

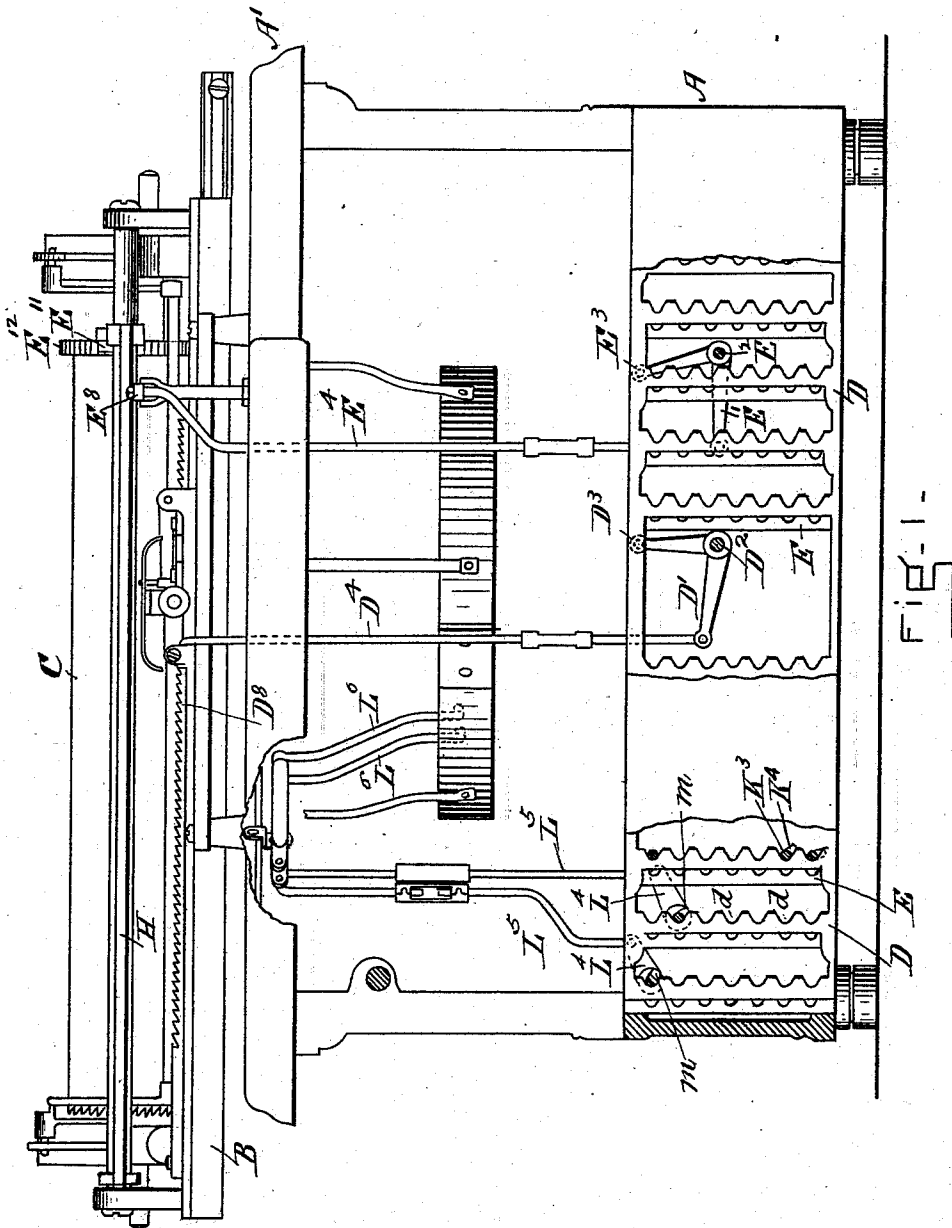
(No Model.)

2 Sheets—Sheet 1.

W. SEARS.  
TYPE WRITING MACHINE.

No. 524,867.

Patented Aug. 21, 1894.



