

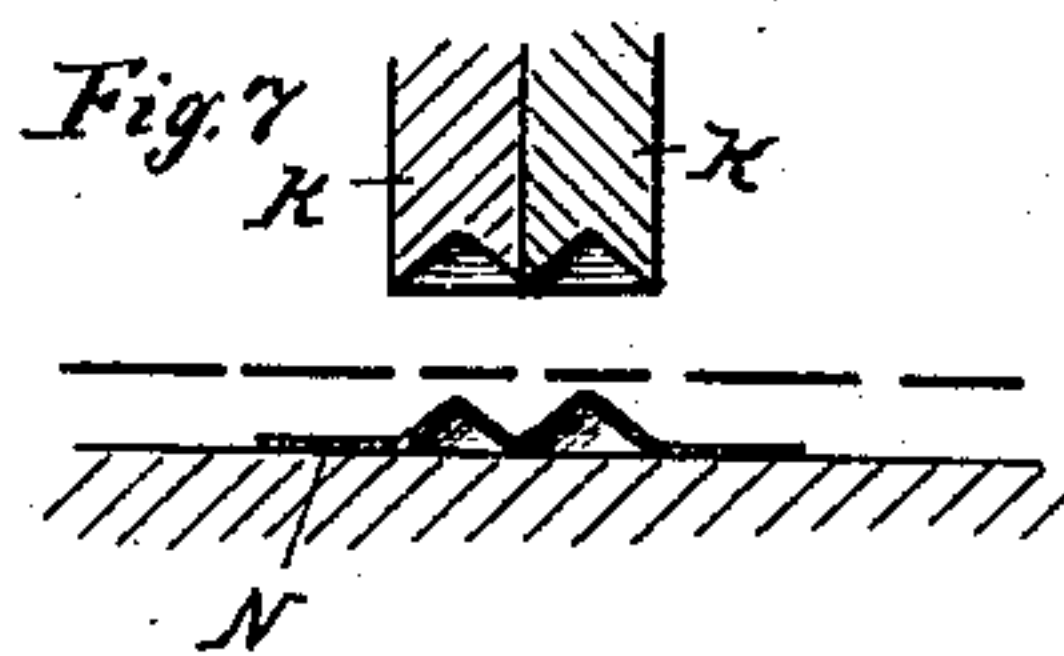
