

P. Harlow.

Eyeletting Machine.

N^o 60000 *Fig. 1.*

Patented Nov. 27, 1866.

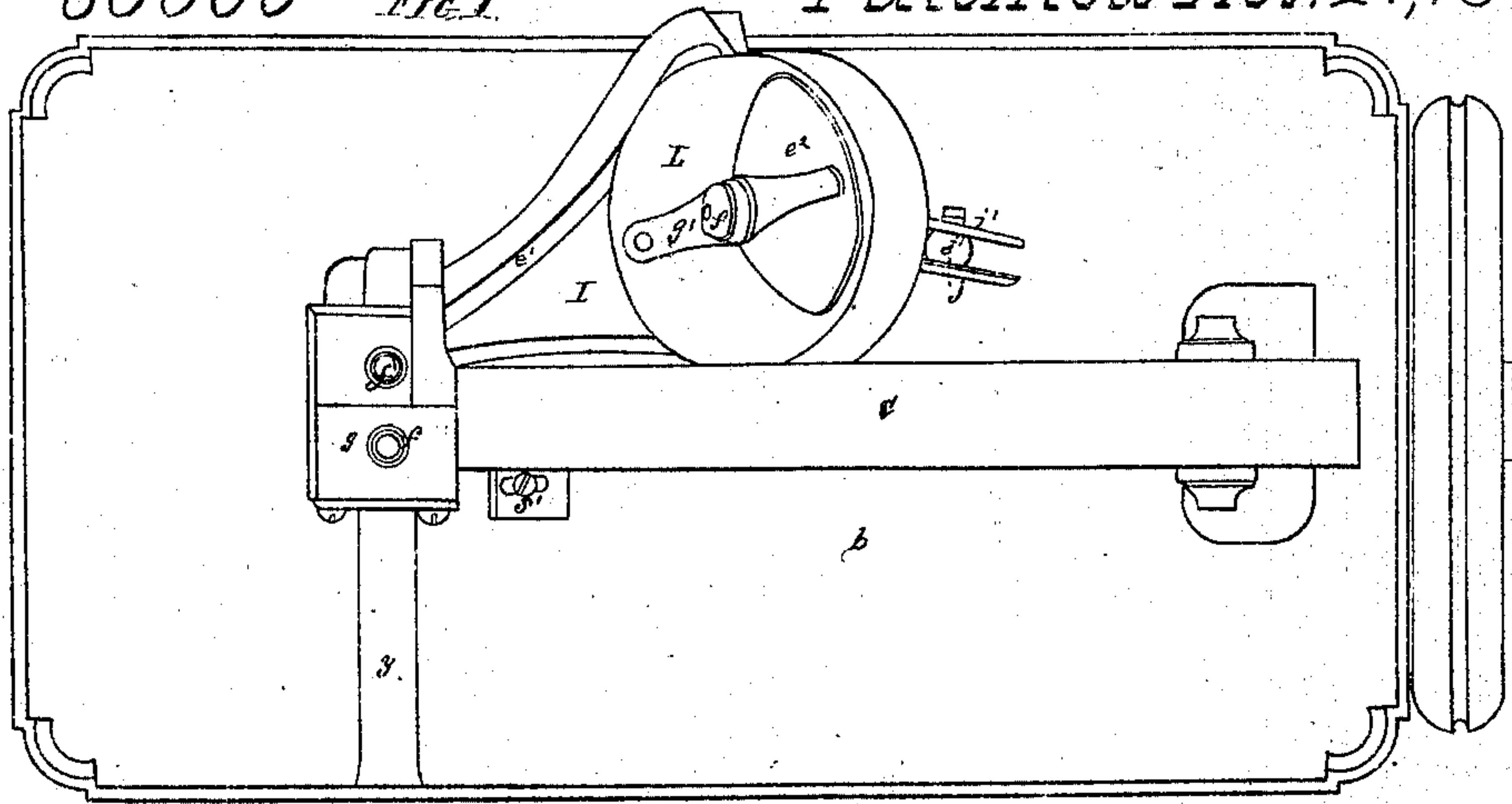
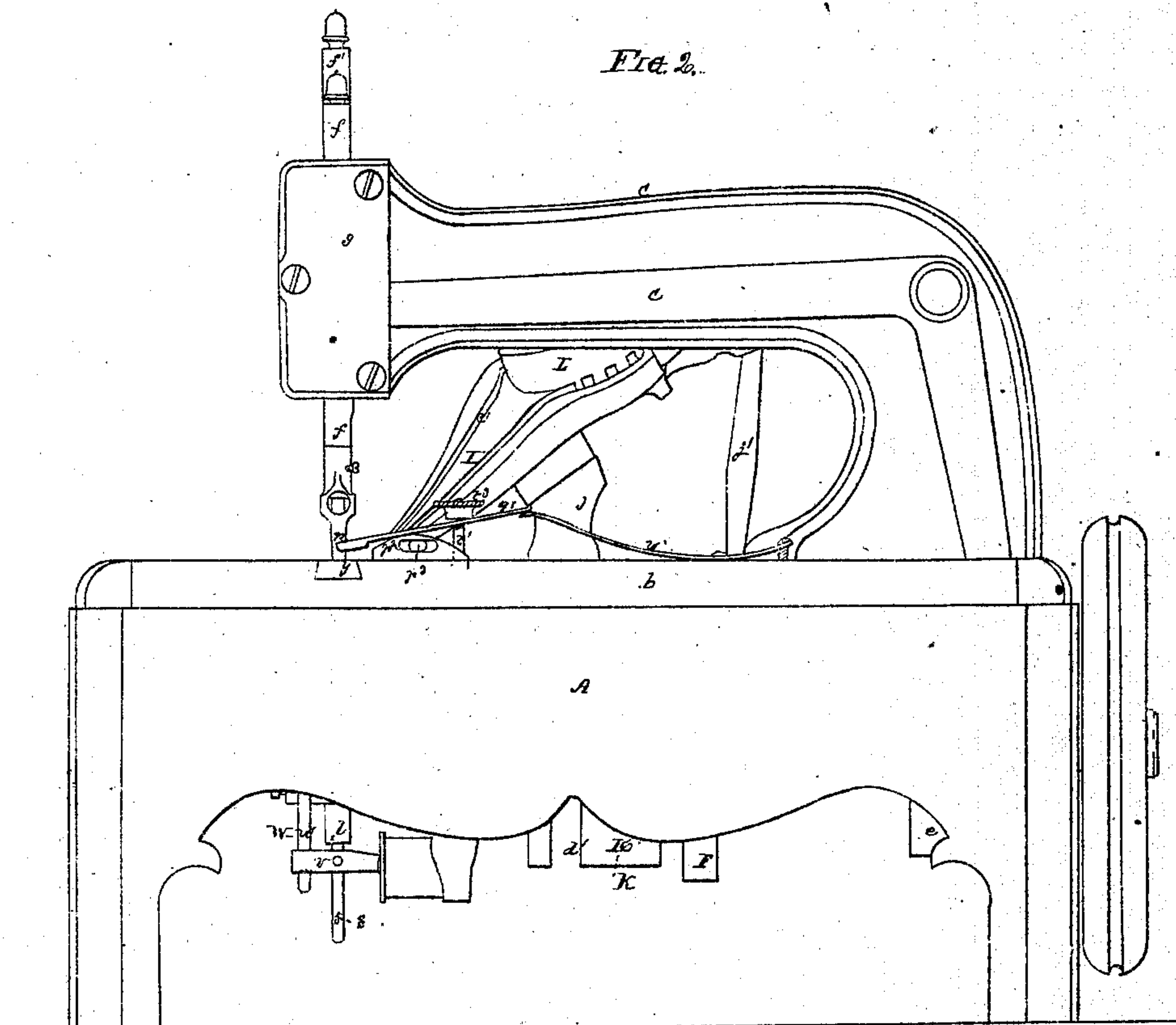


