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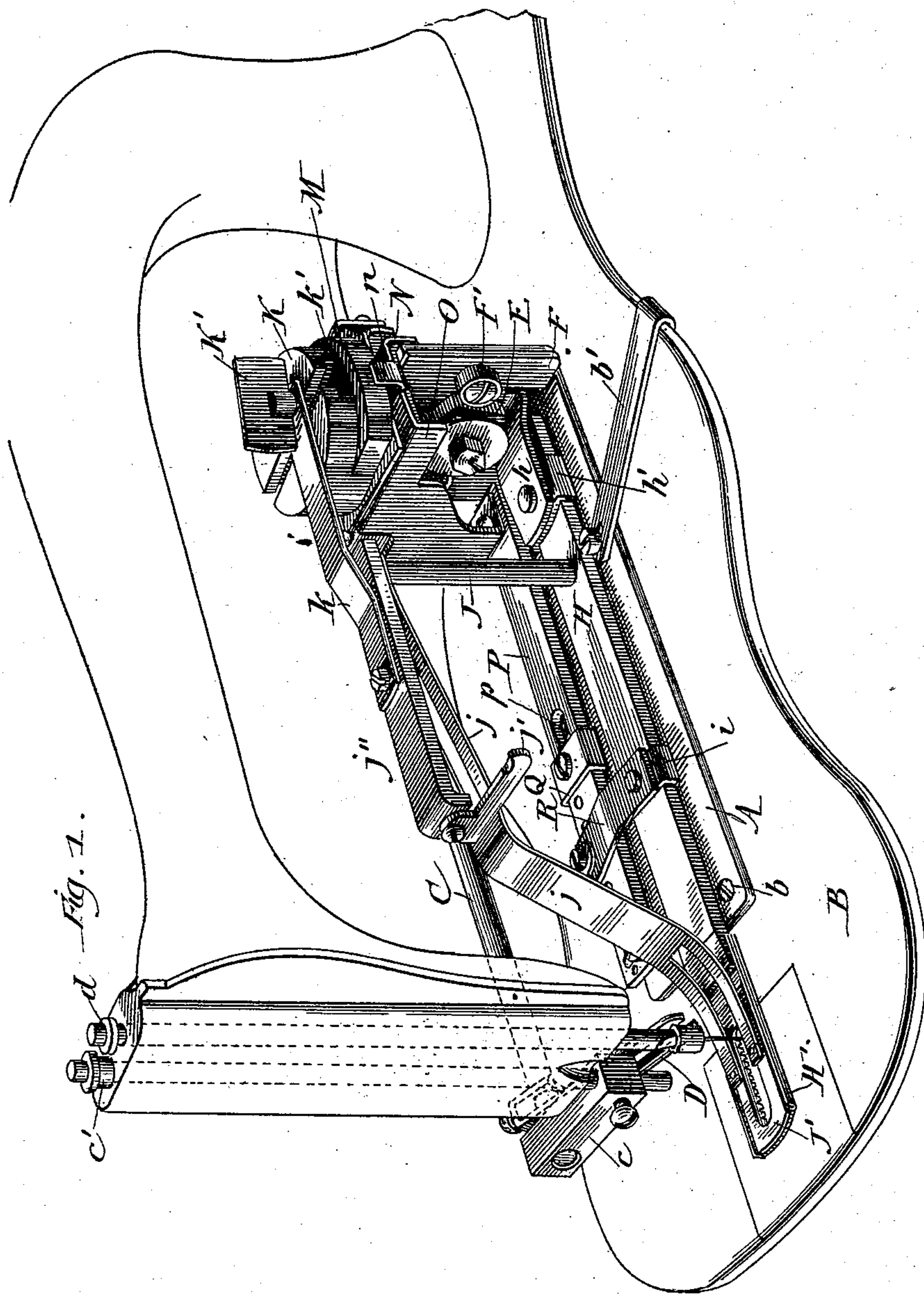
4 Sheets—Sheet 1.

J. W. BLODGETT.

BUTTONHOLE ATTACHMENT FOR SEWING MACHINES.

No. 490,735.

Patented Jan. 31, 1893.



Witnesses:

John L. Jackson
W. Rossiter

Inventor:

Inventor:
John W. Blodgett
By Bond & Adams
attys

(No Model.)

