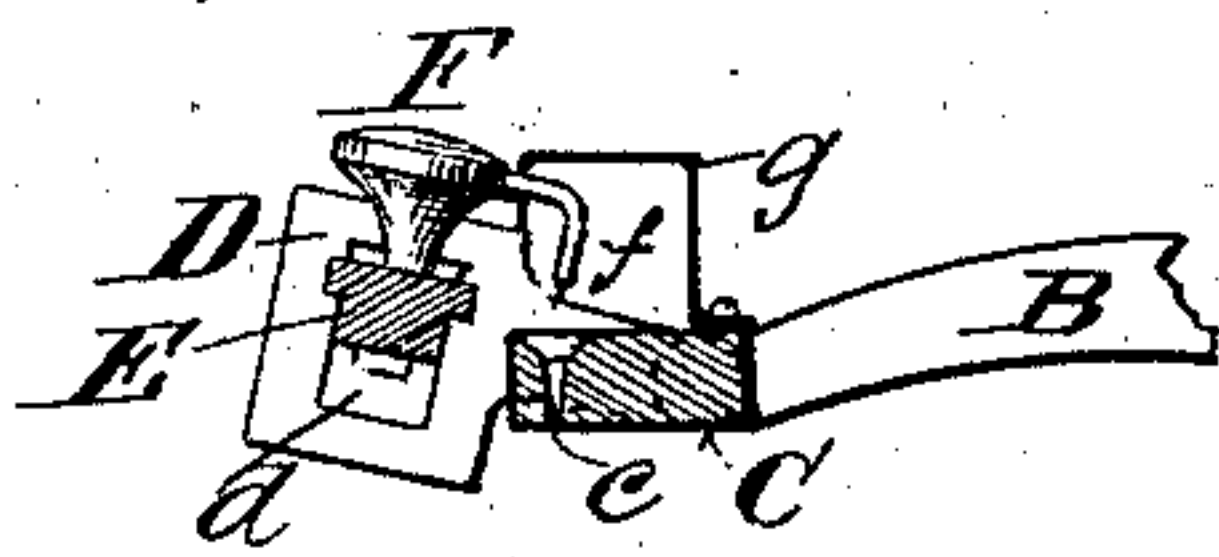
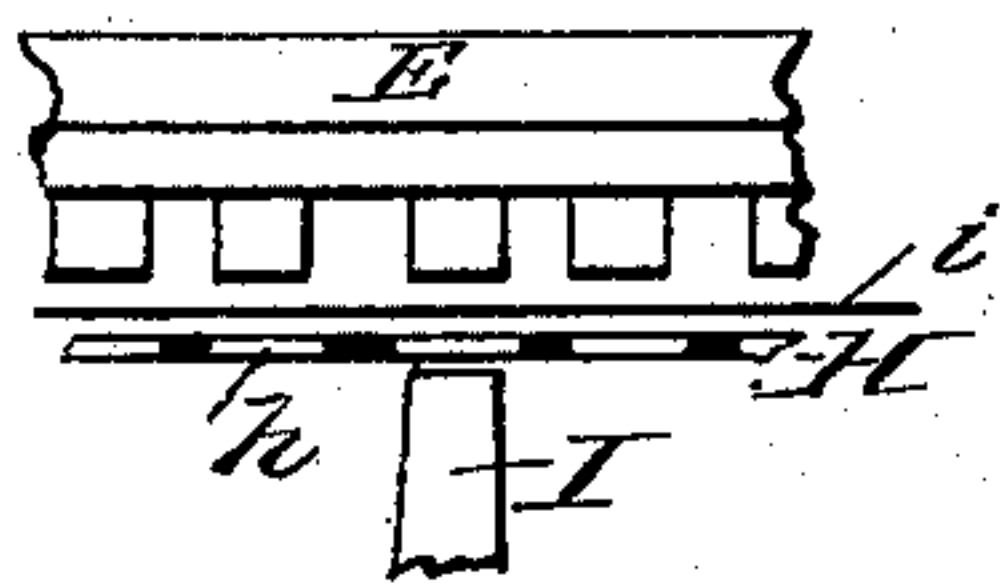