Fig. 2.



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Fig. 3 Patented Nov. 27, 1866.

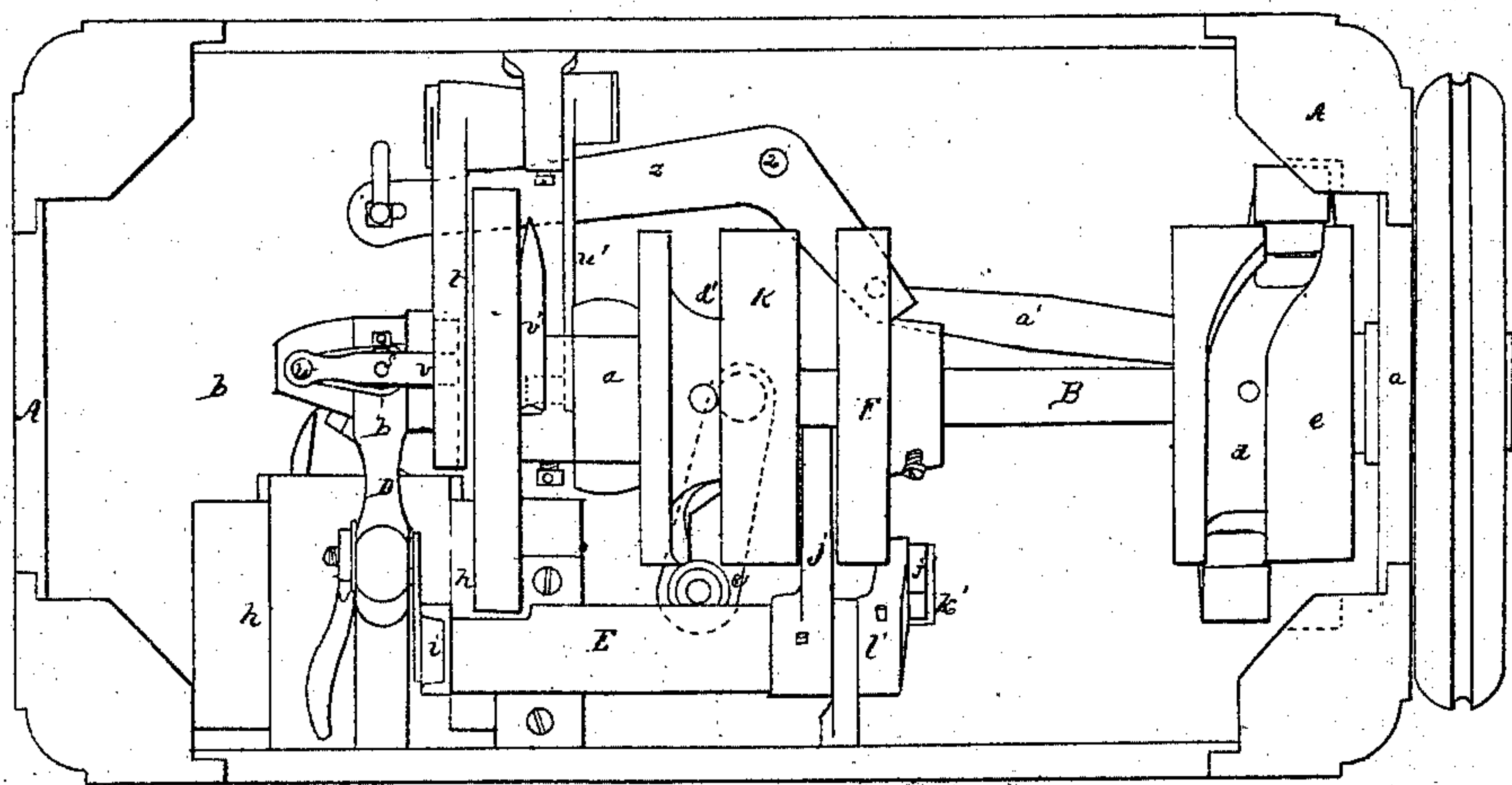
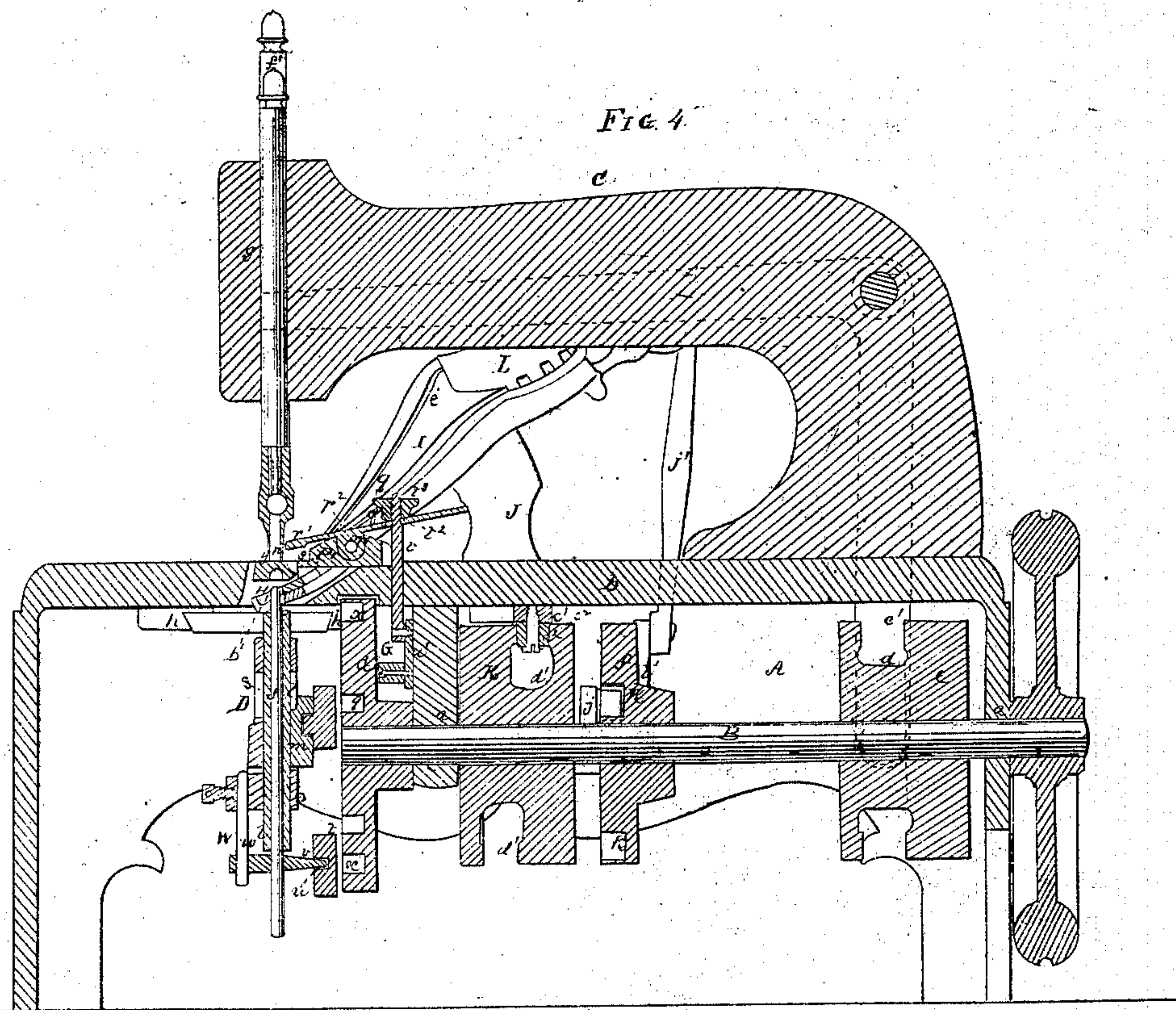