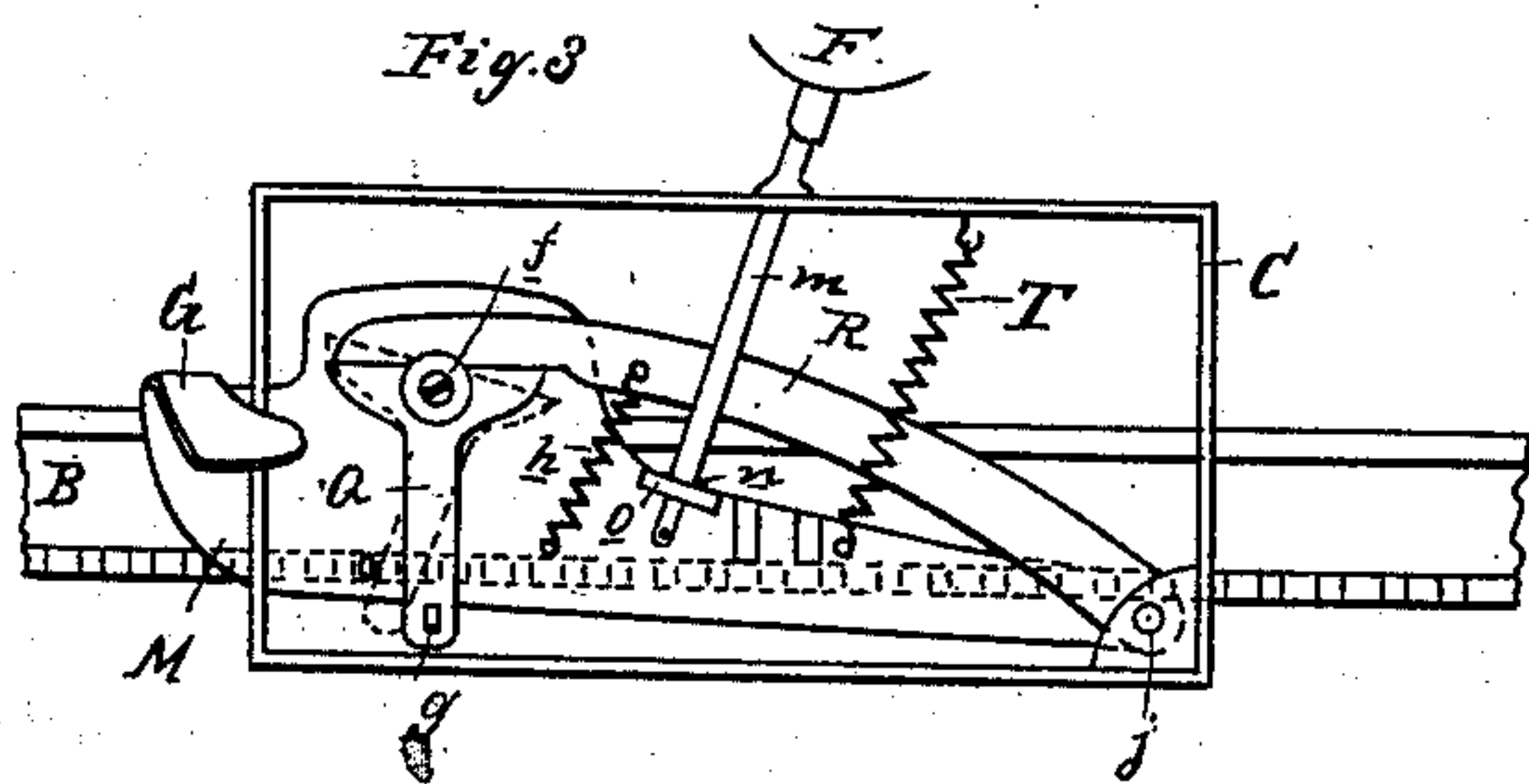
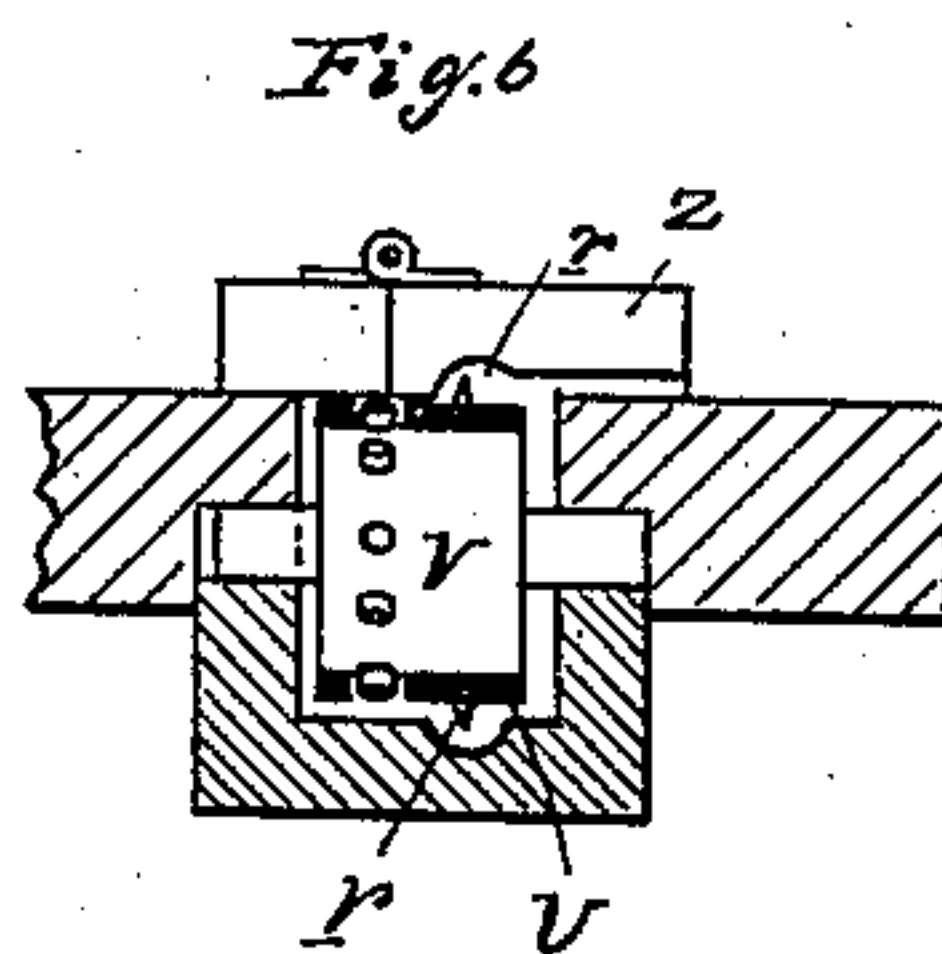
