

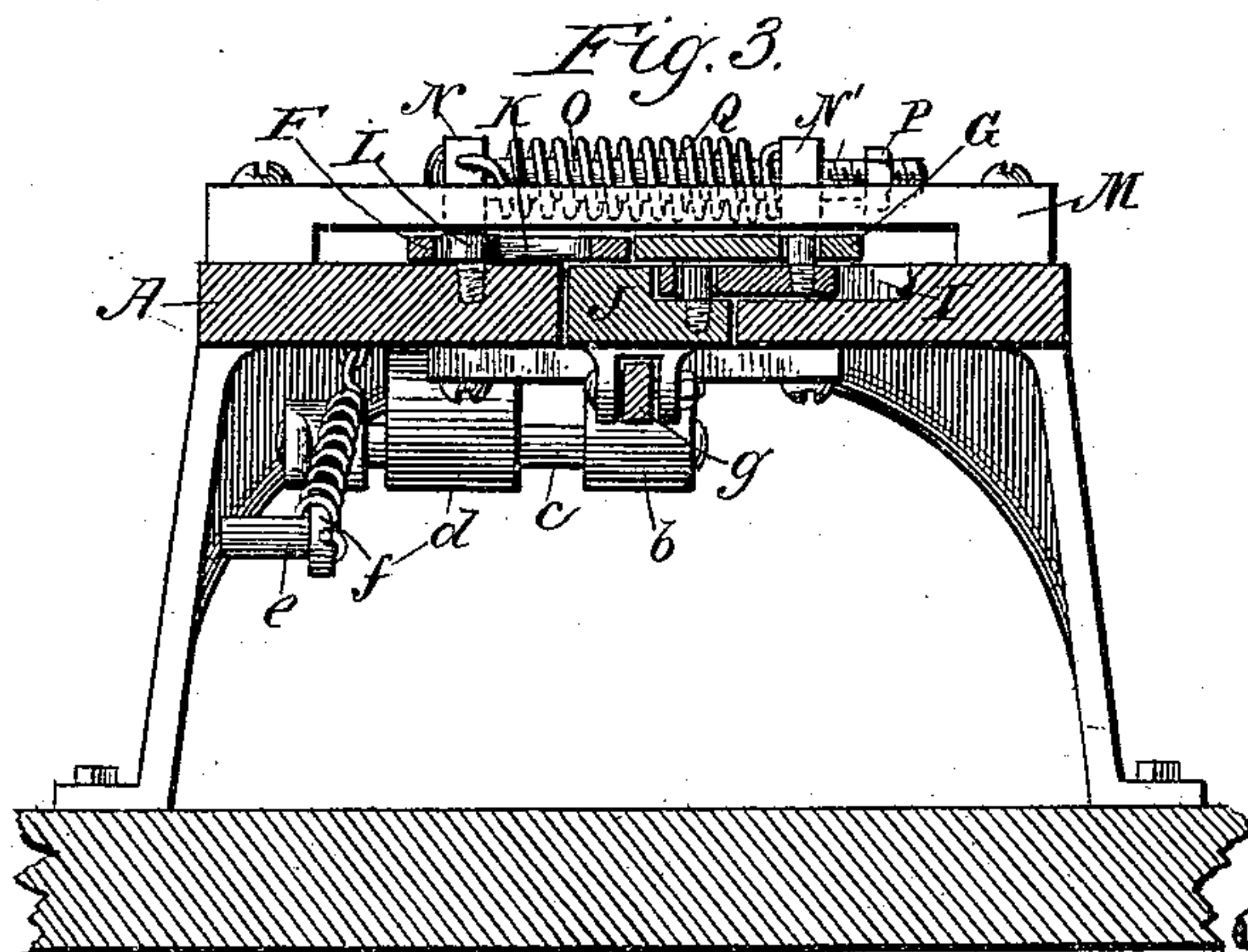
