B. LIVERMORE.

HAND PRINTING DEVICE.

No. 39,296. Patented July 21, 1863.

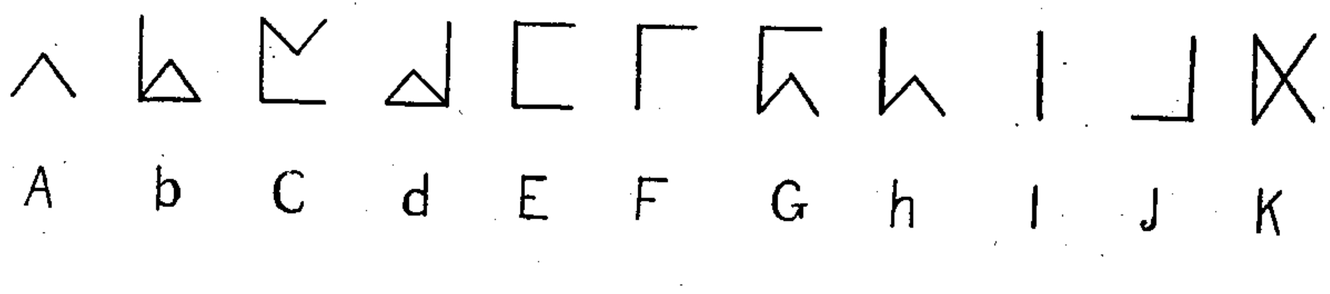


Fig: 5.

Fig: 1

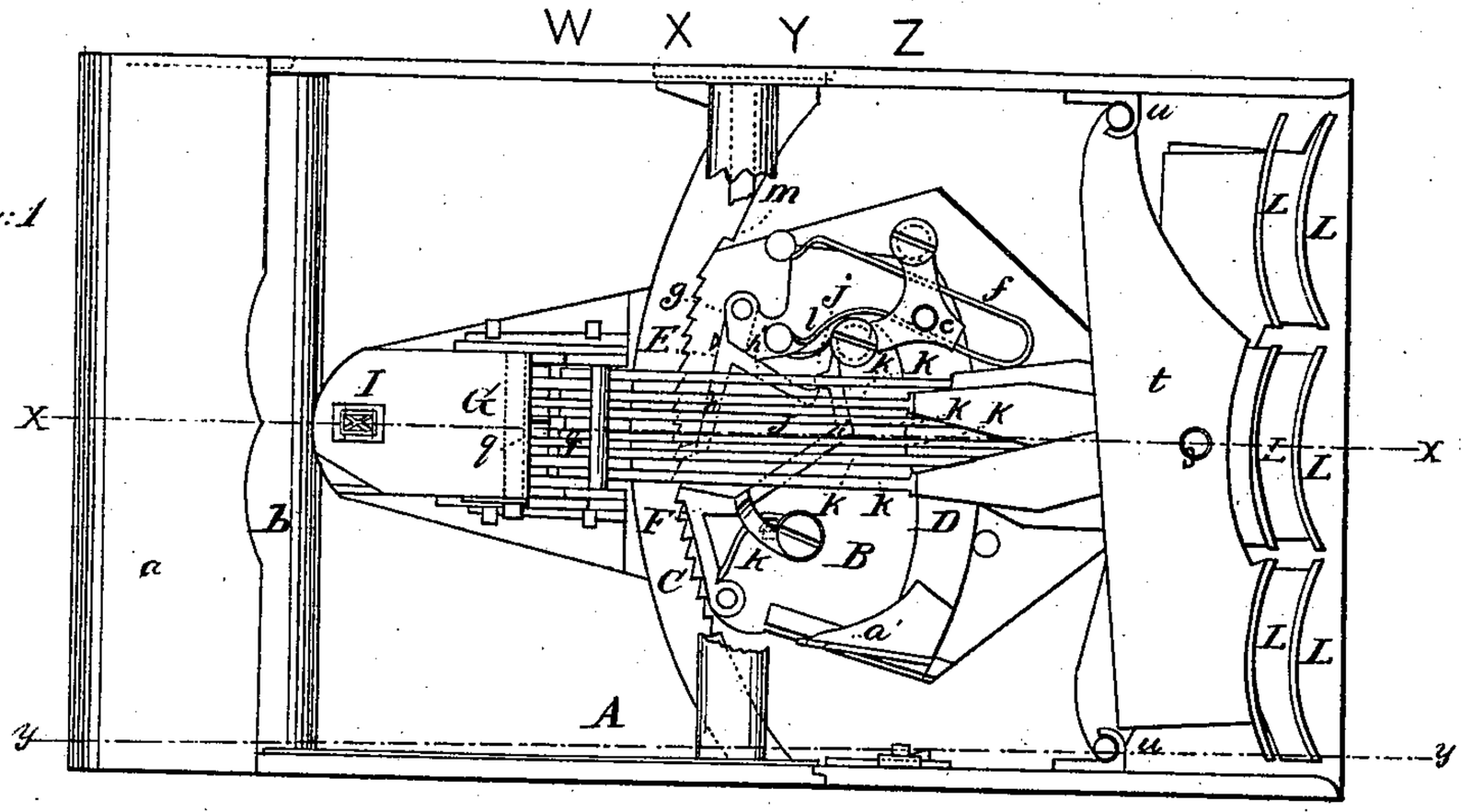


Fig: 2.

