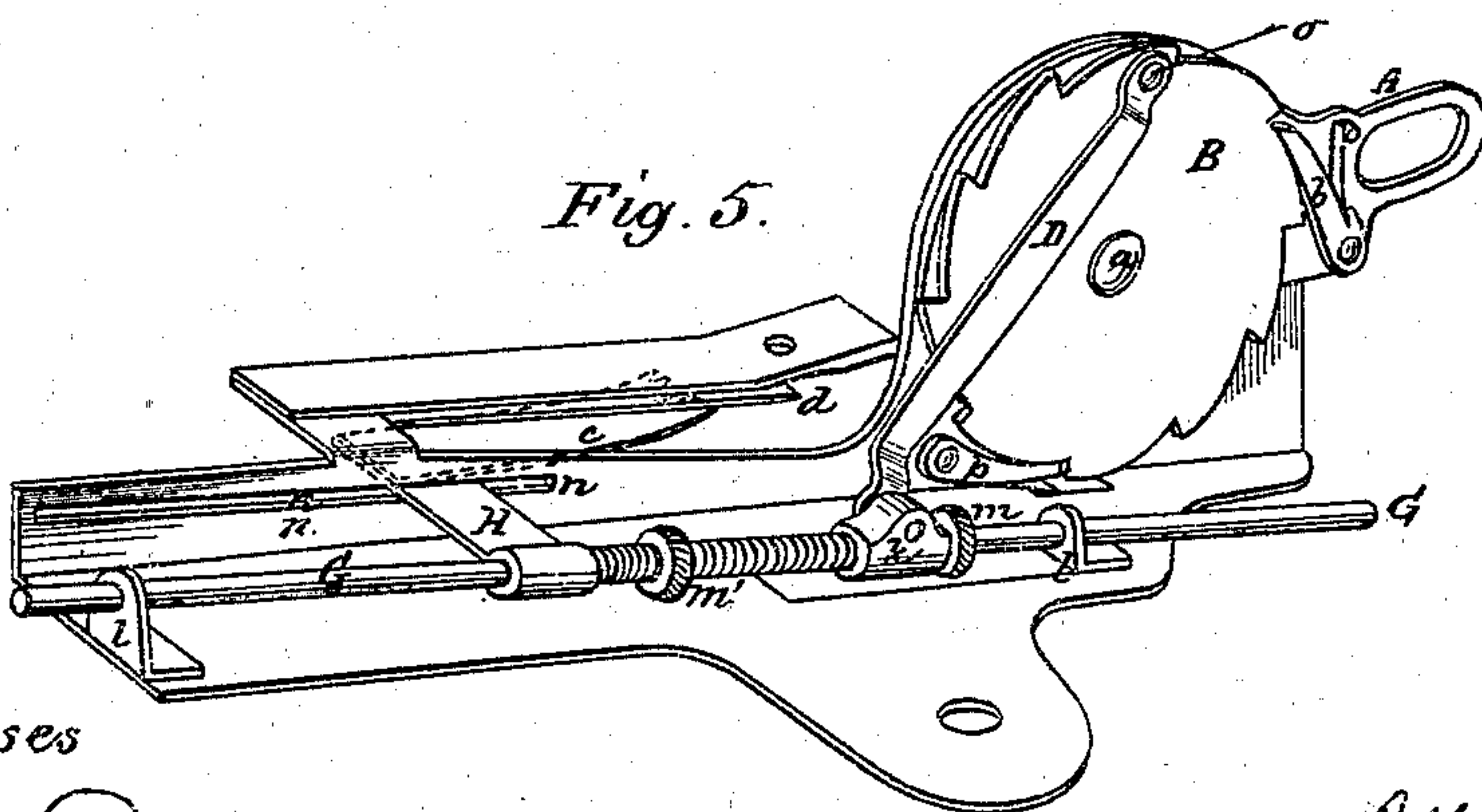