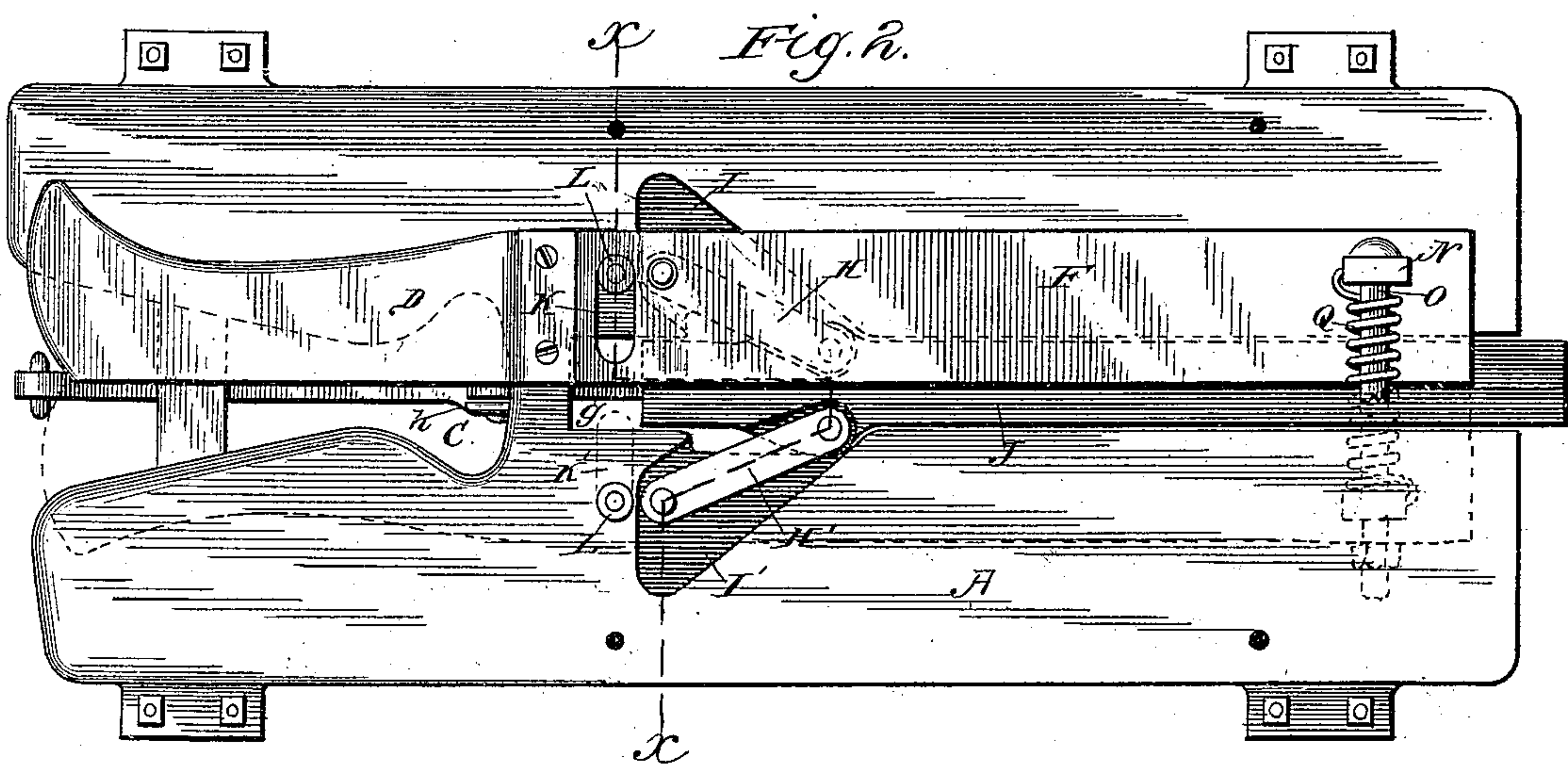
