

(No Model.)

3 Sheets—Sheet 1.

C. LANDGRAF.  
SAW SETTING MACHINE.

No. 335,596.

Patented Feb. 9, 1886.

Fig. 1

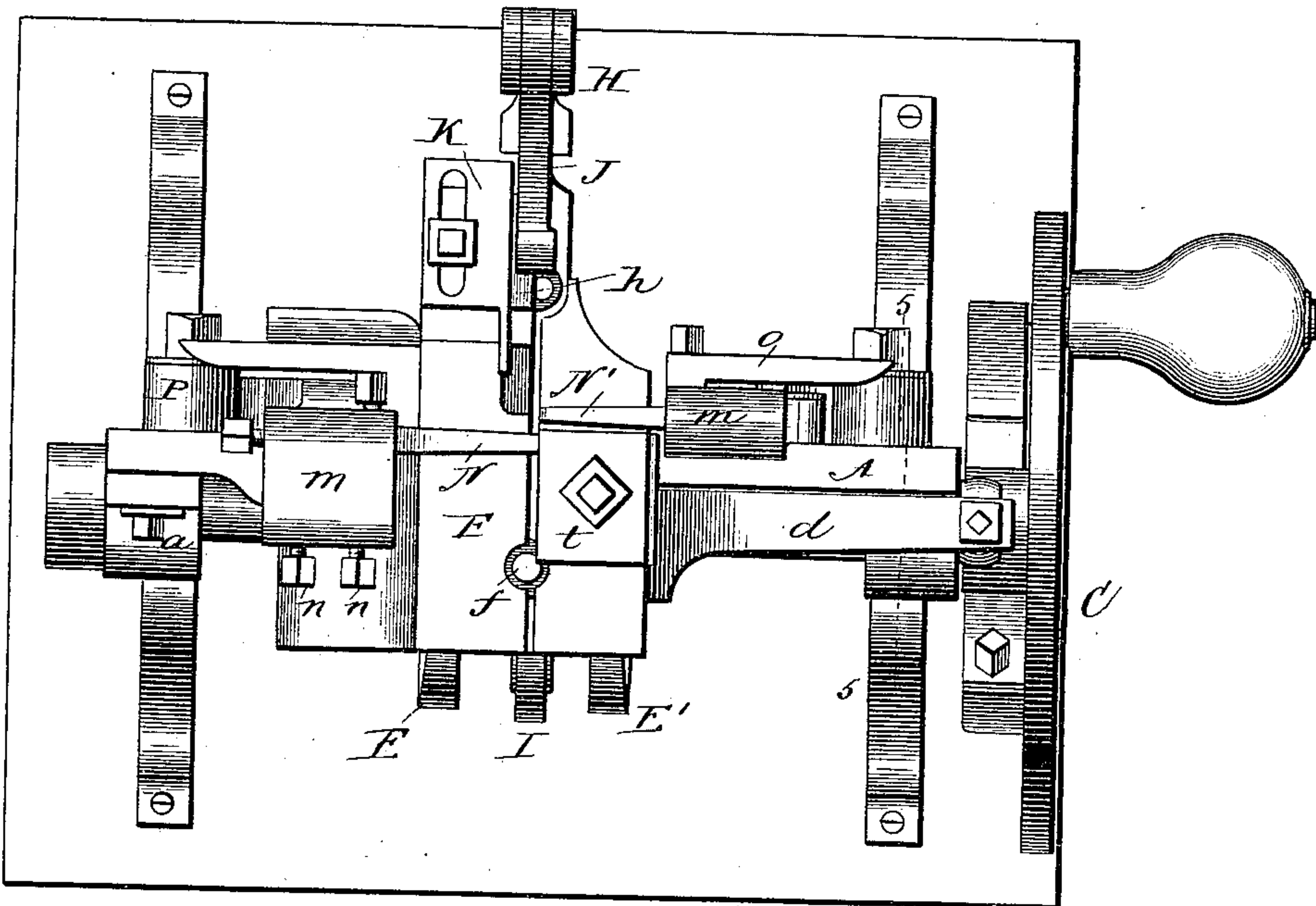


Fig. 3.

