

No. 626,699.

Patented June 13, 1899.

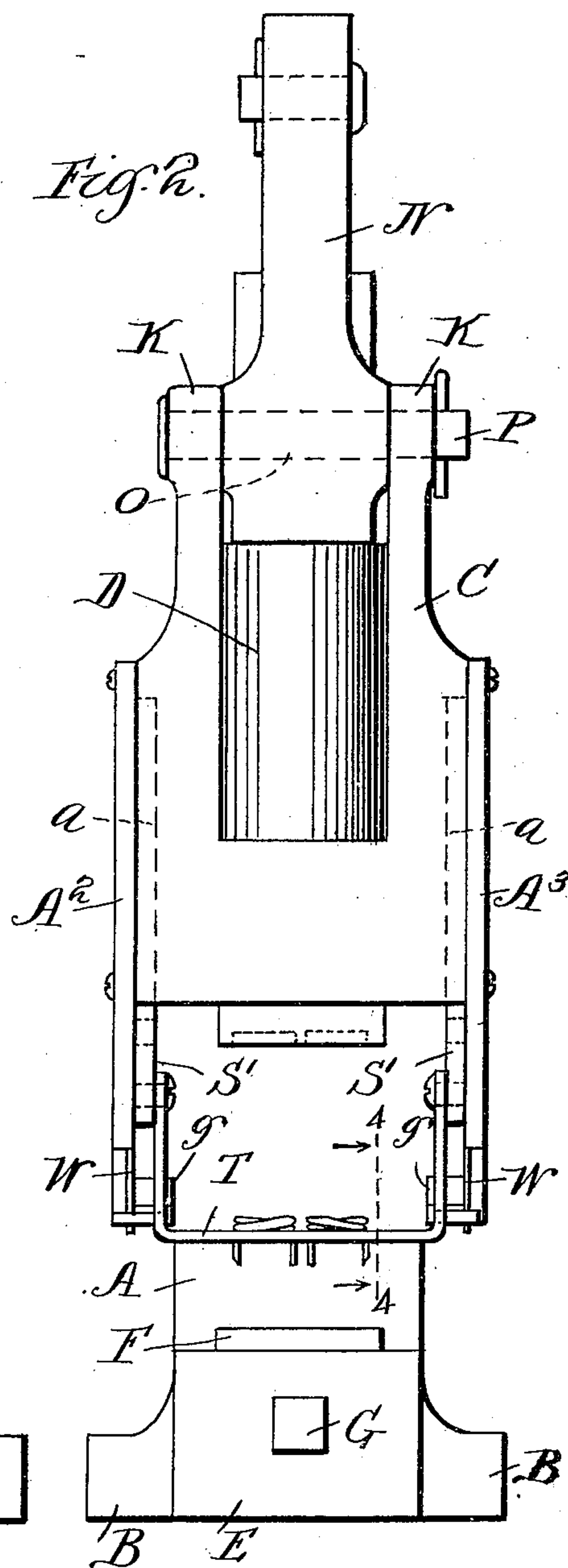
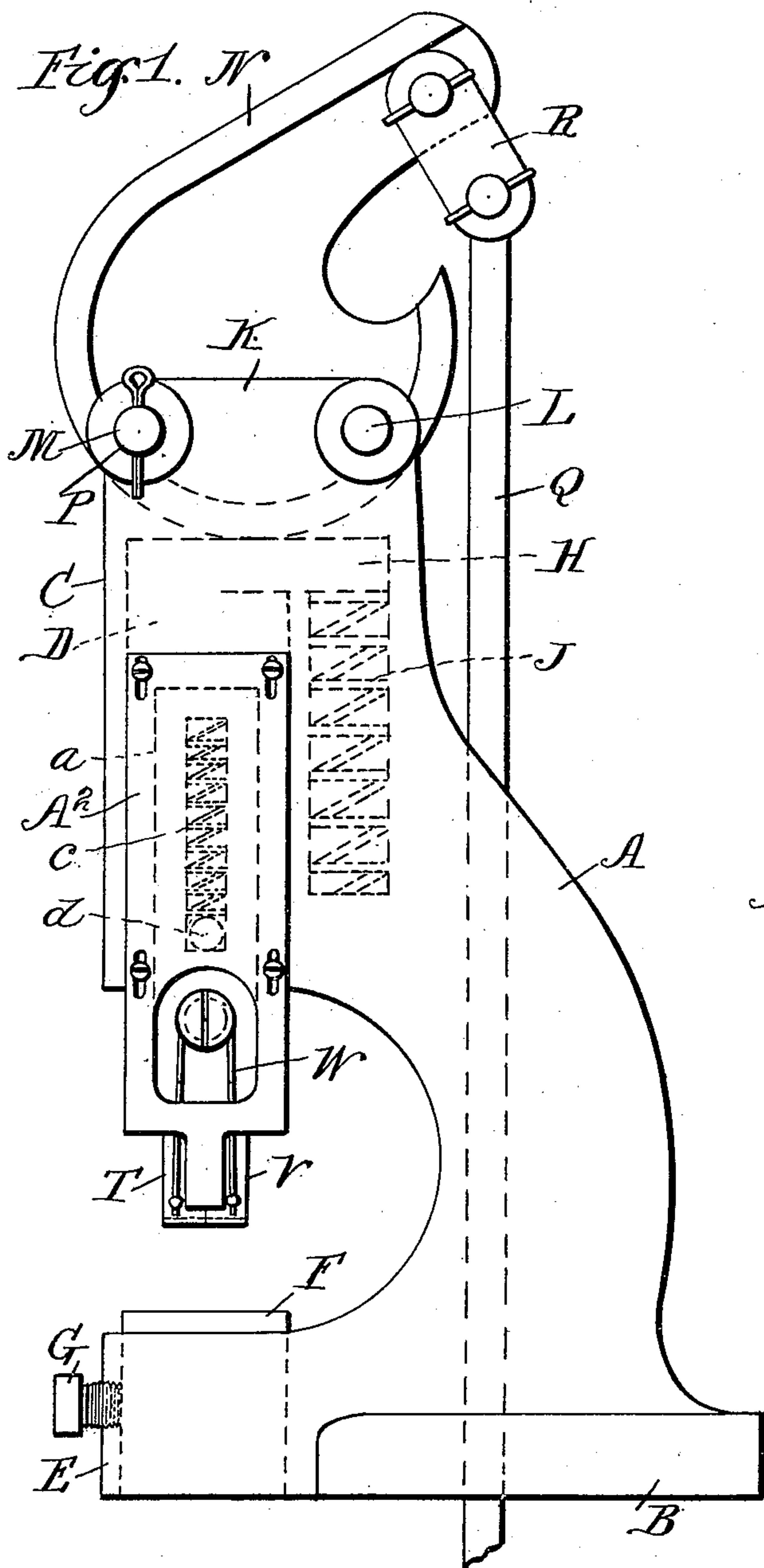
E. D. HEINEMANN.

