2 Sheets--Sheet 1.

B. HALSTEAD.

Type Writing Machine.

No. 124,437. Patented March 12, 1872.

Fig.1. (Plan)

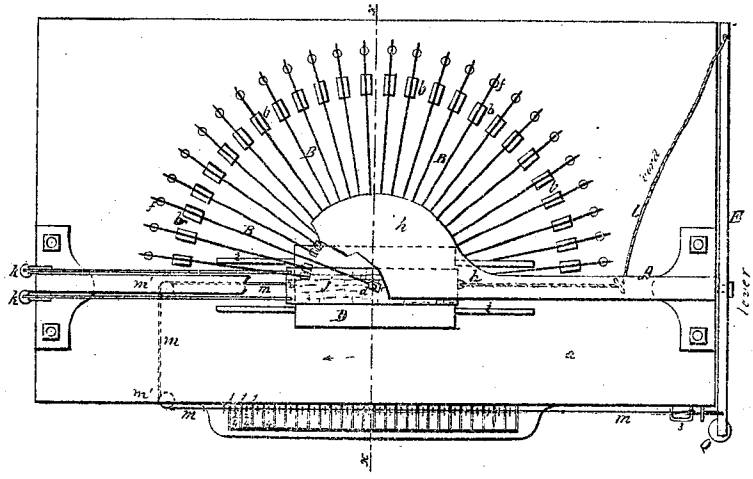


Fig.2. (Section)

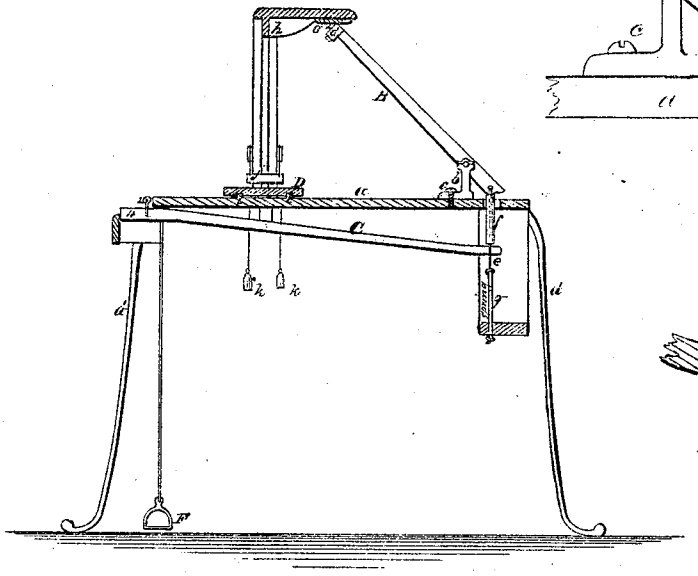


Fig.3. (Enlarged)

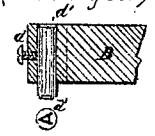


Fig.4. (Enlarged)

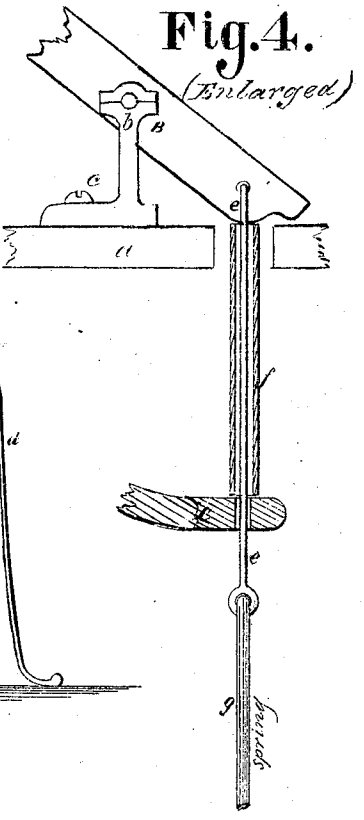
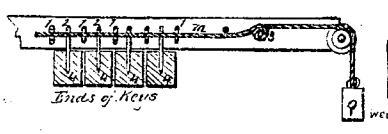


Fig.5.



Witnesses:

C. A. Fisher

H. P. Lloyd

Inventor.

