(No Model.) 4 Sheets—Sheet 1.

E. WOODWARD.

EYELETING MACHINE.

No. 476,504. Patented June 7, 1892.

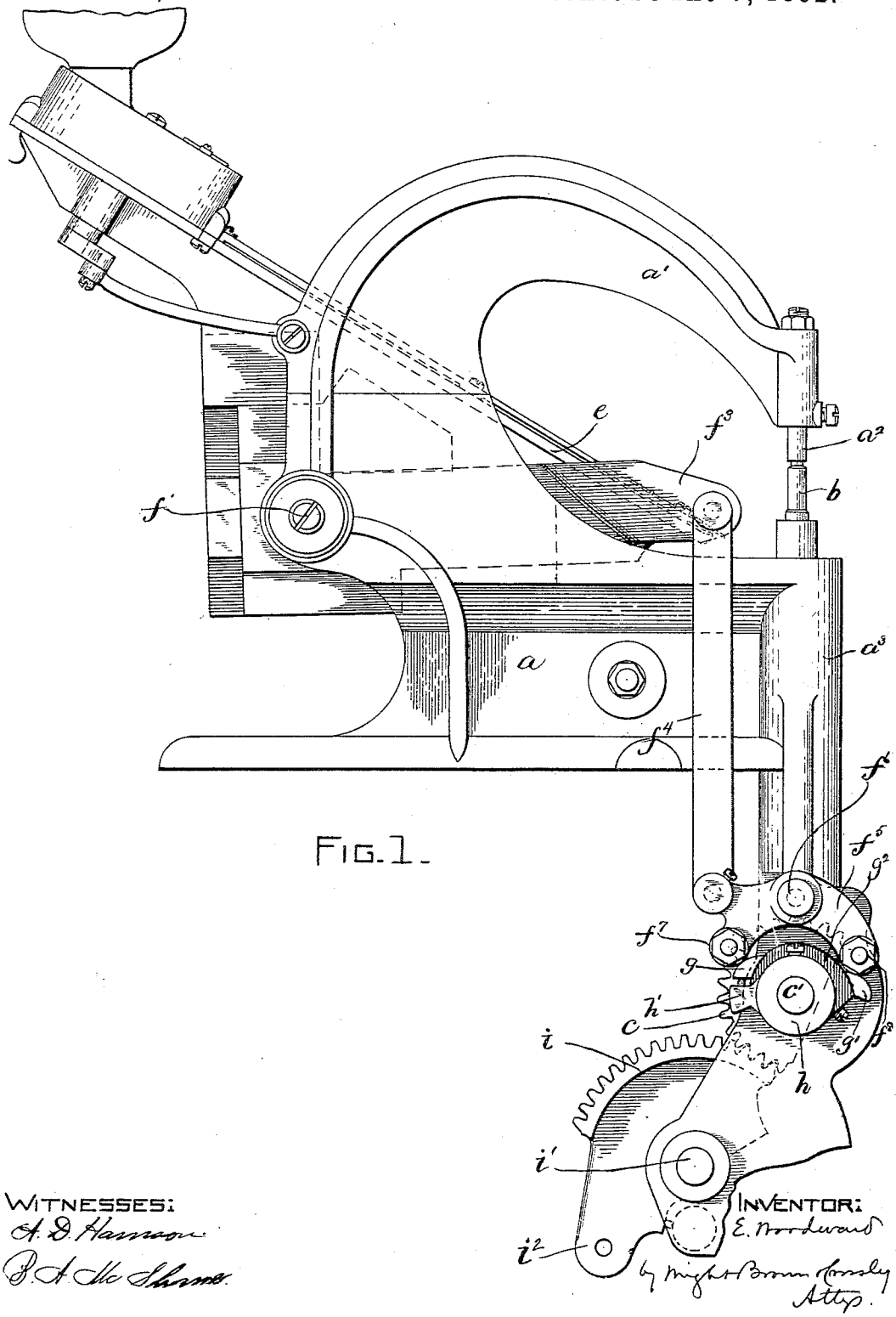

FIG. 1.

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P. A. McShane.

INVENTOR:
E. Woodward
by Wright Brown Quinby & Atty's.

(No Model.)