MACHINE FOR INSERTING AND SETTING LACE FASTENERS.

(Application filed Feb. 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

E. C. Sample
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2 Sheets—Sheet 2.

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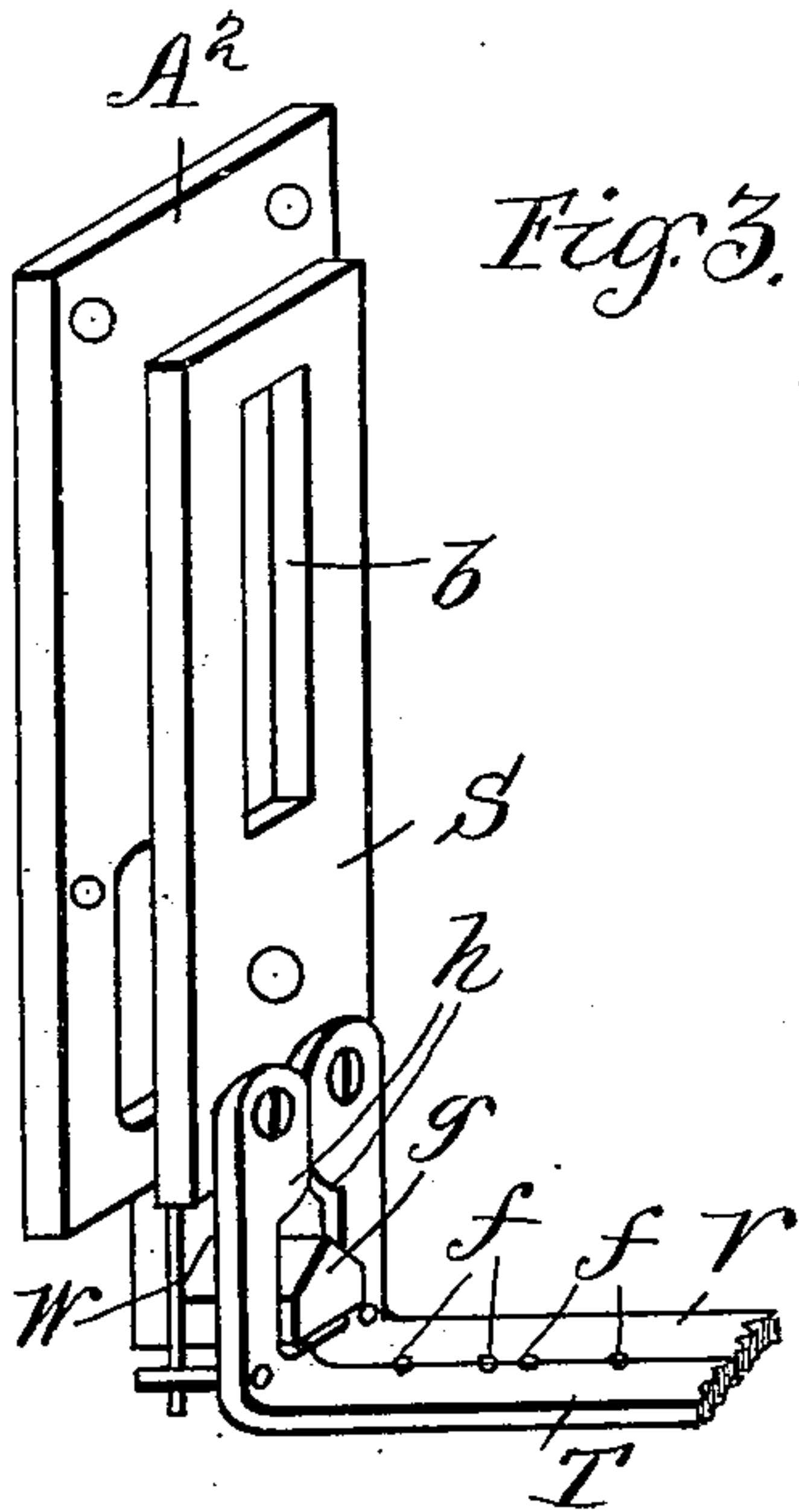


