

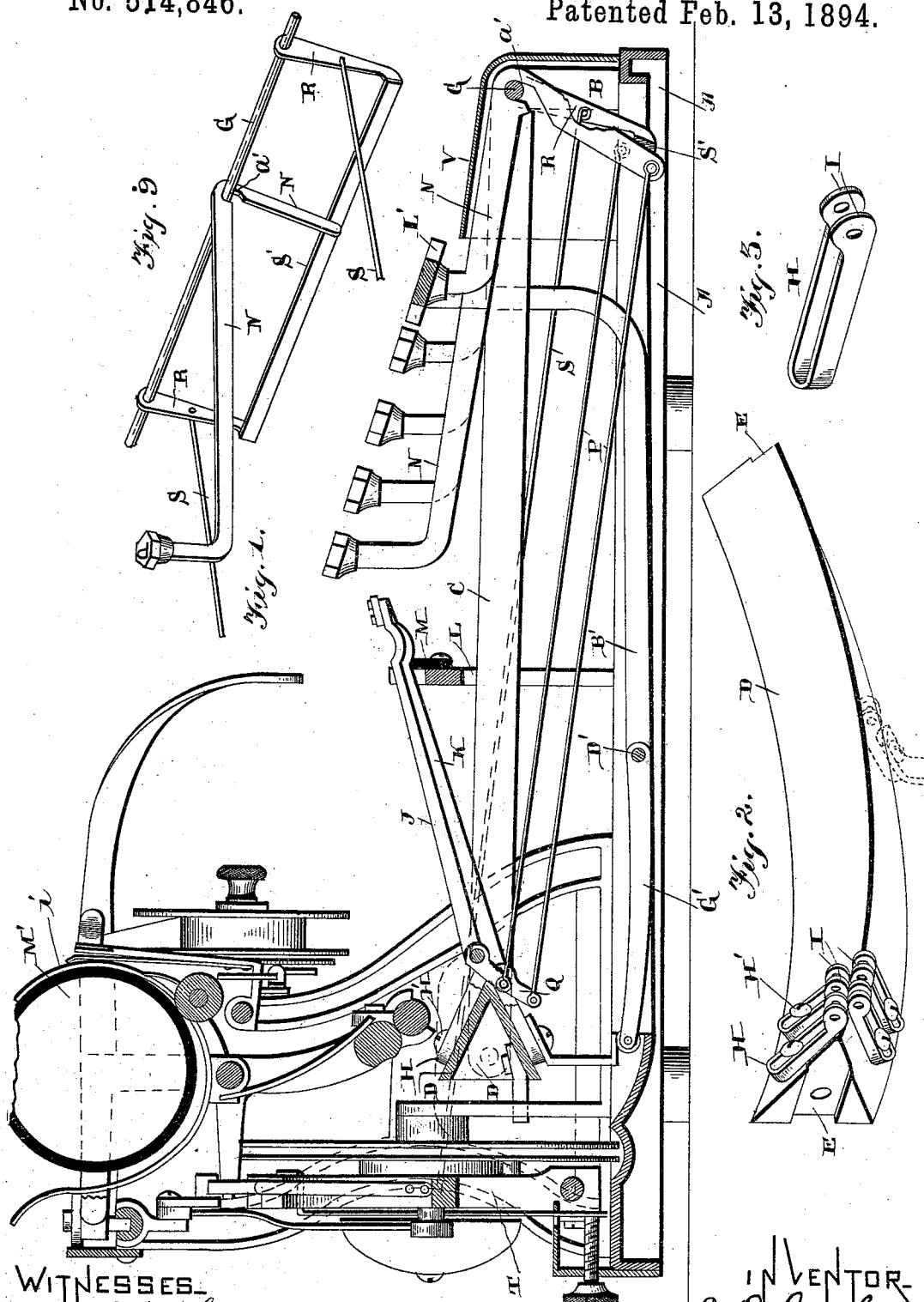
(No Model.)

2 Sheets—Sheet 1.

J. D. DAUGHERTY.
TYPE WRITING MACHINE.

No. 514,846.