Fig. 4



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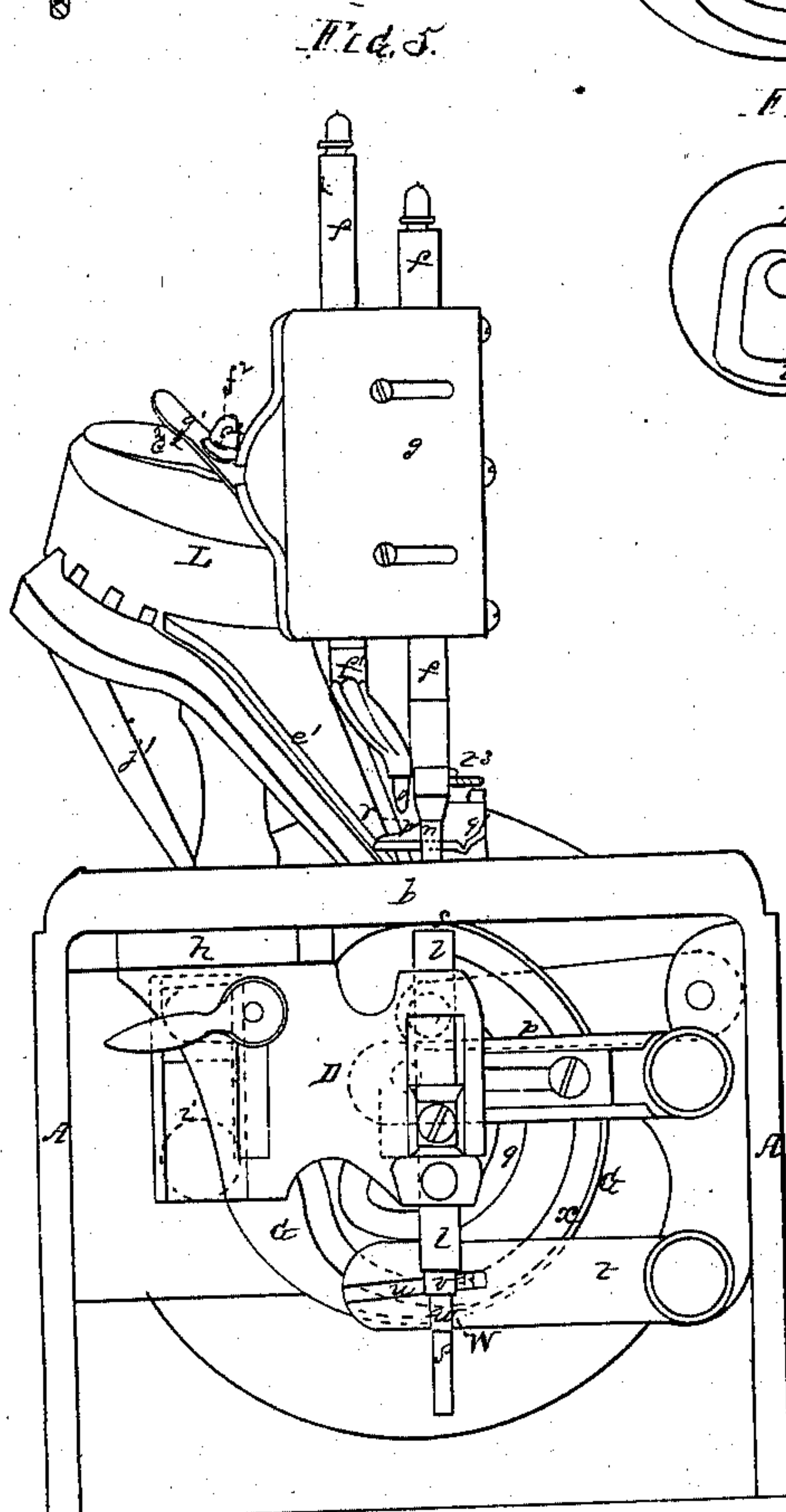
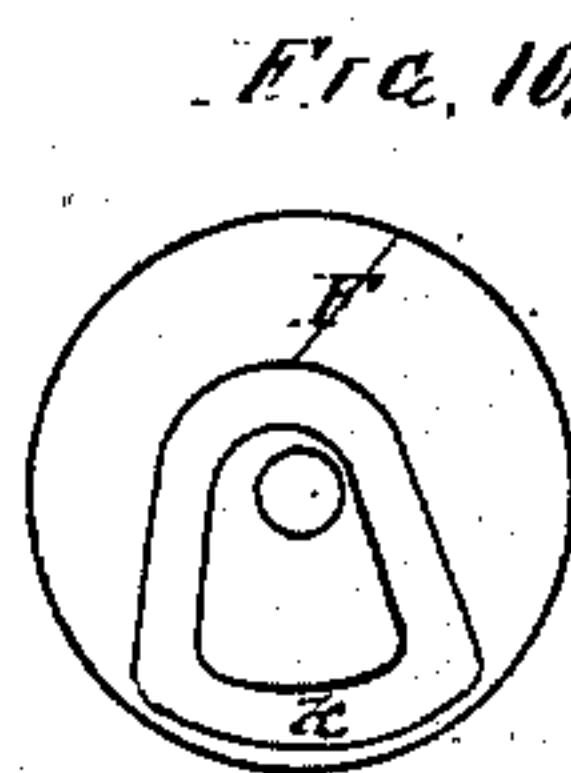