4 Sheets—Sheet 2.

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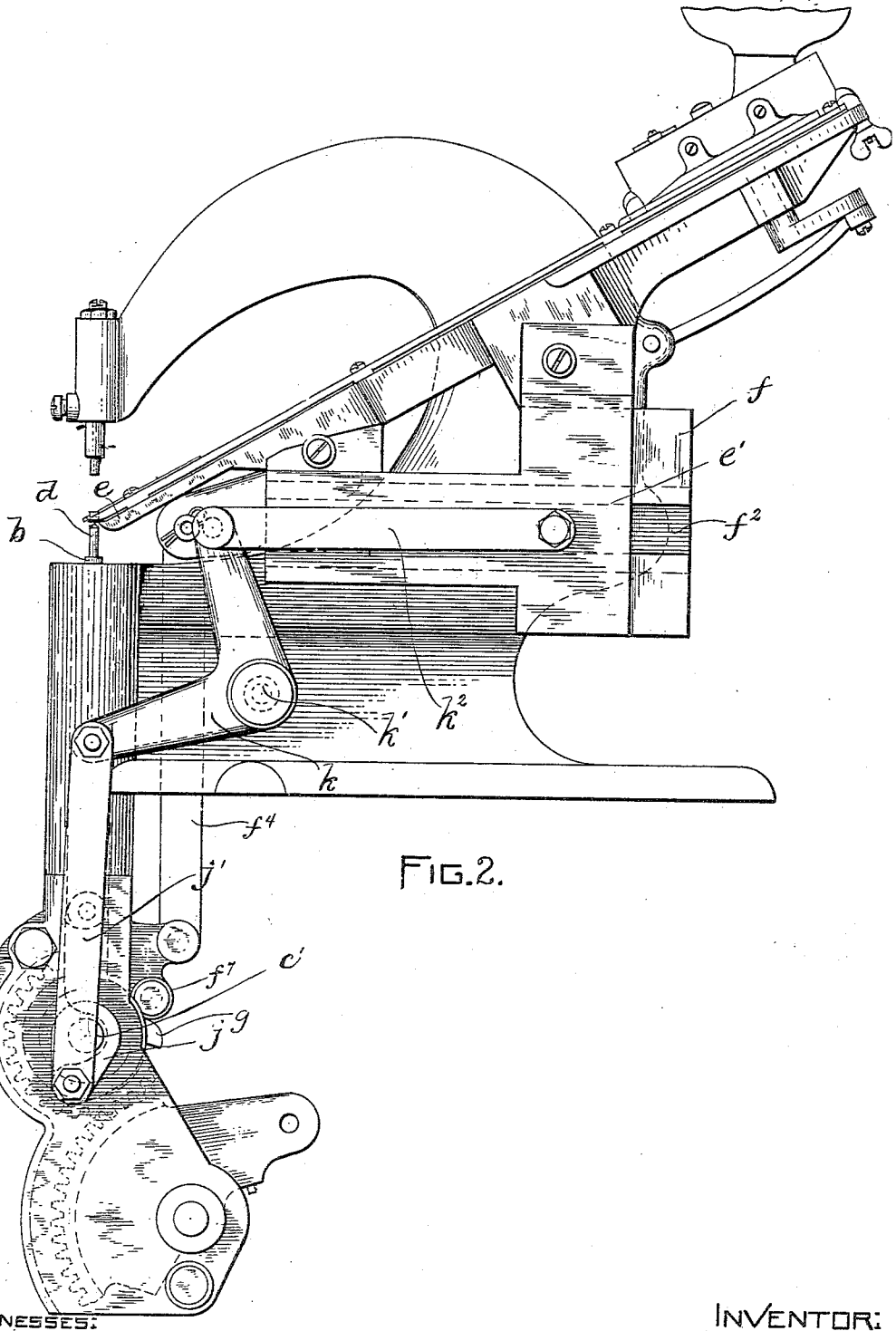

FIG. 2.

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(No Model.) 4 Sheets—Sheet 3.

E. WOODWARD.

EYELETING MACHINE.

