(No Model.)

A. DAVIDSON.

TYPE WRITING MACHINE.

No. 487,066. Patented Nov. 29, 1892.

Fig. 1.

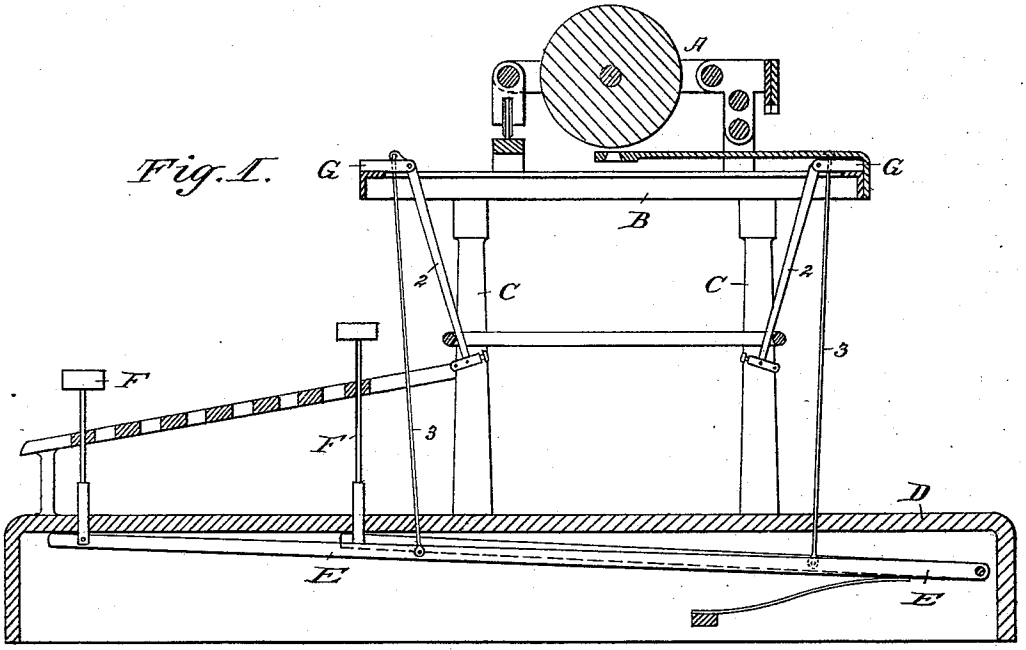

Fig. 3.

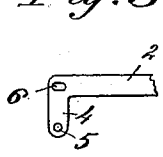

Fig. 2.

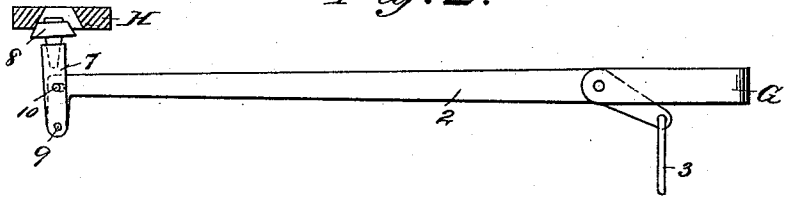

Fig. 4a.

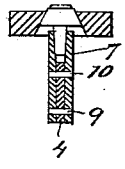

Fig. 4.

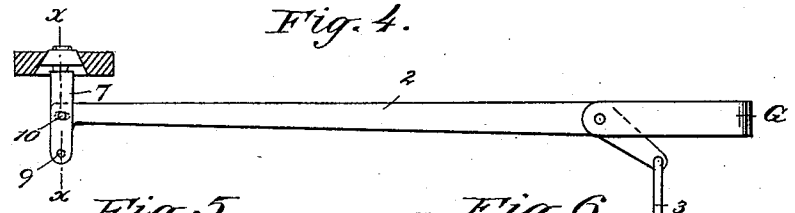

Fig. 5.

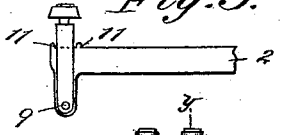

Fig. 6.

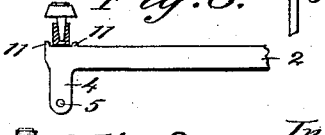

Fig. 9.

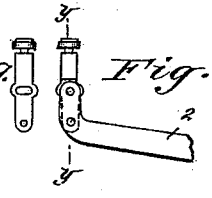

Fig. 7.