Fig. 3.

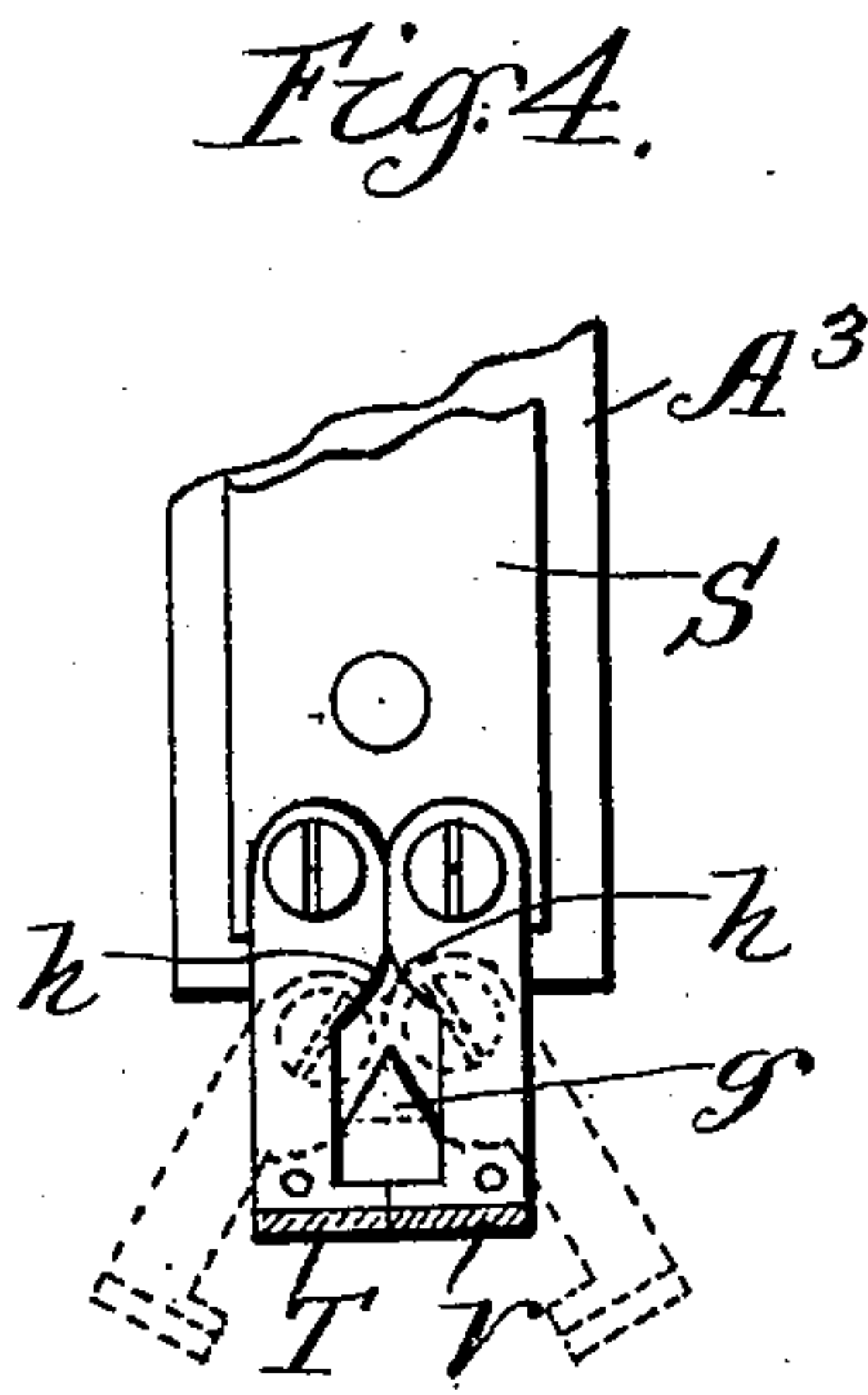