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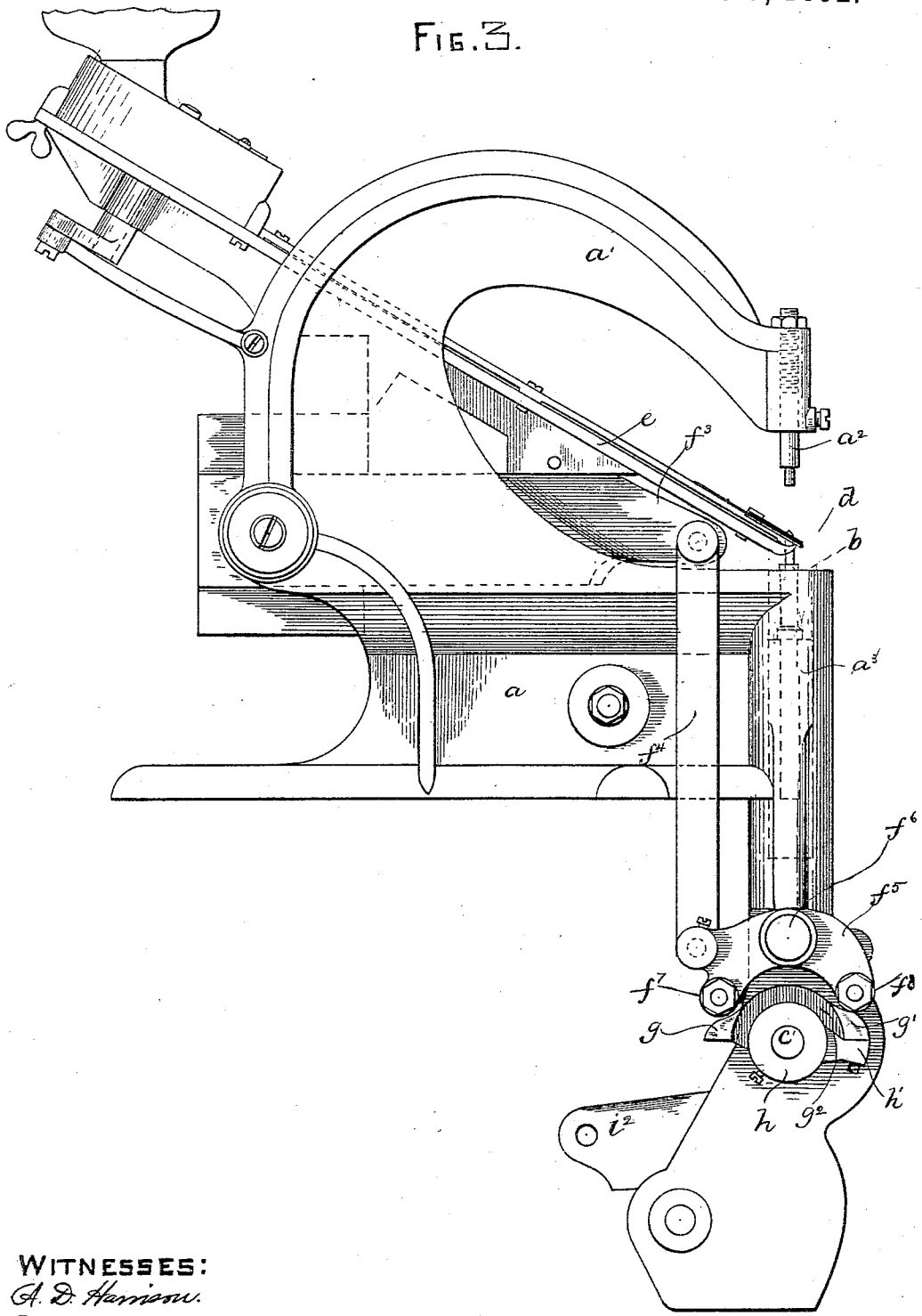
FIG. 3.



WITNESSES:
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(No Model.)