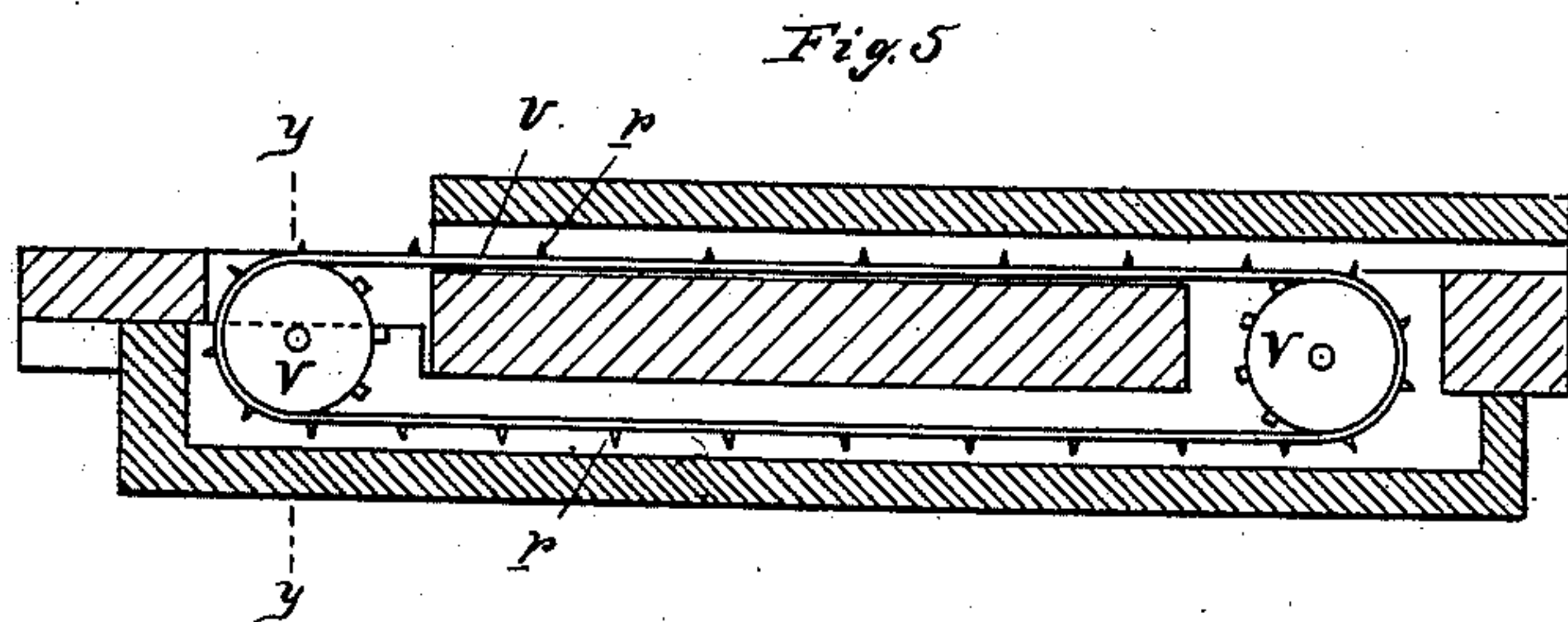