Fig. 4.

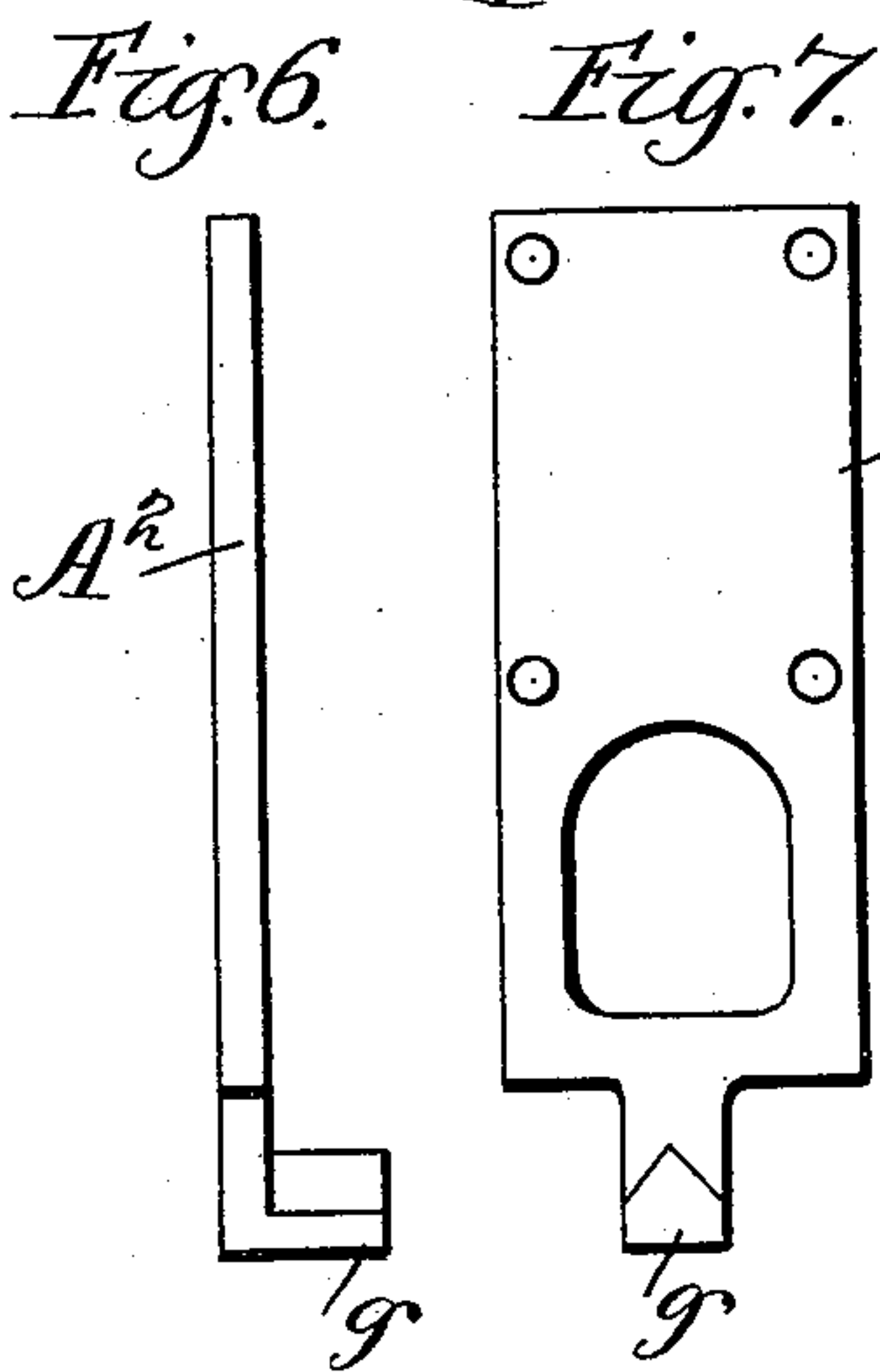


Fig. 6.