Benton Halstead

2 Sheets--Sheet 2.

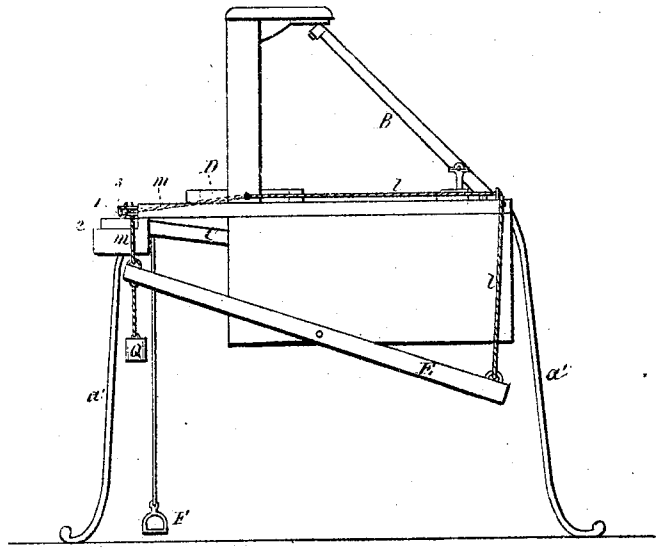
B. HALSTEAD.

Type Writing Machine.

No. 124,437. Patented March 12, 1872.

Fig. 6.

(End View)



Witnesses
C. L. Fisher
H. P. Lloyd

Inventor
Bernhard Halstead

UNITED STATES PATENT OFFICE.

BENTON HALSTEAD, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-THIRD HIS RIGHT TO JOSEPH W. MILLER, OF SAME PLACE.

IMPROVEMENT IN TYPE WRITING-MACHINES.

Specification forming part of Letters Patent No. 124,437, dated March 12, 1872.

Specification describing certain Improvements in Thought-Printing Machines, invented by BENTON HALSTEAD, of Cincinnati, in the county of Hamilton and State of Ohio.

My invention relates to the combination of a stirrup and one of the keys of the key-board, by means of which the registering-table may be moved, without the application of the hands to the key-board, the distance intervening between words; and this is accomplished by the application of the foot to the stirrup-piece.

Figure 1 is a plan of a machine embodying my invention. Fig. 2 is a transverse vertical section of the same, showing those parts of the machine which are at the left hand of the line *x x* drawn across Fig. 1. Fig. 3 is an enlarged sectional elevation of the type and attached arm. Fig. 4 is a detached sectional elevation of the type-arm, key-lever, and connecting parts of the machine, on an enlarged scale. Fig. 5 is an enlarged detached view of the key-board and device for transmitting motion to the registering-table. Fig. 6 is an end view.

A is the frame of the machine, consisting of a table-top, *a*, resting upon legs *a'*, which should be substantially constructed to resist the vibrations of the operating parts. B B are vibrating arms, journaled near their lower and short sections, in raised boxes *b b*. These boxes are attached in a secure manner to the top of the table by tap-bolts *c*, which pass through large holes in the feet of the boxes *b b* to facilitate any adjustment of the arms B B. The extreme ends of the long sections of the arms B B terminate in boxes *d d*, in which are secured, by set-screws, types, figures, or stops *d'*, to be used in printing. To the opposite short ends of the arms are attached metallic rods *e e*, incased by short metallic cylinders *f f*. The rods are attached to rubber or metallic springs, and these springs *g g* are in turn secured to the frame-work of the machine beneath the table-top. The inner end of each of the key-levers C is perforated to give room to the rod *e*. The cylinder *f* incases each rod between the ends of the key-lever and the ends of the arms B. By the tension of the springs *g g* the upper or type-ends of the arms B B are kept in contact with the elastic cushion *o* attached to the circular portion of the frame *h* above the table-top. D represents a registering-table of oblong form, adapted to slide freely upon ways *i i* attached to the upper and middle portion of the table-top *a*. An inked ribbon, *j*, is attached to the center of the right-hand end of the table D, and is extended over it by means of tension-strings attached to weights *k k*. The strings pass over pulleys on each side of the uprights to the frame above the table-top *a*, and at such an elevation that the inked ribbon is elevated a short distance above the registering-table. A flexible cord, *l*, is attached to the right-hand end of the table D and the further unweighted end of the lever E. Another cord, *m*, is attached by one end to the left-hand end of the registering-table D; is thence passed about the requisite pulleys *m' m'*; then through eyed staples in the edge of the table-top at 1 1 and at 2 2 on the upper face of the keys; thence onto the weighted end of the lever E. In order to prevent any motion in lever while the key-board is being operated a coil of the cord *m* is made about the staple 3 in the edge of the table-top, near the last right-hand staple 1. F is a stirrup attached to an extreme left-hand key. It is located near the floor, and is adapted for the reception of the foot of the operator. Any one of the keys 4 4, when depressed, causes the registering-table D to shift from right to left in a manner which has been fully described. To one of the keys 4 4, so set as to have greater action than the others, the stirrup F is attached, which extends from said key downward near the floor, into which stirrup the foot of the operator is placed. This key, to which the stirrup is attached, is not connected with the vibrating arms B B, (as the other keys are,) so when it is depressed it does not cause a letter or emblem to be printed, but does cause the registering-table D to shift from right to left the proper distance for space between words. When the operator has, by touching the keys 4 4 with his fingers, printed the word he had in his mind he presses downward suddenly with his foot that is in the stirrup F that is attached to this particular key, and by so doing depresses it a greater distance than the other keys are depressed by the fingers in printing, and thus causes a greater distance or space to intervene between words than the