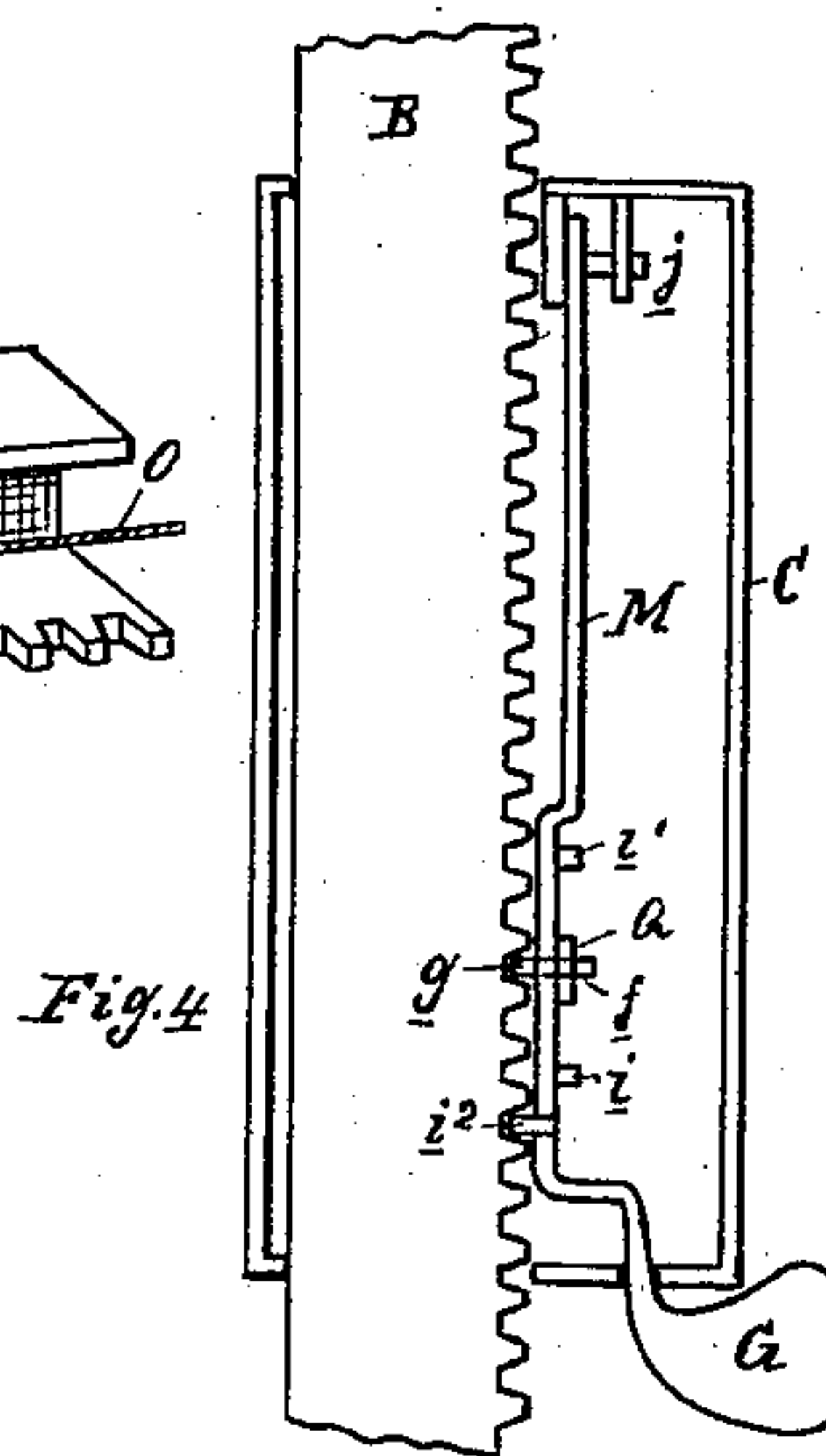
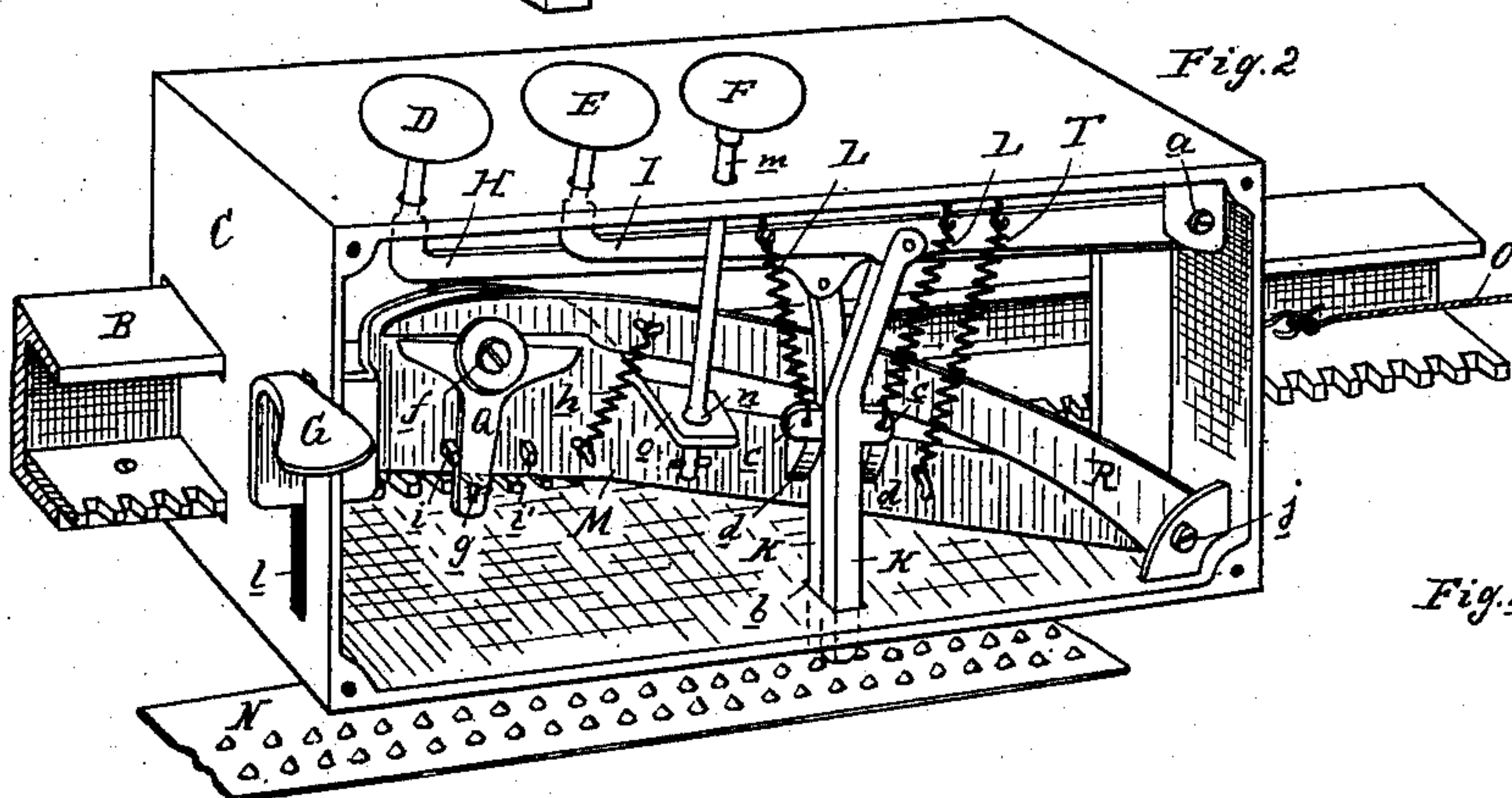