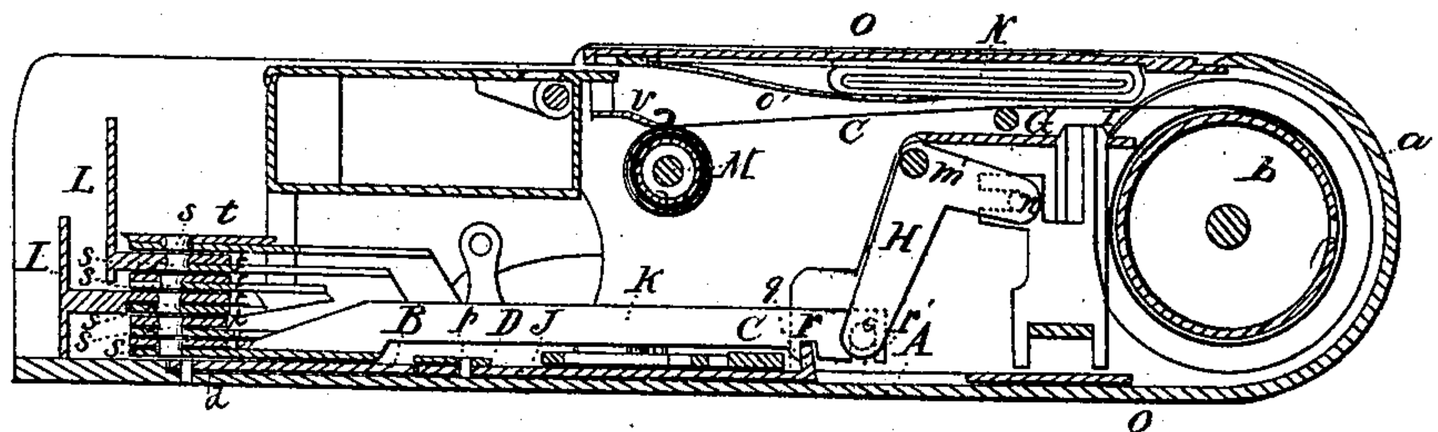


Fig: 4.

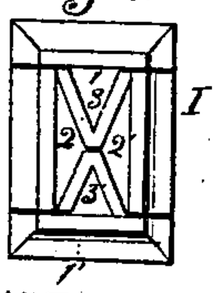
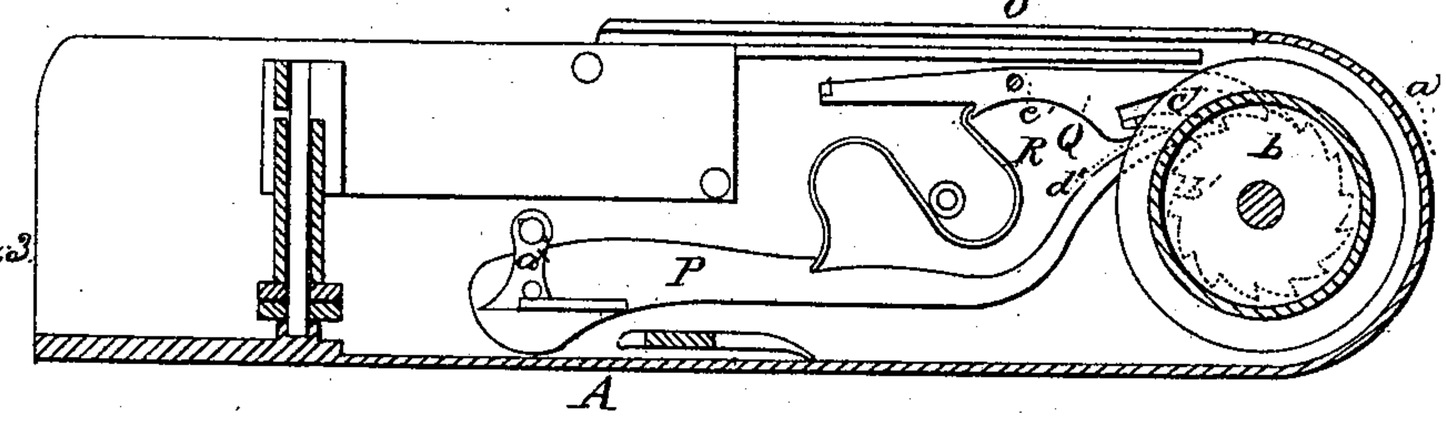


Fig: 3.