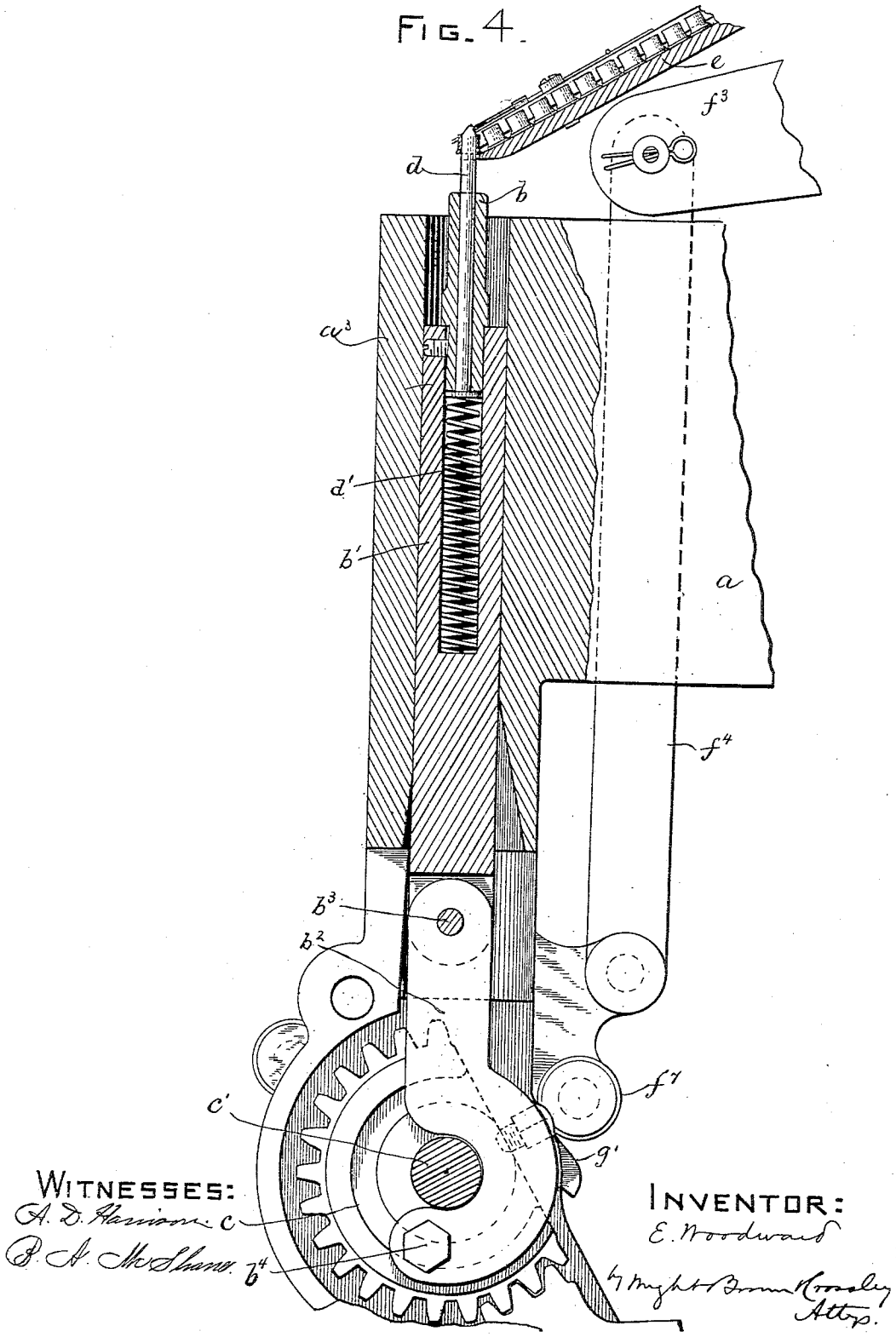
4 Sheets—Sheet 4.

E. WOODWARD.

EYELETING MACHINE.

No. 476,504. Patented June 7, 1892.

FIG. 4.



WITNESSES:

A. D. Harrison

B. A. McShane

INVENTOR:

E. Woodward

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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF SOMERVILLE, ASSIGNOR TO THE MERRICK SEWING MACHINE COMPANY, OF BOSTON, MASSACHUSETTS.

EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 476,504, dated June 7, 1892.

Application filed September 14, 1891. Serial No. 405,621. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS WOODWARD, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Eyeleting-Machines, of which the following is a specification.

This invention has for its object to provide a simple machine for inserting and upsetting metal eyelets in holes previously prepared, the machine being adapted to be operated by foot-power.

