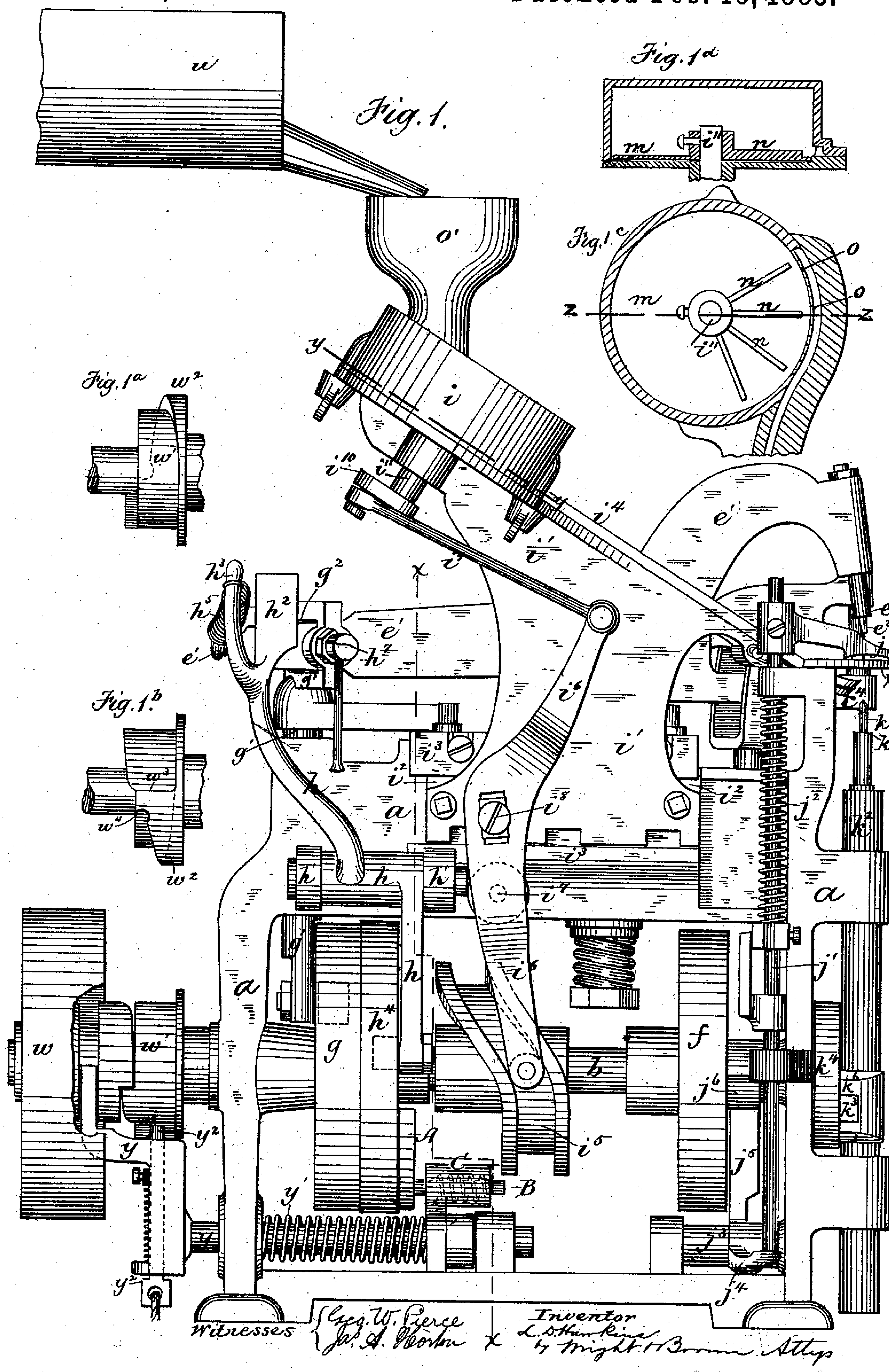
(No Model.)