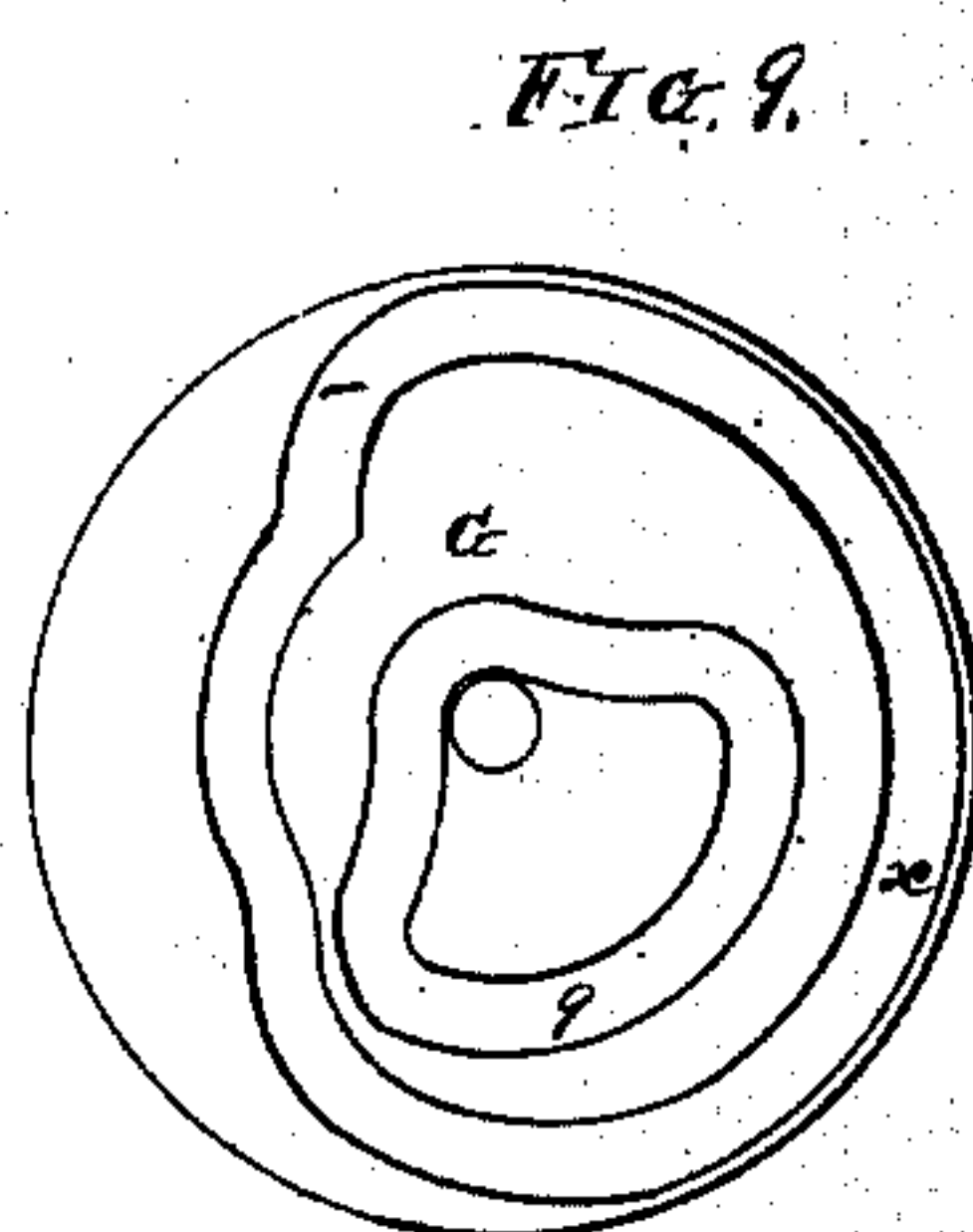
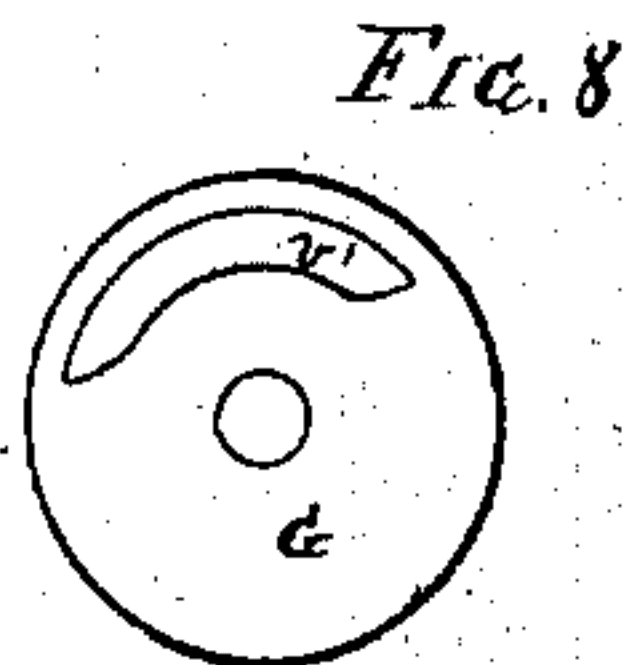
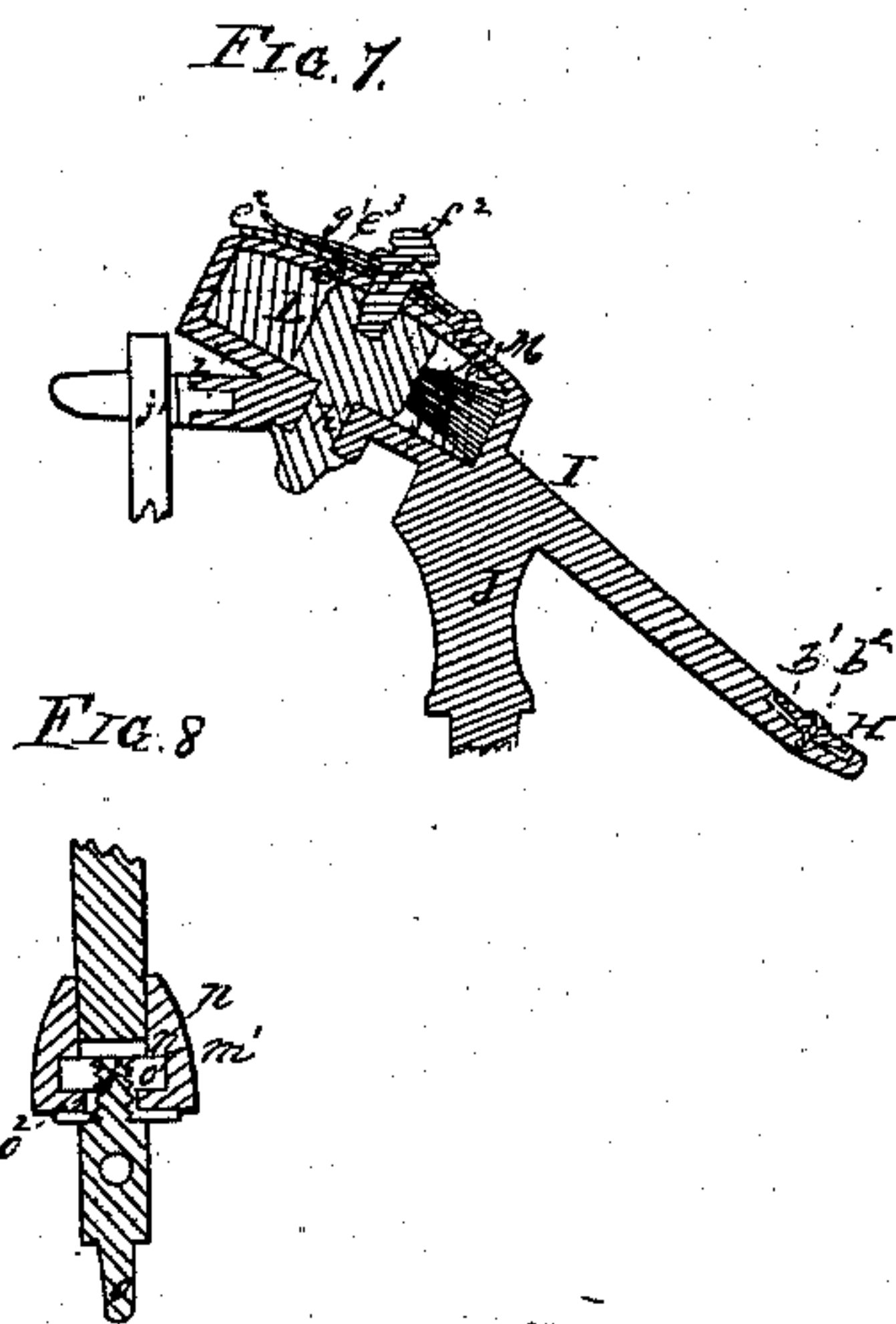