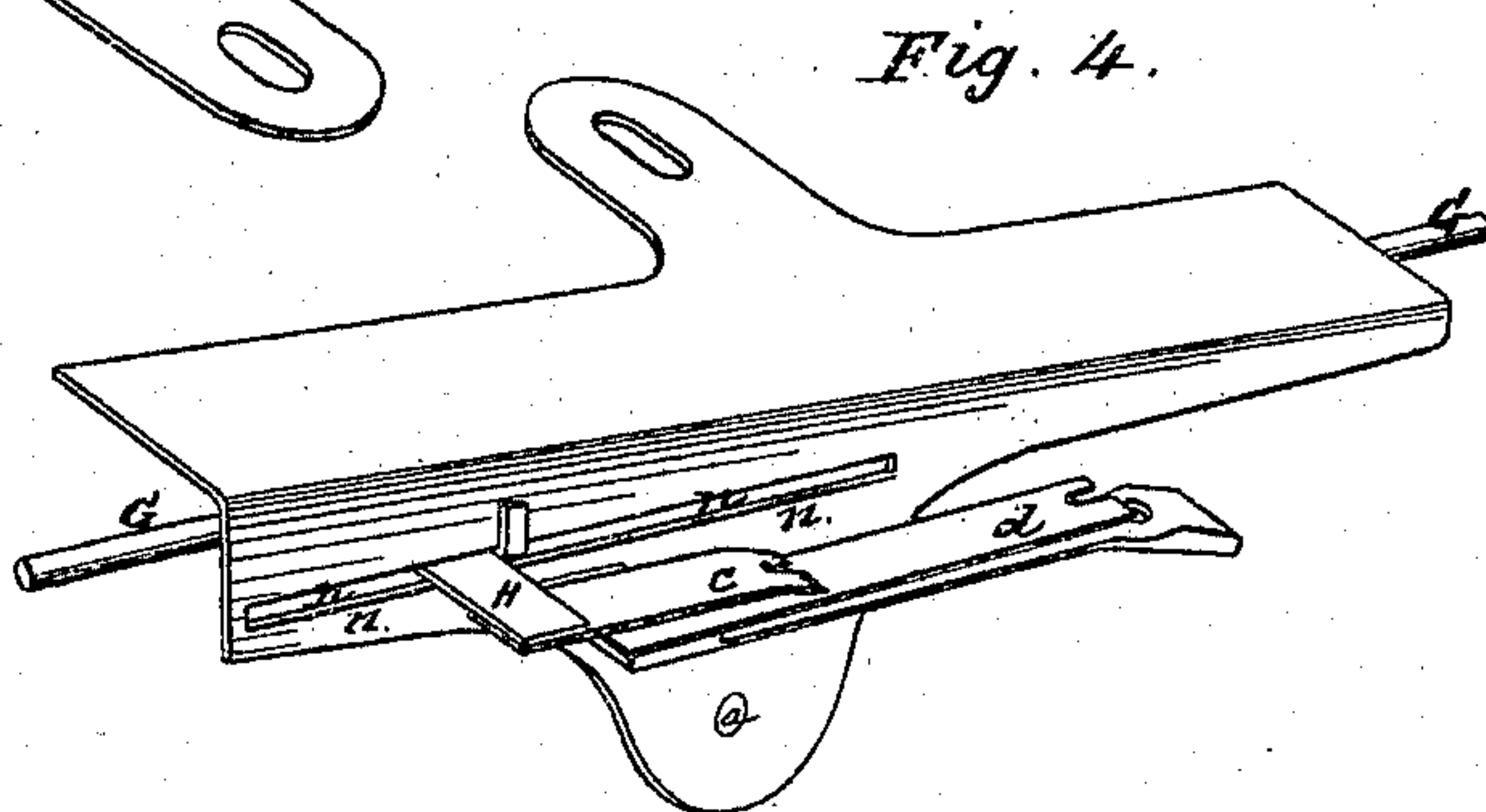
