T. L. KNAPP.

TYPE WRITING MACHINE.

APPLICATION FILED DEC. 23, 1911.

1,032,685.

Patented July 16, 1912.

2 SHEETS—SHEET 1.

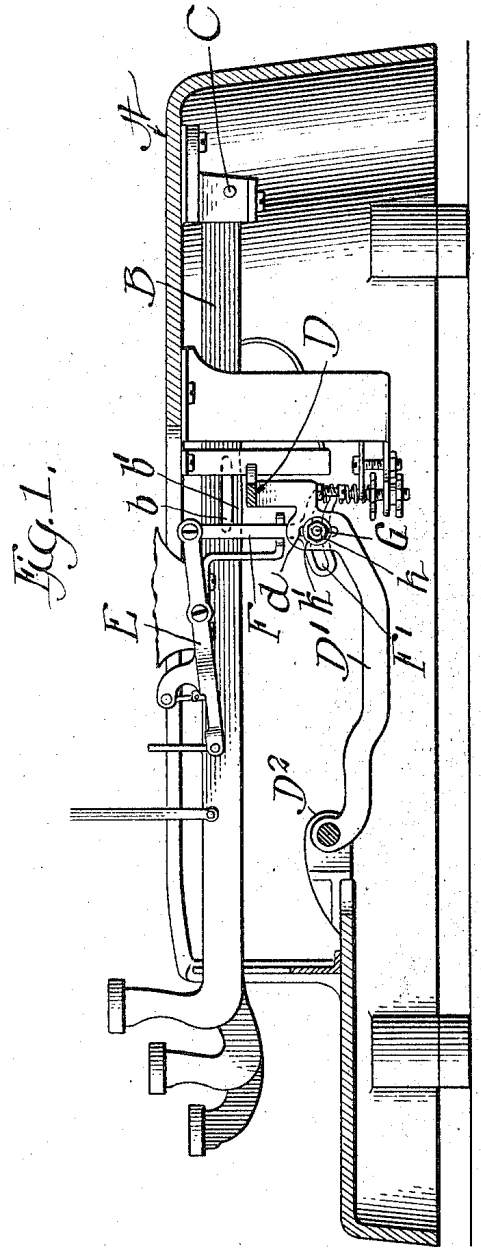

Fig. 1.

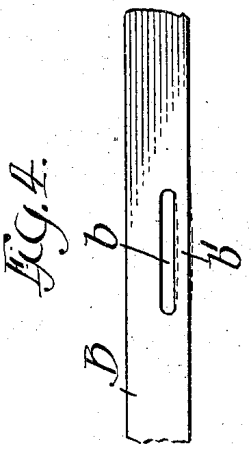

Fig. 4.

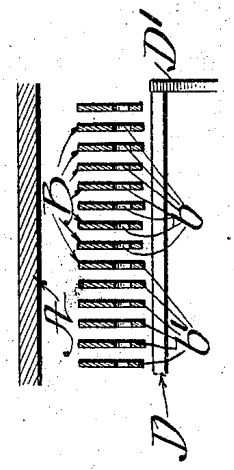

Fig. 3.