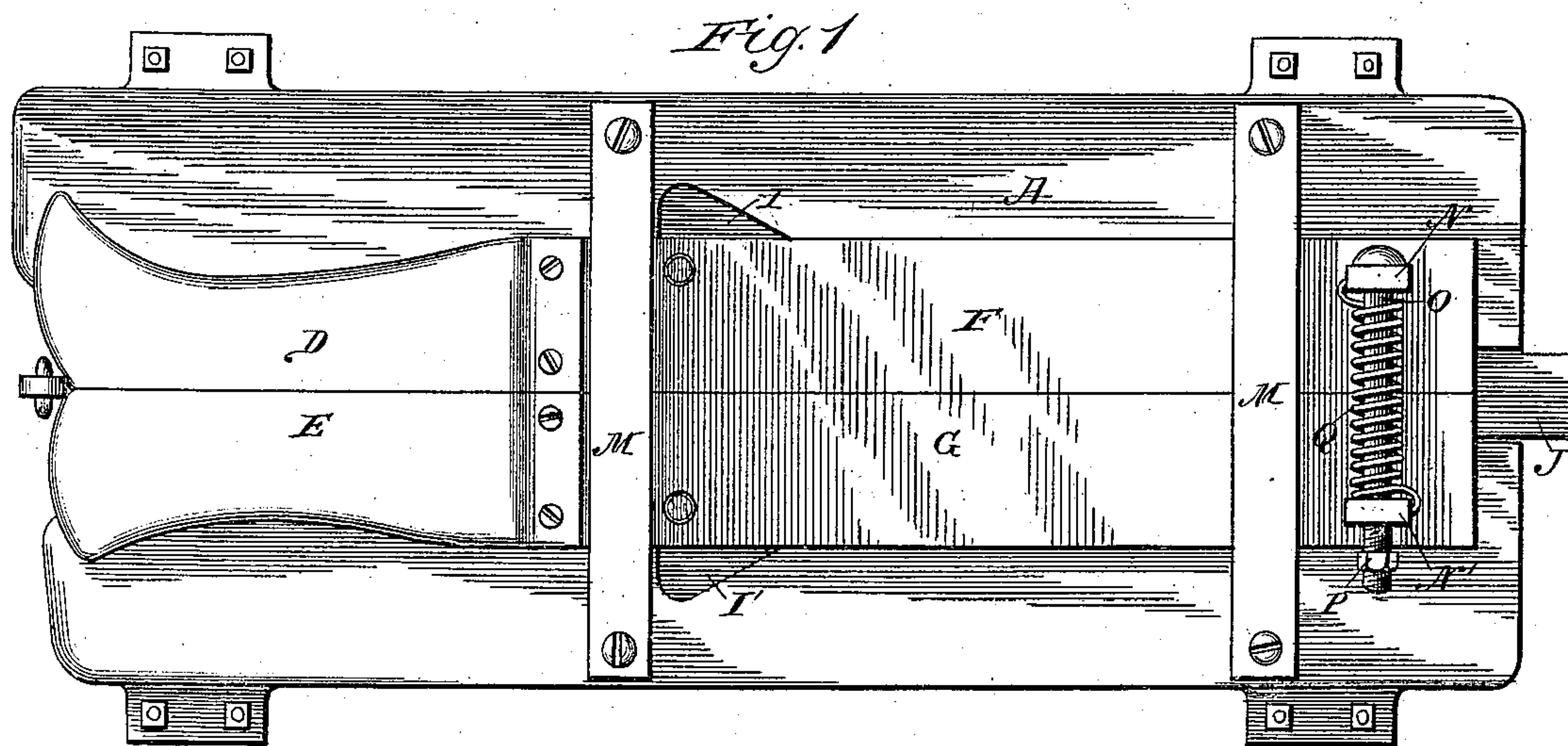
(No Model.)