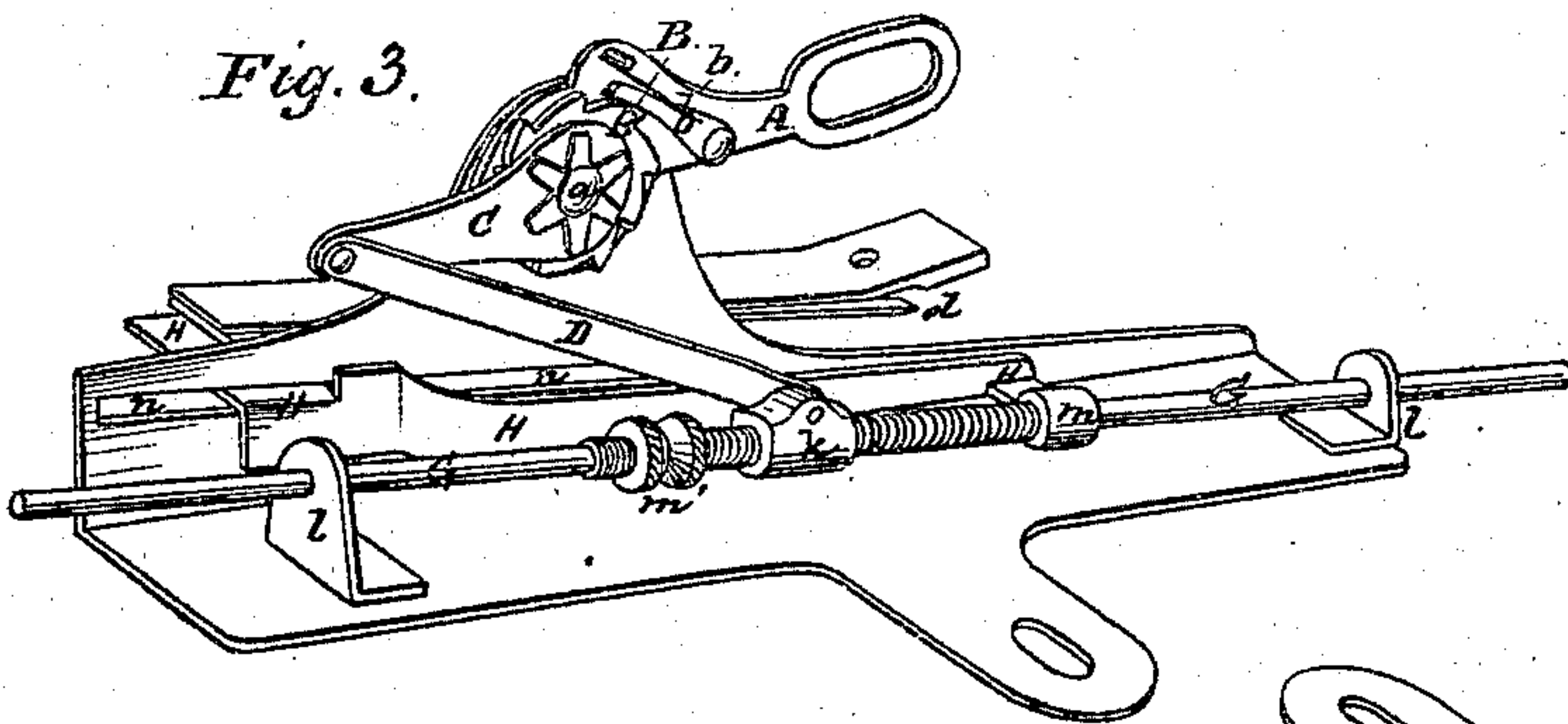