Patented Feb. 13, 1894.



WITNESSES.

Geo. E. Trech.

Roland A. Fitzgerald.

INVENTOR.
J. D. Daugherty
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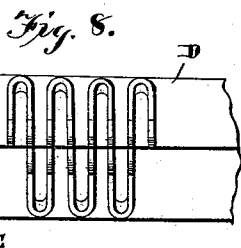
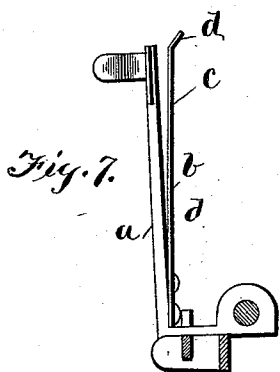
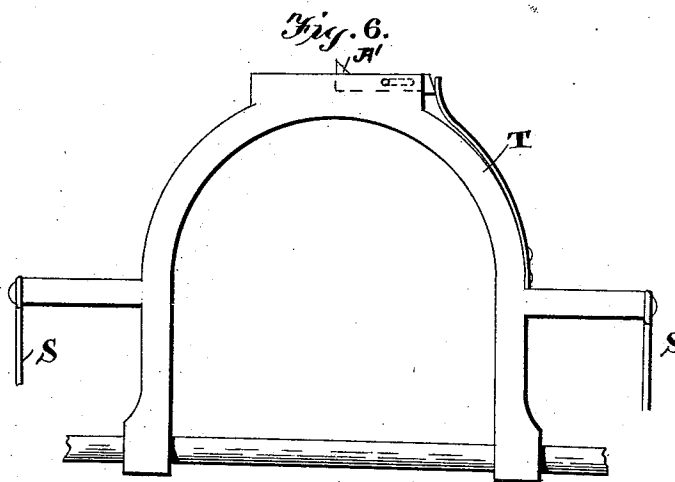
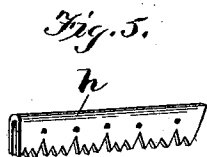
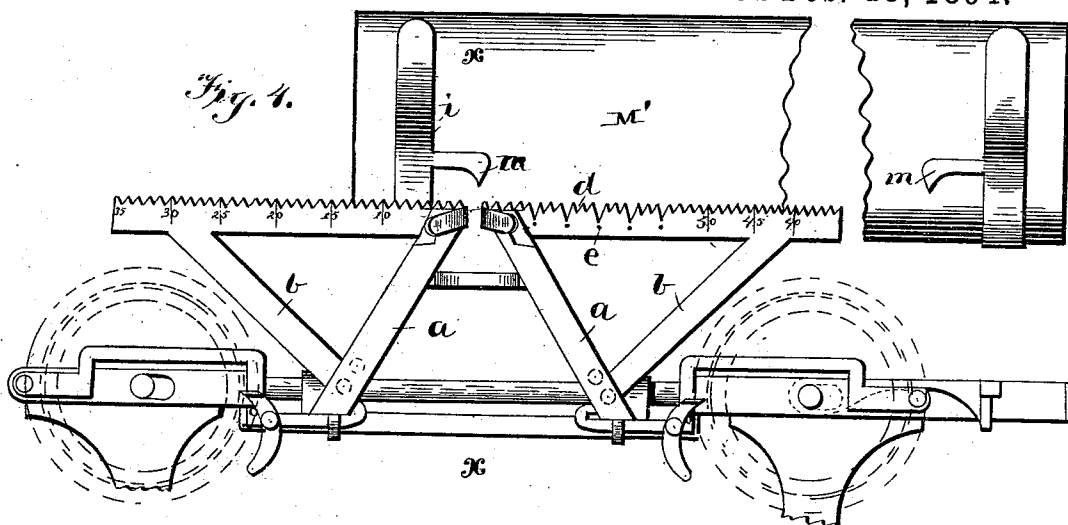
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2 Sheets—Sheet 2.

J. D. DAUGHERTY.
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UNITED STATES PATENT OFFICE.

JAMES DENNY DAUGHERTY, OF KITTANNING, PENNSYLVANIA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 514,846, dated February 13, 1894.