WITNESSES  
Frank G. Parker,  
Frank G. Hattie

INVENTOR  
William Sears

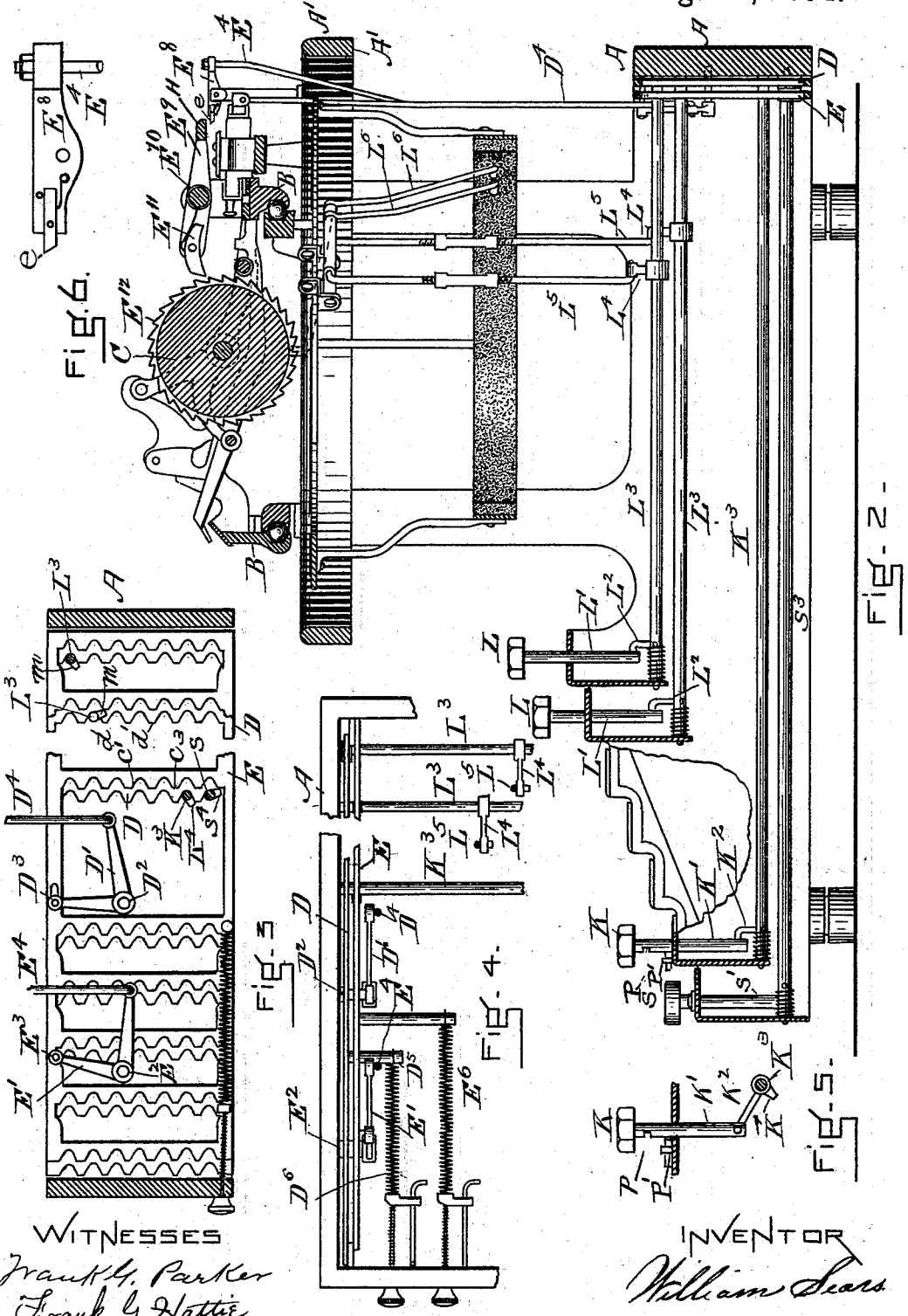
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# UNITED STATES PATENT OFFICE.

WILLIAM SEARS, OF BOSTON, MASSACHUSETTS.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,867, dated August 21, 1894.

Application filed July 24, 1893. Serial No. 481,330. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SEARS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Type-Writers, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a mechanism to be added to any of the ordinary type-writing machines, the object being to so improve the machines in ordinary use that the user may be able to print vertical columns of characters or vertical division lines (as may be desired) by the direct action of the machine. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a view from the rear of the machine, showing parts in section and parts in rear elevation, a portion of the frame of the machine being represented as broken out, to show more clearly the working parts. Fig. 2 is an end view, the frame of the machine being shown in section, and only such of the working parts as are required in explaining the machine. Figs. 3, 4, 5, and 6 represent respectively certain details, in elevation and plan.

I have not shown in the drawings the full details of a typewriting machine; they are old and well known. I have selected for illustration a machine similar to the one described in patent granted to A. T. Brown, No. 465,451, dated December 22, 1891, known to the trade as "The Smith Premier Typewriter;" but I can, with obvious alteration, adapt my improvement to any of the standard typewriters.

In the drawings, A A' represent the frame of the machine, and B the paper carriage. The paper carriage B supports the platen, the roll C, and the usual adjuncts of a paper carriage of a typewriting machine.

L—L, Fig. 2, represents the keys, the depression of which,—acting through the stems L'—L', arm L<sup>2</sup>—L<sup>2</sup>, rocking shafts L<sup>3</sup>—L<sup>3</sup>, arm L<sup>4</sup>—L<sup>4</sup>, connecting rods L<sup>5</sup>—L<sup>5</sup>, and the type-bars L<sup>6</sup>—L<sup>6</sup>,—causes the types to make impressions.

The lateral movement of the paper is effected by the following described devices: Each of the rocking shafts L<sup>3</sup>—L<sup>3</sup> is provided at its rear end with a short arm *m—m* (see Fig. 3), which, acting upon its respective pro-

jection *d'—d'* on the sliding grate D (see Figs. 1 and 3), causes the grate to move back against the action of the tension spring D<sup>6</sup> (see Fig. 4). The sliding grate D is returned by the stress of the spring D<sup>6</sup>, when the key L is free from pressure and the rocking shaft allowed to turn back to its normal position; the movement of the sliding grate D transmits motion through the pin D<sup>3</sup> and the bell-crank D', Figs. 1 and 3, the rod D<sup>4</sup> and a ratchet device, to the rack D<sup>8</sup> on the paper carriage B B. The bell-crank D' is pivoted on the stud D<sup>2</sup>, which is made fast to the frame of the machine.