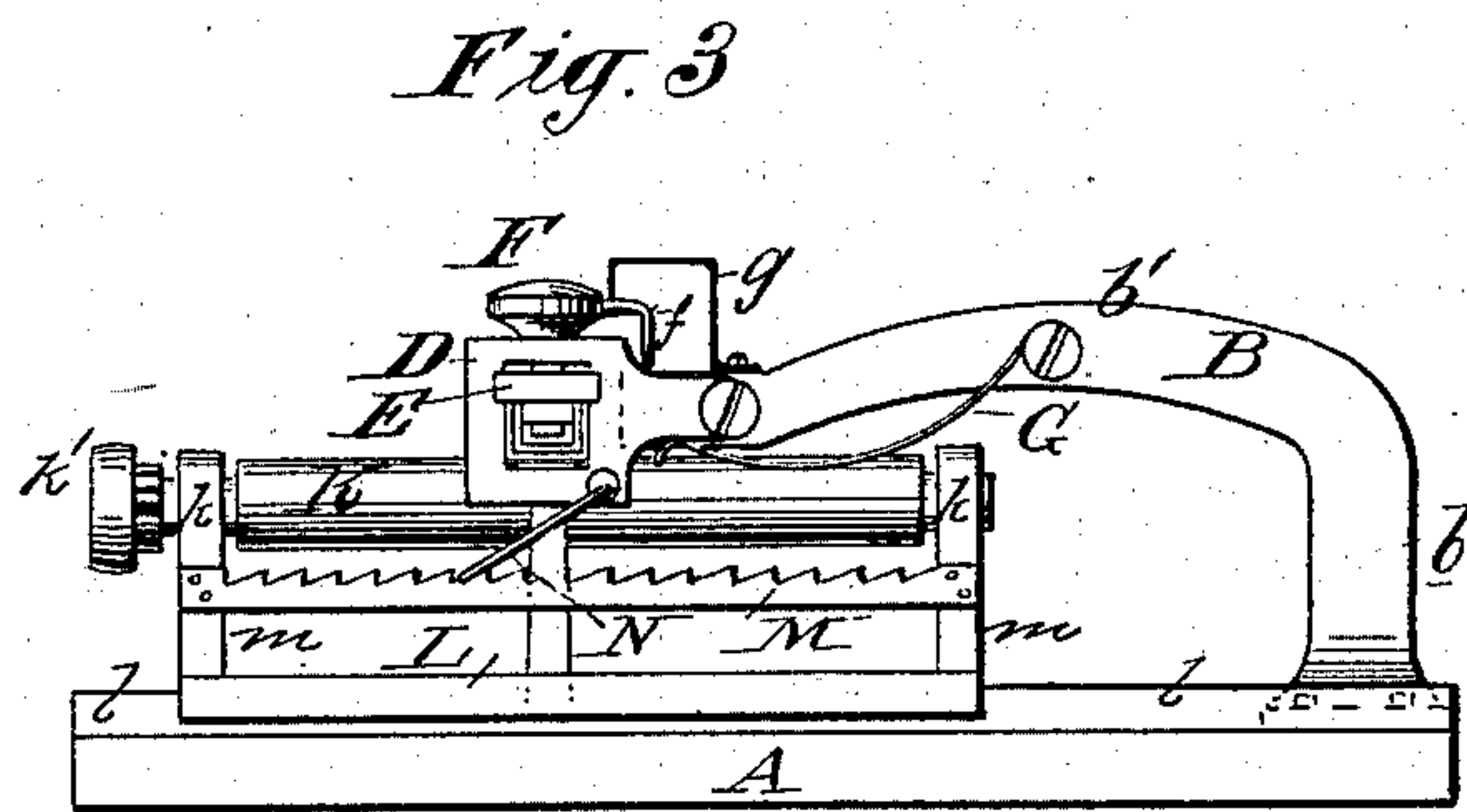