Application filed April 12, 1893. Serial No. 470,134. (No model.)

To all whom it may concern:

Be it known that I, JAMES DENNY DAUGHERTY, of Kittanning, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Type-Writing Machines; 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 improvements in type writing machines, and it consists in certain constructions and combination of parts which will be fully described hereinafter and particularly pointed out in the claims.

The object of my invention is to construct a very compact and simple visible type writing machine.

In the accompanying drawings;—Figure 1, is a vertical longitudinal sectional view. Fig. 2, is a detached perspective view of the inner end of the shifting frame. Fig. 3, is a detached view of one of the type bar hangers. Fig. 4, is a front view of the type bar guide and ribbon carrier to which is attached a scale, showing the platen carrying pointers. Fig. 5, is a detached perspective view of a detachable notating or tabulating scale. Fig. 6, is a detached rear view of the vertical portion of the universal frame which carries the feed dogs. Fig. 7, is a sectional view taken on the dotted line $x-x$, of Fig. 4. Fig. 8, is a front view of the left hand end of Fig. 2. Fig. 9, is a detached view of the universal frame, showing the relation therewith of the key levers.

In Fig. 1, is shown a complete type writing machine, but I do not make any claim in this present application to the carriage, the platen, the means for operating the platen, the ribbon feed, nor to the combined ribbon tilting frame and type bar guide, as they form no part of my present invention.

The construction and devices just named forming no part of my present invention, no description thereof will be given.

A represents the base of the machine, and B the standards which extend upward from the corners of the right hand end thereof, and the upper ends of these standards B support

a pivotal rod G. A shifting frame C has its outer end pivoted upon this rod G, and its inner ends connected by a curved end piece D, which is the segment of a vertical circle the center of which is at the printing point of the platen, as will be readily understood.

The type bars J and K are supported upon this curved end piece D, by means of the hangers H, which are U-shaped preferably, as shown in Fig. 3, and the type bars pivoted between their outer separated ends. These hangers between which the outer ends of the type bars are pivoted, as just stated, are attached to the curved end piece D by means of the screws H', which pass through the said hangers into the curved end piece D. For the purpose of supporting these type bars as near together as is practical, the hangers H are placed staggering, as shown in Fig. 8, that is to say, the lower hangers are placed in a vertical line between the upper hangers so that the trunnions or pivotal pins of the upper bars are at one side of the trunnions of the lower bars, which set the type bars in what is known as a staggering relation. Owing to the fact that the hangers are thus placed, the lower ones are of course a greater distance from the printing point upon the platen than the upper one, and it therefore becomes necessary that the type bars K, which are pivoted to the hangers attached to the lower side of the end piece D, should be made longer than the type bars J, as clearly shown in Fig. 1, so that the type at the outer ends thereof will strike a common center upon the platen. This end piece D is made V-shaped in cross section with its apex extending inward as shown, so that the hangers extend at an angle toward each other, thus bringing the trunnions or pivotal points of the upper and lower series of type bars as near together as possible. The side bars C of this shifting frame are attached to the curved end piece D by providing the end piece with closed ends, as shown in Fig. 2, and forming in these closed ends a horizontal groove E, which receives the inner end of the side bars C, and these side bars C are attached to the curved end piece D, by means of screws.

The purpose of the shifting frame is to bring the upper and lower case letters of the type

bars at a common center upon the platen by raising the said shifting frame. The normal position of the inner end of this shifting frame is down, and in this position the lower case or small letters are brought to the printing point, but when the inner end of this shifting frame is raised the upper case or capitals are brought to the printing point. I accomplish the shifting of this frame by means of the shifting levers B' at each side of the key board, the inner ends of these levers being rigidly attached to a transverse bar or shaft D'.

An arm G' has its outer end rigidly connected to the shaft D' between its ends, and its opposite end provided with a friction roller I' resting against the under side of a shoe J' supported by the curved end piece D, and held in place thereon by means of one of the screws which hold the type bar hanger in place. The upper and outer ends of these levers B' have a broad finger surface L', and when either one of these is depressed the inner end of the arm G', is raised carrying with it the inner end of the shifting frame, and this raises the type bars as is clearly seen.