3 Sheets—Sheet 1.

L. D. HAWKINS.

EYELETING MACHINE.

No. 272,382. Patented Feb. 13, 1883.



N. PETERS, Photo-Lithographer, Washington, D. C.

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L. D. HAWKINS.

EYELETING MACHINE.

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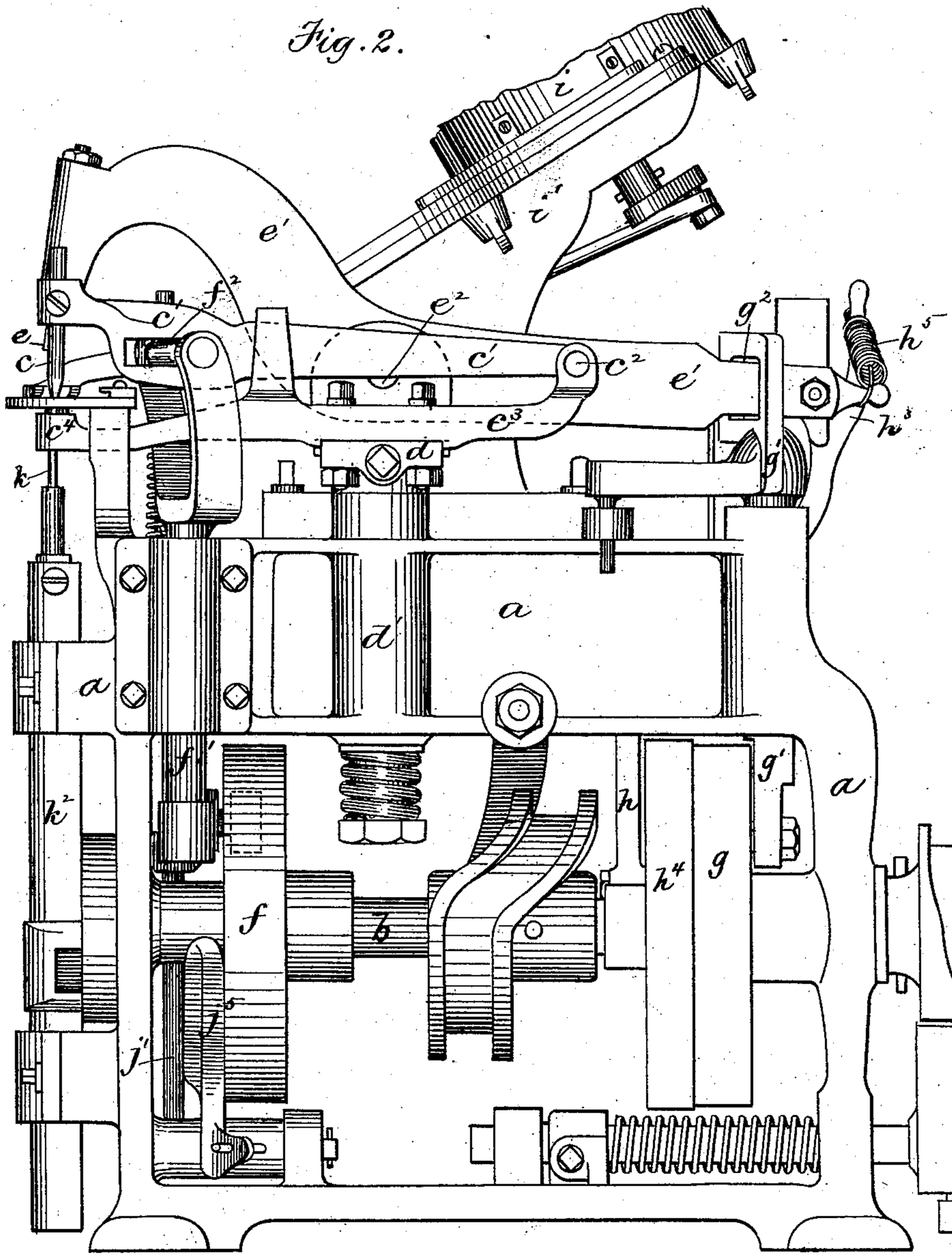
Fig. 2.