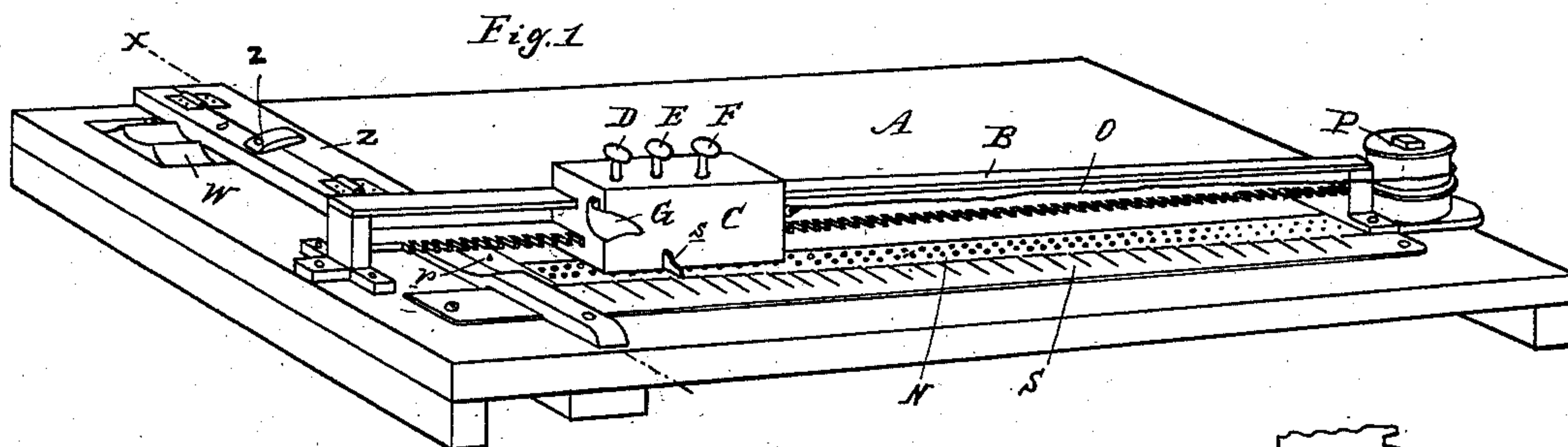
(No Model.)

