D. H. SHERMAN.
TYPE-WRITER.

No. 191,617. Patented June 5, 1877.

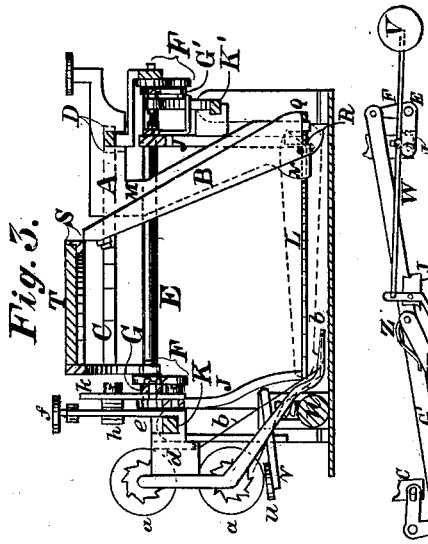

Fig. 3.

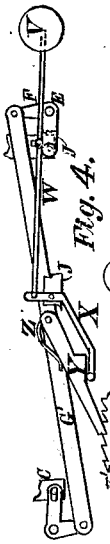

Fig. 4.

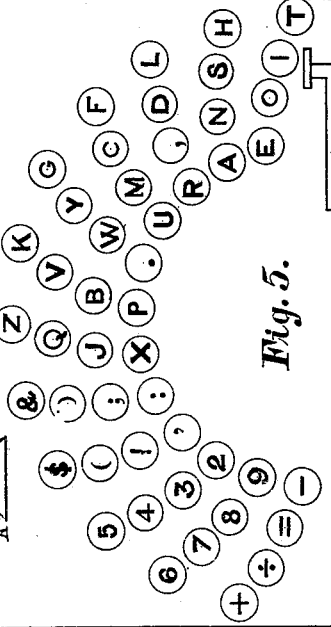

Fig. 5.

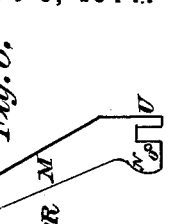

Fig. 6.

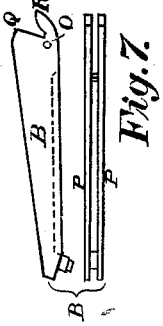

Fig. 7.

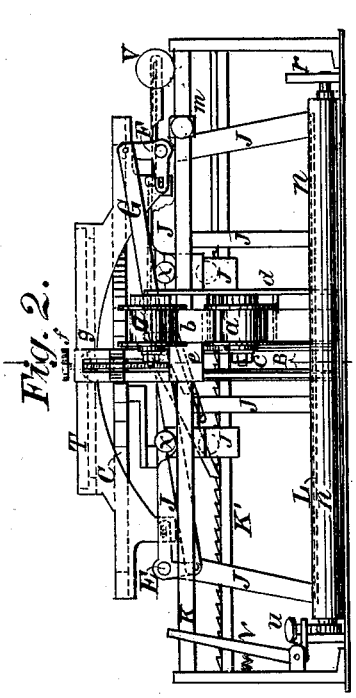

Fig. 2.

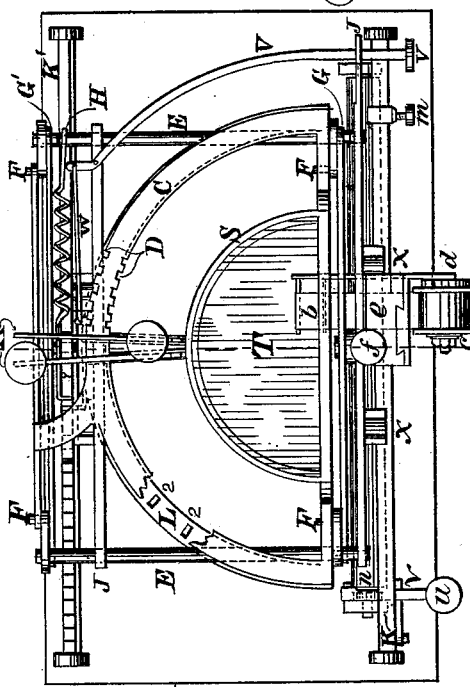

Fig. 1.

