(No Model.)

L. A. BARBER.

TYPE WRITING MACHINE.

No. 455,679. Patented July 7, 1891.

Fig. 1.

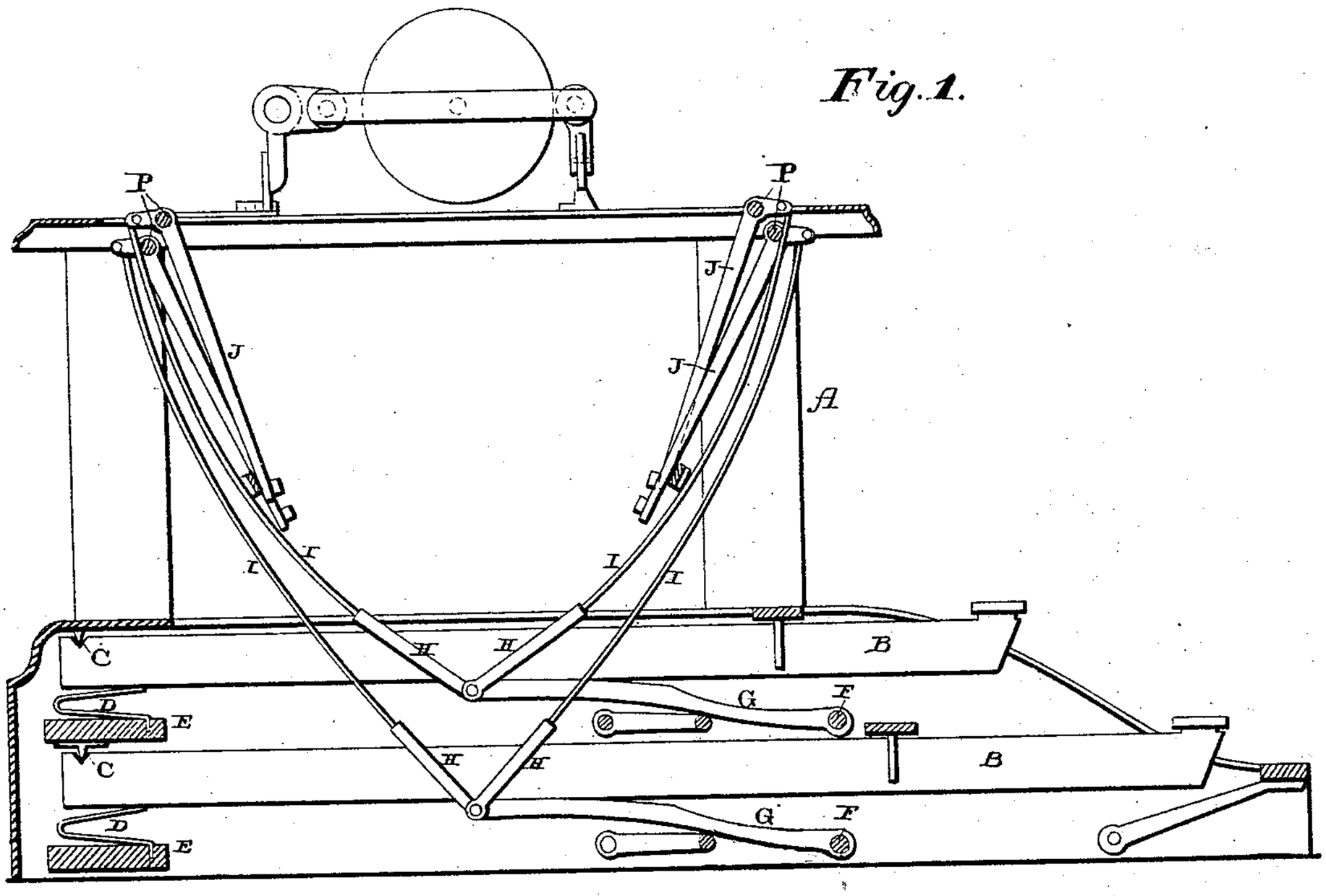


Fig. 2