J. F. McELROY.

WRITING MACHINE FOR THE BLIND.

No. 389,756.

Patented Sept. 18, 1888.



Attest:

John Schuman.
John Schuman

Inventor:

James F. McElroy.

by his Atty

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UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF LANSING, MICHIGAN, ASSIGNOR TO THE AMERICAN
PRINTING HOUSE FOR THE BLIND, OF LOUISVILLE, KENTUCKY.

WRITING-MACHINE FOR THE BLIND.

SPECIFICATION forming part of Letters Patent No. 389,756, dated September 18, 1888.

Application filed February 17, 1887. Serial No. 227,886. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, of Lansing, in the county of Ingham and State of Michigan, have invented new and useful
5 Improvements in Writing-Machines for the Blind; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this spec-
10 ification.

This invention relates to new and useful improvements in writing-machines for the blind; and it consists in the peculiar combinations and the novel construction, arrangement, and
15 adaptation of parts, all as more fully hereinafter described and claimed.

In the drawings which accompany this specification, Figure 1 is a perspective view of my writing-machine. Fig. 2 is an enlarged
20 perspective view of the carriage with the front portion of its casing removed. Fig. 3 is a diagram elevation of the carriage, illustrating the operation of its feed movement. Fig. 4 is a diagram plan of the carriage, showing certain
25 parts of its feed movement. Fig. 5 is a cross-section of the table through the paper-feed on line *xx* in Fig. 1. Fig. 6 is a section on line *yy* in Fig. 5. Fig. 7 is a vertical section through the embossing-dies and the bed.