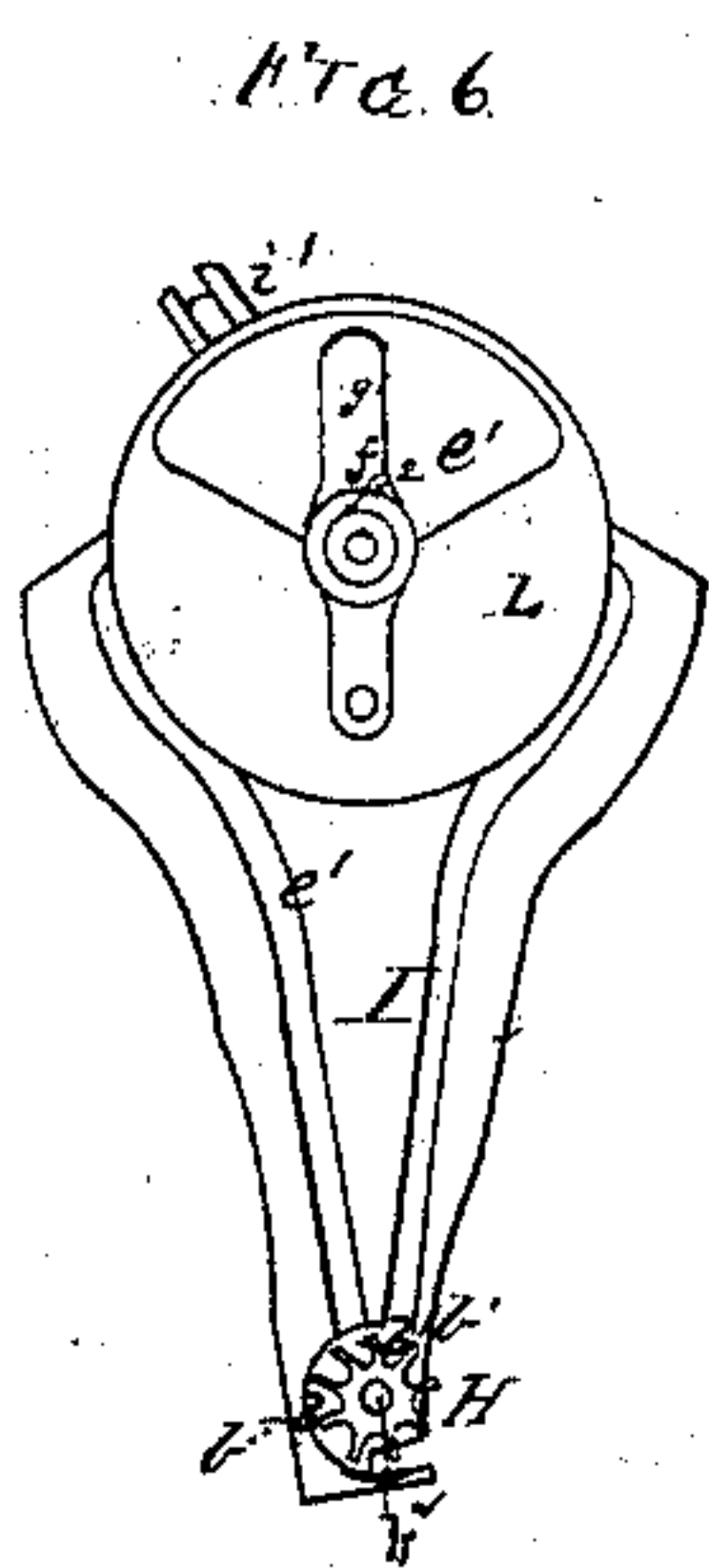
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IMPROVEMENT IN EYELETTING MACHINES.