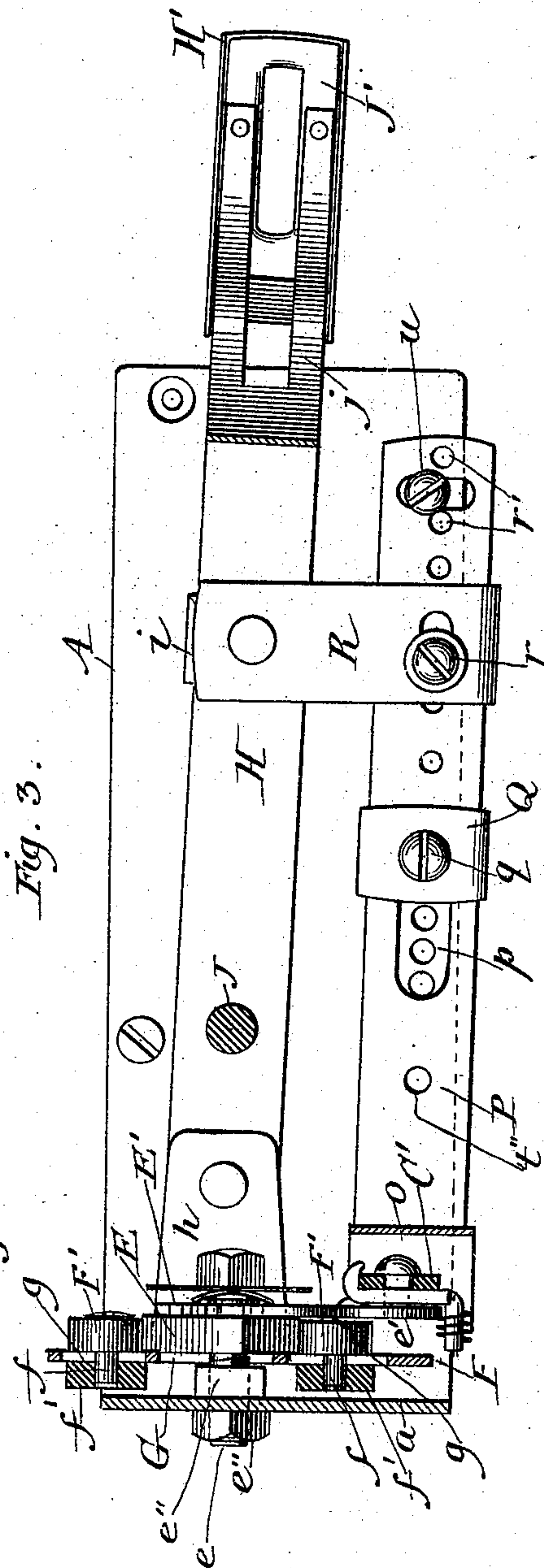
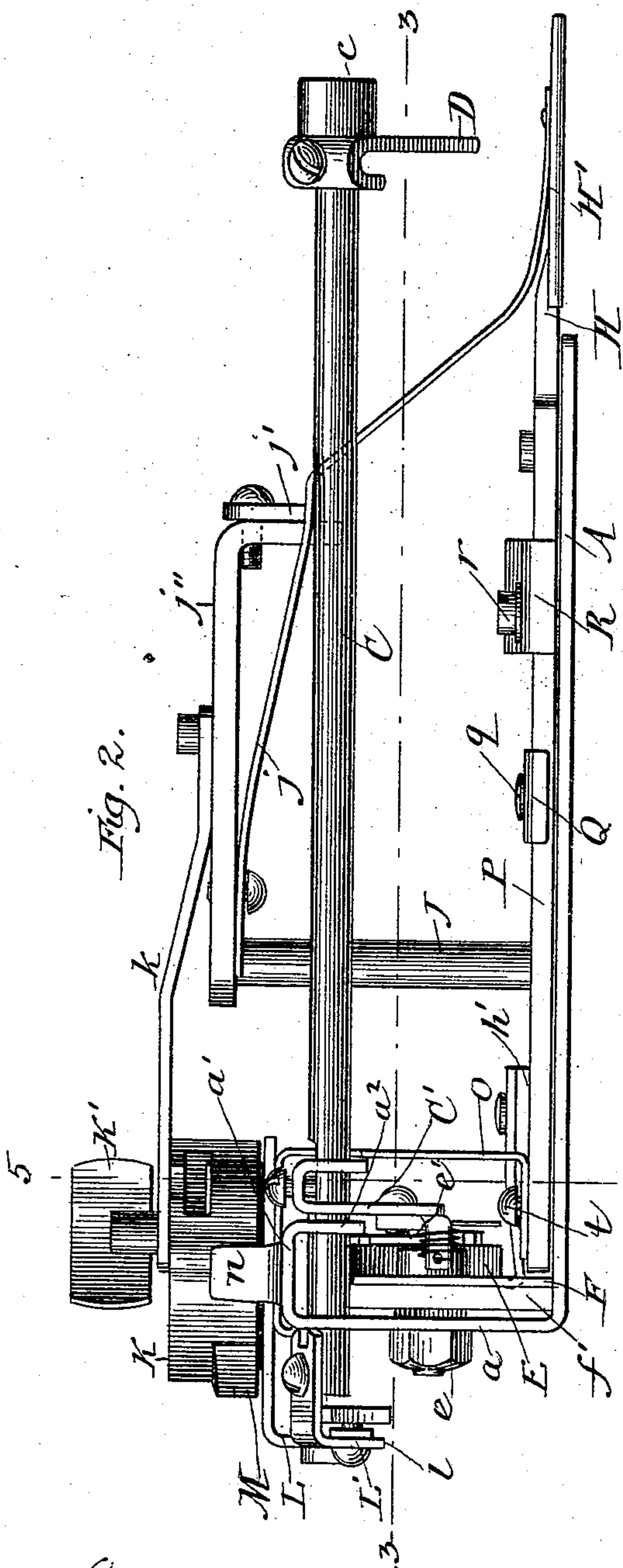
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Witnesses:

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4 Sheets—Sheet 3.