Fig. 7.

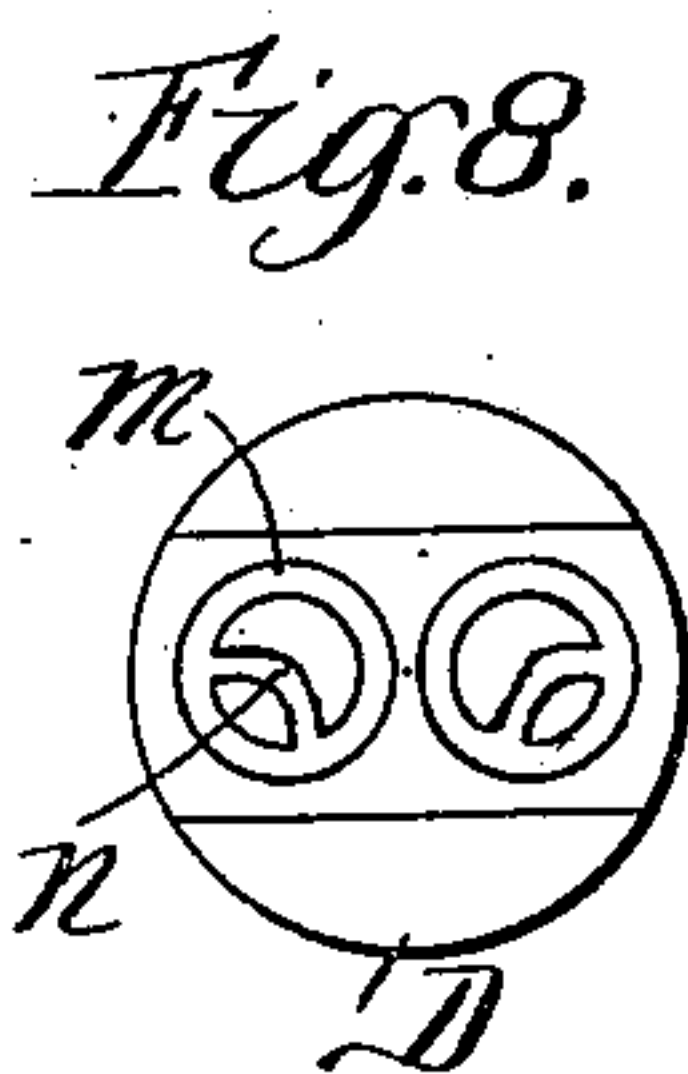


Fig. 8.