The invention consists in the improved mechanism hereinafter described for giving the eyelet-chute the necessary movements with relation to the movements of the vertically-movable eyelet-engaging finger.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of an eyeleting-machine embodying my invention, showing the bottom set raised and the eyelet-chute moved back. Fig. 2 represents an elevation of the opposite side of the same, showing the bottom set depressed and the eyelet-chute moved forward. Fig. 3 represents an elevation of the side opposite that shown in Fig. 2, the bottom set being depressed and the chute in its forward and lowest position. Fig. 4 represents an enlarged sectional view of a portion of the machine, the bottom set and chute being shown in the same relative positions shown in Fig. 3.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the frame of the machine, provided with an overhanging arm a', to which is affixed the usual top set a^2, which is formed, as usual in eyeleting-machines, to upset the end of the tube of the eyelet and form a flange corresponding to the flange originally formed on the eyelet.

b represents the bottom set, which is affixed to a plunger b', adapted to slide vertically in a tubular guide a^3, formed on the supporting-frame, said plunger being reciprocated vertically by a connecting rod or pitman b^2, pivoted at b^3 to its lower end, and an oscillating wheel or gear *c*, to which the lower end of said pitman is pivoted at b^4, said gear *c* being mounted upon a rock-shaft c', which is journaled in fixed bearings on the supporting-frame and is rocked or oscillated by the means presently described. The bottom set is provided with the usual eyelet-picking finger *d*, which is yieldingly supported by a spring d' within the plunger b' and normally projects above the bottom set far enough to enter the lower end of the inclined eyelet-chute *e* and enter the lowest eyelet therein, said finger disengaging the lowest eyelet from the chute when the bottom set is rising and holding the eyelet in place upon the bottom set while the latter rises and co-operates with the top set in upsetting the eyelet in the manner common to all eyeleting-machines. The eyelet-chute *e* is affixed to a slide e', which is movable on a pivoted guide *f*, hereinafter referred to, in the direction required to move the lower end of the chute horizontally toward and from the finger *d*. The guide *f* is pivoted at f' to the supporting-frame and is provided with a groove or way f^2, having dovetail edges which receives a dovetail-rib on the inner side of the slide e', said way permitting the slide and the chute thereon to move horizontally. The guide *f* is provided at one end with an arm f^3, which is connected by a rod f^4 with one arm of a rocking bar or lever f^5, which is pivoted at f^6 to the supporting-frame. The lever f^5 is provided at its opposite ends with studs or trundle-rolls f^7 f^8, which are arranged to be operated, respectively, by cams *g* and g', formed on a plate g^2, which is mounted to rock loosely on the rock-shaft c'.

h represents a collar affixed to the rock-shaft c' and provided with an arm h', which is arranged to alternately strike the cams *g* and g' and cause the same to oscillate the lever f^5 in such manner as to first raise and then depress the arm of said lever, with which the connecting-rod f^4 is engaged.

i represents a segmental gear, which is mounted to oscillate on a stud i', affixed to the supporting-frame, and is engaged with a segmental gear *c*, affixed to the rock-shaft c'.

i^2 represents an arm formed on the segmental gear *i* and adapted to be connected with a rod (not shown) extending downwardly to a

treadle arranged to be moved by the foot of the operator. The gear i is rocked or oscillated in a predetermined arc by movements of the treadle, the latter being depressed by the operator's foot and raised by a suitable spring, each movement of the treadle imparting a corresponding movement to the segmental gear i, which movement is imparted by said gear to the gear c and rock-shaft c', the arm h', affixed to said rock-shaft, being therefore caused to oscillate through a corresponding arc. The oscillating movement of the arm h' is such that at one extreme it strikes the trundle-roll f^7, and thus raises the end of the lever f^5, upon which said trundle-roll is located, this movement being imparted through the rod f^4 to the pivoted guide f, which is swung upwardly on its pivot f', and thus caused to elevate the lower end of the chute e. When the arm h' is carried to the other extreme of its movement, it strikes the cam g', forces the latter upwardly against the trundle-roll f^8, thus raising the other end of the lever f^5 and depressing the end connected with the pivoted guide f, said guide being thus swung downwardly and depressing the lower end of the chute.

The eyelet-chute has, in addition to the vertical movements above described, horizontal movements, which are produced as follows: j represents an arm or crank affixed to the rock-shaft c' and connected by a rod j' with one arm of a bell-crank lever k, which is pivoted at k' to the frame of the machine, and has its other arm connected by a rod k^2 with the slide e', supporting the eyelet-chute. The described movements of the rock-shaft c' cause the crank j and the connections between it and the slide e' to reciprocate said slide in a substantially horizontal direction on the guide f.