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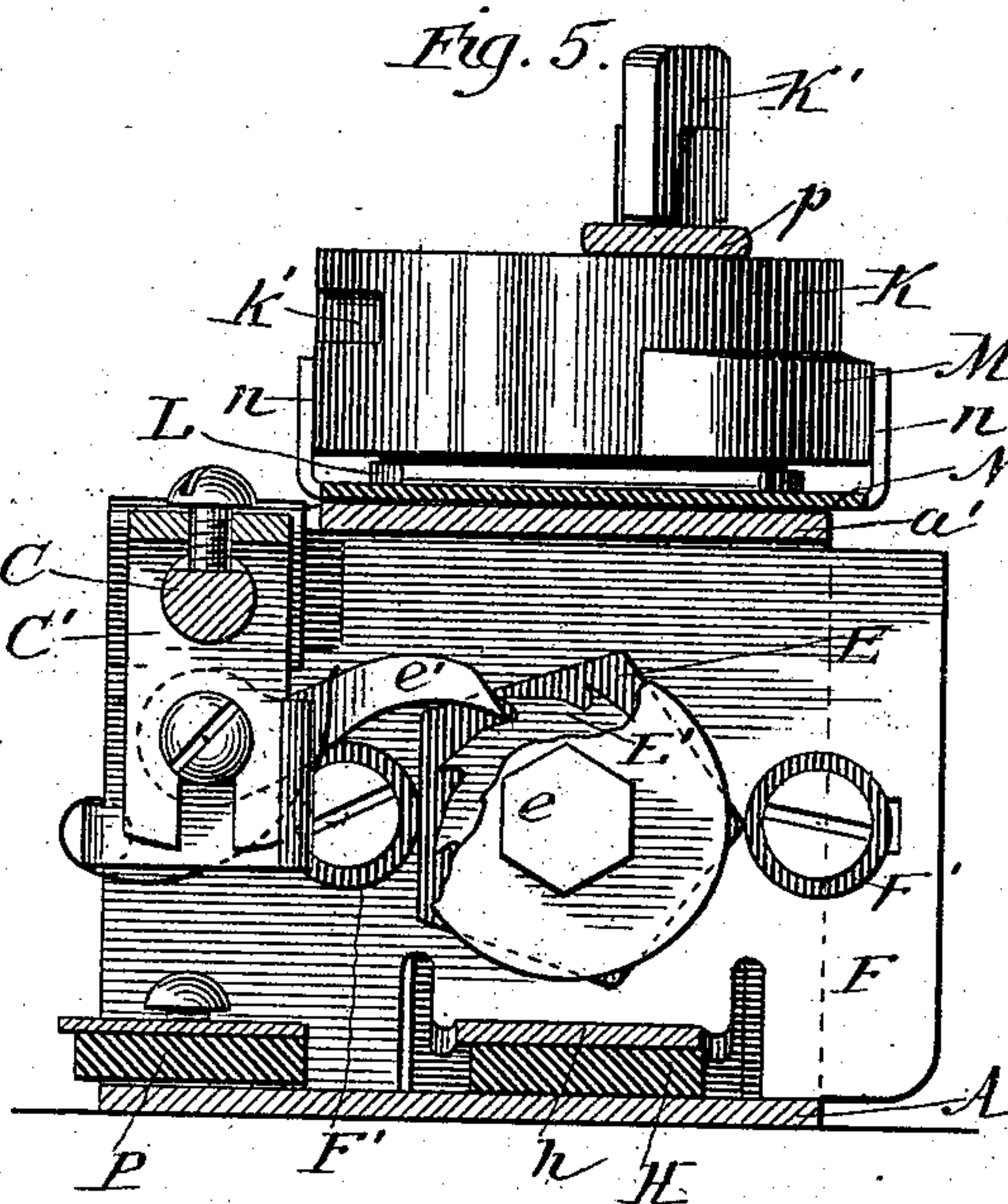
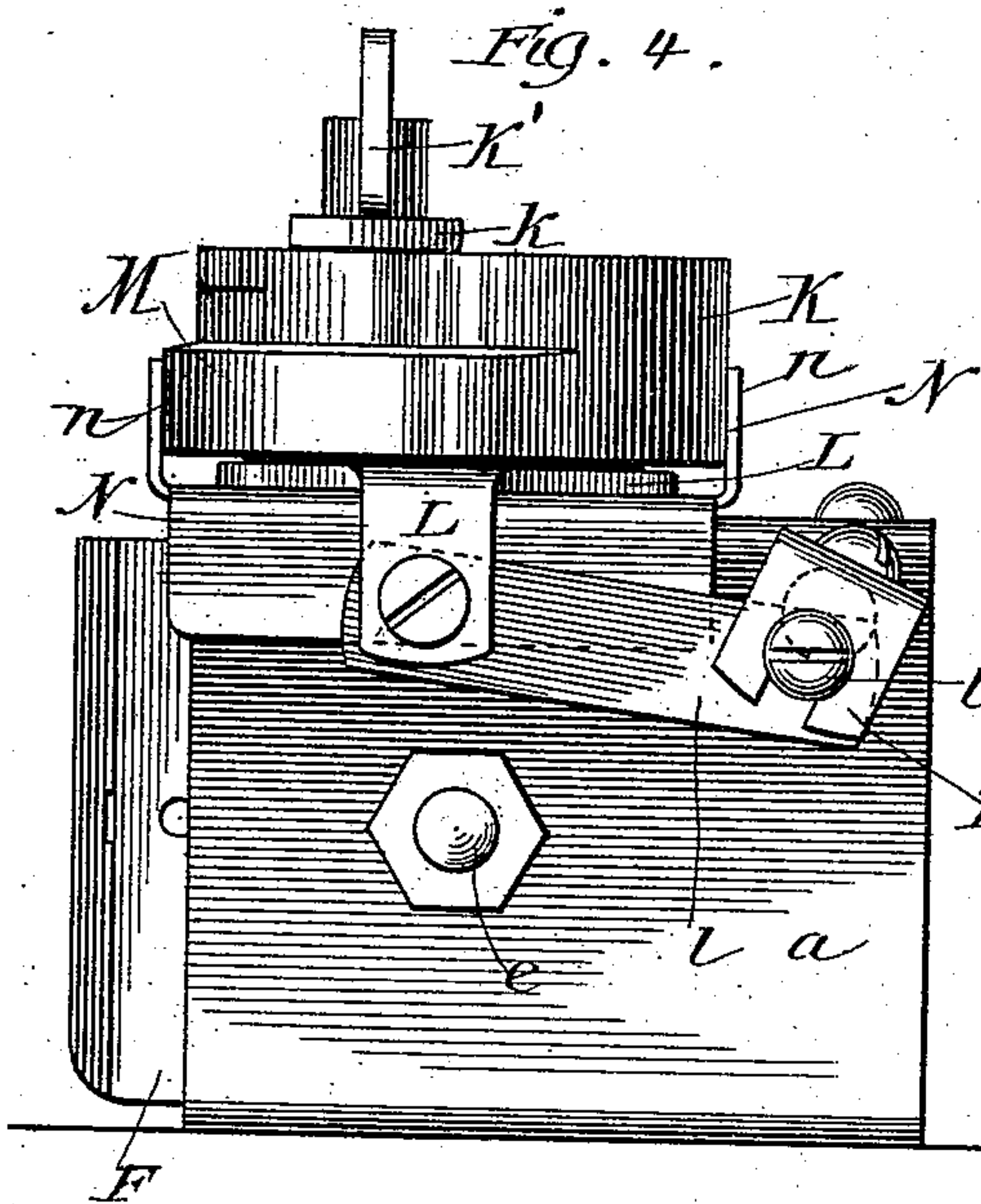


Fig. 6.

Fig. 8.