2 Sheets—Sheet 1.

G. M. LUDLOW.  
CRIMPING MACHINE.

No. 345,241.

Patented July 6, 1886.



Witnesses.

Will B. Overhundert.  
A. B. Overhundert.

By,

Inventor.  
George M. Ludlow  
Jno. G. Elliott  
Atty.

(No Model.)

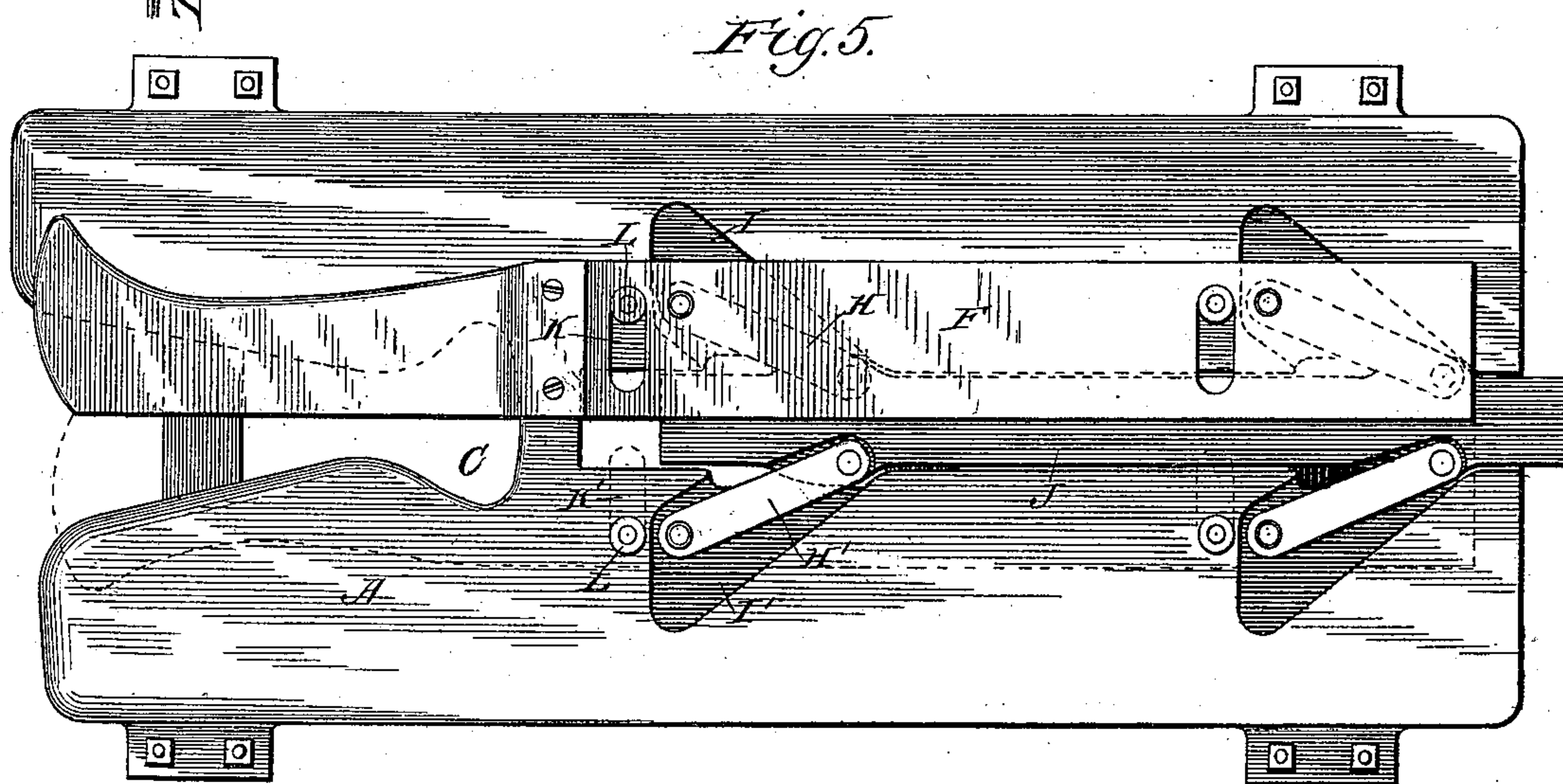
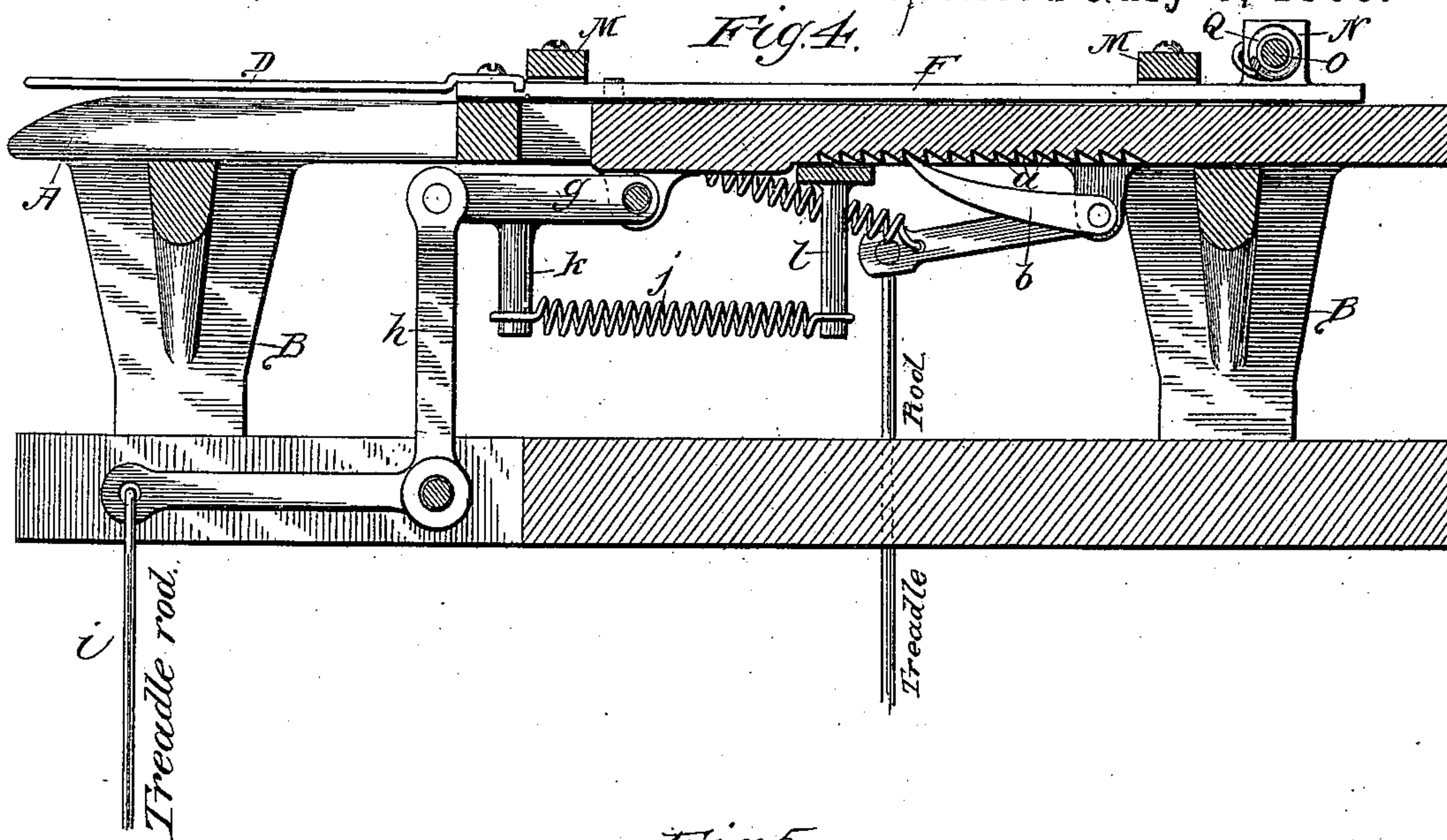
2 Sheets—Sheet 2.