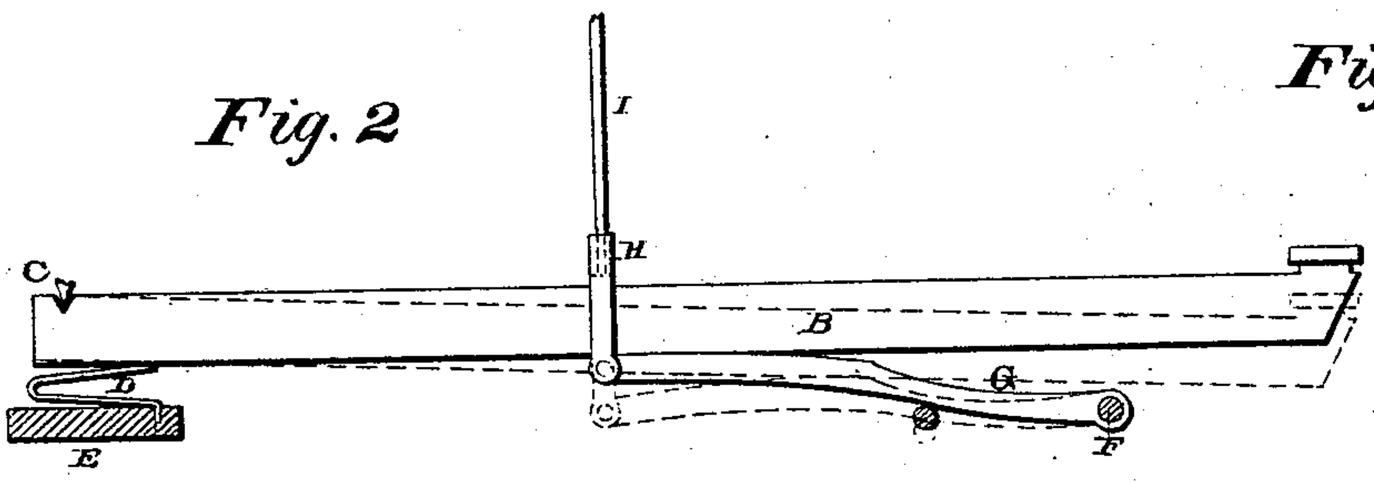


Fig. 3.

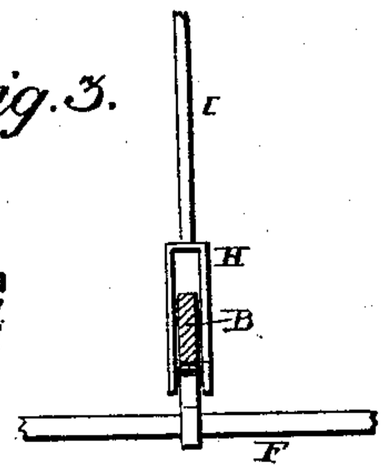


Fig. 4.

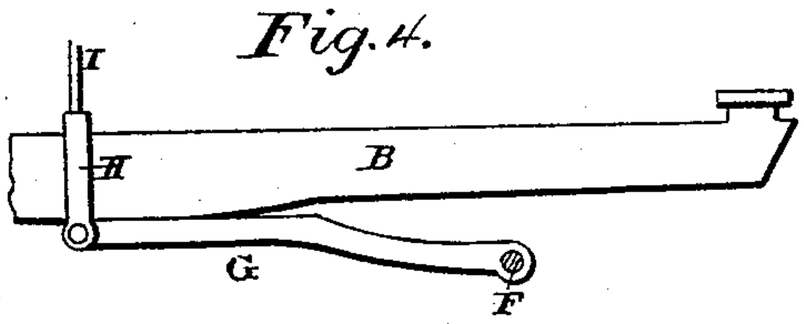
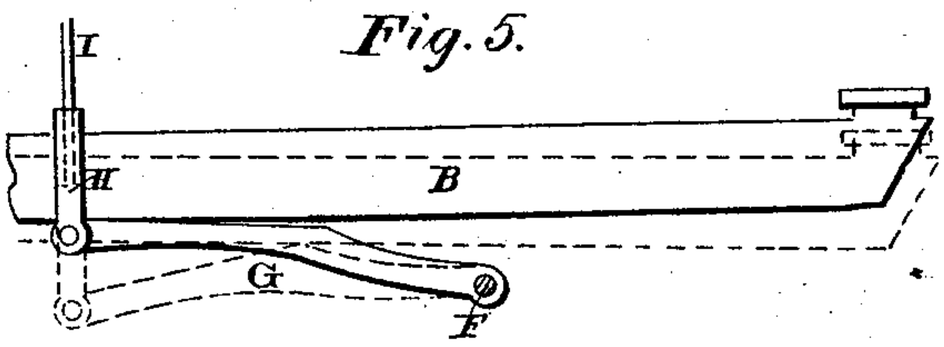