Attest:

J. M. Sherman

S. A. Sherman

Inventor:

Daniel H. Sherman

UNITED STATES PATENT OFFICE.

DANIEL H. SHERMAN, OF URBANA, OHIO.

IMPROVEMENT IN TYPE-WRITERS.

Specification forming part of Letters Patent No. **191,617**, dated June 5, 1877; application filed April 21, 1877.

To all whom it may concern:

Be it known that I, DANIEL H. SHERMAN, of Urbana, in the county of Champaign and State of Ohio, have invented a new and Improved Type-Writer; which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 represents a plan of my improved type-writer; Fig. 2, a front view of the type-writer; Fig. 3, a sectional view of the same on the dotted line shown in Figs. 1 and 2. Fig. 4 is a side view of the ratchet and pawl for spacing between letters and words. Fig. 5 represents a plan of the keys with the arrangement of the letters and characters. Fig. 6 shows a side view of the key; Fig. 7, a plan and side view of the type-bar.

The object of my invention is to furnish a type-writer that is so compact as to occupy the space of a lady's ordinary portable writing-case; to see the words and characters as they are printed and those that have been printed without removing any part of the machine; to arrange the letters and characters upon the keys so as to be most convenient in writing; to arrange the ink-ribbon in such a manner as to be of easy access in adjusting and renewing, and to give the paper one motion only.

The invention consists of the keys A and the type-bars B placed upon and around a semicircular annular bar, C, notched, D, upon the outer and inner circumferences for the reception of the keys A, said bar C having a small downward movement when pressed upon, being supported upon the shafts E E by bell-cranks F F F F, connected by the connecting-rods G G′, securing for the bar C a motion in the same horizontal plane for any point pressed upon. The bar C is returned to its normal position by the spring H attached to the shaft E and connecting-rod G′. The shafts E E are supported by and connected to the frame J, said frame having a longitudinal motion upon the ways K K′, either sliding directly upon the ways or upon friction-rollers *x* fixed to the frame J. Fixed to the center of the connecting-rod G′ is a pawl, Y, and spring, Z, acting upon the ratchet upon the way K′, giving a forward movement to the frame J when the bar C is pressed down, acting through the cranks F F and connecting-rod G′, giving the space between letters or words. Said pawl Y has a longitudinal seat on its lower side.

Fixed to the frame J is a bent lever, X, operating upon and lifting the pawl Y from the ratchet K′ when the lever V is pressed backward, said lever V being the returning-key for the frame J after the printing-point has reached the end of the line printed. To the frame J is connected a semicircular flat ring, L, horizontally and immediately below the bar C, said ring L being a support and a fulcrum for the keys A and type-bars B. The keys A are bent downward, so as to form a leg, M, a foot, N, to which is hinged the type-bar B, by the pin, at a point, O, in front of the ring L, and a heel, U, passing through the notches or apertures 2 in the ring L. The notches D and 2 act as guides for the keys A.

The type-bars B have characters or letters fixed to the upper and outer ends striking forward and downward to the center of the semicircle, said center being the printing-point, and is on the front side of the machine.

The type-bars B have side plates P P, acting on the keys A, so as to guide said bar to the printing-point. Said plates have a shoulder, Q, extending over and resting upon the ring L, throwing the type-bar B forward and downward when the key A is pressed down; also, an arm, R, below the ring L, curved in such a manner as to throw the type-bar B up and back to its original position on the return of the key A.

Fixed to the bar C, and immediately in front and in the same plane with the top of the type-bars B, is a semicircular ring, S, in which is placed a glass plate, T. Said ring and plate act, when pressed upon, as a space-key between words, also locking in their seats all the keys and type-bars not pressed upon at the same instant.

The paper-roller *n* is placed on and upon the front side of the bed-plate of the machine immediately in front of the printing-points and parallel with and to the line to be printed. It is covered with rubber to give the amount of friction required to move the paper forward between it and said bed-plate. The roller *n*

is pressed down upon the paper by springs upon the journals. To the journal at the left hand is fixed a ratchet-wheel and pawl, operated by pressing the key *u* or by the lever *v*, when the frame J is returned to the beginning of the line to be printed.

The paper may be used in sheets or from a continuous roll of paper.