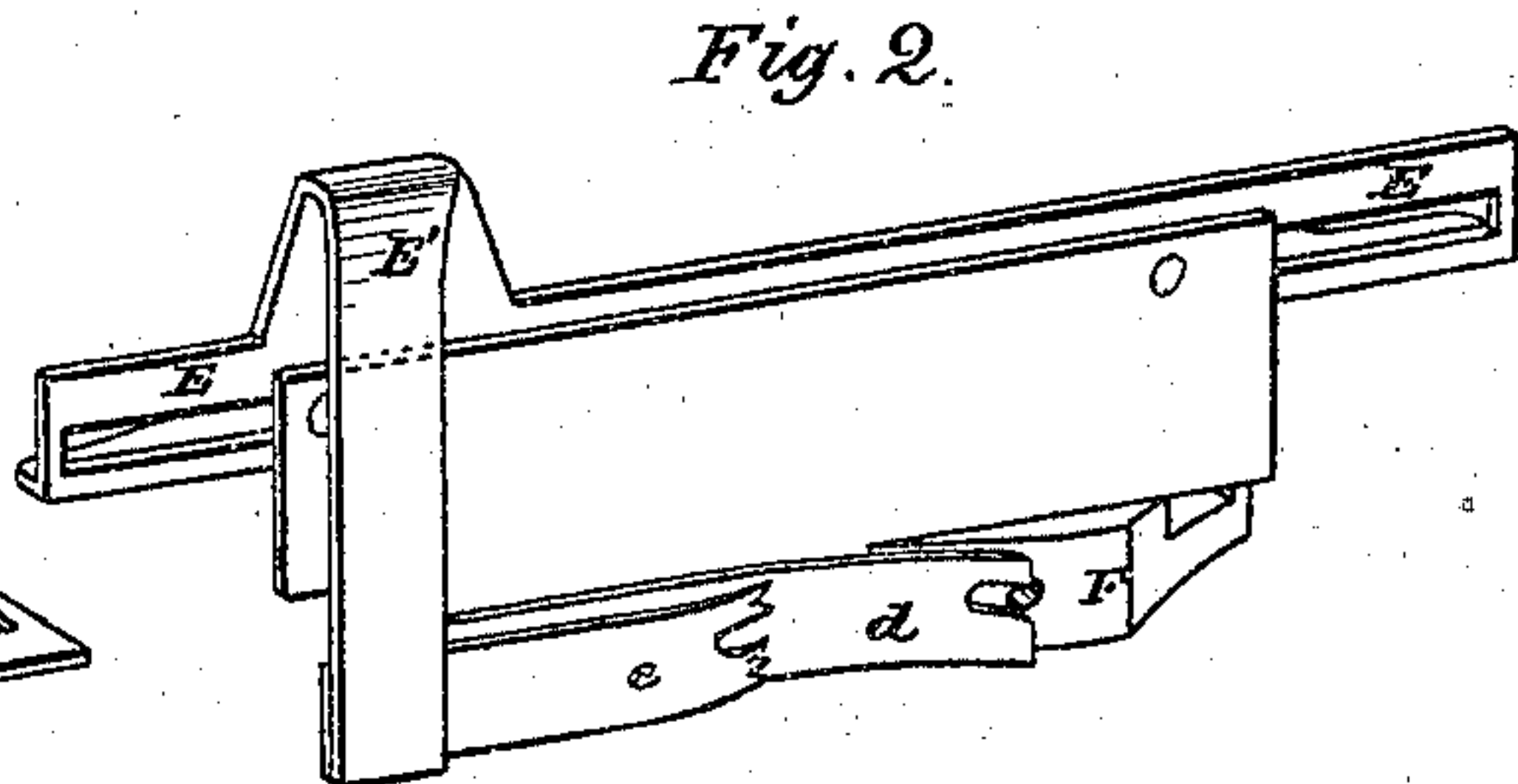