When it is desired to move the paper laterally and not to print, a spacing-key K, Fig. 2, is used; this spacing-key K has a stem K' which, acting through the arm K<sup>2</sup>, rocking-shaft K<sup>3</sup> and arm K<sup>4</sup>, Figs. 3 and 5, operates the sliding grate D, and through its transmitting mechanism (already referred to) causes the paper to move laterally one space; by successively depressing the spacing-key, the paper may be moved laterally to any desired extent.

The above mentioned parts of the machine have been but briefly described, as they are old, and not of my invention.

I will now describe the combinations by which a lengthwise motion is given to the paper, and by which vertical lines or vertical columns of characters may be printed.

E is a second sliding grate, made in all respects like the sliding grate D, having similar vertical bars provided with serrations *ee'* in the same form as the serrations *d d'* of the vertical bars of the sliding grate D.

The grate E is connected with a bell-crank lever E' by a pivot E<sup>3</sup>, the bell-crank lever E' being pivoted to the frame of the machine by the stud E<sup>2</sup>, and is connected to an upright link E<sup>4</sup>. The short levers *m—m* on the rocking shafts L<sup>3</sup>—L<sup>3</sup> are made broad enough to act upon both of the sliding grates D and E, in case the grates were both drawn to the left by their respective springs E<sup>6</sup>; but in use but one of the grates are in position to be acted upon by the levers *m—m*, one of them being locked back; for instance, in Fig. 3, the grate E is represented as locked back by lever S<sup>4</sup> on shaft S<sup>3</sup>.

I will now describe my device for throwing

and locking the sliding grates back. The space key K, Fig. 2, acting through the stem K', arm K<sup>2</sup>, rocking-shaft K<sup>3</sup>, and short lever K<sup>4</sup>, Fig. 3, when depressed, will by pressing on the tooth *d'* of the grate D, throw it back against the action of the spring D<sup>6</sup>. The auxiliary key S, acting through the stem S', arm S<sup>2</sup>, rocking shaft S<sup>3</sup>, and arm S<sup>4</sup>, operates the grate E in the same manner that the key K operates the grate D. To save the operator the trouble of holding the keys S or K down, I have a notch P made in the stem (see Fig. 5), into which a latch-bolt P' may be pushed, and thus lock the stem K' or S, as the case may be; this will hold the grate D or E back out of the working of the short lever *m—m* on the rocking shafts L<sup>3</sup>—L<sup>3</sup>.

For printing a vertical line or vertical column of characters, I lock the key K down, that holds the sliding-grate D out of the action of the levers *m—m* on the rocking-shafts L<sup>3</sup>—L<sup>3</sup>, and leaves the key S up. This will leave the sliding-grate E free to be acted upon by the levers *m—m*; hence every time that one of the character keys L—L are depressed, the sliding-grate E will move, and in its movement will (acting through the bell-crank lever E' and upright link E<sup>4</sup>, see Fig. 2) give motion to the lever E<sup>8</sup>, which in turn, acting through the spring latch *e* and the lever E<sup>9</sup> (pivoted at E<sup>10</sup>) and the pawl E<sup>11</sup>, will give motion to the ratchet E<sup>12</sup> on the paper roll C, the motion of which causes the paper to move vertically; thus printing and spacing can be done in vertical lines or columns. In printing, it is necessary that the paper shall be stationary when acted upon by the type; to effect this I place on the lever E<sup>8</sup> (see Figs. 2 and 6) a small spring latch *e*, so adjusted that it in its upward movement will cause the

lever E<sup>9</sup> to move just sufficiently to move the paper one space, and then slip off from under the lever E<sup>9</sup> and still pass up, allowing the typebar to continue moving upward until the impression is made.

As the lever E<sup>9</sup> is attached to the paper carriage, and moves with it, it is necessary to have a swinging bar H connected to the lever E<sup>9</sup> and extending the whole length of the carriage, so that in whatever position the lever E<sup>9</sup> is, it (being connected to the swinging bar H) will always be operated when the upright link E<sup>4</sup> acts upon the lever E<sup>8</sup>.

I claim—

1. In a typewriter, the combination of a mechanism by which a character may be printed and a mechanism by which the paper printed upon is moved a space, in the direction of its length with a key device by which both of the said mechanisms may be caused to operate by a single movement of said key device to print one character directly underneath the other, substantially as and for the purpose set forth.

2. In a typewriter, the combination of one or more finger keys having mechanism for transmitting motion from said key or keys to the swinging bar H, with the said swinging bar, levers E<sup>8</sup> and E<sup>9</sup>, pawl E<sup>11</sup>, ratchet wheel E<sup>12</sup> and paper roll C, substantially as described and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22d day of July, A. D. 1893.

WILLIAM SEARS.

Witnesses:

FRANK G. PARKER,  
FRANK G. HATTIE.