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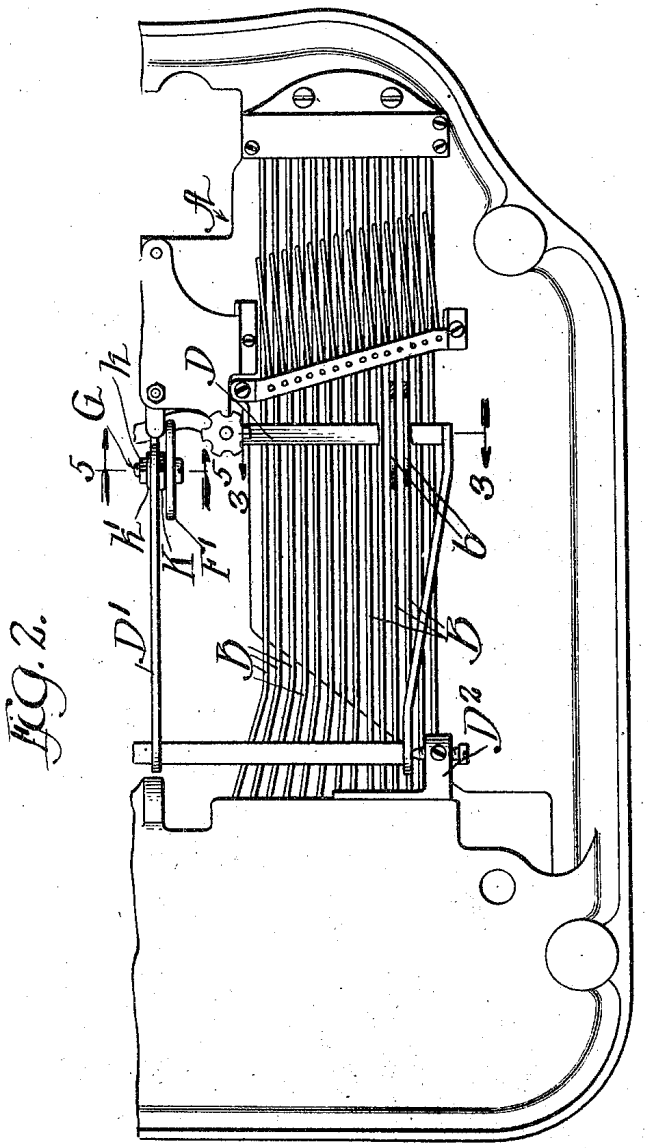

Fig. 2.

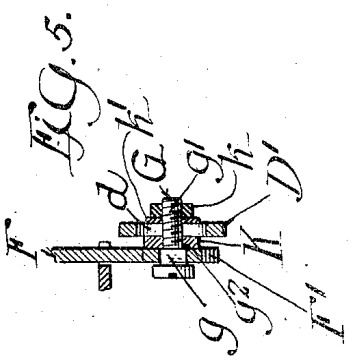

Fig. 5.

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UNITED STATES PATENT OFFICE.

THERON L. KNAPP, OF WOODSTOCK, ILLINOIS, ASSIGNOR TO THE OLIVER TYPEWRITER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TYPE-WRITING MACHINE.

1,032,685. Specification of Letters Patent. **Patented July 16, 1912.**

Application filed December 23, 1911. Serial No. 667,471.

To all whom it may concern:

Be it known that I, THERON L. KNAPP, a citizen of the United States, and a resident of Woodstock, in the county of McHenry and State of Illinois, 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 thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in typewriting machines and more particularly to certain novel features of construction in connection with the key-levers, by means of which the several key-levers may be caused to act with uniform effect upon the universal bar, which operates the spacing mechanism and the ribbon feed.

The invention also relates to novel means by means of which the universal bar itself may be adjusted with reference to the key-levers.

The improvements are shown in the accompanying drawings as applied to a machine of the kind shown in Letters Patent No. 834,565, granted to Cross and Griffiths, October 30th, 1906, but are applicable to machines which differ in details of construction from those shown in said patent.

The invention consists of the matters hereinafter described and more particularly pointed out in the appended claims.

In the drawings,—Figure 1 is a view representing a longitudinal vertical section through the base-plate of a typewriting machine provided with my improvement, the section being taken between two adjacent key-levers. Fig. 2 is a view representing a partial plan of the machine as looked at from below. Fig. 3 is a view representing a partial transverse section through the parts of the machine shown in Fig. 2; the plane of the section being indicated by the line 3—3 of Fig. 2. Fig. 4 is a view representing in side elevation that part of the key-lever which is located above the universal bar. Fig. 5 is a view representing a partial section through Fig. 2 in a plane indicated by the line 5—5 of Fig. 2.

As shown in the drawings, A indicates the base-frame of the machine. Said frame has a horizontal top portion and depending flanges at the side and back parts thereof forming a hollow structure within which the rear end of the key-levers are inclosed.

B indicates the key-levers which extend in a direction from front to the rear of the machine and which are pivotally connected at their rear ends to the base-frame A by means of a horizontal rod C extending transversely of said key-levers. Said levers, in the typewriter of the type shown in the drawings and known as the "Oliver", are arranged in two laterally separated groups located one on each side of the longitudinal center line of the machine and the key-levers illustrated in the accompanying drawings constitute the levers belonging to one of said groups. The pivot rod C is the common pivot point or fulcrum for all key-levers belonging to said group.