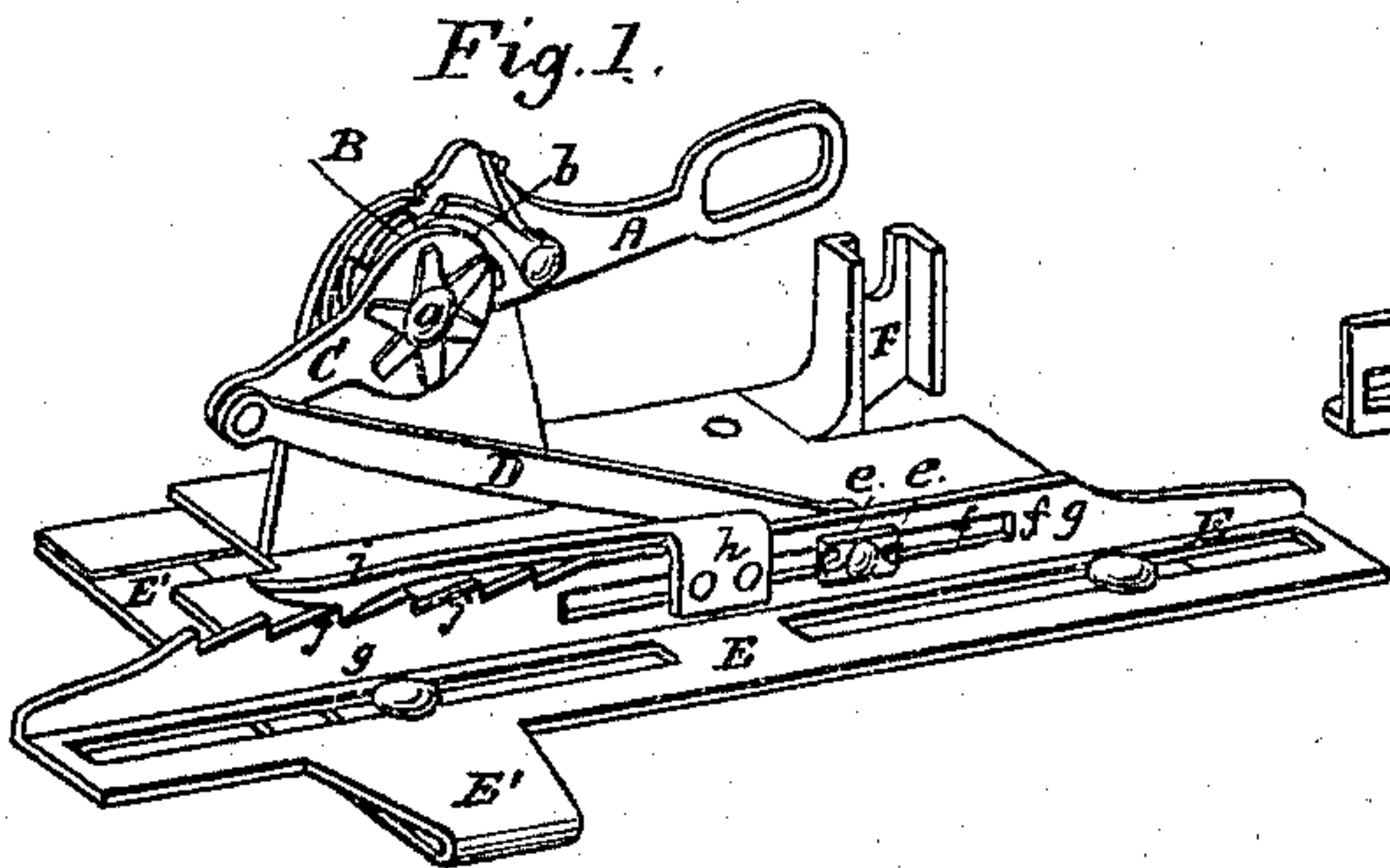