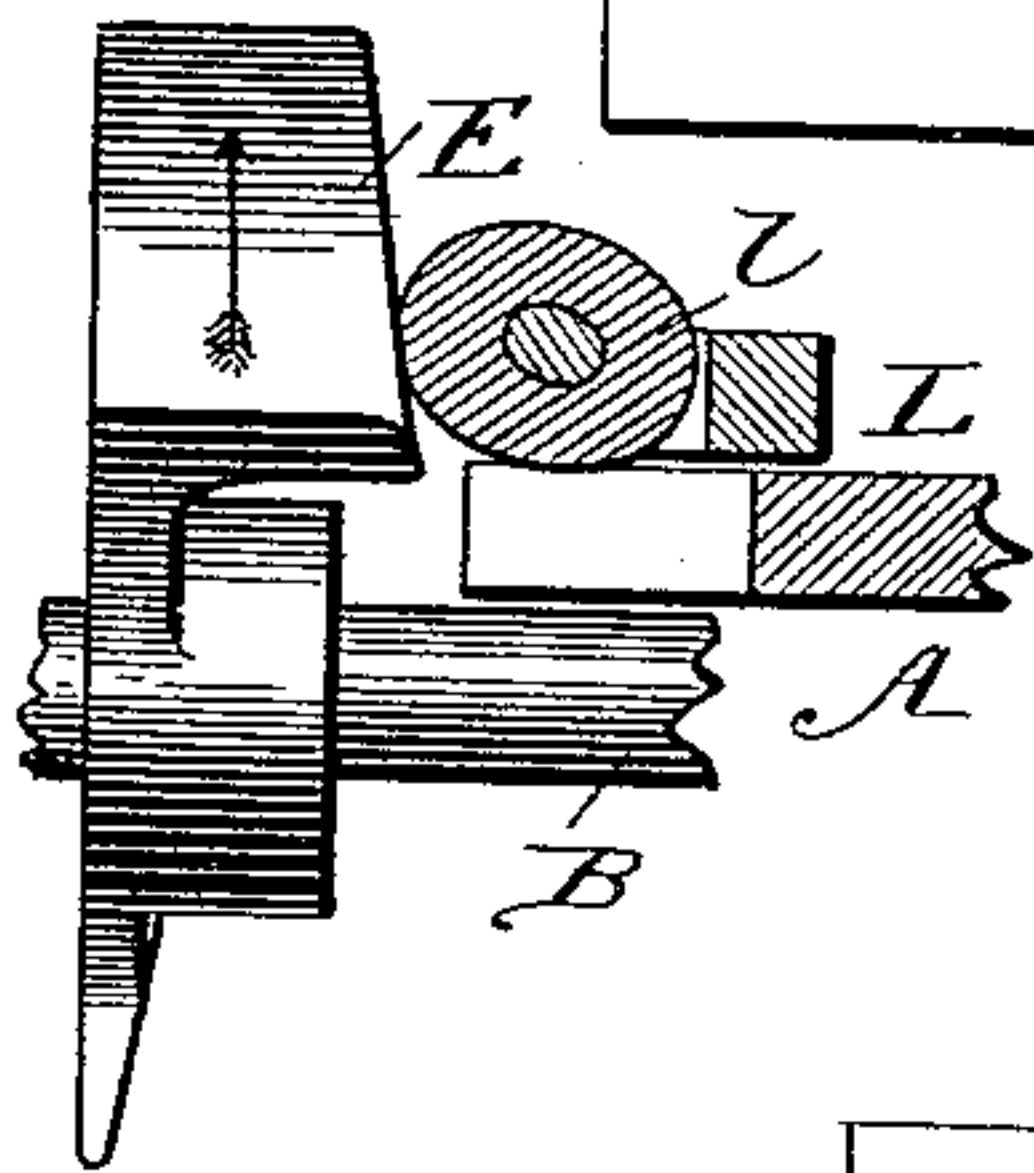
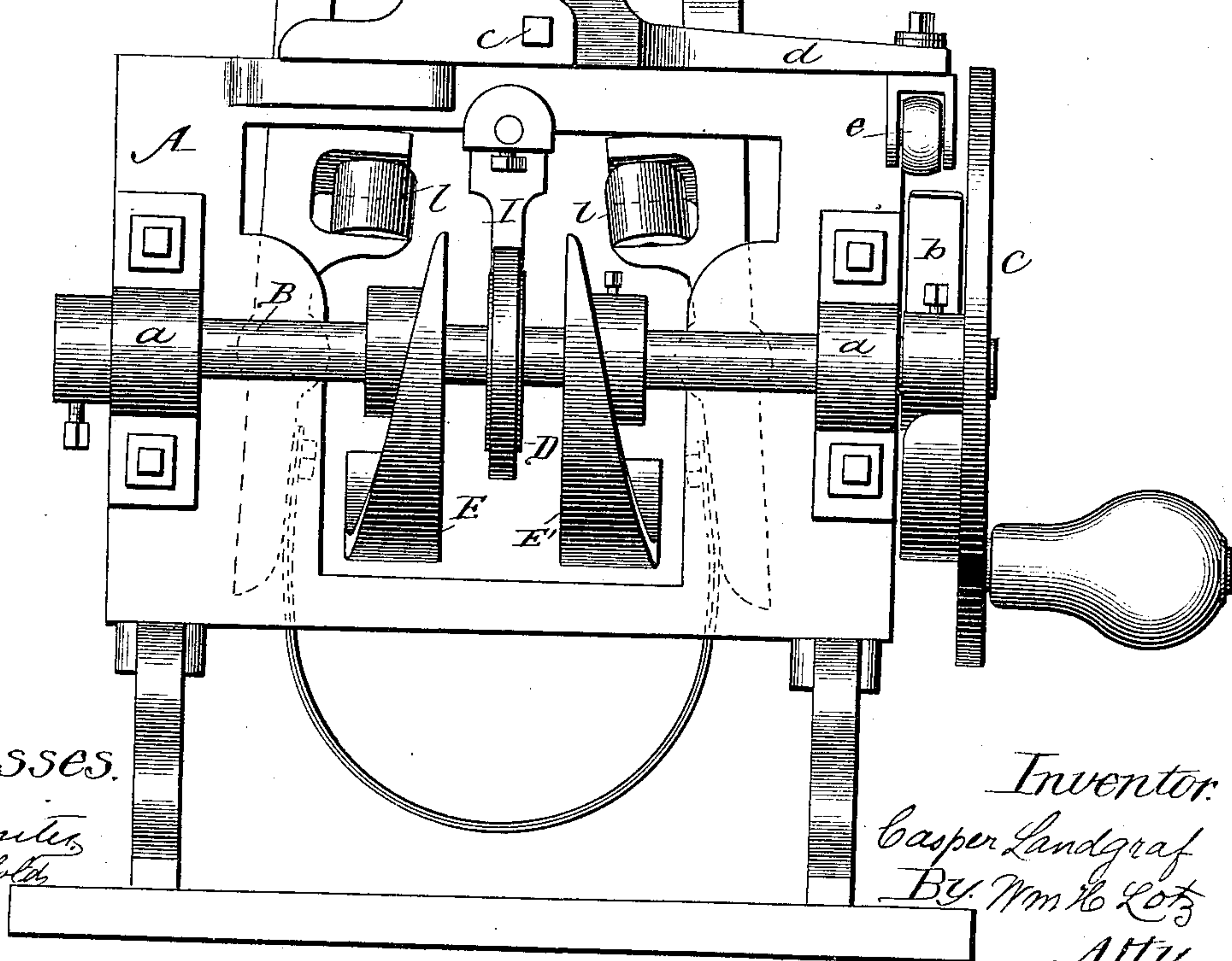