The bars L projecting from the base support a transverse elevated flexible piece M upon which the type bars rest and by which they are supported at an inclination as shown in Fig. 1.

The key levers N are made in the form of bell crank levers as shown, and are provided at the intersection of the two portions of the angle with slots a', which permits of them being placed over and supported by the transverse elevated rod G, before referred to, which is supported by the standards B. These key levers N are of various lengths, as shown and the upper portions extend inward toward the type bars so that the machine is very much shortened, as compared with a machine having key levers pivoted between their ends and the operating portions extending outward instead of inward, as here shown.

Wires P connect short projecting arms Q of the type bars with the depending portions of the bell crank key levers, so that when the key levers are depressed the type bars are raised. The key levers being of varied lengths, as just stated, it becomes necessary to connect the wires P at various points from the pivotal points of the key levers in proportion to their increased length so as to make the touch of all of the key levers equal. The universal frame for vibrating the feed dogs consists of the depending arms R which have their upper ends pivoted upon and suspended from the transverse rod G, and the lower ends of these arms are connected by a cross piece S' which rests just back of all the lower portions of the key levers, as clearly shown in Fig. 1. This universal frame R is connected with the vibrating vertical frame T which carries the feed dogs A' at its upper end, by means of the rod S as shown in Figs. 1 and 6, so that when

one of the key levers is depressed it forces the universal frame R outward drawing the frame T inward, thus moving the dog in relation to the feed rack B' in the usual manner of feeding type writing machines, the frame T being moved in the opposite direction by means of a suitable spring.

A hood V is detachably connected with the base A and extends around the pivotal points of the key levers and the shifting frame as shown, thus protecting them from abuse and also serving to hold the key levers in place upon the rod G to prevent them from being accidentally removed or accidentally misplaced.

Forming the key levers of a bell crank shape and having the finger operating portion thereof extending inward not only enables me to shorten the length of the machine very materially, making it extremely compact as well as simple, but has another additional and important advantage, namely:—by having the finger operating portions of the key levers extend inward, as shown and as just stated, the key levers when depressed travel in the arc of a circle which is the natural travel of the fingers of the operator in the act of depressing the key, as will be clearly understood, owing to the fact that the elbow is the pivotal point for the lower portion of the arm. This greatly relieves the operator and makes writing very much easier, owing to the fact that the depression of the key can be effected without any movement of the wrist which is very tiresome and wearing on an operator. The finger portions of the key levers traveling in the arc of a circle which is as near as possible to that traveled by the fingers when the arm is moved from the elbow, they can be depressed by the movement of the arm alone at the elbow, (instead of by the movement of the wrist which is the usual method of operating keys,) and which I find to be very advantageous.

In Fig. 4, is shown a scale c, which is attached to one side of the type bar guide a, (which is also a ribbon shift) and a scale d, which is attached to the opposite side.

The platen M' has elastic metal guides I at opposite ends thereof and these guides I have inwardly projecting pointers m, which as the platen is moved along will indicate upon the scale the position of the impression upon the platen. The upper edge of this scale c, is provided with notches forming teeth and indicating lines having numerals, so that the writing upon the paper can be indented at any desired point. This scale c, as will be seen, is only about one half the length of the platen and at the opposite side of this type bar guide a, is a second scale b, which taken together with the scale c, makes a scale equal to the length of the line written by the machine. As soon as the pointer m, at the left hand end of the platen has passed by the ends of the scale c, the pointer m, at the opposite

end of the platen will be over the outer end of the scale *d*, thus continuing on until it reaches the central point between the type bar guides, thus completing an indicator for a complete line.