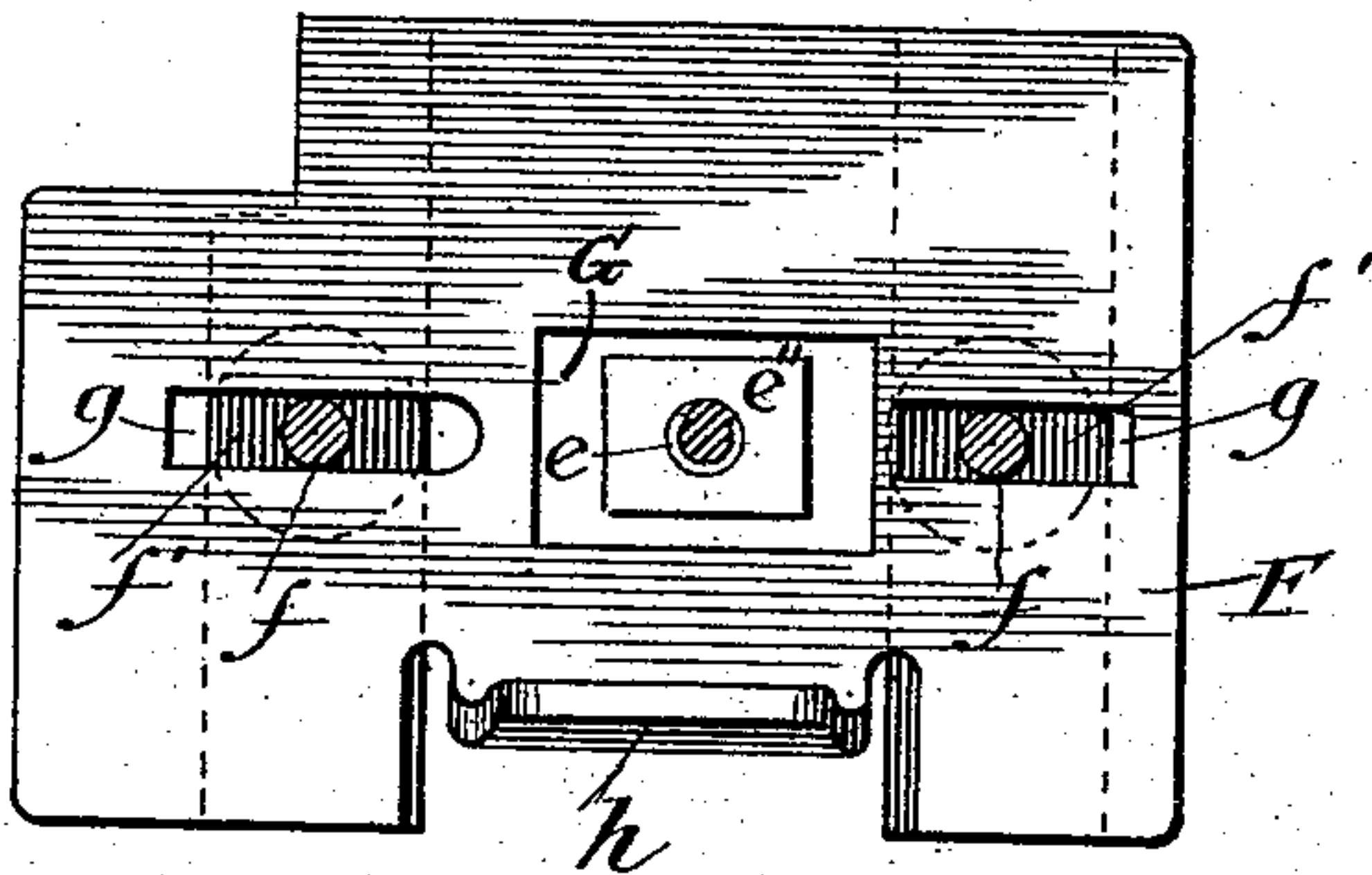
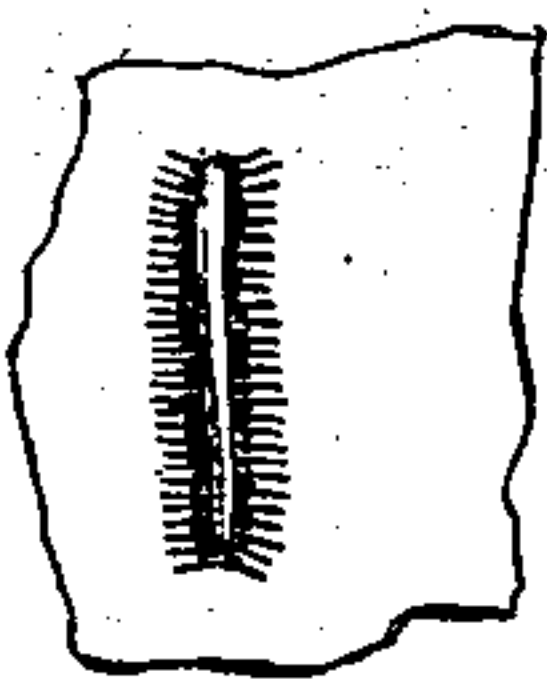


Fig. 9.

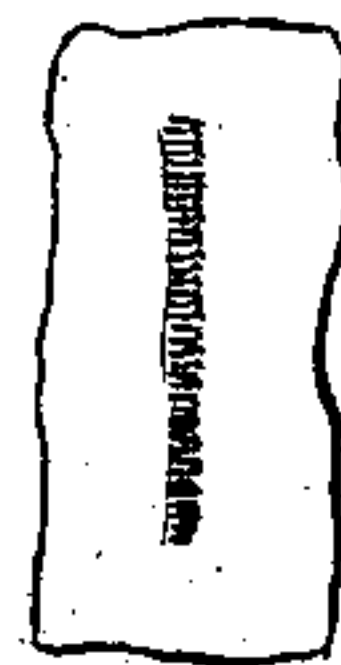
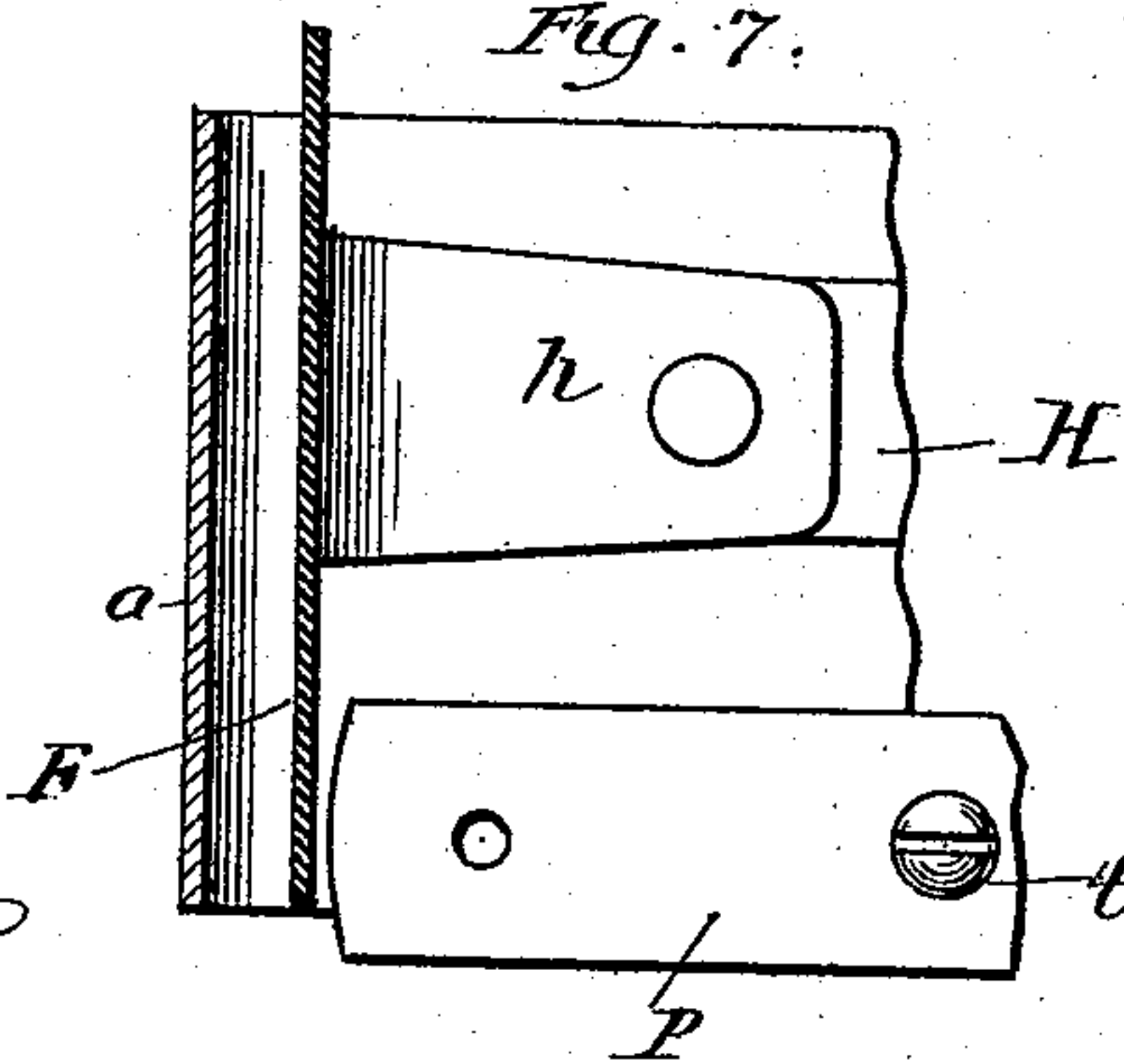