30 A is a table supporting near its front end the feed-rack B, which is elevated above the table and forms a guide-rail for the carriage C, which is thereon supported clear of the table. This carriage carries four finger-keys, D E F G, the
35 three first ones being arranged in a row on top of the frame or casing of the carriage and the latter at the left.

H is a key-lever actuated by the finger-key D, and I is a similar key-lever actuated by the
40 key-lever E. These key-levers are fulcrumed at *a* within the casing of the carriage, and each has a vertically-operating plunger-die, K, pivotally secured to it, all so arranged that by depressing the finger-keys D E the plunger-dies
45 are downwardly projected through the bottom of the casing and again retracted by suitable retracting springs, L, as soon as the pressure is removed. The plunger-dies K pass through a guide slot, *b*, in the bottom of the casing, and
50 each has a projecting shoulder or lug, *c*, arranged to engage with corresponding lugs or shoulders, *d*, on the feed-lever M, whereby the latter is actuated by the plunger-dies for the

purpose of feeding the carriage, as hereinafter described. The lower ends or faces of the
55 plunger-dies are sunk to form intaglio points, (see Fig. 7,) and underneath the carriage is secured a stationary bed-plate, N, which has corresponding cameo points, all so arranged that if a sheet of paper is placed over the bed-plate
60 N embossed points are produced on the paper by the action of the plunger-dies.

The feed of the carriage is arranged as follows: A cord or chain, O, attached to the carriage, passes to a spring-roller, P, which has
65 sufficient force to draw the carriage by the tension of its spring toward the right-hand end of the feed-rack. The feed-lever M is pivotally secured at *j*. Its free end projects through a slot, *l*, in the casing and is provided with
70 the finger-key G. The finger-key F has a downwardly-projecting stem, *m*, which has a shoulder, *n*, loosely engaging with a lug, *o*, on the feed-lever. Two stop-pins, *i i'*, are secured to the feed-lever and project from the front, and
75 a pin or tooth, *i''*, to rear face thereof, as shown in Fig. 4, and between these stop-pins is pivotally secured at *f* the oscillating feed-pawl Q, which carries the locking-pin *g* at its lower end. The feed-pawl has a squared top, against
80 which bears the free end of the hinged arm or lever R, with the tension of small coil-spring *h*, all so arranged that the feed-pawl has a tendency to assume a normal position midway between the stops *i i'*, as shown in Fig. 3. 85

In practice the pin *g* of the feed-pawl in the normal position of the feed-lever shown in Fig. 2 engages between the teeth of the feed-rack, and the pulling force of the spring-roller P oscillates the feed-pawl into con-
90 tact with the stop-pin *i*, and the carriage is thereby locked into position. Now, if any one of the finger-keys D E F is depressed, the feed-lever M is sufficiently depressed to disengage the pin *g* of the feed-pawl from the feed-
95 rack, and the feed-pawl immediately assumes its normal position midway between the stop-pins *i i'*. At the same time that the pin *g* is disengaged from the feed-rack the tooth *i''*, which heretofore was not in engagement with the
100 feed-rack, becomes engaged therewith. If the pressure on the actuating finger-key is now released, the retracting-spring T of the feed-lever immediately raises that lever and engages the pin *g* of the feed-pawl again into en-
105 gagement with the feed-rack, said engagement

being, however, one step farther to the right, and the carriage is thus free to travel to the right until the feed-pawl is again brought in contact with the pin *i*. If the carriage is
 5 pulled the opposite way, either by transposing the spring-roller P to the left or by a suitable pressure applied by the operator, the carriage will travel to the left in the same way, the pin *i'* performing in that case the function of
 10 the pin *i*. Thus at every actuation of one of the keys D E an embossed point is formed upon a sheet of paper placed underneath the carriage, being fed at the same time the distance of one tooth to the right or left, as the
 15 case may be. If both keys D and E are simultaneously depressed, two embossed points will be formed at the same time, one above the other, and the carriage will feed but one step. With the proper use of the spacing-key F it
 20 is evident that writing in embossed points after the system above described may be easily executed. If the carriage has to be returned to commence a new line, the operator uses the finger-key G, by means of which a sufficiently
 25 large depression of the feed-lever M is obtained to carry the pin *i'*, as well as the pin *g*, entirely clear of the feed-rack, and thereby permits of drawing the carriage along the feed-rack to any desired point.