In Fig. 5, is shown a detachable view of a notating scale which can be of any desired length. In this view the scale is shown U-shaped in cross section to be adapted to be attached to the scale of a type writing machine, when it is desired to write figures in columns. The lower edge of this scale is provided with a series of notches or indications corresponding with the notation of figures, that is to say, with the units, tens, hundreds, and at each decimal a deeper notch is made and a period placed over it, showing that a period is to be placed at that point. The operation of this notating scale is very simple. The operator having determined the point upon the paper he desires to have the unit, the detachable scale *h*, is placed over the stationary scale of the type writer with the right hand projection or indicator of the scale at the pre-determined point. This having been done and it is desired to write "1.00" it is only necessary to bring the pointer over the indicating mark or tooth just to the left of the first decimal point appearing upon the scale. This will bring the impression just in front of the decimal thus making "1.—" Now should it be desired to write "\$20" under this, it is only necessary to bring the pointer to one point farther to the left of the one just printed and it brings that in the proper relation to the figure just imprinted. Now should it be desired to write 1,000. or 10,000. 100,000. or a 1,000,000. it is only necessary to carry the pointer to the proper decimal point which is very easily done. In this way a column of figures can be written of varying amounts and yet all the amounts brought in proper relation in line with the other figures already printed without any necessity of lifting up the carriage or making any calculation upon the ordinary scale. Without a scale of this kind the printing of figures in columns is a very tedious operation.

As shown in Fig. 4, instead of having the notating scale separate from the other scale, I preferably form the left hand end of the scale *d*, in the notating style so that it can be used for that purpose which will be found very convenient. With the aid of either the detachable notating scale, or the scale shown in Fig. 4, the figures can be written in a column upon any portion of the sheet that may be desired, as will be clearly and readily understood.

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

1. A type writing machine comprising a series of type bars pivoted near their inner ends, a series of bell crank levers pivoted at their outer ends, with their finger operating portions extending toward the free ends of

the type bars, and connections between the type bars and the opposite ends of the bell crank key levers.

2. A type writing machine comprising a series of type bars pivoted in the segment of a vertical circle, a series of key levers extending inward toward the free ends of the type bars, and pivoted at their outer ends, the said key levers having depending arms, and connections between the type bars and the depending arms whereby the key board is brought adjacent to the free ends of the type bars.

3. A type writer comprising a series of type bars, a series of bell crank key levers pivoted at the junction of the two portions of the bell crank lever, and the finger portions extending inward, connections between the depending portions of the bell crank levers and the type bars, a universal frame outside of the depending portions of the bell crank key levers, a feed mechanism, and a connection between this universal frame and the feed mechanism, the parts operating substantially as described.

4. A type writing machine comprising a series of type bars pivoted in a segment of a vertical circle, a horizontal key lever pivotal rod, a series of key levers having a bell crank shape, the said key levers pivoted between their ends upon the said horizontal rod, and a connection between the depending portion of the key levers and the type bars.

5. A type writing machine comprising a series of type bars, a series of bell crank levers pivoted between their ends and having inwardly extending finger operating portions of varying lengths, and a series of connections between the type bars and the depending portions of the bell crank key levers, the said connections being connected with the key levers respectively at varied distances from their pivotal points for the purpose of equalizing the touch.

6. A type writing machine comprising a pivotal rod, a series of key levers pivoted thereon with their finger portions extending inward, a frame pivoted at its outer extremity upon the said key lever pivotal rod, a series of type bars carried in the inner free ends of the said shifting frame, a series of connections between the key levers and type bars, and a means for lifting the inner end of the shifting frame.

7. A shifting frame for a type writing machine comprising side bars, and a V-shaped downwardly curved end piece to which the type bars are pivotally connected respectively at its upper and lower side.

8. A type writing machine comprising a printing mechanism, a pivotal rod, a series of bell crank key levers having downwardly extending slots with open lower ends which receive the pivotal rod, and connections between the key levers and the printing mechanism.

9. A detachable notating scale made in the

form of a clasp having indicating marks corresponding with the notation of figures.

10. A type writing machine comprising a printing mechanism, a series of bell crank levers having open ended slots, a pivotal rod within said slots, and a hood extending over said pivotal rod and the levers.

11. A type writer comprising a platen, a

printing mechanism, a ribbon shifting frame, and a scale carried by said shifting frame. 10

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

JAMES DENNY DAUGHERTY.

Witnesses:

R. S. MARTIN,

GALEN C. HARTMAN.