which—

Figure 1 is a side elevation, partly in section, and Fig. 2 a plan or top view, of the parts constituting a lever-movement that embodies my invention. Fig. 3 is also a side elevation, partly in section, of the same device, showing the lever in a position different from that shown in Fig. 1; and Fig. 4 represents a modification of the key-board and its connections.

The purpose of the lever herein shown and described is to support and move the printing-type in a type-printing machine, so that the type is lifted from an inking-pad and carried to the point where the impression is to be made on the paper and pressed against the paper and then returned to the said pad by a single vibration of the key-lever; and the invention consists in the combination, hereinafter described and claimed, of a type-lever carrying a printing-type and arranged to rock and slide on a fixed fulcrum, a rock-shaft and single crank-arm from which motion is communicated to said lever, a printing-table, and a finger-key, and the described connections with the rock-shaft whereby, in conjunction with a spring, a rocking motion may be given to the rock-shaft.

A is the type-lever. B is a crank fixed on a rock-shaft, C, that is journaled in suitable uprights, as at *a a'*. The said lever and crank are jointed together, as at *b*, and *c* is a keeper or staple fixed in a suitable support, as at *d*, and through which the lever A passes. It forms the fulcrum of the said lever.

D is a finger or key lever, hinged at its inner end, as at *e*, and provided at its opposite end with a finger-piece, *f*.

A' is a table upon which the parts are mounted.

*g* is a band, one end of which is connected to the crank B, as at *g'*, and the opposite end to the key-lever D, as at *g²*, the said belt passing from its connection down over the inner face of the shaft C.

*h* is another belt, connected at one end also to the crank B, as at *g'*, and, passing down over the opposite or outer face of the shaft C, is connected at its lower end to a spring, E, which acts through the said belt to rock the said shaft and its attached crank in a direction reverse from that given to it by the key-lever D, through the belt *g*, and into the position shown in Fig. 1.

F is intended to represent a section of an inking-pad for inking the type *j*, fixed in the end of the lever A, and G indicates a section of a platen, against which the type on the end of the lever is pressed to give the printing-impression upon paper to be laid against the face of the said platen.

The operation of the described lever movement is obvious. Fig. 1 shows the same in the normal position, at rest. Now, when the key-lever D is depressed by pressing on the finger-piece *f* the shaft C is rocked on its bearings and the crank B makes a half-revolution, or nearly so, into the position shown by the dotted lines at B'. While the crank is making this movement the free end of the lever A, carrying the type *j*, describes the curve shown by the dotted line at *k*, whereby the type at the beginning of the movement is carried directly or nearly directly downward, away from the inking-pad, and at the end of the movement directly upward against the platen for making the printing-impression. Then, when the key-lever D is released, the spring E acts to rotate the crank in the opposite direction, reversing the movement of the lever A and bringing the type back into contact with the inking-pad.

Fig. 4 shows a modification of the key-lever which I regard as the equivalent of that shown in the other figures, and which may be used if preferred. It consists of a post or shaft, *m*, arranged to slide vertically in suitable supports, and to the lower end of which the belt or band *g* is attached and the upper end of which is provided with a finger-piece, *f*. It is obvious that by depressing this post the same effect will be produced as by depressing the key-lever D.

As before intimated, the described lever-movement is especially designed and adapted to operate the type in a type-writing machine in which a series of levers is employed, each one carrying a type. In such a machine the

series of these type-levers may be arranged in a plane in a circle and radiating outward from the type ends, so that each lever, when actuated by the depression of the type-lever, will carry the type to the center of the circle.

By reversing the position on the shaft C of the bands *g* and *h*, it is obvious that the movement of the lever A may be reversed, so that when the lever A is at rest under the stress of the spring E its type end would lie in contact with the platen G, and the manipulation of the key-lever would carry the type from that position outward to the place of the pad F and back again to the platen. Such an arrangement would not be suitable for a machine in which the type-levers are arranged in a circle and the printing is done at the center of such circle; but the described lever-movement is also adapted to the use of a single lever to give repeated impressions with a single type, or the use of a series of such levers arranged side by side parallel to each other, and when thus used the described reverse movement may be adopted, the positions of the inking-pad and platen being also reversed.

I am aware that vibrating and reciprocating type-levers have been used in type-writing machines, to which motion has been communicated in various ways and by various devices for both inking the type and making the printing-impression. I do not therefore claim, broadly, such a lever-movement, but limit my claim to the special devices and combination claimed.

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

The combination of the type-lever A, adapted to carry at its free end a printing type, a fixed fulcrum, *c*, rock-shaft C, single crank-arm B, secured on said shaft and hinged to said lever, with the described means for rocking said shaft, as and for the purpose set forth.

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Witnesses:
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