Witnesses.
Geo. W. Pierce
James A Horton

Inventor
L. D. Hawkins
by Wright Brown
Attys.

(No Model.) 3 Sheets—Sheet 3.

L. D. HAWKINS.

EYELETING MACHINE.

No. 272,382. Patented Feb. 13, 1883.

Fig. 4.

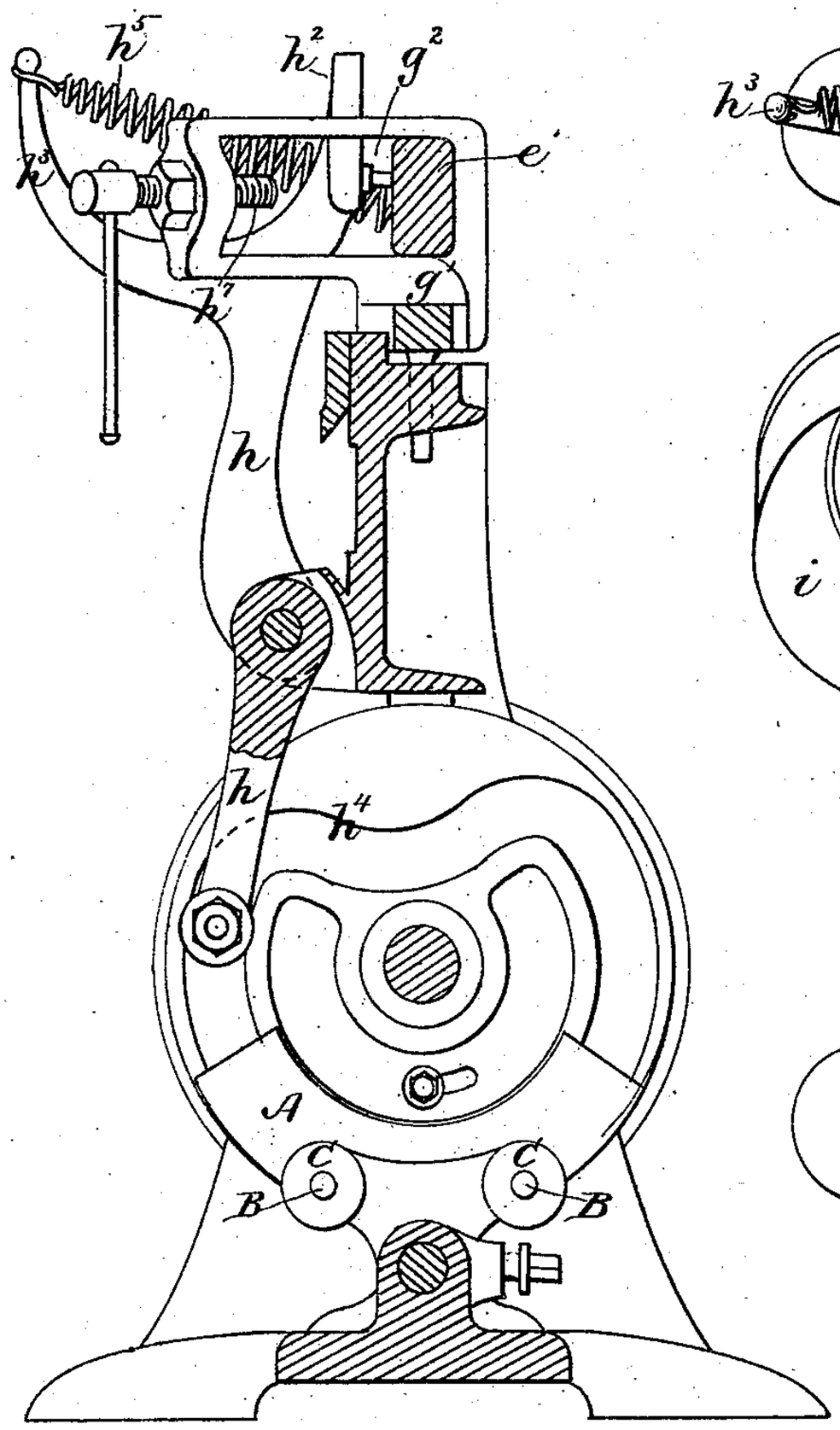
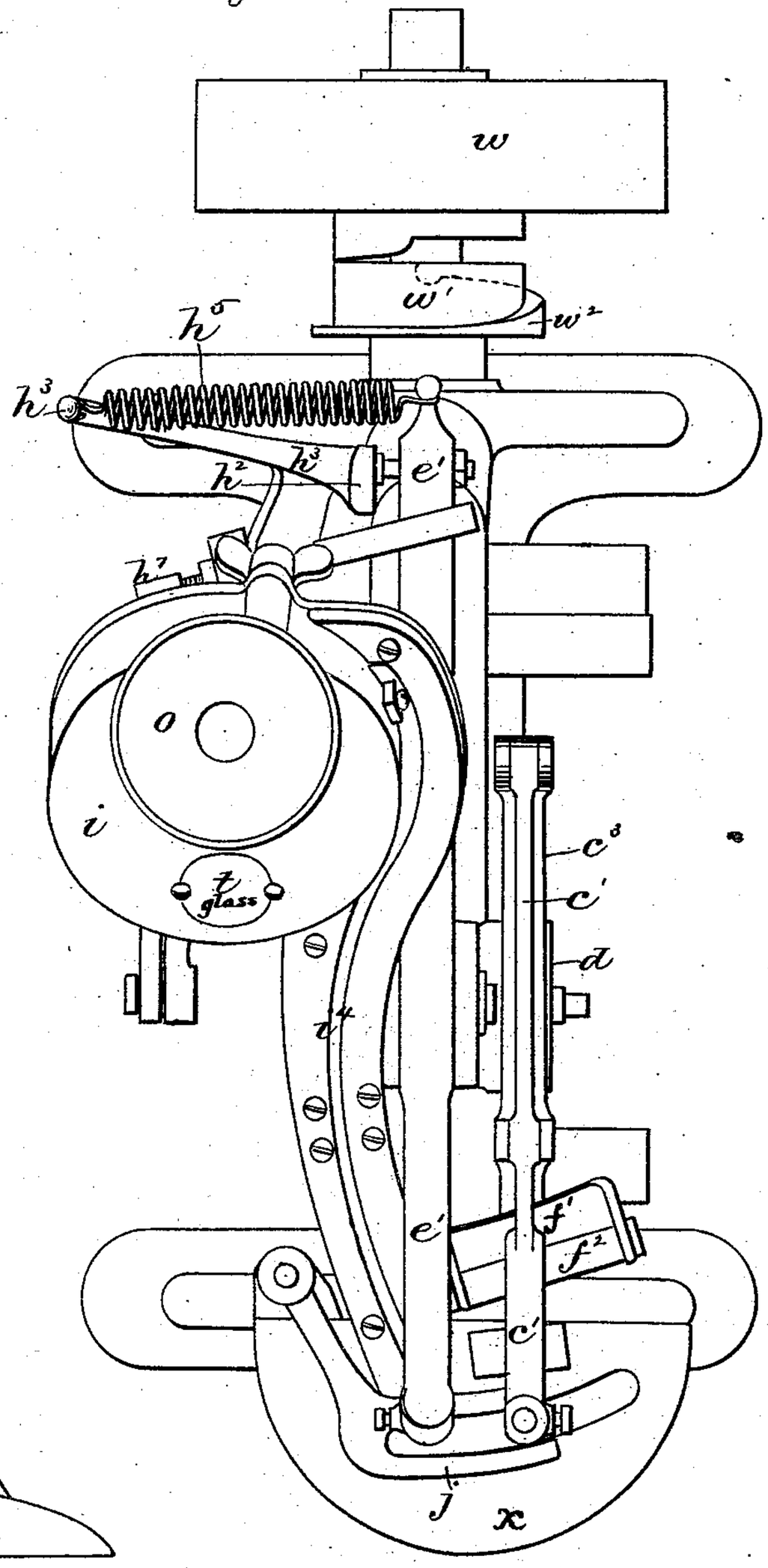


Fig. 3.