PHILANDER HARLOW, OF HUDSON, MASSACHUSETTS.

Letters Patent No. 60,000, dated November 27, 1866.

SPECIFICATION.

Be it known that I, PHILANDER HARLOW, of Hudson, in the county of Middlesex, and State of Massachusetts, have invented a new and useful or improved Machine for Setting Eyelets in Leather or other material; and do hereby declare the following to be a full, clear, and exact description thereof, reference being to the accompanying drawings, making part of this specification, and which—

Figure 1 is a top view or plan, and

Figure 2 is a side elevation of the machine constructed in accordance with my invention.

Figure 3 is an under side view.

Figure 4, a vertical and longitudinal section, and

Figure 5, a front end view of the said machine.

Figure 6 is a plan, and

Figure 7, a section of the eyelet-hopper, or magazine, to be hereinafter described.

Figure 8 will be duly referred to.

Figures 9, 10, and 11 are face views of some of the grooved disks, the same being hereinafter described.

In the drawings above mentioned, A denotes the table or frame of the machine, it being suitably formed for containing and supporting the operative parts. The driving-shaft of the machine is shown at B, it being suitably supported in bearings, *a a*, projecting downward from the operating bed, *b*. A goose-neck, *c*, rises from one end of the bed, *b*, and supports on its opposite sides two bent levers, *c c'*, whose shorter arms extend into a cam-groove, *d*, formed in the periphery of a disk, *e*, secured to the driving-shaft, the groove *d* being of the requisite form to so actuate the levers, *c c'*, as to raise and depress their longer arms, and also two sliders, *f f'*, attached to the front ends of the levers, and working in bearings made in the head, *g*, of the goose-neck. The slider *f* carries the punch, *n*, and the slider *f'* the eyelet-depressing die, *o*, each of whose operations will be duly described. The mechanism for feeding the material along, and for setting the eyelet, may be thus described: A slider or carriage, D, is so applied to the under side of the bed-plate, *b*, by means of dovetailed guides, *h h*, as to be capable of slight reciprocating movements transversely of the machine, this movement being effected by a grooved arm, *i*, attached to the front end of a rocker-shaft, E, supported in brackets suitably applied to the frame of the machine (a stud from the side of the carriage, D, extending into the groove of the arm,) this rocker-shaft being actuated by a second arm, *j*, making part of it, and extending into an eccentric groove, *k*, formed in the front face of a disk, F, fixed to the driving-shaft, B. The sliding carriage D and the arm *i*, should have an adjustable connection, in order to vary their relative positions as circumstances may require. The sliding carriage, D, carries a tubular slider, *l*, (which plays in a recess, *m*, formed in the carriage,) the upper surface of this slider being properly formed for spreading or "setting" the eyelet in conjunction with the die, *o*; the slider or spreader, *l*, having a reciprocal vertical movement imparted to it by means of an arm, *p*, jointed to it and to the frame A, and which, in turn, is actuated by an eccentric groove, *q*, formed in the front face of a disk, G, secured to the driving-shaft, the connection between the slider *l* and arm *p* being a dovetailed groove and stud, as shown in the drawings. Furthermore, the slider *l* carries an eyelet receiver or carrier, *s*, which slides freely within it, and which also has reciprocating vertical movements imparted to it by means of a second arm or lever, *t*, which has a sunken recess, formed in it for receiving one end of a bar, *v*, applied to the receiver *s* by a set-screw, the opposite end of the bar *v* sliding upon a supporting rod or guide, *w*, depending from the sliding carriage, D, as shown in fig. 4 of the drawings. The lever *t* is actuated by an eccentric groove, *x*, formed in the disk G, and surrounding the groove *q*, a stud from the rear side of the lever *t*, entering the said groove, *x*.