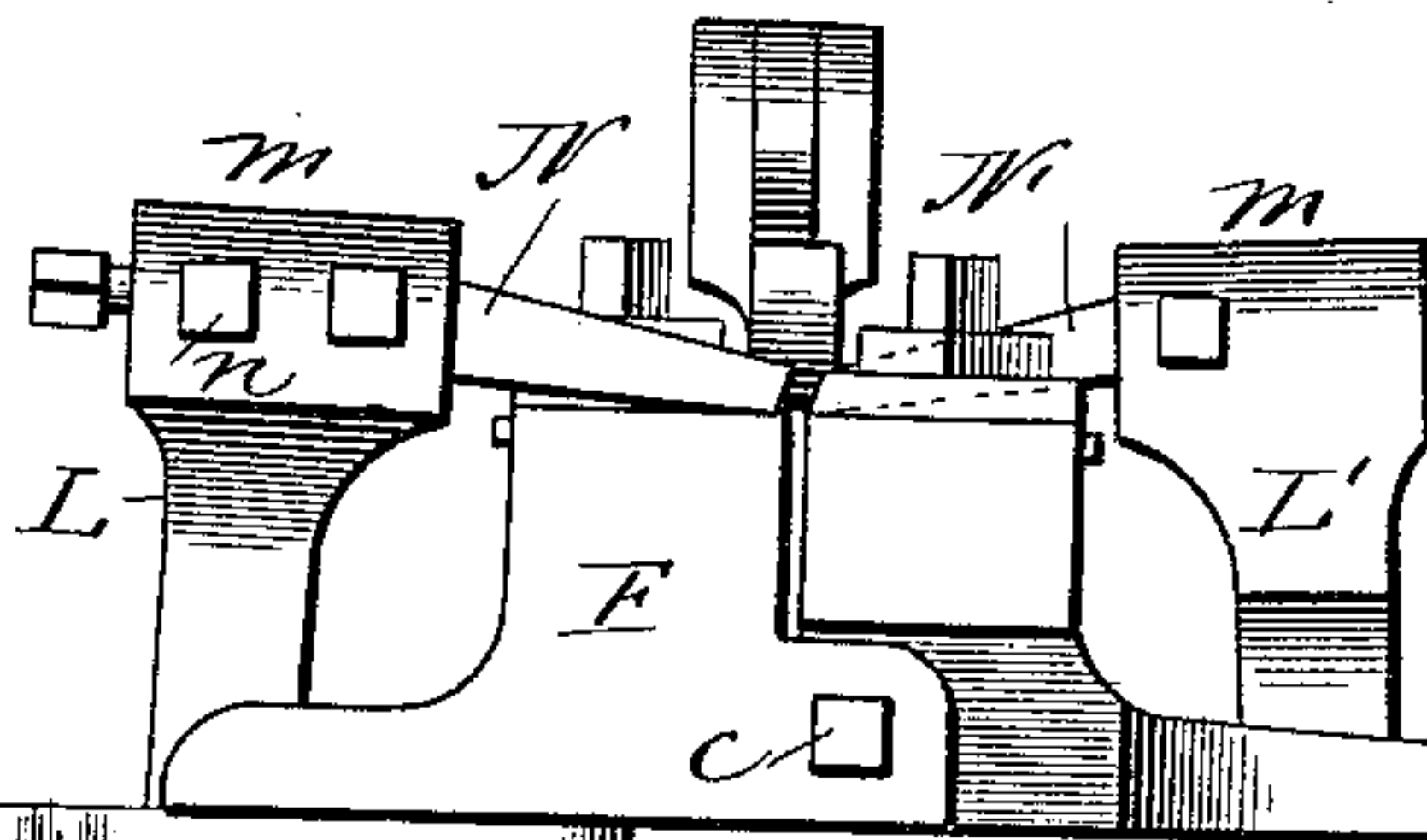