Fig. 5.



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UNITED STATES PATENT OFFICE.

LUTHER A. BARBER, OF GROTON, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 455,679, dated July 7, 1891.

Application filed September 8, 1890. Serial No. 364,288. (No model.)

To all whom it may concern:

Be it known that I, LUTHER A. BARBER, of Groton, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Type-Writers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in type-writers; and it consists in the combination, with the key-levers, of auxiliary levers which are connected at one end, through suitable ligatures, with the type-bars, as will be more fully described hereinafter.

The object of my invention is to give to the type-bar an accelerated motion, whereby it is caused to move more rapidly at the end of its stroke, and is given a correspondingly quick return, so as to enable the operator to write more rapidly than can be done where the ordinary type-bars alone are used; to impart to the key-levers an easier touch and a shorter stroke or depression than has heretofore been used; to prevent the battering of the face of the type and the springing of the type-bars; to use with two banks of key-levers two rows of type-bars of different lengths, which are hung in two circles in such a manner as to strike at a common printing-point; to secure a more permanent and better alignment than can be done with the key-levers alone, and to enable better manifolding to be done than is possible with machines where no accelerating movement is used.

Figure 1 is a vertical section of a type-writer which embodies my invention. Figs. 2 and 3 are detail views of the same. Figs. 4 and 5 are modifications of the engaging surfaces of the key and auxiliary levers.

A represents the frame of a type-writer of that class having a series of type-bars hanging vertically in a circle or circles on the pivotal points P, similar to the "Remington" and "Caligraph" type of machines, so that when thrown to horizontal position the type will strike at a common printing-point, the type-bars being connected at or near their outer ends to wires or ligatures running down toward the base of the machine to a series of key-levers. In this machine two or more banks of key-levers B are used, and these levers B are fulcrumed at their inner ends at C, and are returned to position after having been moved by the springs D, which are placed upon the supporting-bars E and which have their upper ends to bear against the lower edges of the key-levers.

Pivoted upon the cross-bars F, which extend horizontally through the frame of the type-writer, are a series of auxiliary levers G, which are connected at their inner ends to suitable couplings H, which are bifurcated so as to straddle over the key-levers B, and which couplings have the wires I fastened to their upper ends. The upper edge of the levers G, of which there is one for each key-lever B, has all of that portion of its upper edge which comes in contact with the lower edge of the key-levers made rounding or cam-shaped, so that the movement of the type-bars J will be slow at first, but as the downward movement of the key-lever continues the movement becomes accelerated toward and at the end of the stroke, and the type-bar is made to return more quickly to its normal position than it otherwise would do. This construction greatly promotes speed in operating the type-writer and enables such force and power to be given to the movement of each type-bar that better manifolding is secured than can be done where no auxiliary lever G is used. This construction enables the key-levers to be operated by a very slight touch, and the key-levers having a very short movement the operator is enabled to write not only much faster, but with greater ease. The addition of the levers G, in connection with the type-bars, causes less strain upon the type-bars and type-bar hangers from sudden strokes, and these parts are saved the shock from ordinary direct action. When the key is struck by the operator because a lighter stroke is sufficient, a better and more permanent alignment is maintained by preventing the battering of the surface of the types and the springing of the type-bars. The quick return of the type-bars from the printing-point is so rapid that the type-bars are prevented from interfering with each other and a much greater speed is rendered possible than in machines of the ordinary construction.