Witnesses.
Geo. W. Pierce
James A. Norton

Inventor
L. D. Hawkins
by Wright & Brown
Attys.

UNITED STATES PATENT OFFICE.

LORENZO D. HAWKINS, OF STONEHAM, MASSACHUSETTS.

EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 272,382, dated February 13, 1883.

Application filed October 31, 1881. (No model.)

To all whom it may concern:

Be it known that I, LORENZO D. HAWKINS, of Stoneham, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Eyeleting-Machines, of which the following is a specification.

This invention relates to the common form of eyeleting-machine, which performs the several operations of punching the eyelet-holes, inserting and upsetting in each eyelet-hole an eyelet, and feeding the work after each eyelet is inserted and upset; and its special novelty consists in the devices for imparting the lateral and feed motions to the anvil, the same being constructed substantially as will be hereinafter fully described, and pointed out in the claims at the end of this specification.

For the purpose of enabling my improvements to be fully understood, I will briefly describe the construction and operation of a machine embodying the same.

Referring to the drawings, Figure 1 represents a side elevation of such a machine. Figs. 1^a and 1^b represent detail views; Fig. 1^c, a sectional view taken on the line *y y*, Fig. 1. Fig. 1^d represents a section on line *z z*, Fig. 2; Fig. 2, an elevation of the opposite side of the machine; Fig. 3, a top view; and Fig. 4, a section on line *x x*, Fig. 1.

a represents the main frame of the machine. *b* is the driving-shaft. *c* is the work-perforating punch, secured to a lever, c', pivoted at c^2 to an arm, c^3, which is rigidly attached to a head, *d*, and is extended forward so as to support at its forward end the bed c^4 of the punch. *e* is the upper set or anvil having the feeding-finger e^3, and secured to a lever, e', which is pivoted at e^2 to ears formed on the head *d*. The levers c' and e' are capable of oscillation vertically on their pivots, and the head *d* is capable of rotating horizontally in a socket, d', in the frame, so that the punch and anvil can oscillate horizontally in unison. The vertical movements of the punch are effected by a suitable grooved cam, *f*, which raises and lowers a vertical rod, f', forked at its upper end, and having between the ends of its bifurcations a cross-bar, f^2, which passes through a slot in the lever c'. The vertical movements of the anvil are effected by a suitable cam, *g*, which raises and lowers a vertical rod, g', having in its upper end a slot, g^2, receiving the rear end of the anvil-lever e' and permitting said lever to oscillate horizontally. The combined means for effecting the horizontal reciprocating movements of the anvil and punch in unison, and which I regard as novel and original with me, consist of a lever, *h*, pivoted to ears h' on the frame *a*, and adapted to be oscillated laterally by means of a grooved cam, h^4, and having two arms, h^2 h^3, at its upper end, one of which, h^2, bears against the rear end of lever e', while the other, h^3, is connected to said lever by means of a spring, h^5. When the rocking lever *h* is oscillated inward by the cam h^4, its arm h^2 pushes the anvil-lever e' inward by direct contact with it; but when said rocking lever is moved outward its arm h^3 pulls outward the said anvil-lever through the spring h^5.

In machines of this class as heretofore arranged the spring has been supported at its outer end by an arm rigidly attached to the frame of the machine, so that when the anvil-lever was pushed against the force of the spring the latter would be extended, and its increased resistance had to be overcome by the operating-lever; but in the present machine, as I now construct it, the entire spring moves with the lever *h*, and the latter, not having to overcome the resistance of the spring, is more easily operated.