A. JOHNSTON.

Ruffing or Plaiting Attachments for Sewing-Machines.

No. 137,686.

Patented April 8, 1873.



Witnesses

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UNITED STATES PATENT OFFICE

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

IMPROVEMENT IN RUFFLING OR PLAITING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **137,686**, dated April 8, 1873; application filed March 22, 1873.

To all whom it may concern:

Be it known that I, ALLEN JOHNSTON, of Ottumwa, Wapello county, Iowa, have invented certain new and useful Improvements in Ruffling or Plaiting Attachments for Sewing-Machines, of which the following is a specification:

This invention is an improvement on the plaiting or ruffling attachment for which Letters Patent No. 123,995 were issued to me on the 27th February, 1872. The attachment referred to and the present improvement have in common a ratchet-wheel, rotated by a vibrating arm, designed to be connected to a screw on the needle-bar of the sewing-machine, and imparting an intermittent reciprocating movement to a gathering-blade in such manner that a number of stitches will be made for each plait formed by the gathering-blade, differing in this respect from ordinary gathering attachments so arranged as to make a gather at every stitch.

In my patent above referred to the ratchet-wheel imparted movement to the gathering-blade, or gatherer proper, through the medium of a pivoted vibratory lever playing at one end in a slot in the gatherer, and arranged at the other end to engage with and disengage from the ratchet-wheel at suitable intervals. I now modify and alter this arrangement by forming the ratchet-wheel with a crank-arm, or its equivalent, connected with the gatherer proper by a pitman, which, when the ratchet-wheel, together with its crank-arm or pin, is rotated, will impart movement to the gathering-blade. Each tooth on the ratchet-wheel represents a stitch, and, as the wheel must make one complete revolution to effect one back-and-forth movement of the gathering-blade, then the number of stitches made during the formation of one plait will be determined by the number of teeth in the ratchet.

For the purpose of regulating the size of plait, I connect the pitman to the gatherer in such manner that it may have more or less movement independently of and without actuating the gathering-blade. This result is effected by arranging the block, sleeve, or other device which connects the end of the pitman to the gatherer so that it may slide in or on a suitable part of the movable gatherer proper

between two shoulders or abutments, the rear one of which—that is, the one further from the needle—is made adjustable, so that it can be moved toward or away from the other. The nearer the two are together the less independent motion will the pitman have, the greater will be the range of movement of the gathering-blade, and the larger will be the plait.

In the accompanying drawing, Figure 1 is a perspective view and Fig. 2 a bottom view of a plaiting attachment made in accordance with my invention, and adapted to be attached to the presser-bar of a sewing-machine. Fig. 3 is a perspective view and Fig. 4 a bottom view of a plaiting attachment embodying my invention, and designed to be attached to the cloth-plate of the sewing-machine. Fig. 5 is a perspective view of a modified form of the attachment shown in Figs. 3 and 4.

Referring to Figs. 1 and 2, the arm A, which connects with a screw or pin on the needle-bar, is mounted on the frame of the attachment on a pivot, *a*, upon which same pivot is loosely mounted the ratchet-wheel B, to which a rotary movement is imparted from the vibrating arm A by means of a pawl, *b*. The rotary movement of the wheel is intermittent, it being moved a distance of one tooth at each up-and-down movement of the arm A. To the ratchet is fixed a crank-arm, C, or its equivalent, to which is jointed one end of a pitman or connecting-rod, D, whose other end engages with the gatherer proper, or reciprocating piece E, which carries the gathering-blade, and is mounted and arranged to slide on the main frame in the ordinary manner. This piece E is provided with a bowed or bent arm, E', which extends down under the main frame and carries on its outer end the gathering-blade *c*, as shown and described in Letters Patent issued to me January 21, 1873, No. 135,123. The attachment is provided with a false foot, F, designed to be secured to the presser-bar of the sewing-machine in lieu of the ordinary sewing-machine presser-foot. There is also employed an upper holding-blade, *d*, as claimed in reissued Letters Patent 5,072, of September 24, 1872.