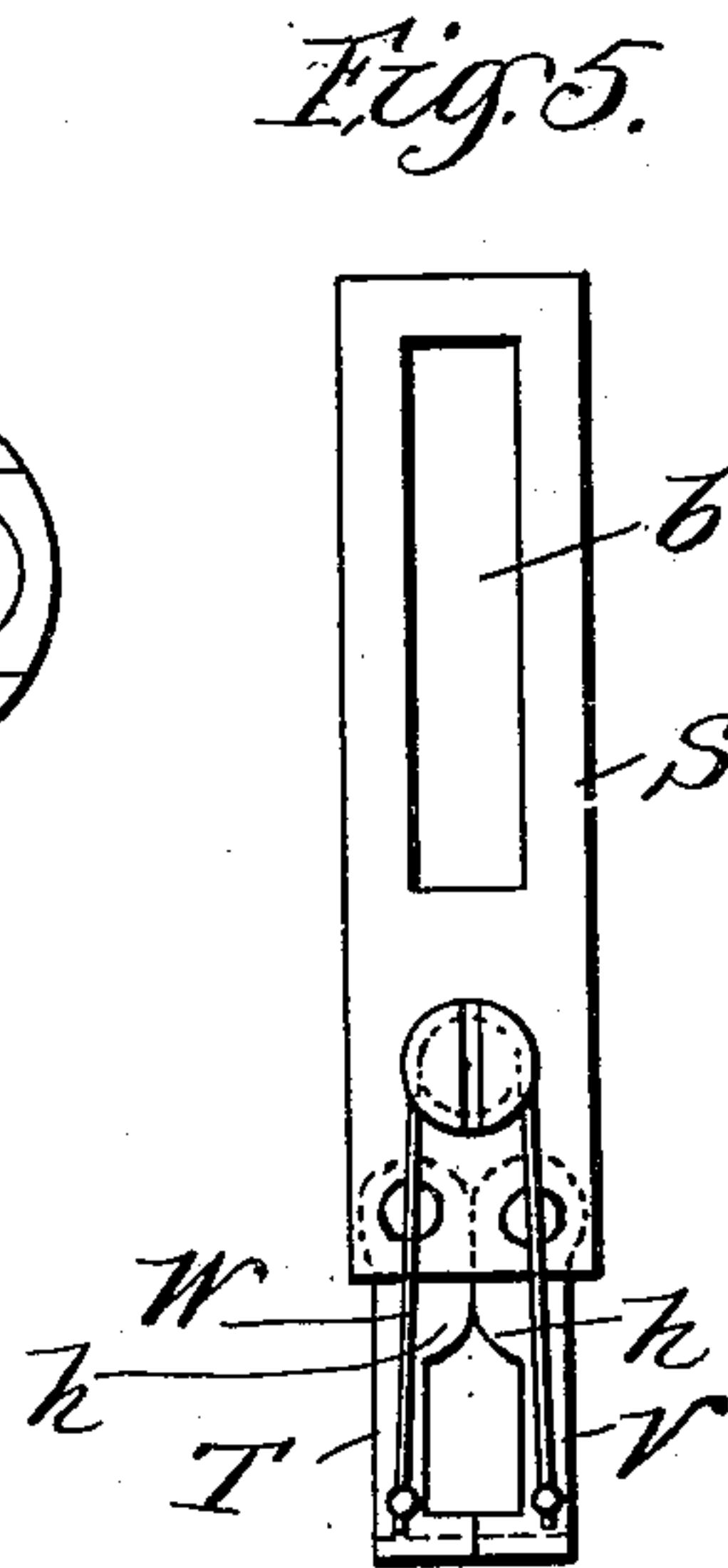


Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

EMIL DABNEY HEINEMANN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE
TITAN FASTENER COMPANY, OF SAME PLACE.

MACHINE FOR INSERTING AND SETTING LACE-FASTENERS.

SPECIFICATION forming part of Letters Patent No. 626,699, dated June 13, 1899.

Application filed February 7, 1898. Serial No. 669,363. (No model.)

To all whom it may concern:

Be it known that I, EMIL DABNEY HEINEMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Machine for Inserting and Setting Lace-Fasteners, of which the following is a specification.

This invention relates to machines for inserting and setting lace-fasteners.

The object of the invention is to provide a machine of simple and improved construction, which may be operated either manually or by foot-power, for inserting and setting lace-fasteners, and it is simple in construction and efficient in operation.

The invention consists, substantially, in the construction, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the appended claims.

Referring to the accompanying drawings, and to the various views and reference-signs appearing thereon, Figure 1 is a view in side elevation showing a machine embodying the principles of my invention, the operating-pitman being broken off. Fig. 2 is a front elevation. Fig. 3 is a detached broken detail view, in isometric perspective, showing the arrangement for temporarily supporting and retaining the fasteners in position to be acted upon by the inserting-plunger. Fig. 4 is a broken detail view in section on the line 4 4, Fig. 2, looking in the direction of the arrows, and illustrating in dotted lines the displaced position of the fastener-retaining plates. Fig. 5 is a detached detail view, in end elevation, of the fastener supporting and retaining plates and the support therefor. Figs. 6 and 7 are respectively side and face views of the means by which the fastener-retaining plates are separated or spread apart to release the fasteners. Fig. 8 is a bottom plan view of the inserting-plunger.

The same part is designated by the same reference-sign wherever it occurs throughout the several views.

In the drawings, reference-sign A designates a suitable casting or standard having flanges B at the bottom thereof, forming a base adapted to rest upon a table, bench, or