Fig. 2.



Witnesses.

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Inventor.

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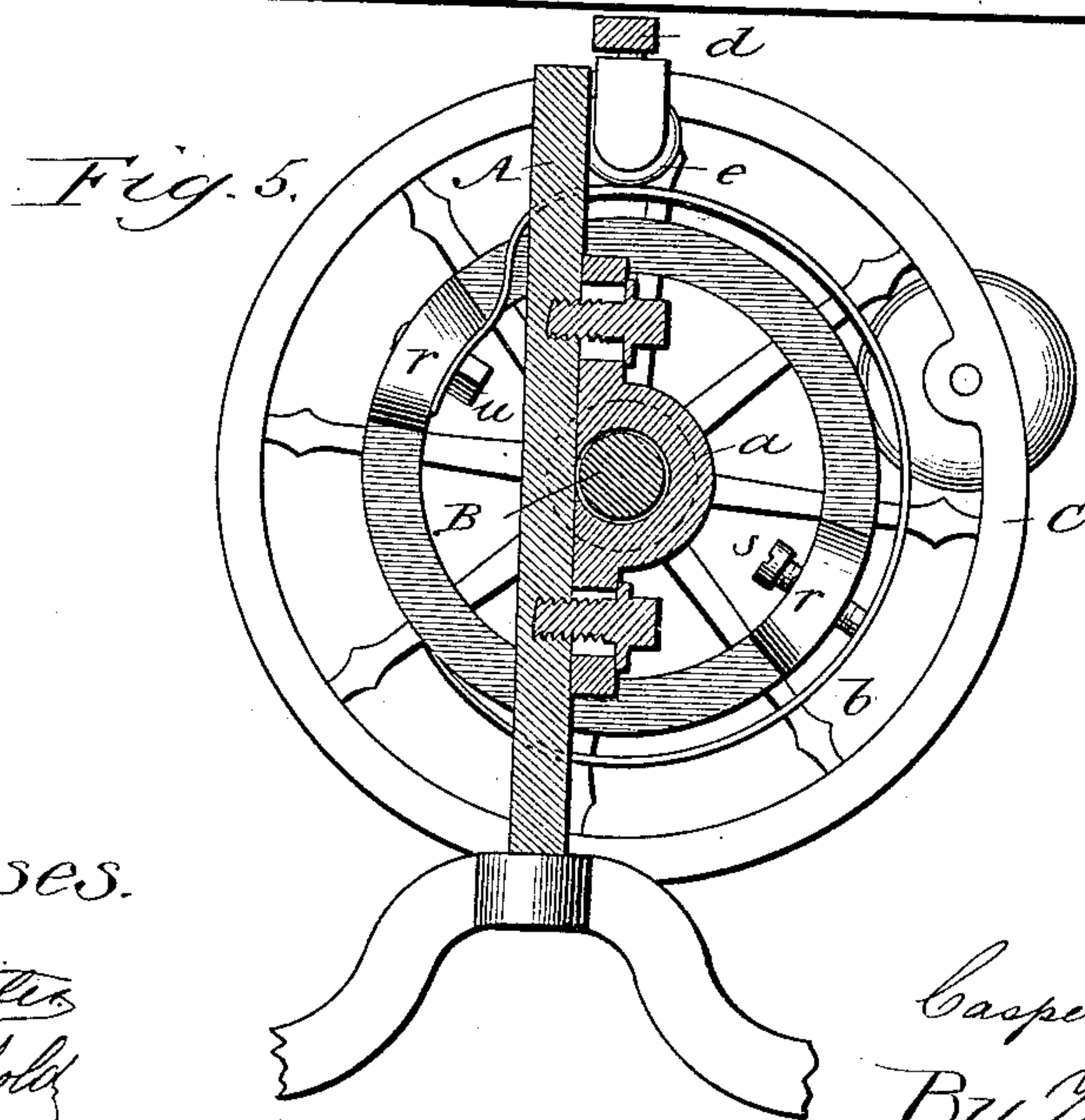
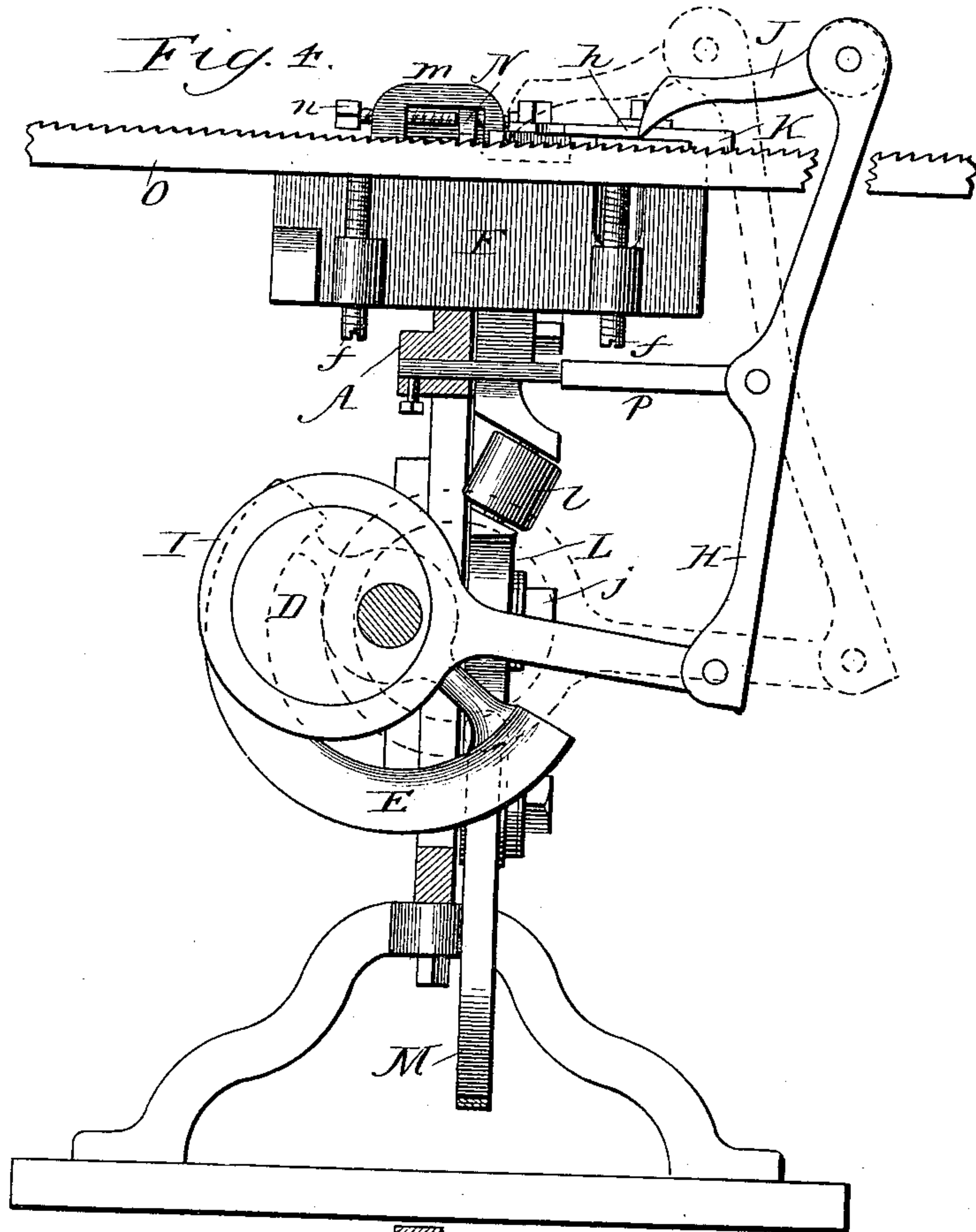
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3 Sheets—Sheet 2