WITNESSES:

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BENJAMIN LIVERMORE, OF HARTLAND, VERMONT.

DEVICE FOR HAND-PRINTING.

Specification forming part of Letters Patent No. **39,296**, dated July 21, 1863.

To all whom it may concern:

Be it known that I, BENJAMIN LIVERMORE, of Hartland, in the county of Windsor and State of Vermont, have invented a new and Improved Hand-Printing Device or Mechanical Typographer; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan or top view of my invention, the top plate being removed in order to show the interior; Fig. 2, a longitudinal central section of the same taken in the line *x x*, Fig. 1; Fig. 3, a longitudinal section of the same taken in the line *y y*, Fig. 1; Fig. 4, an enlarged face view of the combination-type; Fig. 5, a view of the alphabet, as formed by the combination-type.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a portable device which may be held in the hand and operated with the greatest facility for printing direct upon paper or other suitable material.

To this end the invention consists in the employment or use of a combination-type—that is to say, a type composed of several sections, arranged and combined in such a manner that any one of the sections may be used separately, and certain parts used combined, in order to form the different letters of the alphabet, as hereinafter set forth.

The invention also consists in the employment or use of finger pieces or keys, arranged in a novel way with levers, for the purpose of operating the several parts of the type, and also in a certain means employed for causing the type to traverse or move so that proper spaces may be allowed between the impressions, and the type allowed to adjust itself properly at the termination of each line for the printing of a succeeding one.

The invention further consists in a means employed for moving or feeding the paper along at the termination of each line as it is printed.

To enable those skilled in the art to fully understand, construct, and use my invention, I will proceed to describe it.

A represents a metal case, in which the working parts of the device are fitted. This case at one end, *a*, is of semi-cylindrical form, and within said part *a* a cylinder, *b*, is placed, on which the paper *c*, to be printed upon, is wound as it is printed upon. (See Figs. 1 and 2.)

B is a plate, which is placed on the bottom of the case A, and is secured thereto, at its outer end, by a rivet, *d*, on which the plate B is allowed to work freely.

C is a curved rack-bar, which is permanently secured to the bottom of the case A, and underneath which the plate B is allowed to work freely, the bar C having its rack on its concave edge. On the plate B there is secured by a fulcrum-pin, *e*, a bent lever, D, which is acted upon by a spring, *f*, and has a pawl, E, attached to it by a pivot, *g*. This pawl has two prongs, *h h'*, one of which, *h*, engages with the rack-bar C. The use of the other prong, *h'*, will be presently shown.

F is a holding-pawl, which engages with the rack-bar C and is provided with an arm, *i*, which has a projection, *j*, near its outer end, as shown in Fig. 1. The pawl E is acted upon by a spring, *k*, which keeps it engaged with the rack-bar C, and the holding-pawl F is acted upon by a spring, *l*, which performs a like office.

From the above description it will be seen that by forcing or pressing the longer arm of the lever D inward or toward the cylinder *b*, that the pawl E will be raised and slip over a tooth of the bar C, and when said lever is relieved of the pressure the spring *f* will throw the lever D back to its original position, and the inner end of the plate B will be raised in consequence of the pawl E catching into the rack-bar. The inner end of the plate B is thus elevated from the lower to the upper edge of the case A, the latter, when the device is in use, being held in an inclined position in the hand of the operator. When the plate B has reached the upper end of the case A, the prong *h*, which is the pawl E proper, passes over a projecting part, *m*, on the rack-bar and

causes the prong *h'* to act against the projection *j* on the arm *i*, and throw the holding-pawl F out from the rack-bar C, and admit of the plate B falling, by its own gravity, to the lower part of the case A. This movement of the plate B, under the operation of the lever D, is separately described, in order to avoid confusion. On the inner end of the plate B there is secured a box, G, in which six bent levers, H, are fitted on a common fulcrum-pin, *m'*. The form of these levers is clearly shown in Fig. 2.