30 For feeding the paper and holding it in proper alignment while writing, I provide the table with an endless belt, U, passing over sprocket-wheels V, one of which is provided with a suitable hand-wheel, W. The belt has
 35 a series of sharp pins, *p*, so arranged that the paper may be engaged therewith near the edge, and by turning the hand-wheel the paper will be carried across the table.

A hinged cleat, Z, which has a groove, *r*, on
 40 its under side to clear the pins *p*, is secured to a guide on the table above the belt, so as to hold the paper in engagement with the pins when folded down and permit its convenient removal when turned up.

45 *z* is a suitable button for holding the cleat in the position shown in Fig. 1.

Near the front edge of the table is secured a scale, S, underneath which the paper is introduced, and which, in connection with a pointer,
 50 *s*, on the carriage, permits of adjusting the carriage.

The bed-plate N is of metal, and is provided with the requisite number of relief-points to print embossed points at any position of the
 55 carriage. It is evident, however, that the mere form of the character is immaterial, and therefore, if desired, the machine may be constructed to emboss any other suitable character on the paper. The machine may also be
 60 adapted for use with any other system of printing for the blind based on a similar system, wherein the letters of the alphabet are formed by the use of the same character, but variously combined and grouped.

65 What I claim as my invention is—

1. In a writing-machine, key-levers pivoted

at one end in the moving carriage, vertically-movable embossing-dies pivoted at one end to said levers in a carriage having a step-by-step
 70 feed, and a series of stationary embossing bed-dies arranged to register step by step with the plunger-dies, substantially as described.

2. In a writing-machine, two key-levers pivoted at one end in a carriage, vertically-movable embossing-dies pivoted at one end to said
 75 levers in a carriage in front and rear of each other, a step-by-step feed movement for feeding the carriage by the actuation of said dies, and two line-series of stationary embossing
 80 bed-dies corresponding with and in the line of travel with the movable embossing-dies, substantially as described.

3. In a writing-machine, the combination of a table, a feed-rack arranged above said
 85 table, a carriage supported by said feed-rack and having a step-by-step feed movement thereon, vertically-movable embossing-dies adjusted in said carriage, a feed-lever operated by said dies, and a series of corresponding
 90 stationary embossing-dies secured on the table in the line of travel of the carriage, substantially as described.

4. In a writing-machine, the combination, with the table, of the endless belt provided
 95 with pins *p*, sprocket-wheels, and a hand-wheel for operating said belt, and a grooved hinged cleat, Z, substantially as and for the purpose specified.

5. In combination with the feed-rack, the carriage supported by said rack, the feed-
 100 lever pivoted at one end in said carriage, the feed-pawl pivoted to said feed-lever and provided with a pin engaging said rack, the vertically-movable embossing-dies adjusted in
 105 said carriage and having finger-keys for actuating the dies and the feed-lever, the spacing finger-key for actuating the feed-lever, the finger-key for disengaging the feed-lever from the feed-rack, and the cord and winding-roll
 110 for drawing the carriage, substantially as described.

6. The combination, of the feed-rack B, the carriage C, the cord O, the winding-roll P, the
 115 feed-lever M, having finger-key G, stop-pin *i*, and pin or tooth *i'*, the oscillating feed-pawl Q, having pin *g*, the arm R and spring *h*, the spacing-key F, the embossing-dies K K, having shoulders *c c*, the lugs *d* on the feed-lever, the finger-keys D E of the embossing-dies, and the retracting-springs L L T, all substantially
 120 as described.

7. The combination of the feed-rack B, the carriage C, the feed-lever M, having tooth or
 125 pin *i'* and stop-pin *i*, the oscillating feed-pawl Q, having pin *g*, the lever R and spring *h*, and the drawing-cord O, all arranged substantially as described.

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Witnesses:

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 L. C. BUTLER.