The mechanism for supporting the leather or other material to be supplied with eyelets, while undergoing the process of having the hole punched in it, consists of a plate, *y*, sliding in a dovetailed groove formed in the upper surface of the operating bed, *b*, and which is operated by a bent lever, *z'*, applied to the under side of the bed *b*, and whose fulcrum is shown at *z'*, the lever *y* receiving its proper movements by the agency of a pitman, *a'*, connecting its rear extremity with the shorter arm of lever *c*. The mechanism for supplying the eyelets consists of a recessed wheel, H, (see figs. 6 and 7,) having its perimeter formed with a series of eyelet-receiving spaces, *b¹ b¹*, &c., and attached to the lower extremity of a vibratory arm or carriage, I, by a screw or bolt, *b²*, passing centrally through it, and screwed into the carriage, I, and so that it shall rotate freely thereon. The vibratory carriage is, in turn, supported on a standard, J, rising from the bed *b*, of the machine, a journal from this standard extending downward through the bed, and having an arm, *c¹*, applied to it, a stud or roller,

e^2 , from the extremity of this arm, extending into a cam-groove, d' , formed in the perimeter of a disk, k , applied to the driving-shaft, B. The revolutions of the disk k will impart a vibratory movement to the carriage I, upon its journal. The upper part of the carriage I has a hopper, L, formed upon it, for containing the eyelets, which are to be supplied to it promiscuously, a chute, e^1 , leading from the hopper to the recessed wheel, H, serving to conduct the eyelets thereto. This chute is to be so formed, with a horizontal trough and a vertical opening or slot, as to cause the eyelets to enter it and advance towards the wheel H, with their smaller ends upwards, the eyelets being agitated within the hopper L by a vibratory brush, M. The chute e^1 , in practice, is to be covered with a protecting plate. If considered desirable, an additional chute may be formed in the arm, or carriage, I, to render the supply of eyelets to the wheel H more certain, but in practice one will probably be found sufficient. The hopper has a revolving sectoral cover, e^2 , applied to its supply-throat, e^3 , by a turning pin, f^2 , a spring-latch, g^1 , applied to the upper side of the hopper, and having a stud upon its under side, to enter a hole in the cover e^2 , serving to retain the said cover in position when closed, but which will allow it, at the same time, to be opened. The supporting journal, h' , of the brush M, extends through the bottom of the hopper, and is jointed to a forked arm, i' , which receives between its prongs the upper extremity of a vibratory lever, j' , whose fulcrum is a recessed bearing, k' , made in the bed-plate, b , of the machine, the lever K being duly operated by an arm, l' , secured to the rear end of the driving-shaft. For the purpose of varying the relative distance of the depressing die from the punch, in order to increase or diminish the distance between the eyelets after being set in the leather, the slider f may have a foot or block, m' , applied to its lower extremity, in which a dovetailed channel, n' , is cut, to receive a corresponding shaped or dovetailed slider, o^1 , to which the depressing die is secured by a male screw, o^2 , cut upon it, or by any suitable device which will allow of its position being changed. The above-described adjusting mechanism is shown in cross-section, in fig. 8 of the drawings. The presser-foot for keeping the material to be supplied with eyelets down upon the punching-plate, y , is composed of a bar, q' , having a lateral extension, r^1 , to bear upon the material and press it down upon the plate, y , the fulcrum bearing of this bar being a convex projection, r^2 , extending upward from a sliding-plate, s^1 , so applied to the bed-plate b as to be capable of longitudinal adjustment with respect to the punch and its supporting plate, y . The stationary fulcrum pin connecting the bar q' to the projection r^1 , is shown at r^3 . The presser-foot, or its part, r^1 , is raised while the material is fed along, by means of a rod, t^1 , extending through a slot, t^2 , made in it, and which has a thumb-nut, t^3 , screwed upon its upper end, to bear upon the upper surface of the bar q' . The lower end of this rod is jointed to the free end of a rocker-arm, u' , the other end of which is jointed to the frame of the machine, the arm u' , (and with it the rod t^1), being depressed by the action of a wiper, v' , fixed upon the rear face of the disk, G, before referred to, and being elevated by the action of a plate-spring, w' , applied to the bed-plate, b , and extending under the rear end of the bar q' , such spring serving to keep the presser-foot down upon the material. The front end of the convex bearing, r^1 , which extends somewhat in rear of the path of movement of the punching-plate, y , is pointed, and serves as a gauge to guide the material while being operated upon.