The length of the oscillations of the lever e' in the slot g^2 is regulated by an adjusting-screw, h^7, projecting into one end of said slot g^2, and forming a stop for the lever, as will be readily understood. When the feed-adjusting screw h^7 is moved inward to make the outward movement of the anvil-lever e' less than that of the operating-lever *h*, the spring will be slightly extended when the anvil-lever is arrested by the screw; but not such a material variation of tension will take place as will impede the operation of the machine.

The other parts of the machine to be described, but which I do not claim herein, consist of an eyelet box or receiver, *i*, mounted on a standard, i', attached to a slide, i^2, adapted to move between guides i^3 i^3 longitudinally of the frame *a*. The standard i' supports the inclined roadway i^4, through which the eyelets pass to the eyelet lifter and upsetter. The

standard i' is reciprocated to alternately move the end of the roadway over and away from the lifter k by means of a cam, i^5, and a lever, i^6, engaged with said cam, and pivoted at i^7 to the frame a and at i^8 to the standard i'. The lever i^6 is extended beyond its pivotal connection with the standard i', and is connected at its upper ends by a rod, i^9, with a crank, i^{10}, which operates the agitator in the box i. The lever i^6 is oscillated by the cam i^5, and therefore reciprocates the standard i' and oscillates the agitator in the box i.

j represents the bifurcated presser-foot, which is mounted on a vertical rod, j', and is normally held down against the supporting-bed x by a spring, j^2, and raised intermittingly against the pressure of the spring by a rock-shaft, j^3, having an arm, j^4, on which the rod j bears, and an arm, j^5, adapted to be moved by a roller, j^6, projecting from the side of the cam f.

k represents the eyelet-lifter, which is normally held by a spring above the compressor k', as usual in machines of this class, the lifter being adapted to bear against the point of the feeding-finger e^3 of the anvil, and yield when the compressor k' rises to compress the eyelet. The compressor is supported by a vertical rod, k^2, which is reciprocated vertically by an eccentric pin or block, k^3, on a disk, k^4, which rotates the driving-shaft, said pin or block working in a horizontal groove in the cross-head k^6 on the rod k^2. The eyelet-box is provided with an agitator composed of a thin metallic disk, m, rigidly attached to the crank-shaft i^{11}, and adapted to be oscillated thereby. The upper surface of the disk forms the bottom of the box, and is provided with a series of radial ribs, n, of any desired number, preferably four. These ribs are so arranged with relation to the ports o, through which the eyelets pass from the box to the raceway, that when the disk is oscillated the ribs will act to force or push the eyelets through said ports into the raceway.

The general operation of the machine is similar to that of others of its class—that is to say, a piece of work to be eyeleted is placed on the bed under the presser-foot; the punch descends, perforates the work, and then rises; the punch and anvil are moved laterally in unison until the feeding-finger is over the hole made by the punch, the anvil descends, and the finger enters the hole; the anvil and punch move laterally in the opposite direction until the feeding-finger of the anvil and the hole in the work are brought over the eyelet-lifter, (the punch remaining raised above the work;) the compressor and lifter are raised, taking an eyelet from the raceway and compressing it against the anvil, thus upsetting and securing the eyelet to the work. The raceway is moved forward before the lifter rises, and backward after it has taken the eyelet, as usual. The operation is repeated indefinitely, the punch descending after each eyelet is inserted and upset, and the presser rising to release the work while it is being fed and falling to clamp the work during the other parts of the operation.

I claim—

1. In an eyeleting-machine, the combination, substantially as described, with the anvil-carrying lever e', of the positively-operating lever h and the spring h^5, connected to and moving with the lever h, and also connected to the anvil-carrying lever, whereby, when the lever h is pushing the anvil-carrying lever, it is not required to overcome the tension of the spring, as set forth.

2. In the herein-described eyeleting-machine, the combination of the pivoted operating-lever h, having the arms h^2 h^3, the cam h^4, for operating said lever, the anvil-carrying lever e', and the spring h^5, connected to and moving with the arm h^3, and also connected to the anvil-carrying arm, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 5th day of October, A. D. 1881.

LORENZO D. HAWKINS.

Witnesses:
CHAS. B. SOUTHARD,
C. F. BROWN.