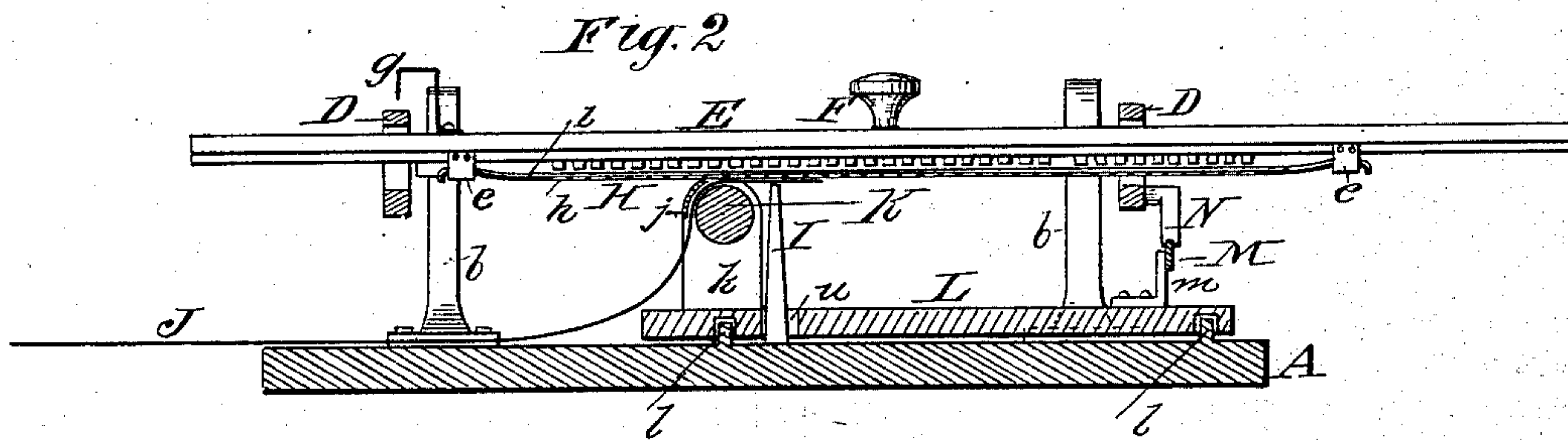
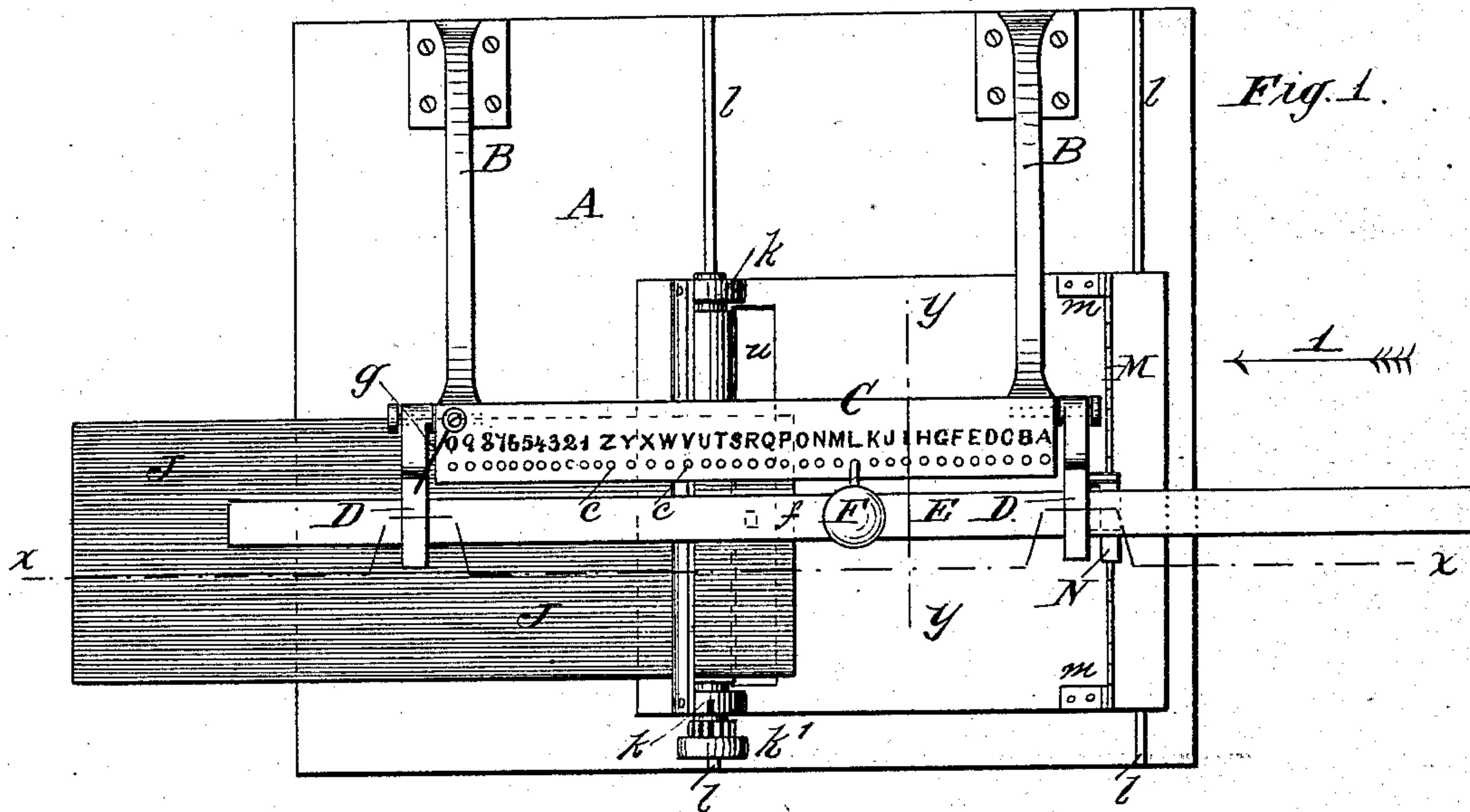