G. M. LUDLOW.

CRIMPING MACHINE.

No. 345,241.

Patented July 6, 1886.



Witnesses.

Will B. Quohundro.  
R. B. Quohundro

Inventor.

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# UNITED STATES PATENT OFFICE.

GEORGE M. LUDLOW, OF CHICAGO, ILLINOIS.

## CRIMPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,241, dated July 6, 1886.

Application filed November 3, 1885. Serial No. 181,745. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE M. LUDLOW, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Crimping and Stretching Machines, of which the following is a specification.

This invention is particularly designed for use upon the uppers or ankle portion of ladies' boots; and its prime object is to facilitate and promote the effectiveness of the treeing and shaping of this class of boots, and at the same time reduce the manual labor heretofore required to accomplish these ends.

A further object is to combine with the shaping or stretching jaws a bed-plate so arranged relative to said jaws that it shall constitute a solid resistance for and receive the force of the blow struck upon and flattening the seams of the boot, and thereby preventing injury to the jaws, and at the same time promote the effectiveness of the treeing operation.

A further object is to have opposing shaping-jaws mechanically and simultaneously actuated away from each other, whereby their strain upon the boot-leg is evenly imparted thereto and an irregularity in the stretching operation prevented.

A further object is to have the stretching-jaws adjustable in such a manner that while they may be capable of moving in direct parallel lines from each other they may also be moved away from each other on differing arcs of a circle, as the exigencies of the case may require, whereby the said jaws may successfully operate upon legs varying from the standard shape of and for which the jaws are specially designed, and thereby be successfully used upon varying shapes of boot-legs; and, finally, to promote the simplicity of construction and operation of such a machine by details hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 represents a top plan view of the boot treeing and shaping machine embodying my invention; Fig. 2, a similar view with one of the shaping-jaws removed; Fig. 3, a transverse section on the line *x x*, Fig. 2; Fig. 4, a central longitudinal section of the same; Fig. 5, a top plan view with one of the shaping-

jaws removed, and illustrating a modification of the connections between the rear ends of the shaping-jaws and the actuating slide-bar thereof.

Similar letters of reference indicate the same parts in the several figures of the drawings.

The bed-plate A of the machine is solidly supported upon legs or standards B, and at its forward end and directly beneath the shaping-jaws is slotted, as shown at C, so that in passing the boot-leg upon said jaws the buttons thereof will lie between the walls of said slot, which is of such form that the buttons are subject to no strain or compression during the stretching operation. Supported slightly above this bed-plate, and in parallel lines thereto, are shaping-jaws D E of the desired and necessary form, preferably composed of approximately thin and spring metal, and removably secured, by set-screws or other suitable means, to bars F G, respectively, constituting their shanks, and having their bearing on the bed-plate. The jaws are elevated above the bed-plate a distance corresponding with a minimum thickness of material in the leg, so that when hammering down the seam thereof the bed-plate will constitute a solid support for receiving the same and relieving the jaws from any injurious strain, besides promoting the effectiveness of the blow; but composed of spring metal, as these jaws are, they also permit of the introduction between them and the bed-plate of boot-legs having a maximum thickness of material, it being of course understood that the leg is sleeved upon the jaws, so that only one thickness or side of it lies between the jaws and the bed-plate. When so sleeved upon the jaws, the buttons of the leg will project into the slot in the table, and the seam or seams be at a point removed from said slot—that is to say, next the outer edges of the stretching-jaws—and hence are subject to a solid support from the bed-plate. Toward their forward ends and next the outer edges of the jaw-shank are pivoted links H H', working in recesses I I' in the bed-plate, and underneath said shanks, which links converge toward their rearward ends, where they are pivoted to a sliding bar, J, supported in a corresponding slot or groove in the bed-plate, and movable, as hereinafter described, in a



direct line with the length of the bed-plate. Forward of these links and in the jaw-shanks are elongated slots K K', extending transversely the length of the shanks, in which slots work anti-friction rollers L L', the pivots of which are secured to the bed-plate, whereby when the jaws are actuated by the links they will be directed in a straight line, and in parallel lines from and toward each other, the jaws being prevented from a vertical movement by means of one or more slotted bars, M, spanning the shanks and bolted to the bed-plate, which said bar or bars preferably extend across the elongated slots for the purpose of excluding dust and other foreign substances therefrom, but may be at any other desired point relative to the jaws. When only a direct movement of the jaws from and toward each other is desired, this link-and-slot connection may be duplicated at the rear end of the jaws, as shown in Fig. 5; but in practice it is preferred to have the jaws open and close upon the arc of a circle, and in such manner that they may be adjusted to swing upon different arcs to adapt them for variations of the leg; or, in other words, in the diametrical contour between the upper and lower end portions of the leg. To these ends are mounted on and toward the rear end of the jaw-shanks fixed studs N N', connected by a bolt, O, upon which the studs are free to move, one end of said bolt projecting beyond its corresponding stud and provided with screw-threads, on which is adjustable a nut, P, for limiting the spreading apart of the rear ends of the jaws, and hence providing for a variation in the arc of the circle, upon which the jaws may swing when being opened and closed. These studs are connected by and have rigidly attached thereto a coil-spring, Q, which, by its contracting power, normally maintains the rear ends of the jaws in a closed position, but is sufficiently yielding to permit an external force to spread the jaws apart. In this connection it may be observed that the spring also has the effect of retarding the separation or closing of the jaws at this point to such an extent that at no time during their movement can they move in parallel lines, and by so doing it has been satisfactorily demonstrated that the best effect of the jaws is obtained for shaping purposes.

