(No Model.)

A. M. DA COSTA.

Type Writing Machine.

No. 232,692. Patented Sept. 28, 1880.

Fig. 1.

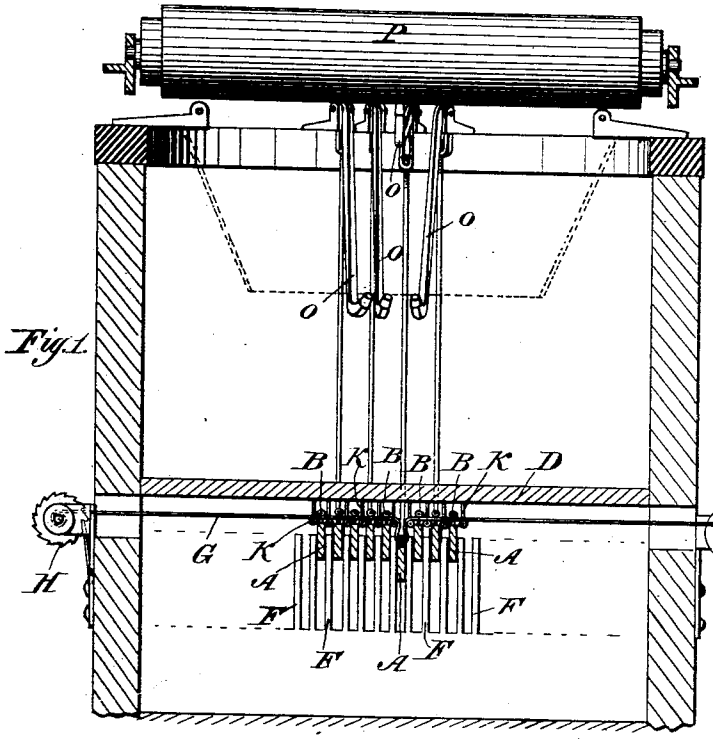


Fig. 2.

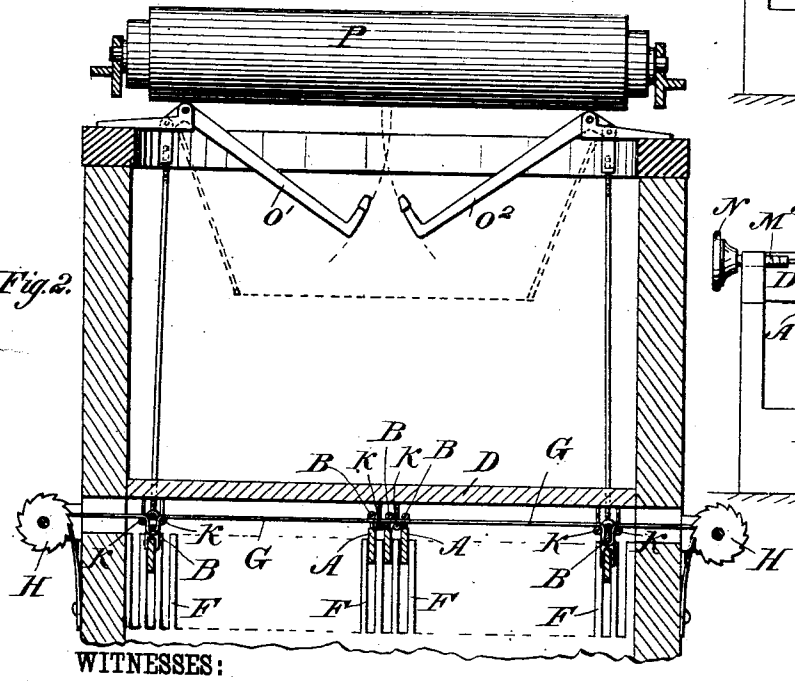


Fig. 3.

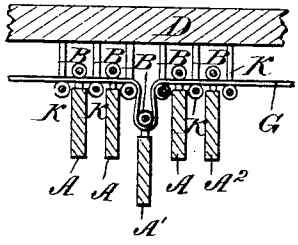


Fig. 4.

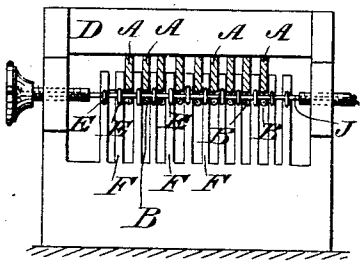


Fig. 5.

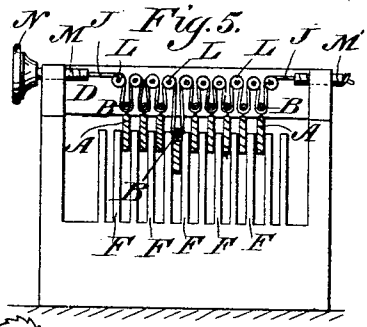


Fig. 6.

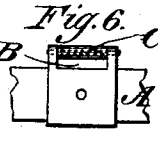
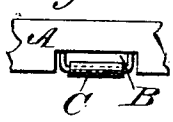


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALBERT M. DA COSTA, OF BROOKLYN, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,692, dated September 28, 1880.

Application filed April 26, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALBERT M. DA COSTA, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

The object of my invention is to provide an improvement in type-writing machines by which the operator is enabled to write much more rapidly than with the ordinary type-writing machines in use at present, and whereby the clashing of two or more type-levers and blurred impression of the type are avoided.