(No Model.)
L. S. BURRIDGE & N. R. MARSHMAN.
TYPE WRITING MACHINE.

TYPE WRITING MACHINE.

No. 315,386.

Patented Apr. 7, 1885.



Witnesses:—

26 W. Hubbard
Robt W. Matthews —

Fig. 4.

Inventors:—
 Lee S. Burridge —
 Newman R. Marshman
 by A. W. Almqvist Atty.

UNITED STATES PATENT OFFICE.

LEE S. BURRIDGE AND NEWMAN R. MARSHMAN, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 315,366, dated April 7, 1885.

Application filed March 22, 1884. (No model.)

To all whom it may concern:

Be it known that we, LEE S. BURRIDGE and NEWMAN R. MARSHMAN, citizens of the United States, and residents of New York, in the county and State of New York, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

The object of our invention is to provide an inexpensive and yet complete type-writer of but very few parts, not liable to get out of order, requiring for its operation as few movements as in the case of expensive machines now in use, and which will admit of printing a sheet of paper of any length without the necessity of coiling or folding the same.

The invention consists in the combination, with a stationary letter-plate, of a type-plate fitted to slide parallel with the said letter-plate in hinged or only vertically-movable supports, a stylus rigid upon the said type-plate, an impression-surface, and means for feeding the paper the proper distance between the letters by the vertical movement of the type-plate.

It also consists in the combination of a laterally-movable type-plate carrying below its type-surface a plate perforated opposite to the type-face of each letter, and an ink-ribbon interposed between the type-surface and the said perforated plate, with a stationary impression-stud, and means for moving the paper over the said stud.