the like, and also with a suitably-recessed head C, adapted to receive the setting-plunger D. Suitably formed with casting or standard A is a projection E in line with head C and in which is adapted to be received an anvil F in line with the reciprocations of the setting-plunger, said die F being suitably held and adjusted in its seat in projection E by means of a set-screw G. At its upper end plunger D is provided with a projecting wing, (indicated in dotted lines at H, Fig. 1.) A spring (indicated in dotted lines at J, Fig. 1) is arranged to bear at one end against a convenient shoulder formed on the casting A and at the other end against the under surface of flange H, said spring normally acting to yieldingly maintain said plunger D in elevated position. The flanges K, formed with head C of casting A, are suitably perforated at both corners thereof, as indicated at L M. A casting N, having a cam-shaped head and also suitably perforated transversely, as indicated at O, Fig. 2, is arranged to be pivotally mounted upon a rod or bolt P, arranged to be received through the perforations L or M of flanges K and also through the perforation in the cam-shaped head of lever N, thereby supporting said lever N, with the cam-surface of the head thereof arranged to engage and bear upon the surface of the upper end of plunger D, as clearly shown in Figs. 1 and 2. Cam-lever N may be rocked in any suitable or convenient manner about its pivot-pin P, whereby the cam-surface of the head of said lever causes the plunger D to be projected endwise and against the action of spring J. In the particular form shown, to which the invention is not limited, a pitman or rod Q is pivotally connected to lever N, about which said lever may be rocked by means of a foot-treadle. (Not shown.) In order that the foot-treadle may oscillate through the smallest possible arc and still perform the duties required of it, it is desirable that pitman Q be connected to cam-lever N at the closest possible point to the pivot-pin P of said lever. In order to accomplish this result and at the same time to avoid unduly obstructing the operation of the apparatus, instead of directly connecting pitman Q to lever N, I connect said pitman to a link R, which

link is pivotally connected to cam-lever N. By this arrangement I am enabled to connect the end of pitman Q, through said link R, to the cam-lever at a point closer to the pivot thereof than would otherwise be possible, and at the same time, by reason of this link-joint connection, I do not sacrifice power to any appreciable or objectionable extent.

In case the machine is to be used as a hand device, pitman Q and connecting-link R are dispensed with. The pivot-pin P of cam-shaped lever N is removed from perforations M in flanges K and said lever N reversed or turned around, so as to enable the pivot-pin P to be inserted through the perforations L in flanges K and through the perforation O in the cam-shaped head of said lever N. By this arrangement the operating end of said lever projects toward the front instead of the rear of the machine, thus enabling the machine to be more easily and readily operated by means of a handle or other device suitably secured or connected to lever N. When used as a foot-power machine, it is desirable that the operating end of lever N be presented toward the rear of the machine, so that the operating-pitman Q may not offer obstruction to the easy access of the operator to the front side of the machine to insert fasteners in the retaining-plate and to insert the articles to which the fasteners are to be applied in proper position to receive the fasteners.

I will now describe the means for supporting and retaining the fasteners in the line of reciprocation of plunger D. In each of the side faces of head C is provided a counter-sunk recess, (indicated in dotted lines at *a*,) in which are loosely mounted plates S S'. These plates are slotted, as indicated at *b*. A spring *c* is arranged to bear at one end upon a shoulder or pin *d*, fixed in the casting A, and at the other end against the inner wall of the upper end of slot *b*, as indicated in dotted lines in Fig. 1, the action of said spring being to normally but yieldingly maintain plates S S' in elevated position. Pivotally supported upon the lower ends of plates S S' are fastener supporting and retaining plates T V. These supporting and retaining plates are preferably, and as clearly shown in the drawings, formed into U shape, one end of each of said retaining-plates being pivotally secured to the plate S and the other end of each of said retaining-plates being pivotally secured to the other supporting-plate S' on the opposite face of the standard. Springs W normally operate to maintain said fastener-supporting plates closed edge to edge upon each other. In the meeting edges of these plates are formed registering seats or grooves (indicated at *f*, Fig. 3,) spaced a distance apart corresponding to the distance between the legs of a fastener and adapted to receive and clamp therein the legs of the fastener when the fastener is placed in position to be inserted in an article, as clearly shown in Fig. 2. A cap-plate A² A³ is adjustably mounted upon the side faces of

head C of the standard to form a retainer for plates S S'. The lower ends of plates A² A³ are provided with angular wedge-shaped projections *g*, arranged to project into the space between the bent ends of retaining-plates T V and in position to engage between shoulders *h*, formed on said bent ends, whereby when said retaining-plates are moved downwardly they are spread apart by the engagement of said wedge-shaped angular projection *g* between said shoulders *h*, as indicated in dotted lines in Fig. 4, whereby the fasteners supported and retained upon said retaining-plates T V are released therefrom. This separation, however, does not occur until the ends of the fastener have entered the article or material to which the fastener is to be applied.