D is a universal bar extending transversely under the key-levers and is adapted to be operated upon by any one of such key-levers. Said universal bar constitutes the rear member of a vertically swinging frame having arms D^1 which are pivotally connected at their forward ends to lugs D^2 secured to the base-frame, said frame operating the escape mechanism and the ribbon mechanism in the usual manner.

E indicates the escapement lever and F the upright bar or link connecting said lever with one of the arms D^1 of the frame carrying the universal bar. F^1 indicates the slotted yoke by means of which said link F is connected to the said arm D^1. The construction thus far is familiar and substantially as described in the patent heretofore named. The said arm D^1 is connected to the slotted yoke F^1 by means of a bolt or screw G (see Figs. 1 and 5) which extends through the horizontally disposed slot in said slotted arm and through a vertical slot *d* in the arm D^1. As shown in the drawings, the bolt G has a part *g* rectangular in section and having a sliding bearing in the slotted yoke F^1. The threaded part g^1 of the bolt is reduced in diameter, thus forming a shoulder g^2 adjacent the said rectangular part *g*. The threaded part g^1 of the bolt extends through the vertical slot *d* in the arm D^1 of the universal bar frame, and said arm is clampingly engaged between a nut K threaded upon the bolt intermediate the arm D^1 and the slotted yoke F^1 and a nut *k*

threaded upon the end of said screw. A washer k^1 is preferably interposed between the nut k and the adjacent face of the arm D^1. By means of this construction the bolt G may be adjusted vertically with reference to the arm D^1 so that the rear end of the universal bar frame may be raised or lowered with reference to the slotted yoke F^1. This operates to adjust the universal bar vertically toward or away from the key-levers B.

Each key-lever has a longitudinally extending slot b located above the universal bar D. Said slot is located near the lower edge of the key-lever and extends a short distance to the front and to the rear of the universal bar so as to provide a long, vertically narrow strip of metal b^1 above the universal bar and integrally connected at each end with the key-lever. Said metal strips of the key-levers may be easily bent to raise or lower their bottom edges, that is to say, the edges which contact with the universal bar in the operation of the key-levers, so as to cause all the key-levers to act with uniform effect on the universal bar.

This construction provides a simple and efficient means of adjustment, and since the adjustable member is a part of the key-lever itself, no special guiding means for the key-levers in the neighborhood of the universal bar is required, as in the case where the adjustable member is carried by the universal bar, when such means is necessary in order that the movement of the key-levers, which being of thin metal are more or less flexible in a direction parallel to the universal bar, may be absolutely confined to the vertical planes containing the associated adjustable members.

By means of the construction described with the bendable strip b' integral at each end with the key-lever, a sufficiently rigid member is provided for contact with the universal bar to properly operate it and in addition the lever may be slotted to form the bendable member without unduly weakening it adjacent said bendable member.

I claim as my invention:—

1. In a typewriting machine having longitudinally extending key-levers and a universal bar extending transversely below said key-levers, each key-lever having a longitudinally extending slot adjacent its bottom edge to provide a narrow strip of metal above the universal bar, said strip being integral at each end with a key-lever and being bendable in a vertical direction, whereby the key-levers may be caused to act with uniform effect upon the universal bar.

2. In a typewriting machine in combination with the key-levers, a vertically swinging frame including a universal bar extending transversely under said key-levers and an arm extending parallel to said key-levers, an escapement lever, a vertically reciprocable bar adapted for the operation of said escapement lever, said bar having a slotted yoke at its lower end adjacent said arm, means having sliding bearing in said slotted yoke and providing a connection between said slotted yoke and said arm whereby said arm is adapted for reciprocating said bar, said means being vertically adjustable.

3. In a typewriting machine in combination with the key-levers, a vertically swinging frame including a universal bar extending transversely under said key-levers and an arm extending parallel to said key-levers, an escapement lever, a vertically reciprocable bar adapted for the operation of said escapement lever, said bar having a slotted yoke at its lower end adjacent said arm, a bolt having sliding bearing in said slotted arm, said bolt being provided with a shoulder adjacent said slotted arm, and having a threaded stem extending through a vertical slot in said arm, and clamping nuts on said bolt at each side of said arm.

In testimony, that I, claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 18th day of December A. D. 1911.

THERON L. KNAPP.

Witnesses:
B. C. YOUNG,
A. J. MULLEN.