I represents what I term a "combination-type." It is formed of six different parts, designated by 1 1', 2 2', and 3 3'. as shown in Fig. 4. The parts 1 1' and 2 2' form a hollow square, while the parts 3', 3', are of V form and within said square, 3' being inverted and having its angle adjoining the angle of 3, as shown clearly in Fig. 4. By means of these six parts the alphabet is formed, as shown in Fig. 5. The part 3' when pressed against the paper forms the letter A. 3', 3', and 2 form the letter B; 3, 2, and 1', the letter C; 3', 1', and 2', the letter D; 1, 1', and 2, the letter E; 2 and 1, the letter F; 3', 2, and 1, the letter G; 3 and 2, the letter H; 2, the letter I; 1' and 2', the letter J; 3, 3', and 2, the letter K; 2 and 1', the letter L; 3, 2, and 2', the letter M; 1, 2, and 2', the letter N; 1, 1' 2, and 2', the letter O; 3, 1, and 2, the letter P; 3, 1, and 2', the letter Q; 3 and 2, the letter R; 1, 2', and 3', the letter S; 1 and 3', the letter T; 2, 2', and 1', the letter U; 3, the letter V; 3', 2, and 2', the letter W; 3 and 3', the letter X; 3 and 1', the letter Y; 1, 1', and 2', the letter Z. The levers H are connected one to each of the parts of the type, as shown at *n*, in Fig. 2, and each lever H at its lower end is provided with a pin, *o*, said pins projecting laterally from one side of the levers. The position of these pins is shown by a dotted circle in Fig. 2. The lever D has a flat bar or arm, J, attached to it by a pin or pivot, *p*, and said arm has a notched ledge, *q*, at its inner end, into which a series of six arms, K, are fitted. These arms are each provided with two notches, *r r'*, at their inner ends. The outer notches, *r'*, are fitted over the pins *o* of the levers H, and the inner notches, *r*, are fitted in the notched ledge *q*. The notches *r* are made sufficiently wide to admit of the arms K having a certain degree of play on the ledge *q*, as will be seen by referring to Fig. 2. The outer ends of the arms K are connected by pivots *s* to levers *t*, which have their fulcra *u* at opposite sides of the case A, there being a lever, *t*, for each arm K, and each lever *t* has a key or finger-piece, L, attached to it, each of which is marked corresponding to the part of the type with which it is connected through the medium of the lever H. The pivots *s* of the levers *t* are about in line with the pivot or rivet *d* of the plate B. By pressing inward any one of the keys or finger-pieces L, the part of the type I which is connected with it will be raised, and just previous to this, by the backward movement of the key, the plate B was raised one notch in the bar C, to admit of a proper space being between the letters or impressions on the paper. The paper *c* to be printed upon passes over the type I upon the cylinder *b* from a roller, M, which has a spring, *r*, bearing upon it to prevent it from casually turning.

N represents a pad, which is saturated with ink or coloring material. A piece of paper having a mixture of coloring matter and grease rubbed over it will answer. This pad or paper is secured by springs *r*, to the under side of the lid O of the case. The impression is given by the parts of the type pressing the paper in contact with the pad N. The keys or finger-pieces L may be readily operated, either singly or two or more at a time, so as to form the several letters. The lines, it will be seen, are printed on the paper in curved form, owing to the curved path the plate B describes in its upward movement, and at the termination of each line the plate B drops, owing to the throwing out of the holding-pawl, and the paper *c* is moved a trifle upon the cylinder *b* at the first upward movement of the plate B, so as to cause a proper space between the lines. This movement of the paper *c* is effected as follows: As the lever D is pressed inward at its first movement in commencing a line, the end *a* of its longest arm comes in contact with a sliding pawl, P, which engages with a ratchet, *b'*, on one end of the cylinder *b*. This pawl P is at the lower side of the case A, and connected thereto by a swinging plate, *a*, and it is provided at its front end with a barb, *c'*, which catches over a projection, *d'*, on a pawl, Q, which works on a pivot, *e'*, and which also engages with the ratchet *b'*.

R is a spring, which bears or acts against both pawls P Q, and has a tendency to keep both pawls engaged with the ratchet *b* when the pawl P is shoved forward, and also to throw the pawl P back from the ratchet. The pawl Q is a holding one, and prevents the cylinder *b* from casually turning while the pawl P is thrown back by the spring. By pressing down the back end of the pawl Q, both pawls will be disengaged from the ratchet *b'* and the paper *c* adjusted as desired.

I would remark that numerals may be formed by the combined type I, the several parts being used singly and combined so as to approximate as nearly as possible to the known form of the same.

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

1. The combination-type I, formed of a se-

ries of parts, 1 1′, 2 2′, 3 3′, arranged, substantially as shown, so as to be capable of being operated singly or any two or more of them simultaneously, for the purpose specified.

2. The arrangement of the levers H, arms K, levers *t*, and keys or finger-pieces L, substantially as shown, for operating the parts of the type.

3. The plate B, rack-bar C, and lever D, the latter being provided with the pawls E F, provided, respectively, with prongs or arms *h′ i′*, for the purpose of feeding or moving the type across the paper, as set forth.

4. Connecting the arms K with the lever D of plate F through the medium of the bar or arm J, for the purpose of moving the type across the paper simultaneously with the giving of the impression, or just before the impression is given, as set forth.

5. The two pawls P Q, arranged, as shown, in connection with the ratchet *b′* and the lever D of the plate B, for moving the paper *c*, as set forth.

BENJAMIN LIVERMORE.

Witnesses:
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