It also consists in the combination, with the letter-plate and type-plate, of one or more supports, each consisting of a horizontal or overhanging arm or reach having at one end the aforesaid plates, and secured at its other end by a downward-projecting branch to the bed-plate or main support of the machine, as will be hereinafter described and claimed, with reference to the accompanying drawings, in which—

Figure 1 represents a top or plan view of our improved type-writer. Fig. 2 is a longitudinal vertical section of the same, taken on the line *xx* of Fig. 1, as seen from the front. Fig. 3 is an end elevation of the same, seen in the direction of arrow 1 in Fig. 1. Fig. 4 is a detail cross-section of the letter-plate and type-plate, as seen in the direction of ar-

row 1. Fig. 5 is a partial detail view, on a larger scale than the previous figures, to illustrate the operation and arrangement of the type-plate, ink-ribbon, perforated plate, and impression-stud.

In Figs. 1, 2, and 3 of the drawings the type-plate is shown as depressed almost in printing contact.

Upon the edge (preferably the rear edge) of the base-plate A of the machine are secured the vertical or downward-bent portions *b* of two brackets or supports, B, to the free end of whose horizontal or overhanging arms *b'* is attached a letter-plate, C. The letter-plate may either be secured to or formed in one part with the said supports B, and in place of two supports only one may be used, the reach or overhanging arm *b'* being of sufficient length to allow of a free movement of the paper without coiling or winding in the same. The letters and figures on the plate C are arranged in one continuous line, as shown in Fig. 1, and opposite each letter and figure is a downward-tapering hole or socket, *c*, in which the point of the stylus is inserted when it is desired to bring into alignment on the paper the type corresponding to the letter opposite such socket *c*.

To the ends of the letter-plate C, or to the horizontal arms *b'* at its ends, are hinged or pivoted arms D, having suitable ways, *d*, by which the type-plate is guided and arranged to be slid parallel with the letter-plate and the rows of letters and perforations *c* on the same.

The stylus F is formed or secured upon, and thus rigid with, the type-plate E, and has forward a down-turned point, *f*, which is tapered so that it will easily enter the aforesaid tapering holes *c*, the sizes of the said point and the said holes being so made that the final adjustment of the letter-type to a nicety in alignment will be effected by the guiding of the said point by means of the tapering of the hole *c* when the stylus is depressed far enough to bring the type in printing contact. The spring G, acting against the under side of the arms D, keeps the type-plate E normally in a raised position, with the point *f* just above and clear of the letter-plate, a button, *g*, serving to prevent the arms from being raised

higher than necessary. When it is desired to throw the arms D back, so as to examine the under side of the type-plate, or for other purposes, the said button is swung aside clear of the arm D. The letters of the type on the plate E are arranged in the reverse order to those on the letter-plate, so that the letter A (which on the plate C begins on the extreme right) on the type-plate begins at the extreme left.

Underneath the type-plate is attached and supported in suitable cleats, *e*, (or other fastening which will prevent lateral movement,) a strip of metal, H, which plate has opposite the face of each letter-type a perforation, *h*, of suitable size to allow the type-face to pass through the said perforation when making the impression, which impression is received by the paper resting on the face or guide surface of the small impression-stud I, which is stationary upon the bottom plate, A. The ink-ribbon *i* is interposed between the type-face and the said perforated plate H, and held by them in position, as shown in Fig. 2. From this construction it is evident that the ink on each point of the ribbon supplies only the type directly opposite thereto, and thus will last much longer than it would if not sliding with the type-plate. The plate H protects the paper from contact with the ink-ribbon, except only at the point where impression is made upon the stud I.

To move the paper (designated by the letter J) cross-wise to the type-plate the desired distance between each two letters, and also to allow of moving it, in the same direction as the type-plate slides, the distance required for the spacing between the lines, it is held between a little metal strip, *j*, and the frictional surface of a roller, K, the said roller being pivoted in brackets *k* upon a sliding frame, L, and the said metal strip (or wires) being fastened with its ends to the said brackets *k*. The near end of the roller K is provided with a knob, *k'*, by marks on which and a corresponding mark on the nearest upright *k*, the distance for the turning of the roller may be observed, so as to give the correct desired spacing.