The operation of the device is as follows: A fastener to be inserted in an article is placed by hand or otherwise upon retaining-plates T V, the body portion of such fastener resting upon the upper surface of said plates and the legs of the fastener projecting through and clamped between the abutting edges of said plates, said legs being received in the seats formed by the registering grooves *f* in the meeting edges of said retaining-plates. The lever N is now rocked either by hand or through the foot-treadle pitman Q, as above explained, thereby projecting plunger D endwise. The lower end of said plunger is thereby forced downwardly until it engages the fastener between the lower end thereof and the retaining-plates. Thereafter the continued downward movement of the plunger carries the retaining-plates before it until the ends of the fastener engage in the material to which the fastener is to be applied. When this point is reached, the wedge-shaped angular projections *g* engage the shoulders *h* on the bent ends of retaining-plates T V and spread the same apart, thereby releasing the fastener and enabling the plunger to complete its work of inserting the fastener in the article and clenching the ends of the fastener on the inner side of the article to which they are applied, such clenching being effected by the die or anvil F. The downward movement of plunger D is opposed, as above explained, by the action of spring J, the tendency of which is to return said plunger to its normal or elevated position, and the downward movement of the supporting slides or plates S S' is opposed by the action of spring *c*, which normally acts to return or to elevate said plates and with them the fastener-supporting plates T V.

While the machine is adapted for use in connection with any form of fastener, it is particularly designed for use in inserting and setting lace-fasteners of the type, form, and construction set forth in my Patent No. 586,818, issued July 20, 1897. In adapting the machine to this particular form of fastener it is desirable to so form or shape the end of the plunger as to receive and hold the body of the fastener therein, whereby the dan-

ger is avoided of tilting the body of the fastener during the inserting and setting operation. This is a matter to be avoided in order to prevent spoiling the fastener or to prevent an inefficient securing of the fastener to the article and to further prevent the fastener from being mashed or spread out of proper shape during the setting operation. Therefore I provide in the end of the plunger a seat comprising a circular groove (indicated at *m*) and having a groove *n*, arranged to extend across the circular groove to receive that portion of the fastener which projects through to and across the space inclosed by the coil of the fastener. By this particular construction the fastener is efficiently held in place and prevented from turning, tilting, or being mashed out of proper shape during the setting operation.

In order that the machine may be adapted for use in setting and inserting both "right" and "left" fasteners, the fastener-retaining plates *T V* are provided with two sets of seats *f* to receive the legs of two separate fasteners, and the same plunger *D* may be employed with two seats on the end thereof, either or both of which may be employed at the same time to effect a setting of one or the other of a right or left fastener, or both simultaneously. I do not desire, however, to be limited or restricted to a single plunger, for it is obvious that two plungers may be employed, one designed to set right fasteners and the other designed to set left fasteners.

Having now set forth the object and nature of the invention and a form of apparatus embodying the same, and having described the construction, function, and mode of operation thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a machine for inserting and setting lace-fasteners, a casing, a setting-plunger mounted to reciprocate therein, said casing having seats formed in the opposite sides thereof, plates yieldingly supported in said seats for movement relative to said plunger in the line of movement thereof, fastener-supporting plates arranged transversely of the line of movement of said plunger and having upturned ends arranged to be pivotally connected, respectively, to the sliding plates on

opposite sides of the casing, said supporting-plates provided with shoulders, means arranged in the path of movement of the plunger for engaging and spreading apart said supporting-plates, means for actuating said plunger, and a clenching-die, as and for the purpose set forth.

2. In a machine for inserting and setting lace-fasteners, a plunger mounted to slide therein, means for actuating said plunger, and a die arranged in the line of action of said plunger, in combination with slide-plates suitably mounted in said standard, an inclosing cap therefor, said cap provided with an angular wedge-shaped projection at the lower end thereof, fastener supporting and retaining plates pivotally mounted at the ends thereof upon said slide-plates and provided with shoulders, said angular wedge-shaped projection arranged to project between the ends of said supporting-plates and in position to engage said shoulders, and means for yieldingly maintaining said slide-plates in elevated position, as and for the purpose set forth.

3. In a machine for inserting and setting lace-fasteners, a casing, a setting-plunger mounted to reciprocate therein, said casing having seats formed in the opposite sides thereof, plates yieldingly supported in said seats for movement relative to said plunger in the line of movement thereof, fastener-supporting plates having shoulders formed thereon and having registering grooves or seats in the meeting edges thereof, said supporting-plates arranged transversely the line of movement of the plunger and having upturned ends pivotally connected respectively to the sliding plates on opposite sides of the casing, springs arranged to yieldingly clamp said holding-plates toward each other, means arranged in the path of movement of the plunger for engaging the shoulders on said plates and spreading the same apart, means for actuating said plunger, and a clenching-die, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 31st day of January, 1898, in the presence of the subscribing witnesses.

EMIL DABNEY HEINEMANN.

Witnesses:

S. E. DARBY,

E. C. SEMPLE.