As a simple and convenient means for locking the jaws in an open position, and through the medium of the sliding bar, this bar is provided upon its under side with ratchet-teeth a, engaged by a pawl, b, which (see Figs. 3 and 4) is rigid on a short shaft, c, journaled in a stud, d, fixed to the under side of the bed-plate, and carrying upon its outer end a crank-arm, e, which is automatically maintained in an elevated position, and the pawl in engagement with the ratchet by coil-spring f, attached at one end to the crank-arm and at its opposite end to the bed-plate.

To a depending lug on the under side and forward of the sliding bar is pivoted a link, g,

(see Fig. 4,) the opposite end of which link is pivoted to one arm of a bell-crank, h, in turn pivoted to a fixed support of the machine, and connected with a treadle (not shown) by a rod, i, so that the operator may use his foot as a power for actuating the sliding jaws. This foot-lever is maintained in an elevated position, the sliding bar at the limit of its backward stroke, and the jaws in a closed position by means of the coil-spring j, secured at one end to a depending lug, k, on the link g, and at its opposite end to a stud, l, rigidly connected with the bed-plate in such a manner that a bearing is formed for the sliding bar to move upon. In this connection it may be observed that while the connections between the sliding bar and the treadle are simple and not liable to get out of order, any other mechanism for the same purpose may be employed without a departure from my invention.

In operation the boot-leg to be treed and shaped is slipped over the shaping-jaws while closed upon each other, with the buttons of the boot projecting in the slot in the bed-plate. After the boot is in its operative position the treadle is depressed and the shaping-jaws thereby forced apart until the boot-leg is stretched to the desired degree, in which position the jaws are maintained by the engagement of the pawl with the ratchet of the sliding bar. When the stretching and treeing operation has been completed, the bell-crank e is depressed against its spring-resistance, thereby releasing the pawl from the ratchet of the sliding bar and permitting the spring j to actuate and close the jaws.

Instead of actuating the pawl by hand to disengage it from the ratchet-bar, it may be actuated by any treadle or stop mechanism connected therewith.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a crimping and stretching machine for shoes, a horizontal bed-plate, in combination with a pair of flat horizontal stretching or shaping jaws composed of spring metal, and entirely opposed by said bed-plate, substantially as described.

2. In a crimping and stretching machine for shoes, a bed-plate provided with a recess opening at its forward end, in which the buttons of the shoes may be projected, in combination with a pair of flat stretching or shaping jaws composed of spring metal, and entirely opposed by said bed-plate, substantially as described.

3. In a crimping and stretching machine for shoes, a bed-plate provided with a recess opening at its forward end, in combination with the vertically-yielding and laterally-adjustable shaping-jaws mounted thereon, and means, substantially as described, for operating said jaws, as set forth.

4. In a crimping and stretching machine for shoes, a bed-plate provided with an opening or recess, the vertically-yielding and lat-



erally-adjustable shaping jaws mounted thereon, in combination with the link-connection between said bar and jaws, substantially as described.

5 5. In a crimping and stretching machine for shoes, the bed-plate, the opposing laterally-adjustable shaping-jaws, and the sliding bar, in combination with the link-connection between said bar and jaws, substantially as described.  
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6. In a crimping and stretching machine for shoes, the bed-plate, the movable shaping-jaws provided with elongated slots, and an anti-friction connection, substantially as specified, between said jaws and the bed-plate, in  
15 combination with a sliding bar, and a link-connection between said bar and jaws, substantially as described.

7. In a crimping and stretching machine  
20 for shoes, the bed-plate, the slotted and movable shaping-jaws and operative toggle, in

combination with a yielding connection, substantially as described, between the rear ends of said jaws, substantially as described.

8. In a crimping and stretching machine 25 for shoes, the bed-plate, the shaping-jaws, and the sliding bar and ratchet thereof, in combination with a treadle, and a pawl-and-link connection between said treadle and sliding bar, substantially as described.

9. In a crimping and stretching machine 30 for shoes, the bed-plate, the stretching-jaws, and the sliding bar, in combination with a treadle, a bell-crank, and link-connection between said treadle and bar, and a spring for 35 automatically maintaining the sliding bar at the limit of its backward stroke, substantially as described.

GEORGE M. LUDLOW.

Witnesses:

W. W. ELLIOTT,

R. C. OMOHUNDRO.