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Patented Feb. 9, 1886.



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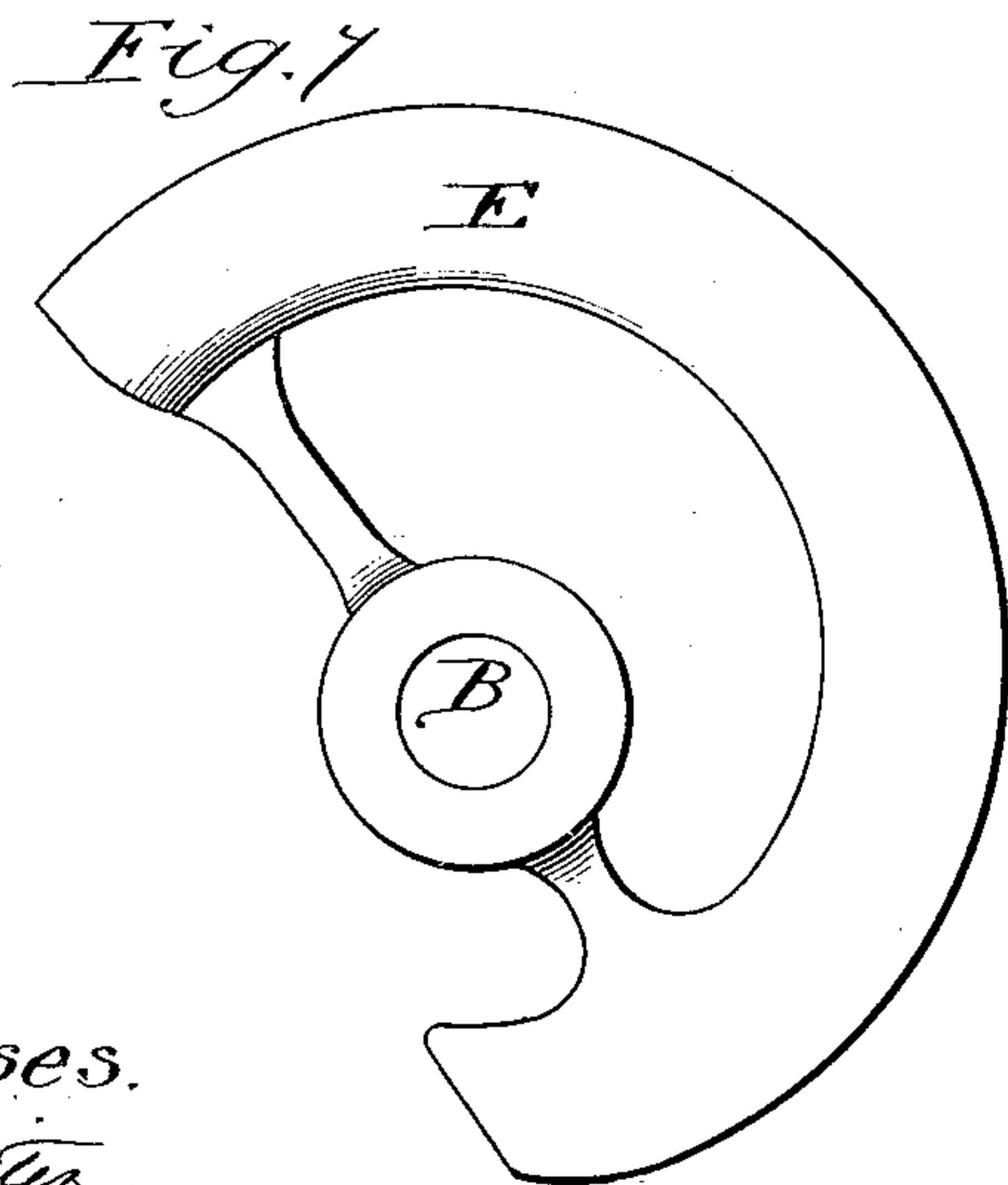
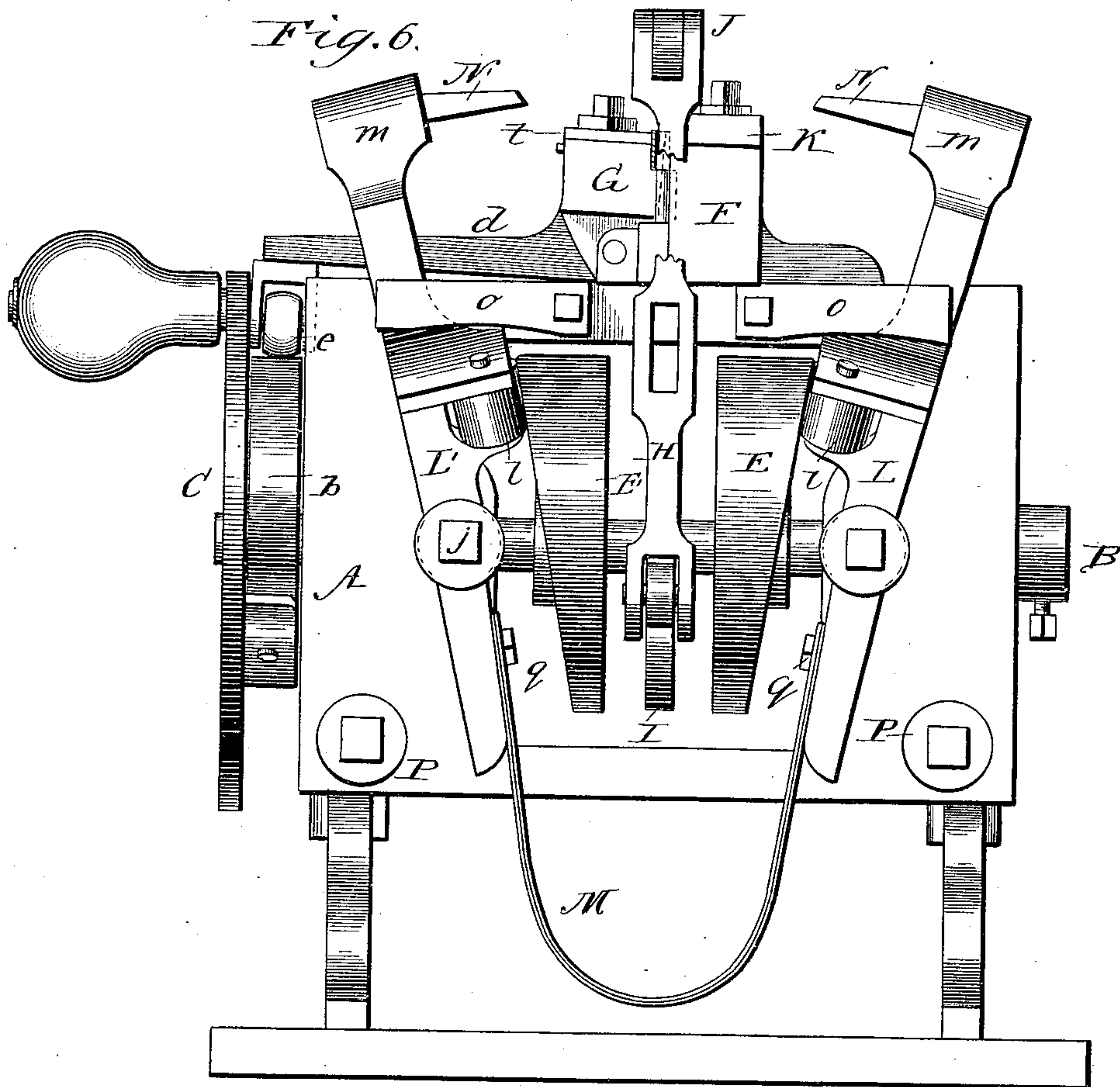
(No Model.)