Fig. 8.

Attest:

Chas. Wolf Steger

George B. Wilson.

Inventor:

Alex. Davidson

By Jacob Felbel

Atty:

UNITED STATES PATENT OFFICE.

ALEXANDER DAVIDSON, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO THE YOST WRITING MACHINE COMPANY, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 487,066, dated November 29, 1892.

Application filed April 3, 1888. Serial No. 269,446. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER DAVIDSON, a citizen of the United States, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates more particularly to that class of lever type-writing machines in which a center guide or directrix is employed, and by which a more perfect alignment of the printing may be obtained. In machines of this description it is not necessary to pivot the radiating type levers or carriers with the precision and nicety required in machines devoid of a center guide, for any slight inaccuracies in pivoting or occurring in time by reason of wear of the carrier journals or bearings are corrected by the center guide as the type pass therethrough on their way to effect an impression upon the paper of the platen.

As machines containing a center guide have heretofore been constructed the type levers or carriers have been made of a single piece, with the type mounted rigidly at one end thereof, and as thus constructed the corrections in adjustment or alignment of the type-levers have been effected in the center guide by a movement of the type levers or carriers bodily, which in a measure destroys the momenta of the carriers, and hence the force of impression, besides increasing the resistance at the finger-keys and making the touch more difficult and laborious.

My invention has for its main object to overcome these objections in previously-made machines; and to this end it consists, primarily, in certain features of construction and combinations of devices, all of which will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a vertical section of a type-writing machine embodying my invention. Fig. 2 is a detail view of the center guide, a type-holder, type-carrier, connecting-rod, and hanger or support. Fig. 3 is a detail view of the inner end of the type-lever. Fig. 4 is a view similar to that shown at Fig. 2, with the moving parts in a different position. Fig. 4^a is a section taken at the line $x\ x$ of Fig. 4. Fig. 5 is a detail view of a modification of my invention. Fig. 6 is a sectional elevation of the same. Fig. 7 is a detail view of another modification of my invention. Fig. 8 is a vertical section taken at the line $y\ y$ of Fig. 7, and Fig. 9 is a side elevation of the type-holder shown in the last-named figure.

In the several views the same part will be found designated by the same letter or numeral of reference.

I shall first refer to Figs. 1 to 4^a.

A represents the paper-carriage, which may be of any approved construction; B, the top plate or type-ring of the machine, which is supported by posts C, secured to the bed-plate D, beneath which the key-levers E are pivoted in substantially the well-known way.

F represents the finger-keys attached to the forward ends of the key-levers E. Around the top plate are secured hangers G, in the bifurcated inner ends of each of which is pivoted the type-carrier arm or lever 2, to the shorter portion of which, preferably, is attached the upper end of a connecting-rod 3, whose lower end is connected to the key-lever E. The type end of each type-carrier is bent downwardly or provided with an extension 4 and is formed with a round hole 5 and an oblong hole or slot 6.

7 designates a type socket or holder provided with a cavity or opening for the reception of the shank of a type 8 and bifurcated at its lower end to straddle the extension of the carrier or arm 2. The bifurcated portion of the type-holder is perforated with round holes at such a distance apart as to coincide with the holes 5 and 6 when the holder is set astride the carrier. Small wire pins 9 and 10 are passed through the holes in the carrier and in the type-holder and are riveted at their ends. The lowermost pin 9, in line with the axis of the type-holder and center guide, acts as a pivot for the type-holder, which may vibrate longitudinally of the type-bar to either side of a line coincident with the axis of the center guide, and the uppermost pin 10 acts as a stop to limit the vibration of the type-holder.

At Fig. 2 the type-carrier is shown partially elevated and the type as just entering the cen-

ter guide H. In this view the type-holder is shown vibrated forward and the pin 10 against the front end of the slot. As the upward movement of the carrier is continued the type will slide along on the beveled wall of the guide and the type-holder be vibrated backward slightly on the pivot 9. When the upward movement of the carrier has been effected to the full extent, the face of the type will have passed through the guide and the type-holder been moved to the position illustrated at Fig. 4, in which view it will be observed that the vertical axis of the type-holder and that of the guide are in line or coincide, the pin 10 standing in the center of the slot 6. When the parts are in this position and the type-body fills or fits snugly in the upper or narrow end of the guide-opening, the alignment of the printing will approximate perfection.