The invention consists in a band, string, or wire which alternately passes through staples or apertures in the key-levers and through rigid supports above and between said key-levers, which band or string can be drawn as taut as may be desired by means of ratchet-rollers, and is thus adjusted in such a manner as to leave sufficient slack only to permit one key-lever to be entirely depressed at a time, so that if two keys should be struck at the same time the band will prevent both type-hammers from being raised sufficiently to clash against each other.

In the accompanying drawings, Figure 1 is a cross-sectional elevation of the mechanism of a type-writing machine provided with my improvement, showing one type-hammer raised. Fig. 2 is the same view, showing two type-hammers partially raised. Fig. 3 is a cross-sectional elevation through the key-levers, showing one of said levers depressed. Fig. 4 is a cross-sectional elevation of a modification of my improvement, showing all the key-levers at rest. Fig. 5 is a cross-sectional elevation of another modification, showing one of the key-levers depressed. Fig. 6 is a detail side view of the staples on the key-levers. Fig. 7 is a detail view of a modification of said staples.

Similar letters of reference indicate corresponding parts.

The key-levers A A of a type-writing machine are provided with staples or lengthened eyes B, which may be attached to the upper or lower edge of said levers, as shown in Figs. 6 and 7, respectively. These staples may consist of a simple wire loop driven into the said levers, or attached in any other suitable manner, or may consist of a wire held by metal bands, as shown in Fig. 6, and are preferably provided with a sleeve, C, loosely mounted on the cross-piece of said staples, so as to reduce the friction caused by drawing the bands or cords through the said staples, and to prevent chafing and cutting of the string or band.

Between every two levers A a like staple or eye, K, is attached to the under side of a transverse frame or rail, D, arranged directly above and adjacent to the key-levers A; or the above or any other suitable kind of staple E may be attached to a series of partitions or standards, F, between the key-levers, and all the staples on the key-levers and on the rail D or standards F are preferably arranged in the same longitudinal vertical plane.

A band or ribbon, G, of any desired suitable material, is alternately passed through the staples on the key-levers and through the staples on the transverse rail or the partitions, so that the cross-pieces of the several staples are alternately below and above the said ribbon G, which is attached to and passes over one or more ratchet-rollers, H, or other suitable stationary supports or devices, by which the tension of the said band can be regulated. The ratchet-rollers can be attached to the side of the frame of the machine, so that they can be operated conveniently.

The band G may be replaced by a string, wire, strong silk thread, or catgut, J, which alternately passes through the staples B of the key-levers and the staples K or E, or over a series of grooved disks, L, which are loosely mounted on pins on the sides of the rail D or on the front or rear sides of the standards F, as shown in Fig. 5.

The tension of the string or wire J may be regulated by means of one or two externally-threaded tubes, M, in which the ends of said string are secured in some suitable manner. The threaded tubes M rest in the sides of the frame of the machine, and are provided with thumb-screws N, or other suitable device, for turning them. The string may also be alternately passed through the staples, eyes, or perforations in the key-levers and perforations in the standards F.

The operation is as follows: The tension of the band G or string J is regulated so as to permit but a single key-lever to be depressed sufficiently to allow the type end of but a single type-hammer, O, to touch the printing-

cylinder P at a time—that is, the band or string has just so much slack that if one key-lever is depressed the staple of said lever will draw down the band or string, as shown in Figs. 1 and 5, taking up all the slack of the said band or string, which is thus drawn so taut that no other key-lever can be depressed, and if that should be attempted the key-lever or the band would break.

If two key-levers are depressed at the same time and under equal pressure, the corresponding two type-hammers O′ and O² will both be raised half-way, as shown in Fig. 2, and as long as the pressure on the two keys is equal they must remain in this position, for if the entire slack of the band or string is taken up to raise one type-hammer to the printing-cylinder, then the two key-levers must share the slack equally, and thus it is evident that they can only be raised half-way; but as soon as the pressure on one key-lever is increased, the corresponding type-hammer will rise in proportion, whereas the other descends.

It is evident that two or more type-hammers cannot be raised at the same time, and thus all clashing of the hammers is entirely avoided. As stated above, if two type-hammers are partially raised, as shown in Fig. 2, one of them can only be raised entirely if the other descends; or, in other words, if one key lever—for instance A′, Fig. 3—has been depressed, no other lever can be depressed until the lever A′ is released, and as soon as that is the case the lever that is depressed next—for instance A²—will take up the slack of the band or string and necessarily raise the lever A′, upon which there is no pressure; and it is seen from the above that one lever must rise as rapidly as the other descends, and consequently one type-hammer must descend as rapidly as the other ascends. This makes accurate writing, for the spacing produced by this action is exact. The operator need not wait until a type-hammer drops by its own weight before raising another, but the more rapidly the hammers are raised the more rapidly they will descend. A person is thus enabled to write with about twice the speed attainable with type-writers in use heretofore, and the writing will be very regular and will not be marred by the irregularities caused by the clashing of the type-hammers; and, further, the tension of the band or string prevents the type-hammers from being raised higher than up to the printing-cylinder, and consequently blurring of letters, so common from indentation by the type when writing rapidly, is obviated.

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

1. In a type-writer, a band, or equivalent, passing through staples or eyes on the key-levers and on a frame above or between the key-levers, and held or checked rigidly by stationary supports, all said parts being combined substantially as shown and described.

2. The combination, with the key-levers A, of the staples B K, transverse rail D, or equivalent, ribbon G, and a tension-adjusting device fastened to rigid supports, substantially as shown and described.

3. In a type-writing machine, the combination, with the key-levers A, of the staples B and K, the ribbon G, and the ratchet-rollers H, the ribbon being attached to the rollers, substantially as herein shown and described, and for the purpose set forth.

ALBERT M. DA COSTA.

Witnesses:

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C. SEDGWICK.