When the attachment is secured to the sewing-machine, and the arm A is attached to

the needle-bar, a vibratory movement will be given to the arm during the time the sewing-machine is in motion. The ratchet-wheel will thus receive a rotary movement, making one rotation for every eight or nine stitches, or more or less, according to the number of teeth in the ratchet made by the sewing-machine. A single rotation of the ratchet causes the gathering-blade to move backward and forward once, thus forming a plait. The size of the plait is governed by the length of reciprocation of the gathering-blade. To regulate this movement so as to produce plaits of different sizes, the pitman is pivoted to a block, *e*, held and sliding in a slot, *f*, in a raised portion, *g*, of plate E. The length of this slot is increased or diminished by an adjustable stop, *h*, fitting and held on the part *g*, and capable of being moved toward and away from the front end of the slot. The stop is held in any required position by means of a spring-tooth, *i*, which catches in one of a series of notches, *j*, formed on the top of part *g*. According as the stop *h* is adjusted the block *e* will have a greater or less range of movement in the slot without imparting movement to the gatherer.

The attachment shown in Figs. 3 and 4 requires, for the most part, no detailed description. The arrangement of its parts, excepting in the particulars hereinafter noted, is the same as the arrangement of corresponding parts in Figs. 1 and 2. The attachment is designed to be attached not to the presser-bar, but to the cloth-plate of the sewing-machine. The pitman D is connected not to a block sliding in a slot, but to a sleeve, *k*, encircling a rod, G, sliding in bearings *l*, and screw-threaded between the shoulders or stops *m m'*, between which the sleeve plays. The stop *m* is fixed. The stop *m'* is a screw-threaded nut, capable of being screwed toward or away from the fixed stop so as to regulate and determine the range of independent movement of the pitman. The rod G is fast to an arm or frame, H, a portion of which projects through a slot, *n*, in the upright part of the main frame, and carries the gathering-blade. The slot *n* is made inclined, as shown, being higher at its rear than at its front, and the front and rear bearings *l* of rod G are of such height as to cause the rod to correspondingly slant or incline; the object being to enable the pitman to operate to better advantage, and also to enable the goods to be better folded into the large plait, which should be formed when the gathering-blade advances.

The plaiter shown in Fig. 5 is substantially the same as the plaiter shown in Figs. 3 and 4, excepting that the ratchet is made so large

as to admit of its receiving a crank-pin, *o*, without requiring a distinct crank-arm, as in the preceding figures. The size of the teeth in the ratchet is, of course, increased proportionately to the increased diameter of the wheel. When a ratchet-wheel of this size is used it may be well to employ a retaining-pawl, *p*. Such a pawl may be used for the smaller ratchets, but will hardly be necessary if the ratchet and vibrating arm work with sufficient freedom and absence of friction.

The vibrating arm in Fig. 5 is represented as thrown over on the right hand of the ratchet, this being done in order to better show the arrangement of the various parts of the plaiter. When the attachment is in use, however, the arm is to be on the left of the ratchet.

It will be understood that similar letters of reference indicate like parts in the several figures of the drawing.

The attachments represented are designed for Singer's sewing-machines. Their proportions, however, obviously may be changed to adapt them to other machines in the market. It is manifest that in lieu of the sliding block *e* in Fig. 1 the pitman may carry on its end a pin projecting into and through the slot, and provided, if desired, with a head of greater diameter than the width of the slot to prevent possibility of the disengagement of the pin from the slot.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a ruffling or plaiting attachment for sewing-machines, the combination, with a vibrating arm, deriving its movement from the needle arm or bar of the sewing-machine, and ratchet-wheel operated by said arm, substantially as set forth, of a crank pin or arm fixed to said ratchet, and a pitman jointed at one end to said crank pin or arm, and connected at the other end with the reciprocating gathering or plaiting blade, substantially in the manner and for the purposes shown and described.

2. The combination of the pitman deriving its movement from the ratchet-wheel and its crank, as described, with a block or slide arranged and held in or on the reciprocating gatherer proper and between two stops or abutments, the rear one of which is adjustable toward and away from the other, as and for the purposes set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALLEN JOHNSTON.

Witnesses:

A. G. HARROW,
B. R. HAMILTON.