The frame L slides on ways *l* upon the bed-plate A, and is also provided with oppositely-placed uprights or studs *m*, formed on or attached to which is a toothed rack, M, and in contact with the latter rests the free end of a pawl, N, whose other end is pivoted to one of the aforesaid hinged arms D, as shown in Figs. 1 and 3. By means of the said rack and pawl, the spacing between the letters of a word is effected in such a manner that by each depression of the stylus F to print the letter the pawl N, simultaneously with the said movement, will slide (by contact of the tooth with the rack N) the frame L, and thereby the paper J, forward the space of one tooth, (or more, according to the throw of the arm D.) On the withdrawal of pressure the springs G raise the arms D, and thereby the pawl N,

causing the latter to slide back the space of one tooth and contact with the next. To print a figure upon the paper, it is thus only necessary to slide the stylus F in position with its point in the hole *c* opposite to the corresponding figure on the letter-plate C, and then depress the stylus.

It will be observed that by the described construction of the supports B the paper J may be of any length without necessitating its folding or rolling, there being free space at each end of the machine for the paper to pass through, the rack M being elevated by its studs *m* sufficiently above the frame L to allow the paper to pass between the said rack and frame. The greatest width of paper that may be printed depends, of course, on the length of the horizontal reach *b'* of the support B and the length of the feeding-roller K.

The letter-plate C may be the horizontal arm *b'* itself, in which case of course the downward branch *b* should descend directly from the right-hand end of the letter-plate, but as in this case the said upright *b* would be a bar to the passage of the paper farther toward the right, the right end of the paper should be returned underneath the roller K, and this would be feasible by attaching the impression-stud I upon a horizontal bar elevated by end posts upon the bottom plate, A, and sliding frame L; but at present we prefer the construction shown in the drawings.

It should be observed that the sliding frame L is provided with a slot, *n*, through which the impression-stud I projects, and which allows of the sliding motion of the frame L, which otherwise would be impeded by the stationary stud I.

We are aware of English Patent No. 3,727, of 1882, and United States Patent No. 144,450, and make no claim to the construction shown therein as forming a part of our invention.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with the base-plate A and the letter-plate C, stationarily mounted thereon, of bearings movably connected with said plate, and a type-plate, E, fitted to slide parallel with the said letter-plate and mounted on said movable bearings, a stylus, F, upon the said type-plate, an impression device, as I, and means, substantially as described, for feeding the paper the distance between the letters by the vertical movement of the type-plate, as described.

2. The combination of a laterally-movable type-plate, E, carrying below its type-surface a plate, H, perforated opposite the type-face of each letter, and an ink-ribbon, *i*, interposed between the type-surface and the said perforated plate, with a stationary impression-stud, I, and means, substantially as described, for moving the paper over the said stud.

3. The combination of the laterally-movable type-plate E with the stationary impression-stud I, the slotted frame L, and mechanism,

substantially as shown and described, for moving said frame L as each letter is printed, the parts being constructed, arranged, and operating as and for the purposes set forth.

5 4. In a type-writing machine, the combination of the overhanging arms B, rigidly secured at one end only to the bed A, a letter-plate, C, firmly secured to the free end of said arms, with the short arms D, pivotally secured
10 to the free ends of arms B, and the type-plate E, free to slide in and through the said arms D, as and for the purpose set forth.

15 5. In a type-writing machine, a support, B, consisting of an overhanging arm or reach with the letter-plate rigidly secured upon the said arm, and having at one end a downward-projecting branch, b, fixedly secured to the bed-plate or main support of the machine.

20 6. In a type-writing machine, the combination of a base-plate and a letter-plate fixedly mounted thereon, with a type-plate and bear-

ing for the same moving independent of the letter-plate and loosely connected with the base-plate, and arranged to receive and guide said type-plate, substantially as described. 25

7. In a type-writing machine, the combination of a stationary letter-plate with a type-plate sliding parallel with said letter-plate, and pivoted arms provided with bearings for the said type-plate, whereby an equal leverage is
30 maintained for the same and the arms carry the minimum of weight, substantially as described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 18th day of 35
March, 1884.

LEE S. BURRIDGE.

NEWMAN R. MARSHMAN.

Witnesses:

ROBT. W. MATTHEWS,

A. W. ALMQVIST.