Fig. 7.



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4 Sheets—Sheet 4.

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Fig. 10.

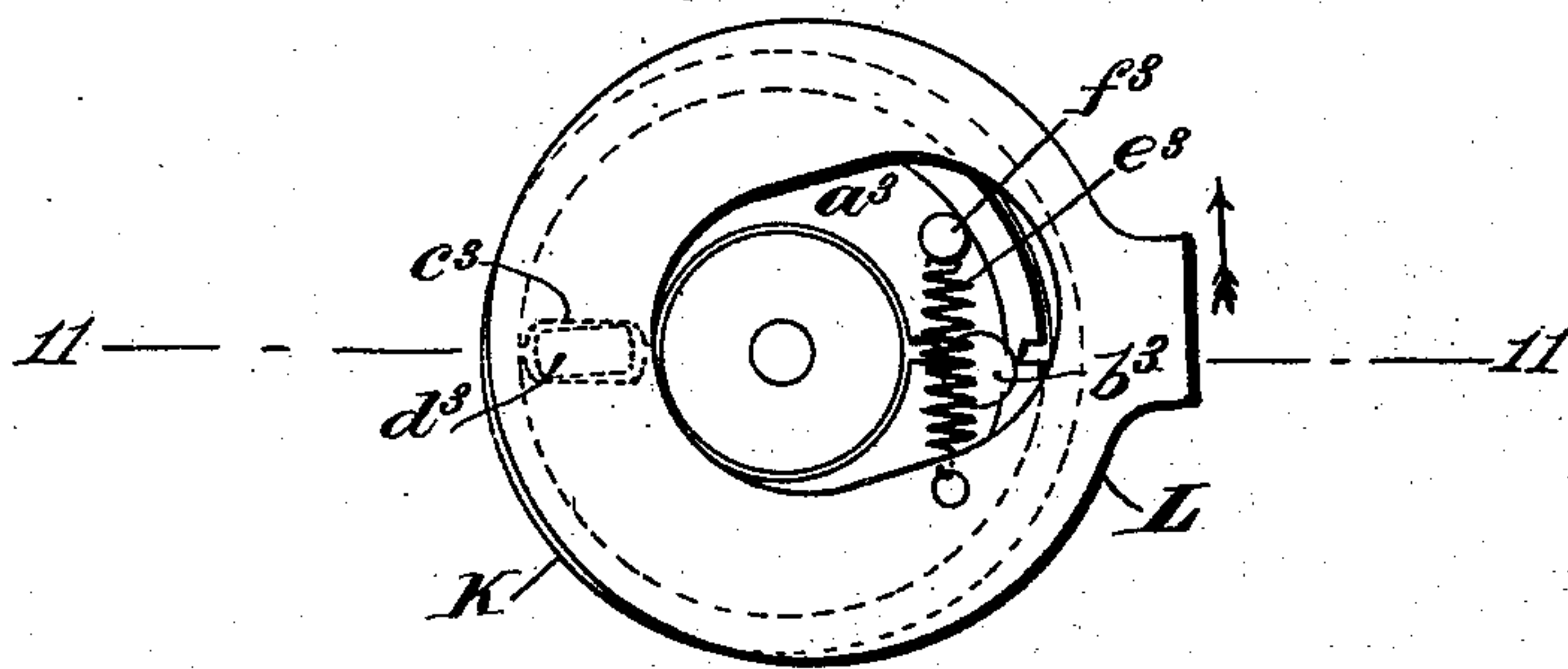


Fig. 11.