In operating with the above-described machine, we will suppose it to be in the position as shown in the drawings, and the hopper to be supplied with a desirable quantity of eyelets. The leather, or other material, is to be laid upon the bed-plate, b , and the driving-shaft put in rotation. On revolution of the driving-shaft, the groove d , of the disk e , will so actuate the lever c as to depress the punch, while simultaneously with this action, the punch-supporting plate will be moved forward, and under the punch, by the action of the bent lever, z , and pitman, a' , operating with the lever, c , and the punch be forced through the leather, the presser-foot, during this operation, remaining down upon the leather. While this operation has been going on, the recessed eyelet wheel, H, attached to the vibratory carriage, I, has been moved forward into such a position, by its actuating mechanism before described, as to bring an eyelet contained in one of its recesses directly over the path of movement of the receiver, s , and the receiver moved upward within the tubular slider, l , and into the eyelet by the action of the eccentric groove, x , rocker-arm, t , and cross-bar, v . On continued revolution of the driving-shaft, the vibratory carriage, I, will be partially rotated upon its journal by the action of the cam-groove, k , and lever or arm, j , and moved rearward, and carry the recessed wheel away from its position with respect to the receiver s . In this rearward movement of the vibratory arm, I, that revolves the wheel H on its turn-pin sufficiently to bring the next contiguous recess into the proper position for carrying the eyelet over the receiver, as by referring to the model, it will be seen that this is caused by the teeth forming the boundaries of the recesses, $u u$, striking against the receiver while the rearward movement of the carriage is taking place, thus rendering the intermittent rotary motion automatic, or self-acting, and requiring no specific mechanism to accomplish it. The groove d' is of such a shape as to allow the recessed wheel to remain in its extreme rearward position while the tubular slider, l , and receiver are being forced upwards and rearwards, and the eyelet carried by them into the hole in the leather, which, by the previous revolution of the machine, was punched for its reception, which will be accomplished by the action of the eccentric groove, q , arm p , and dovetailed groove and stud before described, operating the slider to produce its vertical movement, and the carriage, D, operated by the rocker-shaft, E, and its mechanism before described, producing its rearward or transverse movement, the receiver, s , in the mean time serving to confine the eyelet in position upon the spreader or slider. As the driving-shaft, continuing to revolve the spreader by the action of the cam-groove upon the lever, c^1 , will be forced downward towards the setting die; and at the same time the receiver, s , will retreat from before it, and allow the eyelet to be spread at its upper part over upon the leather, and be "set" thereto. It will be seen that the receiver s , and surrounding sleeve or sheath, l , have several distinct and important functions. The nature of their construction and arrangement is such that they are each capable of horizontal and vertical reciprocating motion, as above explained. When the punch, n , is in the position shown in fig. 1, the receiver rod, s , has been pushed by its actuating mechanism out from the sheath, l , so as to be inserted through and hold one of the

eyelets contained in the wheel, H, and it is just underneath the punch, *n*, the slide-plate *y* intervening between them. Now, when the main shaft, B, is revolved, the intervening reciprocating plate, *y*, is moved back, and as soon as it is fairly out of the way, the upward vertical movement of the sheath, *l*, and receiver, *s*, begins. They move up towards the punch, *n*, which, as they advance, is proportionably withdrawn from the punched leather, or other material, until the projecting end of the receiving rod, which, it will be remembered, also carries the eyelet, as above mentioned, fits in and is inserted through the hole punched in the leather by the punch, *n*; at the same time the presser-foot, *r'*, is lifted from the leather. Everything is now in readiness for the feeding forward of the leather to the "setting" mechanism. Upon continuing the rotation of the driving-shaft, the horizontal motion of the sheath and receiver rod begins. By the arrangement of their actuating mechanism, as above explained, they are moved horizontally toward the setting die, the receiver rod, *s*, carrying with it the leather through which it is inserted, until it brings the hole formed therein by the punch, *n*, directly under the die, *o*. Here the horizontal motion of the sheath and receiver rod ceases, and their vertical movement again begins. The "setting" die, *o*, is now depressed by the action of its operative mechanism, and, as it approaches the leather, the receiver, *s*, is retracted therefrom, until the die takes the place formerly held by the receiver rod, being inserted through the punched leather and eyelet, which are now pressed firmly against the sheath, *l*, the top of which forms a die-plate, as before explained; and by the resistance of the latter against the pressure of the setting die, *o*, the eyelet is forced up through the punched hole and is "set" to the leather. The presser-foot, *r'*, at the same time comes down and presses firmly upon the leather, so that by the continued rotation of the shaft B, the die *o* is withdrawn from the eyelet-hole without difficulty, and the leather is ready to be again punched. It will be seen that the reciprocating motion of the sheath or slider, and receiver rod, is alternately horizontal and vertical, while in the latter movement they are actuated successively and, in a measure, independently of each other. By this arrangement I am enabled to use the receiver rod, *s*, not only to hold and centre the eyelet, but to feed the leather from the punch towards the "setting" die, and also to centre or to place the punched hole in its proper position in relation to the die, and to adjust the eyelet to the hole preparatory to its being "set" therein by the action of the die and matrix.

Having described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is as follows:

I. I claim the combination, with the "setting" die of an eyeletting machine, of an eyelet receiving rod, and surrounding sheath or die-plate, and mechanism for actuating the same, under the arrangement and for operation as herein described, so that the said receiver rod shall constitute the means whereby the eyelet is adjusted to the punched leather, and the leather fed forward to the "setting" die, substantially as set forth.

II. In an eyeletting machine, I claim the combination, with the eyelet receiver rod and surrounding sheath or die-plate, as described, of the "setting" die and punch forming the eyelet-holes, under such an arrangement that, by the action of said punch, receiver rod, sheath, and "setting" die, the leather or other material operated on shall be alternately punched, fed forward to the setting die, and stamped with eyelets, substantially as herein shown and described.

III. In an eyeletting machine as described, I claim the combination, with the punch for forming eyelet-holes, of a reciprocating or sliding plate for sustaining the leather under the action of said punch, arranged and operating substantially in the manner and for the purposes set forth.

IV. I claim the adjustable presser-foot and its actuating mechanism, as herein described, for producing an intermittent pressure upon the leather or other material operated on by the punch and eyelet "setting" die, substantially as and for the purposes set forth.

V. I claim the mechanism for feeding the eyelet, as herein described, the same consisting of a hopper and vibratory arm provided with one or more chutes for conducting and holding the eyelets, and a wheel or disk, in the periphery of which, recesses are formed for the reception of the said eyelets, the whole being combined and operating substantially in the manner shown and specified.

VI. I claim the combination of the above-described eyelet-feeding mechanism with the eyelet receiver rod and surrounding sheath, under such an arrangement that, by the motion of said vibratory arm, the eyelets held in the recessed wheel may be fed to the said receiver rod, substantially as herein shown and described.

VII. I claim the combination, in an eyeletting machine, of mechanism for punching, feeding, and holding the material operated on, and for feeding and "setting" the eyelets to the same, under the arrangement, and for operation substantially as herein shown and set forth.

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