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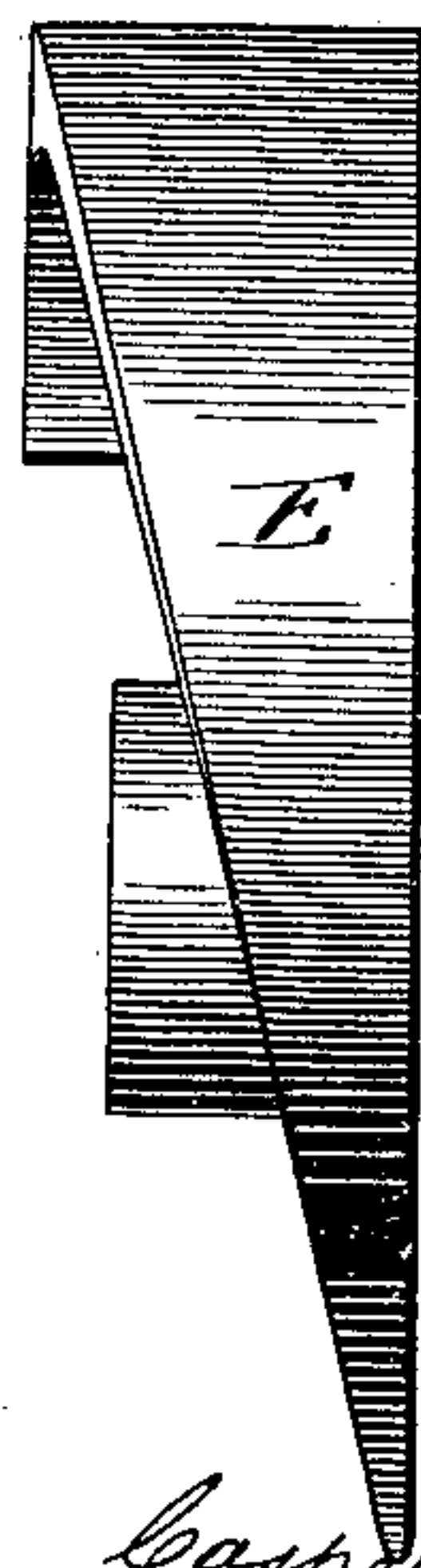
C. LANDGRAF.  
SAW SETTING MACHINE.

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Patented Feb. 9, 1886.



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

CASPER LANDGRAF, OF CHICAGO, ILLINOIS.

## SAW-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 335,596, dated February 9, 1886.

Application filed December 11, 1885. Serial No. 185,418. (No model.)

*To all whom it may concern:*

Be it known that I, CASPER LANDGRAF, a subject of the Emperor of Germany, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Saw-Setting Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to devices for slanting the teeth laterally from the plane of the saw alternately to the right and left; and it is my object to construct a machine, particularly intended for thus setting the teeth of band-  
15 saws, that automatically will feed the saw through the machine, intermittently will clamp such saw while the teeth-setting operation takes place, and in which two consecutive teeth will be slanted by punches simultaneously striking from opposite sides.

My invention therefore consists of the novel devices and combinations of devices herein-after described, and specifically claimed.

25 In the accompanying drawings, Figure 1 represents a plan view of the machine; Fig. 2, a rear elevation of the same; Fig. 3, a sectional plan of one of the swinging punch-arms with roller and actuating cam. Fig. 4 represents a transverse vertical section through the  
30 center of the machine; Fig. 5, a similar section on line 5 5 in Fig. 1; Fig. 6, a front elevation of the machine; and Figs. 7 and 8, an end and side elevation of one of the punch-retracting cams detached.

35 Corresponding letters in the several figures of the drawings designate like parts.

A denotes the rectangular upright frame, being supported upon transversely-expanded feet, one to each end. In boxes *a*, bolted  
40 against one side of this frame A, is journaled the driving-shaft B, that has mounted upon its overhanging end the crank-wheel C, having to its inward face two lugs, *r*, to one of which is secured by a screw, *u*, one end of a  
45 segmental plate, *b*, that, by a set-screw, *s*, tapped through the other lug *r*, is adjusted to increase or decrease its radius. This segmental plate *b* is concentric with the shaft about three-fifths of a circumference, with its  
50 end curved toward the center of the wheel, so as to be cam-shaped.

Upon the center of shaft B is mounted an

eccentric, D, and each side thereof a cam, E E'.