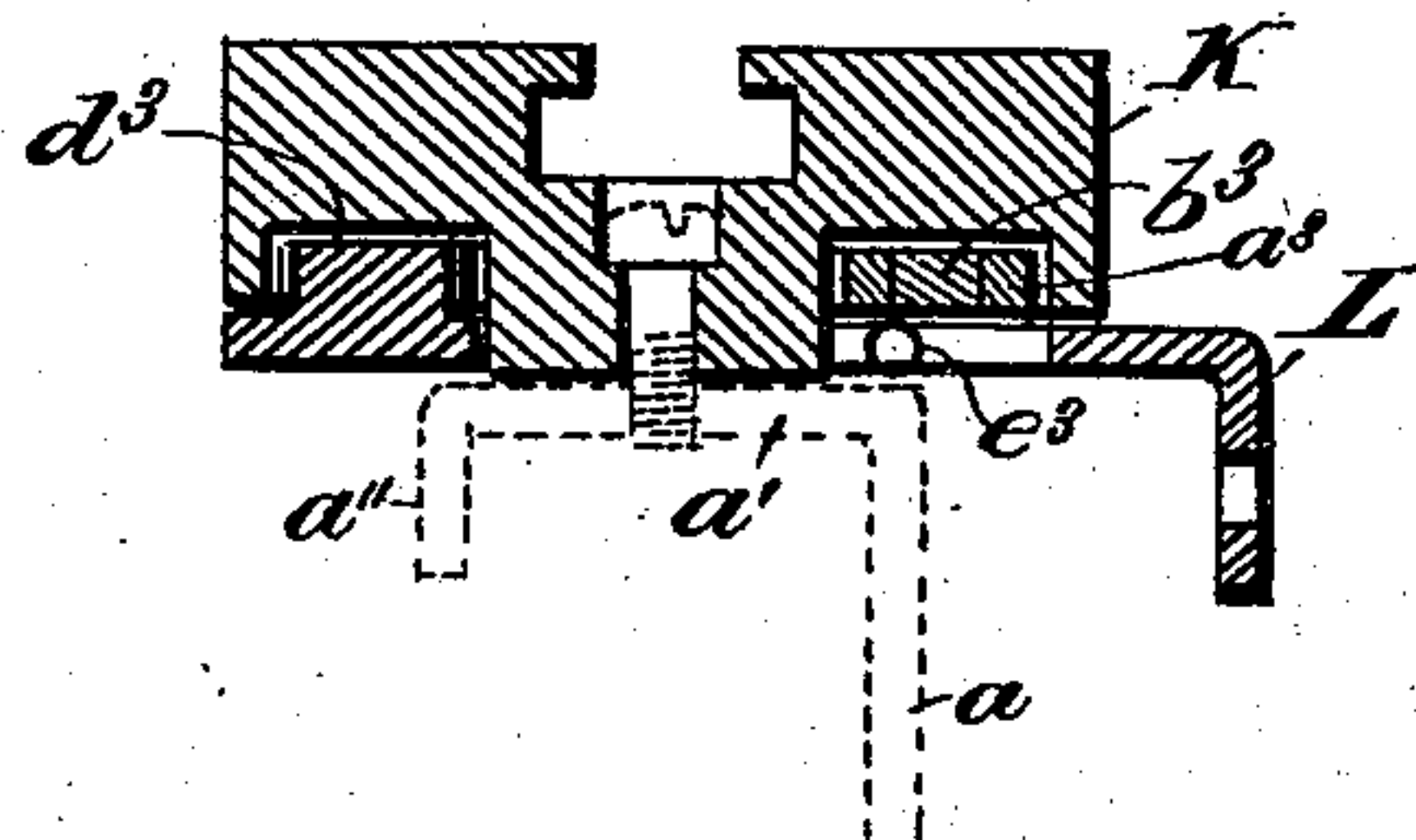
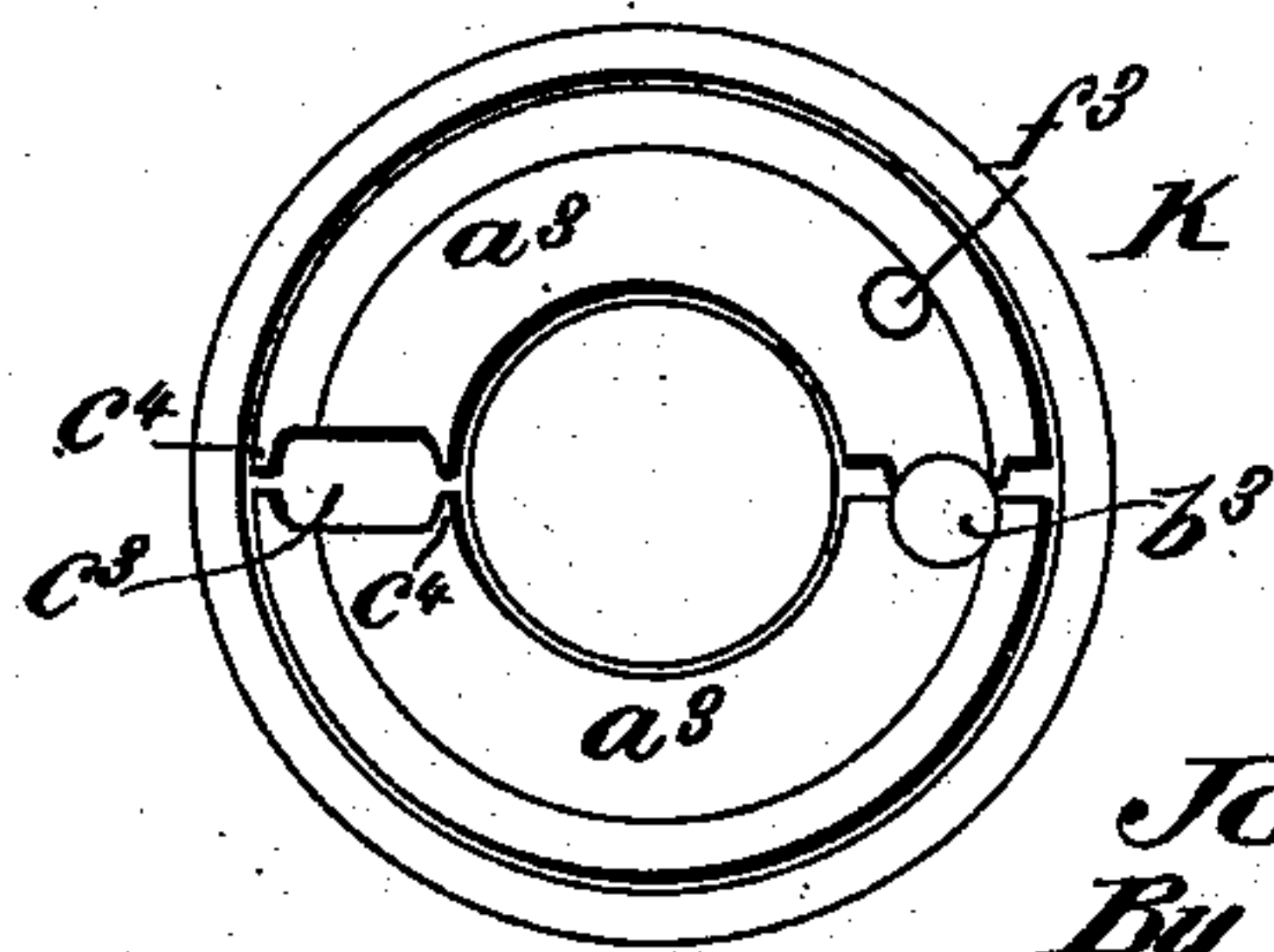


Fig. 12.



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Inventor:
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By *Bond & Adams*

Attys.

UNITED STATES PATENT OFFICE.

JOHN W. BLODGETT, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND
THE ABBOTT MACHINE COMPANY, OF SAME PLACE.

BUTTONHOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 490,735, dated January 31, 1893.

Application filed April 13, 1891. Serial No. 388,661. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. BLODGETT, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Buttonhole Attachments for Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view showing the attachment in position for work; Fig. 2 is a side elevation; Fig. 3 is a horizontal section on line 3, 3, of Fig. 2; Fig. 4 is an end elevation; Fig. 5 is a vertical section on line 5, 5, of Fig. 2; Fig. 6 is a detail being an elevation of the sliding-plate; Fig. 7 is a detail showing a modification in which the device is used as a tacking attachment; Fig. 8 is a diagram showing the form of button-hole made by my attachment; Fig. 9 is a diagram for showing the form of tack made by my attachment. Fig. 10 is a detail bottom plan view of the rotating clutch head or shell. Fig. 11, is a sectional view of the same taken on the line 11—11 of Fig. 10—and Fig. 12, is a bottom plan view of the clutch head or shell omitting the actuating lever.