The operation of the described mechanism is as follows: When the treadle is depressed by the operator, the arm h' on the rock-shaft c' is held against the cam g and the end of the lever f^5 over said cam is raised by the latter, so that the lower end of the eyelet-chute occupies its highest position. The bottom set is at the same time elevated and caused to co-operate with the top set in upsetting the last eyelet detached from the chute. When the operator releases the treadle, the upward movement of the latter causes the depression of the bottom set, and at the same time the forward movement of the chute, the latter being brought forward, so that its lower end is entered by the finger d on the bottom set, as shown in Fig. 2. When the chute and finger reach the position shown in Fig. 2, the arm h' strikes the cam g' and elevates the end of the lever f^5, carrying the trundle-roll f^8, thus depressing the swinging end of the guide f, and with it the lower end of the eyelet-chute, the chute being thus brought down over the upper end of the finger d, so that said finger enters the lower eyelet in said chute. The operator then depresses the treadle, thus causing the backward movement of the chute, and at the same time the downward movement of the bottom set, the eyelet being thus removed from the chute and carried upwardly by the bottom set and eventually upset by the combined action of the bottom and top sets.

It will be seen that the mechanism for giving the eyelet-chute its horizontal and vertical movements is all comprised in the rock-shaft c', the arm h', the segmental gear c, and the crank j on said rock-shaft, the cam-plate g^2, the rocking lever f^5, the pivoted guide f f, connected with said lever, and the segmental gear i', adapted to be operated by a treadle. Said mechanism is extremely simple and durable, and gives the desired movements to the eyelet-chute and bottom set without liability of failure of said parts to properly co-operate.

I claim—

1. In an eyeleting-machine, the combination, with the fixed top set and the reciprocating bottom set, of the eyelet-chute, a slide affixed thereto, a guide supporting said slide and chute, said guide being pivoted to the supporting-frame and adapted to oscillate vertically, mechanism for reciprocating the slide to carry the chute horizontally toward and from the finger of the bottom set, and mechanism for oscillating the pivoted guide to raise and lower the chute, as set forth.

2. In an eyeleting-machine, the combination of the fixed top set, the reciprocating bottom set, the eyelet-chute, the slide affixed to said chute, the vertically-movable guide supporting said slide and chute, the oscillating pivoted lever having one arm connected with said guide, the rocking plate carrying cams arranged to raise the ends of said lever alternately, and means for rocking or oscillating said plate, as set forth.

3. In an eyeleting-machine, the combination of the rock-shaft provided with an arm h', the rocking plate mounted to swing loosely on said rock-shaft and provided with cams g g', means for rocking the rock-shaft, the pivoted lever having its ends arranged to bear on said cams, the pivoted guide connected with said lever, and the eyelet-chute affixed to a slide adapted to move on said guide, as set forth.

4. In an eyeleting-machine, the combination of the rock-shaft provided with an arm h', the rocking plate mounted to swing loosely on said rock-shaft and provided with cams g g', the segmental gear pivoted to the supporting-frame and meshing with a gear affixed to the rock-shaft, said segmental gear having an arm adapted to be connected with a treadle, the pivoted lever having its ends arranged to bear on said cams, the pivoted guide connected with said lever, and the eyelet-chute affixed to a slide adapted to move on said guide, as set forth.

5. In an eyeleting-machine, the combination of the rock-shaft provided with an arm h', the rocking plate mounted to swing loosely

on said rock-shaft and provided with cams *g* *g'*, the segmental gear pivoted to the supporting-frame and meshing with a gear affixed to the rock-shaft, said segmental gear having an arm adapted to be connected with a treadle, the pivoted lever having its ends arranged to bear on said cams, the pivoted guide connected with said lever, and the eyelet-chute affixed to a slide adapted to move on said guide, the crank *j* on the rock-shaft, and the connections between said crank and the slide, whereby the eyelet-chute is reciprocated horizontally, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subsribing witnesses, this 24th day of August, A. D. 1891.

ERASTUS WOODWARD.

Witnesses:
C. F. BROWN,
A. D. HARRISON.