Upon the top face of frame A is rigidly secured the block F, and between two lugs of  
55 such block F is pivotally secured the block G by a bolt or pin, *c*. The blocks F and G form the two jaws of a vise for clamping the saw-blade O during the operation of setting each pair of teeth, which saw-blade, while moving  
60 between the jaws, is supported upon the points of two set-screws, *f*, which are tapped through lugs of jaw-block F, and can be adjusted for saw-blades of different width so as only to allow the saw-teeth to project above the jaws of  
65 the vise. Jaw block G has a rigid arm, *d*, that, below its end, has pivoted between suitable bearings a roller, *e*, riding upon segmental cam-plate *b* of crank-wheel C, which will impart to such arm a vibrating movement  
70 for the purpose of intermittently clamping and rigidly holding the saw-blade and releasing it again.

A lever, H, is pivoted at its middle to a bracket-bar, *p*, which is adjustably secured to  
75 the frame A. The lower end of this lever H is pivotally connected to the arm of a ring or strap, I, which is fitted over eccentric D, and to the upper extremity of this lever H is pivotally connected a pawl, J.

80 O represents a portion of a saw as placed between the jaws F and G. The pawl J by its gravity will engage with the teeth of saw O, and with each revolution of shaft B such pawl will have imparted to it by the eccentric a  
85 reciprocating movement that pushes the saw forward a few teeth. It being desirable to push the saw ahead only two teeth with each revolution of the shaft, and the size or pitch of the teeth of different saws varying, I regulate  
90 such feed by a plate, K, having a slotted hole for securing it upon the end of jaw-block F by a screw, *i*, so as to be adjustable. This plate K, I provide with a flange, *h*, the upper face of which will be on an elevation above  
95 the saw-teeth, and upon this flange *h* the end of pawl J will ride part of its reciprocation, or so much of its movement as is beyond the desired feed, which can be regulated by adjusting the plate K to hold the pawl J a more  
100 or less distance out of contact with the saw-teeth.

The motion of feeding the saw forward is made alternate with the movement of closing



the vise for clamping the saw by placing the eccentric D and cam *b* into proper relative positions on shaft B.

Two levers, L L', are pivoted on bolts or pins *j* to frame A. The heads *m* of these arms form boxes, into which are adjustably secured by set-screws *n* the punches N and N'. The lower or tail ends of both levers L L' are connected by a bow-shaped leaf-spring, M, that is secured thereto by screws *q*. This spring M will exert its power to force the tail ends of the levers apart, and thereby swing the heads *m* toward each other. Each lever L L' is guided by a bracket, *o*, secured against the upper edge of frame A. Between lugs of each lever L L', a short distance above its fulcrum, is pivotally secured a roller, *l*, which rollers are brought in contact with the spirally-shaped rim edges of segmental cams E E', in a manner that such cams, with being rotated, will swing simultaneously the levers L L' in the direction that their heads *m* will recede from each other until the position shown in Fig. 6 has been reached, thereby compressing spring M, and with a further rotation both levers are released, when the spring M will cause the heads *m* of levers L L' to swing simultaneously toward each other for the punches N N' to strike from opposite sides, each punch being adjusted to hit one of two consecutive saw-teeth, while the tail ends of the levers L L' at the same time strike against rubber washers P, that are secured against frame A, and will cushion and react the force of spring M after each stroke of the punches.

Swage-plates *t*, having edges of proper angle to which the teeth of the saw are to be bent in setting, are secured by screws—one upon each jaw-block F and G—in proper position to form the anvil for one of the punches N N', and the ends or striking-faces of such punches are trimmed to an angle corresponding with the angle of its swage-plate *t*.

The *modus operandi* of the machine is that after the saw has been fed forward, and while it is held rigidly in position between the jaws of the vise closed upon it, the punches will strike two of the saw-teeth alternately from opposite sides and will set them to the proper angle. Then while the punches are being re-

tracted by cams E E' and the vise has released the saw again the pawl will shift such saw a distance of two teeth, when the same motion as heretofore described will be repeated. The machine will thus set two teeth with each revolution of the driving-shaft, and the spring M, driving the punches with the same force every time, the set of all the teeth must be uniform.

What I claim is—

1. In a saw-setting machine, the combination, with rigid vise-jaw F and pivoted vise-jaw G, the latter provided with arm *d* and roller *e*, of cam *b*, as set forth.

2. In a saw-setting machine, the combination, with rigid vise-jaw F, adjusting-screws *f*, and pivoted vise-jaw G, the latter provided with arm *d* and roller *e*, of cam *b*, as set forth.

3. In a saw-setting machine, the combination, with automatic saw-holding device and automatically-operating teeth-setting punches, of pawl J, lever H, eccentric D, strap I, and adjustable plate K, all substantially as described, to operate as specified.

4. In a saw-setting machine, the combination, with an automatic clamping-vise for holding the saw and provided with swage-plates *t*, of two tooth-setting punches arranged to strike two consecutive teeth simultaneously from opposite sides, substantially in the manner set forth.

5. In a saw-setting machine, the combination, with arms L L' and punches N N', mounted in the heads thereof, of spring M, connecting such arms, rollers *l*, mounted on said arms, and cams E E', operating such rollers, as set forth.

6. In a saw-setting machine, the combination, with levers L L', punches N N', mounted in the heads thereof, and spring M, connecting the tail ends thereof, of rubber cushions P, rollers *l*, mounted in levers or arms L L', and cams E E', operating such rollers, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CASPER LANDGRAF.

Witnesses:

RICHARD REINBOLD,  
JOHN W. WEISS.