space that does intervene between the letters of the words. Of course this particular key, which we may name the stirrup-key, is combined with eyed staples 1 1, 2 2, and 3, lever E, cords 7 and *m*, and registering-table D, as all the other keys are, for it is one of the keys. The advantage is that the foot is brought into use to space between words. The boxes *b b*, in which the vibrating-arms B B are journaled, are ranged in a semicircle or arc of a circle upon the table *a*, to which they are secured, and so arranged by means of their top-bolts *c c* that the arms converge toward a common point on the registering-table D when the arms are depressed by the action of the key-board. It thus becomes manifest that no two letters, figures, or stops can be indicated in printing by manipulating the keys 4 4 at the same time, since the ends of adjacent arms would interfere.

When the machine is to be used to print, the ends of the arms B B, in which are secured the letters, figures, and stops, are in contact with the elastic cushion O, the weighted lever E has its front end elevated, and the cord connecting it with the left-hand end of the registering-table "taut," the table D being at the same time in position as far to the right as it is designed to go. The operator, having inserted upon the registering-table the paper to be inscribed, beneath the inked ribbon, depresses the keys of the key-board consecutively with his fingers, according to the composition or text that he is copying, for each key is indirectly connected with a letter, figure, or stop in the registering-end of the arms B B, which strike successively the inked ribbon, always at intervals equal to the distance between the letters printed, which is regulated by the distance of motion of the key itself, giving a succession of impressions on the paper. When a key is depressed the cord *m* is drawn down by the attached eye-staple 1, and since it cannot be drawn from the right hand by reason of the coil about the staple 3, and the tension exerted on the cord to the right of the staple by the weight Q on the lever E, the left-hand end of the cord is drawn upon, which imparts a motion to the registering-table sufficient to space the letters of words, at the same time the weight Q descends sufficiently to take up the slack of the cord; in the mean time the small weights *k k* attached to the cords of the inked ribbon have moved downward, keeping the ribbon stretched over the registering-table, thus preventing the descent of the type upon the same place on the ribbon as each letter is formed. When a line has been printed and the registering-table moved to the extreme left the weighted end of the lever E is elevated; this operation straightens out the cord *l* and draws upon the registering-table, moving it to the extreme right when the next line may be printed upon the paper on the table D. This operation is repeated, the paper impressed being advanced the requisite distance as each line is formed until the sheet or text is exhausted. In this machine the letters, stops, figures, or emblems are arranged on the key-board in a manner to facilitate rapid manipulation.

I claim as my invention—

1. The combination of the keys 4 4, eyed staples 1 1, 2 2, and 3, lever E, cords *l* and *m*, and registering-table D, arranged to operate substantially in the manner shown and specified.

2. The weighted cords *k k*, in combination with the inked ribbon *j*, substantially as and for the purpose set forth.

3. The combination of the stirrup F and one of the levers C, substantially as and for the purpose specified.

BENTON HALSTEAD.

Witnesses:
C. L. FISHER,
H. P. LLOYD.