The ink-ribbon is upon the spools *a a*, turning upon axles running through them and fixed to the frame *d*. On the outer ends of the axles are nuts and cloth washers *c* for adjusting the tension of the ink-ribbon *b*.

The frame *d* passes down and over the paper to a distance beyond the printing-point. To this frame and at right angles are fixed pins acting as guides to the ribbon *b*.

The frame *d* is attached to the slide *e* by the dovetail and groove in such a way as to be easily removed for renewing the ribbon.

To the slide *e*, sliding upon the way K or the frame J, is an upright thumb-screw, *f*, and nut *h*, working between the guide-posts *g*. The nut *h* is connected to the lever *k* in such a way as to have a vertical motion on the lever *k* when the same is turned.

The lever *k* is attached by a pin at its lower end to the frame J, and at a short distance above that point to the connecting-rod G, causing the spool-frame *d* to slide over the printing-point when the bar C is pressed down, and to reverse the movement when the bar C returns to its place, always carrying the ribbon to the right hand of the printing-point when not in use, thus leaving what has been printed to the view.

By turning the thumb-screw *f*, raising or lowering the nut *h*, the movement of the ribbon is varied so that its whole width is used.

The ribbon-spools *a a* may be revolved by ratchet-wheels and pawls operated by an arm extending from the bar C, and by changing the position of the pawls a reverse motion is given to the ribbon, thus using all the ink upon the whole length of the ribbon before removing it from the spools.

A sliding clamp, *m*, is attached to the way K, acting as a step for the end of the lines to be printed.

The characters and letters are arranged as shown in Fig. 5, placing the letters and characters most used to the right hand, according to the number of each letter contained in a font of type.

The operation of the machine is as follows: Place a sheet of paper under the roller *n* and under the printing-point; fix the clamp *m* upon the way K to the desired right-hand margin of the paper by bringing the printing-point by the lever V to said margin; return the printing-point by the same means to the extreme left hand of the paper; press upon the key desired for the letter shown upon its top; press the glass plate T for the space between words, so on to the end of the line; return as before by the lever V, when the roller *n* is made to revolve by the lever *v*, causing the paper to advance the required space between the lines. The paper can be moved forward at any point of the printing by pressing the lever-key *u*.

To change the ribbon, remove the spool-frame *d* and remove the ribbon, and return to the machine with the new ribbon.

I do not claim as new covering the paper-roller *n* with rubber, as I am aware that the same has been described for a similar purpose.

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

1. The keys A, with the leg M, foot N, heel U, and pin O, in combination with the semicircular bar C, flat semicircular ring L, and type-bars B, operating substantially as shown and described.

2. The type-bars B, with the guide-plates P P, the shoulders Q, and curved arm R, in combination with the key A and the flat semicircular ring L, operating substantially as shown and described.

3. The semicircular bar C, with the notches D, in combination with the semicircular ring S, glass plate T, bell-cranks F F F F, and keys A, operating substantially as shown and described.

4. The semicircular flat ring L, with the apertures 2 2, in combination with the keys A, type-bars B, and frame J J, operating substantially as shown and described.

5. The shafts E E, bell-cranks F F F F, connecting-rods G G′, and spring H, in combination with the frame J J and semicircular bar C, operating substantially as shown and described.

6. The semicircular glass spacing-plate T in the semicircular guard-ring S, in combination with the semicircular bar C and type-bars B, operating substantially as shown and described.

7. The spool-frame *d*, with ribbon guide-pins, slide *e*, thumb-screw *f*, nut *h*, guide-posts *g g*, and lever *k*, in combination with the way K, frame J, and connecting-rod G, operating substantially as shown and described.

8. The pawl Y, with the longitudinal seat upon the lower side, the bent lever X and lever V, in combination with the connecting-rod G′, ratchets K′, and frame J J, operating substantially as shown and described.

9. The paper-roller *n*, with springs upon the journals, in combination with the bed-plate of the machine, the ratchet-wheel and pawl, key *u*, and lever *v*, operating substantially as shown and described.

10. The frame J J, friction-rollers *x x x x*, in combination with the ways K K′, shafts E E, flat semicircular ring L, and the connecting mechanism, operating substantially as shown and described.

DANIEL HOIT SHERMAN.

Witnesses:

S. A. SHERMAN,

J. M. SHERMAN.