This invention relates to sewing machine attachments for making button-holes.

The objects of the present invention are to provide an improved construction whereby the end of the operating shaft is supported; to provide improved devices for operating the presser-plate, and to provide other means hereinafter more particularly specified. I accomplish these objects as illustrated in the drawings and as hereinafter described.

That which I claim as new will be pointed out in the claims.

Similar letters refer to similar parts throughout the several views.

The main plate A of the attachment is secured to the cloth plate B of the machine by a screw *b*, and an attaching strap *b'*, as shown in Fig. 1. The plate A consists of a horizontal portion which is attached to the cloth plate, a vertical portion *a*, and a horizontal portion *a'* which on one side has a depending portion *a²*, as shown in Fig. 2. The operat-

ing rock-shaft C is supported at its rear end in the vertical portions *a*, *a²*, as shown in Fig. 2. At its forward end this shaft C is supported in a bearing block *c*. This bearing block *c* is attached to the presser bar *c'* of the sewing machine by a setscrew, as shown in Fig. 1.

Upon the outer end of the shaft C is secured a forked arm D which is arranged to engage with a pin or other projection upon the needle bar *d*. By means of this forked arm D the shaft C is rocked by the needle bar *d*.

Upon the vertical portion *a* of the plate A is secured a pivot-bolt *e* upon which bolt is mounted a cam-wheel E. The pivot-bolt *e* is secured to the vertical portion *a* by means of two set-nuts *e''*, one upon each side of the vertical portion *a*. The cam-wheel E, as shown in Fig. 5, is a five-sided wheel. A ratchet-wheel E' is secured to or made integral with the cam-wheel E. This ratchet-wheel is provided with ten teeth in the construction shown for purposes hereinafter set forth. This ratchet-wheel E' is rotated one tooth at a time by a spring-pawl *e'* which is mounted upon an arm C' secured to the shaft C, as shown in Figs. 2 and 5.

A sliding-plate F is placed between the vertical portion *a* and the cam-wheel E, as shown in Figs. 2 and 3. Upon the plate F are mounted two anti-friction rollers F', as best shown in Figs. 3 and 5. I mount these anti-friction rollers upon screw-bolts *f* which are secured in plates *f'*. These bolts *f* pass through slots *g* in the plate F so that the plates *f'* and bolts *f* can be adjusted on the plate F for purposes which will hereinafter appear.

Upon each downward movement of the arm D, the spring-pawl *e'* is drawn backwardly the distance of one tooth in the ratchet-wheel E' and upon each upward stroke of the arm D the pawl *e'* will move the ratchet-wheel E' forward one notch.

The wheel E is so arranged between the rollers F' that when one side of the wheel engages with one roller F', one of the projecting corners will engage with the other roller F'.

When the ratchet-wheel E' is moved one tooth the cam-wheel E will be turned so as to bring the side against one roller and the corner against the other roller thereby causing the plate F to slide. Upon moving the ratchet-wheel E' the interval of another tooth, the plate F will be caused to slide in the opposite direction. The plate F is provided with a slot G, as shown in Fig. 6, through which the bolt *e* passes so as to permit the plate F to slide.

The sliding plate F is provided with a horizontal extension *h*, as shown in Figs. 1, 3, and 6. A swinging lever H passes through a guide *h'* which is pivotally connected with the extension *h*, as shown in Fig. 1. The outer end of the swinging lever H is provided with a cloth plate H', as shown in Figs. 1 and 3. Near its middle portion the lever H passes through a guide *i* which is secured upon an arm R. A post J is secured upon the lever H near its rear end, as shown in Fig. 1. To the upper end of this post is secured a spring lever *j* which at its outer end is provided with a presser plate J', which engages with the cloth plate H'. This cloth plate H' and presser plate J' are provided with an elongated hole which is approximately the form of a button hole. The cloth in which the button hole is to be worked, is inserted between the cloth plate H' and presser plate J' with the button hole at the opening in these plates H' and J'. The presser plate J' and lever *j* are pressed down by a cam-lever *j'*, as best shown in Fig. 1.

The sliding plate F causes the lever H to swing to the right and left alternately upon each stroke of the needle, thereby causing the needle to make the stitches alternately through the cloth and through the button-hole. The lever H, and the spring-lever *j* are caused to slide longitudinally by a pitman *k* which is attached to a bar *j''* secured upon the post J to which, in the construction shown, the spring-lever *j* and cam-lever *j'* are secured. A pitman *k* is pivotally connected with the bar *j''* at one end and at its other is pivotally connected with a rotating clutch head or shell K which is intermittently turned or rotated as hereinafter explained. The pitman *k* is pivotally attached to the clutch head or shell by means of a thumb screw K' attached to a suitable clamping device in the clutch head or shell so that the distance of the pivotal point of the pitman from the center of the clutch head or shell can be adjusted as may be necessary.

The clutch head or shell K is journaled on the horizontal portion *a'* of the plate A and within an annular recess in the lower side of the clutch head or shell is arranged a pair of segments *a³* one of which is provided at one end with a pin *b³* fitting into a recess in the adjoining end of the other segment as in Fig. 12. The opposite ends of the segments *a³* are provided with a recess or opening *c³* which

does not extend across the entire width of the segments thus leaving a projection *c⁴* at each end. A lever L is arranged beneath the clutch head or shell K and is provided with an oblong pin or stud *d³* which projects into the recess or opening *c³*. A spring *e³* is attached at one end to the lever L and at the opposite end to a pin *f³* secured to one of the segments *a³*. When the lever L is moved in the direction of the arrow Fig. 10, the oblong pin or stud *d³* in the recess or opening *c³* will force the ends of the segments apart, thereby pressing the exterior faces of the segments *a³* against and into clutching contact with the interior of the clutch head or shell for the purpose of causing the latter to rotate with the segments and lever L. The lever may be rotated in the opposite direction from that indicated by the arrow in Fig. 10, without rotating the clutch head or shell. In consequence of this when the lever L is vibrated or oscillated an intermittent rotary motion is imparted to the clutch head or shell for the purpose of actuating the pitman *k*.

The lever L is connected by a link *l* with an arm L' of the rock shaft C. This arm L' is slotted so that the pivot screw *l'* of the link *l* can be adjusted therein to cause the lever to move a greater or less distance at each stroke of the needle bar *d*.