At Figs. 2 and 4 the type-carrier is shown as correctly assembled, and if the type-holder were made rigid or of a piece with the carrier the alignment of the printing would for a time be satisfactory; but in assembling the carriers of a type-writing machine considerable time and skill are required to get the type-carriers into this accurate position, and even when thus fitted they will in use wear at their pivots or fulcrums or joints and get out of true. While this imperfection in itself is unobjectionable, because of the ability of the center guide to make the correction as the printing is done, it is highly objectionable if in the making of the correction the carrier is obliged to be moved bodily or for its whole length, as is the case where the type-holder is made fast to or integral with the carrier.

By my invention it will be observed that in making the correction for want of proper assembling or for wear the center guide is obliged to move not the whole type-carrier, but simply the small type-holding portion or socket, which, being light and pivoted, moves with the utmost ease and without perceptibly decreasing the force of impression or increasing the "touch" at the finger-keys.

In the modification shown at Figs. 5 and 6 the extension of the carrier is provided with one hole only, and in lieu of the hole or slot 6 and pin 10 two projections 11, formed upon the upper side or edge of the carrier, are used. The type-holder is preferably bifurcated at its lower end, as in Fig. 2, and provided with perforations in line with the hole 5 in the carrier for the introduction of the pivot-pin 9. It will be understood, of course, that the projections 11, like the slot and pin 6 10, serve to keep the type-holder in position and limit its vibration.

In the modification shown at Figs. 7, 8, and 9 the type-carrier is slotted or formed of two pieces held apart and the type-holder provided with a thin shank to fit into the slot or the opening in the carrier. The inner end of the carrier is turned up instead of down, as in the other figures, and is formed with two round holes. The type-holder is provided with an oblong hole or slot and with a round hole the same distance apart as the holes in the carrier. A pivot-pin 9 is passed through the lower set of holes and a stop-pin 10 through the upper set of holes.

The operation of the modifications shown at Figs. 5 to 9, inclusive, is the same as that shown in the other figures.

The type-carrier and the type-holder may be of any detail construction and may be hinged, pivoted, or jointed in any desired manner so far as my improvement is concerned, and changes in the center guide and in the shape of the type and in its mode of mounting or attachment, as well as changes in the general organization of the machine, may be made without departing from the spirit of my invention.

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

1. In a type-writing machine, the combination, with a center guide, of a type-bar having a pivotally-connected type free to vibrate longitudinally of the type-bar in either direction, whereby the type may be automatically adjusted in and during its passage through the center guide independently of the type-bar, and means for limiting the said vibrations.

2. In a type-writing machine, the combination, with a center guide, of a type-bar and a type-holder pivotally connected substantially at right angles to said type-bar, the pivot of the type-holder being substantially coincident with the axis of the type-holder and the center guide and the type-holder being constructed and arranged to have a free but limited vibratory motion longitudinally of the type-bar to both sides of a line drawn through its axis when standing in a vertical position or coincident with the axis of the center guide.

3. In combination, a type-bar provided at one end with a pivoted type-holder and means, substantially as described, for limiting the vibration of the type-holder.

4. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a pivoted type-holder and a type fitted thereto.

5. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a pivoted type-holder and means, substantially as described, for limiting the vibration of the type-holder.

6. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a self-adjusting type-holder and a type fitted thereto.

7. In a type-writing machine, the combination, with a center guide, of a type-bar provided at one end with a self-adjusting type-holder and a type fitted thereto and means for limiting the movement of the same.

8. In a type-writing machine, a type-bar hav-

ing at one end an extension arranged at an angle to the bar and having a type-holder pivoted to said extension.

9. In a type-writing machine, a type-bar having at one end an extension arranged at an angle to the bar, having a type-holder pivoted to said extension, and having means for limiting the vibration of the pivoted type-holder.

10. In a type-writing machine, in combination with a type-bar having at one end an extension arranged at an angle to the bar and having also a stop, a type-holder pivoted to said extension and provided with a slot which embraces said stop to limit the vibration of the type-holder.

11. In a type-writing machine, a type-bar having a slot at one end, in which is pivoted the thin flat shank of a type-holder.

Signed at New York city, in the county of New York and State of New York, this 16th day of March, A. D. 1888.

ALEX. DAVIDSON.

Witnesses:
M. LAYDEN,
JACOB FELBEL.