While it may be preferable in some cases to form the curve or cam upon the levers G,

the curve or cam may be formed upon the lower edges of the key-levers B, while the levers G are provided with straight surfaces, as shown in Fig. 4. It is immaterial where the cam is formed, so long as the levers G are used for the purpose of enabling a shorter stroke and an easier touch upon the key-levers to be given and the type-bars are given an accelerated motion.

Instead of only a single set of type-bars, which are arranged in a common circle, as has heretofore been the case, I use two sets of type-bars of unequal length and which are arranged in two separate circles P, the shorter type-bars being placed in the upper and smaller circle, so that all of the type will strike at a common center. The upper ends of the wires I are connected to the upper and outer ends of the type-bars, as shown, and the depression of any one of the key-levers B causes a corresponding depression of its auxiliary lever G when the type-bar J rises, so as to strike the paper in the usual manner. The first movement of the type-bar being comparatively slow, but constantly gaining in speed to the end of the stroke, and the first part of the return of the type-bar being comparatively rapid, so as to get out of the way of the other bars, allows a great deal more rapid work to be done than is possible where the type-bars return to position in the usual manner.

The use of long and short type-bars enables the short type-bars to be used for lower-case letters, and hence better alignment, and the arrangement of the key-levers in two banks allows connecting wires or ligatures to extend nearly straight from the key-levers to the type-bars, and thus avoid the bending of connections and consequent imperfect action, which would be unavoidable if key-levers were arranged in one bank, as usual. This applies principally to writing-machines where a separate key is used for all or nearly all of the characters.

I do not limit the application alone of the auxiliary levers to the class of type-writers here shown; but include all writing-machines where the type are brought to a common printing-point by being actuated through the necessary connections by keys and key-levers. Neither do I limit the accelerated motion to the precise construction here shown, for it can be applied in other ways and similar results obtained.

The rods which operate the dogs for spacing extend across under the auxiliary levers and are operated thereby. The auxiliary lever can be placed at the rear end of the main lever to operate in a similar manner to the one here shown. The shape or surface of the auxiliary levers need not necessarily be curved, but can be straight where they rest together, as shown in Fig. 5, the depression of the key causing a change of fulcrum, and consequently an accelerated motion.

Having thus described my invention, I claim—

1. In a type-writer, the combination of two circles, one arranged above the other, type-bars pivoted thereon, two banks of key-levers, one arranged above the other, and connections between the key-levers and the type-bars, substantially as specified.

2. In a type-writer, the combination of an auxiliary lever pivoted at one end, a type-bar, a connection between the opposite end of the lever and the type-bar, and a key-lever pivoted at one end and engaging the auxiliary lever between its free and pivoted ends, the engaging surface of one of the levers being irregular for the purpose of accelerating the movement of the type-bar, substantially as shown and described.

3. In a type-writer, the combination of two circles, one arranged above and inside of the other, type-bars pivoted upon the circles, two banks of key-levers, one above the other, and connections between the key-levers and the type-bars, whereby two separate and distinct sets of type-bars and key-levers are provided, for the purpose described.

4. In a type-writer, the combination of the type-bars, the key-levers, auxiliary levers below the key-levers, which are pivoted at one end, the adjacent edges of the two levers engaging and the engaging edge of one of said levers being cut away toward the pivotal point of the auxiliary lever for the purpose set forth, and connections between the auxiliary levers and the type-bars, substantially as shown.

5. In a type-writer, the combination, with a key-lever, of an auxiliary lever below and between the ends of the key-lever, the two levers having their adjacent edges engaging each other, the engaging edge of one of the levers being irregular for the purpose of accelerating the movement of the type-bars, the type-bars, and connections between the type-bars and the auxiliary levers, substantially as described.

6. In a type-writer, the combination, with a key-lever, of an auxiliary lever below it, the type-bars, and a connection between one end of the auxiliary lever and the type-bars, the auxiliary lever having its opposite end pivoted below and out of engagement with the key-lever and that end which is connected with the type-bars engaging with the key-lever, whereby when the key-lever is depressed the engaging point of the two levers changes longitudinally and the type-bar is given an accelerated movement, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

LUTHER A. BARBER.

Witnesses:
B. Z. BUCK,
B. D. NOBLES.