The clutch devices are constructed as described and shown in the Letters Patent No. 432,473 issued to me July 15, 1890.

Upon the downward stroke of the needle-bar *d* the link *l* and lever L are drawn toward the shaft C, the clutch being disengaged upon that stroke. Upon the upward stroke of the needle-bar, the link *l* and lever L will be moved in the opposite direction and the clutch engaging with the shell K at this time will cause the shell K to be rotated partially. By adjusting the screw *l'* on the arm L', the distance to which the lever L and shell K will be moved can be varied, thereby varying the distance through which the pitman *k* will be moved upon each stroke of the needle, and by adjusting the pivot-bolt K' in the groove *k'*, the length of movement of the pitman *k* on each rotation of the shell K can be adjusted. By means of these two adjustments the length of the button-hole and the distance apart of the stitches can be varied, as may be necessary.

The shell K is provided with a switch cam M. A sliding plate N is mounted upon the upper vertical portion *a'* of the plate and provided with arms *n* which engage with the shell K and switch cam M. An arm O depends from the sliding plate N and is secured to a lever P by a screw *t*, as shown in Figs. 1 and 2.

The lever P at its middle portion is provided with a slot *p* through which passes a screw *q*. A guide-plate Q is secured to the plate A by the screw *q*, the plate A being provided with a number of adjusting holes for

the screw *q*. The lever *P* swings upon the guide *Q* as a center and the slot *p* permits the guide to be adjusted longitudinally upon the lever *P* for purposes which will hereinafter appear.

The forward end of the lever *P* is provided with a number of adjusting holes *r'* adapted to receive a screw *r*. An arm *R* is pivotally connected with the lever *P* by the screw *r* it being provided with an elongated slot through which the screw *r* passes. The arm *R* is pivotally secured to the lever *H* as best shown in Fig. 3.

The switch cam *M* during one half of the rotation of the shell *K* will hold the sliding plate *N* in the position shown in Fig. 4. During this time the stitches are being made along the edge of the button-hole. When the needle arrives at the end of the button-hole the switch cam *M*, causes the plate *N* to slide. The sliding of the plate *N* will cause the lever *P* to be swung by the arm *O*. This will cause the arm *R* to swing the lever *H* to the left from the position shown in Fig. 3, thereby causing the stitches to be formed on the opposite edge of the button-hole. When the stitches have been formed along the second edge of the button hole and the needle has arrived at the end from which the stitching was commenced, the switch cam *M* will cause the plate *N* to return to the position shown in Fig. 4, in readiness to commence a second button hole.

By adjusting the pivot screw *q* and arm *R*, the distance which the lever *H* is moved sideways by the switch cam *M* can be varied, as may be necessary. The arm *R* is slotted to receive the screw *r* so that the arm will not be bound by the movements of the lever *H*. The arm is provided with a guide *i* through which the lever *H* slides so that the arm will not interfere with the longitudinal and vibrating movements of the lever *H*.

The lever *P* at its forward end is provided with a slot adapted to receive a screw *u* which is secured in the plate *A*. This slot forms a limit for the movement of the lever *P*.

By supporting the shaft *C* on a bearing block secured to the presser-bar of the sewing machine, the forward end of the shaft is firmly supported and no other support is necessary for the shaft except the support in the portion *a*, *a''*, of the plate *A*. This construction gives a perfect support for the shaft and also permits the garment to be inserted under the shaft *C* a considerable distance.

When it is desired to use the device as a tacking attachment for sewing machines, the screw *t* is removed from the bracket *O* so that the lever *P* will not be moved by the switch, and said screw *t* is inserted through an opening *t''* in the lever *P*, thereby holding the lever fixed upon the plate *A*. The lever *H* will, in this case, be vibrated as before and will be moved longitudinally as in the button-hole attachment, which will cause the

stitches to be made in a straight line only forming a tack such as that shown in Fig. 9. The change from one construction to the other is simply a change in the placing of the screw *t* to *t''*, so that the lever *H* will not be switched from side to side as at the ends in working button-holes.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a base plate *A*, of a swinging lever *H* having a cloth plate *H'* at its outer end, a transversely sliding plate *F* pivotally connected with the inner end of the swinging lever, a rotating clutch head *K* provided with a switch cam *M* means for intermittently rotating the clutch head, a pitman *k* connected with the swinging lever and adjustably engaged with the clutch head, a horizontally sliding plate *N* intermittently operated by the switch on the clutch head, a swinging lever *P* connected with the horizontally sliding plate, and a pivotal connection *R* between the swinging levers *P* and *H*, substantially as described.

2. The combination of the shaft *C*, shell *K*, devices for intermittently moving the shell *K*, pitman *k*, lever *H* connected with said pitman, wheel *E*, devices for intermittently rotating said wheel, sliding-plate *F* having rollers *F'* and pivotally connected with the lever *H*, lever *P*, sliding-plate *N*, arm *O*, and arm *R*, substantially as specified.

3. The combination with a base plate *A*, of a swinging lever *H* having a cloth plate *H'* at its outer end, a transversely sliding plate *F* pivotally connected with the inner end of the swinging lever, a rotating clutch head *K* provided with a switch cam *M*, means for intermittently rotating the clutch head, a pitman *k* connected with the swinging lever and adjustably engaged with the clutch head, a horizontally sliding plate *N* intermittently operated by the switch cam on the clutch head, a swinging lever *P* connected with the horizontally sliding plate, and an arm *R* pivoted at one end to the swinging lever *H* and at its opposite end pivoted to and adjustable along the swinging lever *P*, substantially as described.

4. The combination with the lever *H* and plates *H'*, and *J'*, of devices for swinging said lever, devices for moving said lever longitudinally, a shell *K*, plate *N*, switch cam *M*, lever *P*, and arm *R*, substantially as and for the purpose specified.

5. The combination with a plate *A* having a vertical portion *a*, of a screw-threaded bolt *e*, set-nut *e''*, cam-wheel *E*, sliding plate *F* having rollers *F'*, and swinging lever *H* carrying a cloth plate *H'*, substantially as specified.

6. The combination with a base plate *A* having an upright portion provided with a pivot-bolt *e*, of a cam wheel *E* rotating on the pivot-bolt, a transversely sliding plate *F* having slots *g*, the adjustable plates *f* pro-

vided with the friction rollers F' bearing against different portions of the cam wheel, mechanism for intermittently rotating the cam wheel, a swinging lever H having a cloth
5 plate H' at its outer end, connections between the inner end of the swinging lever and the transversely sliding plate, and means for longitudinally reciprocating the swinging lever, substantially as described.

JOHN W. BLODGETT.

Witnesses:

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JOHN L. JACKSON.