

(No Model.)

3 Sheets—Sheet 1.

S. J. LEONARD.  
TENSION DEVICE FOR SAWS, &c.

No. 547,792.

Patented Oct. 15, 1895.

Fig. 5.

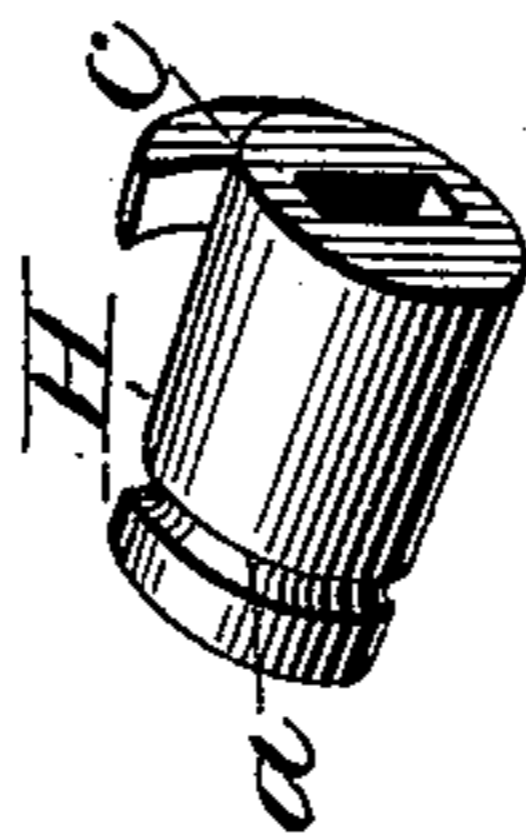
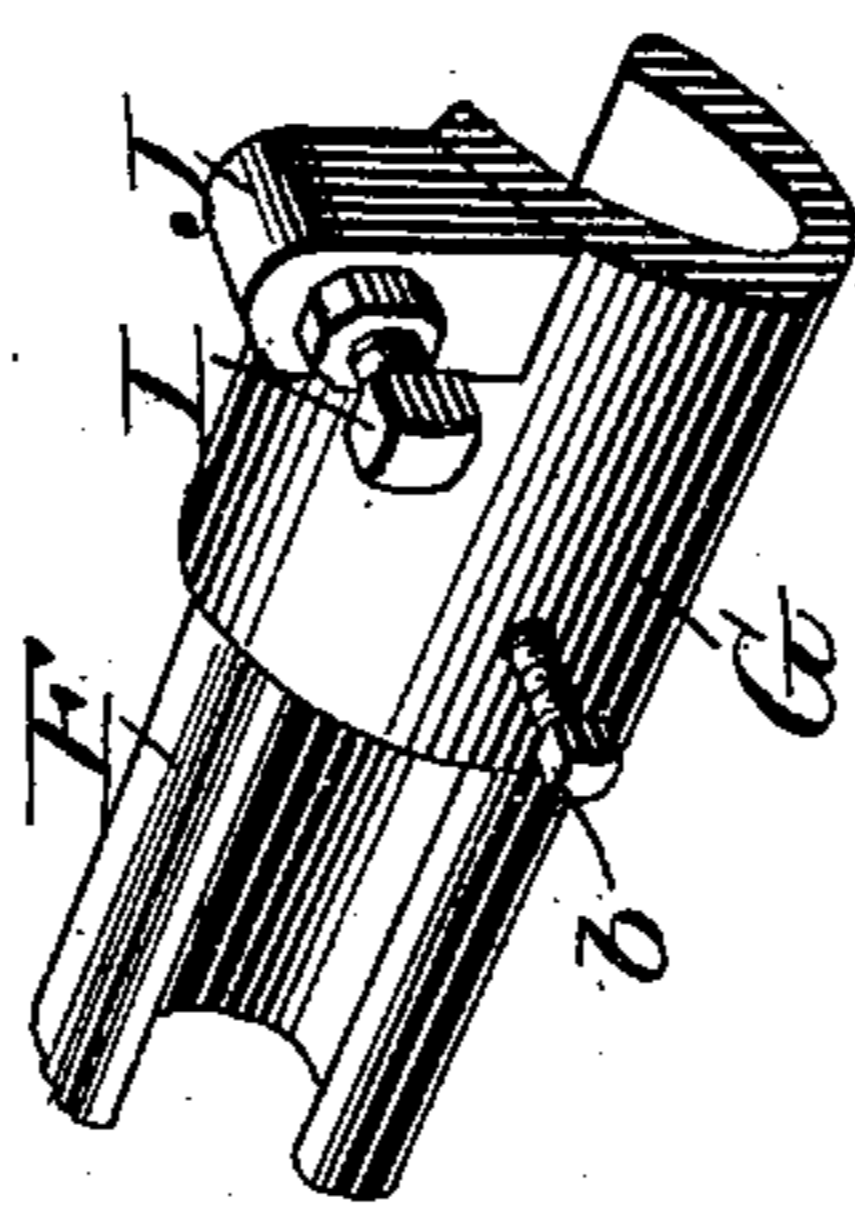
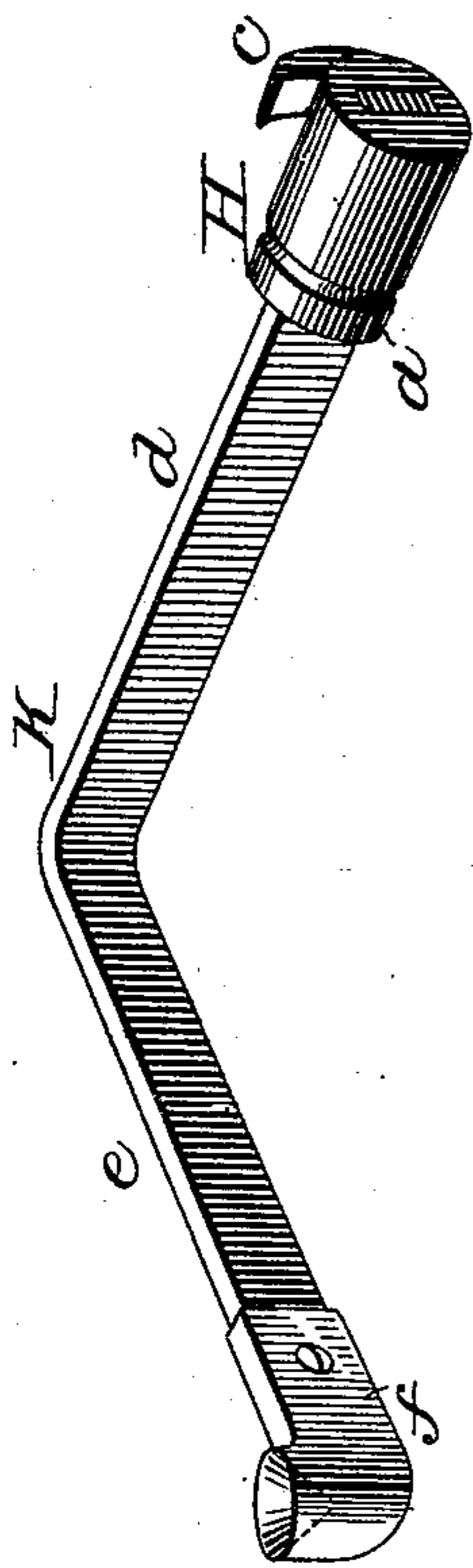
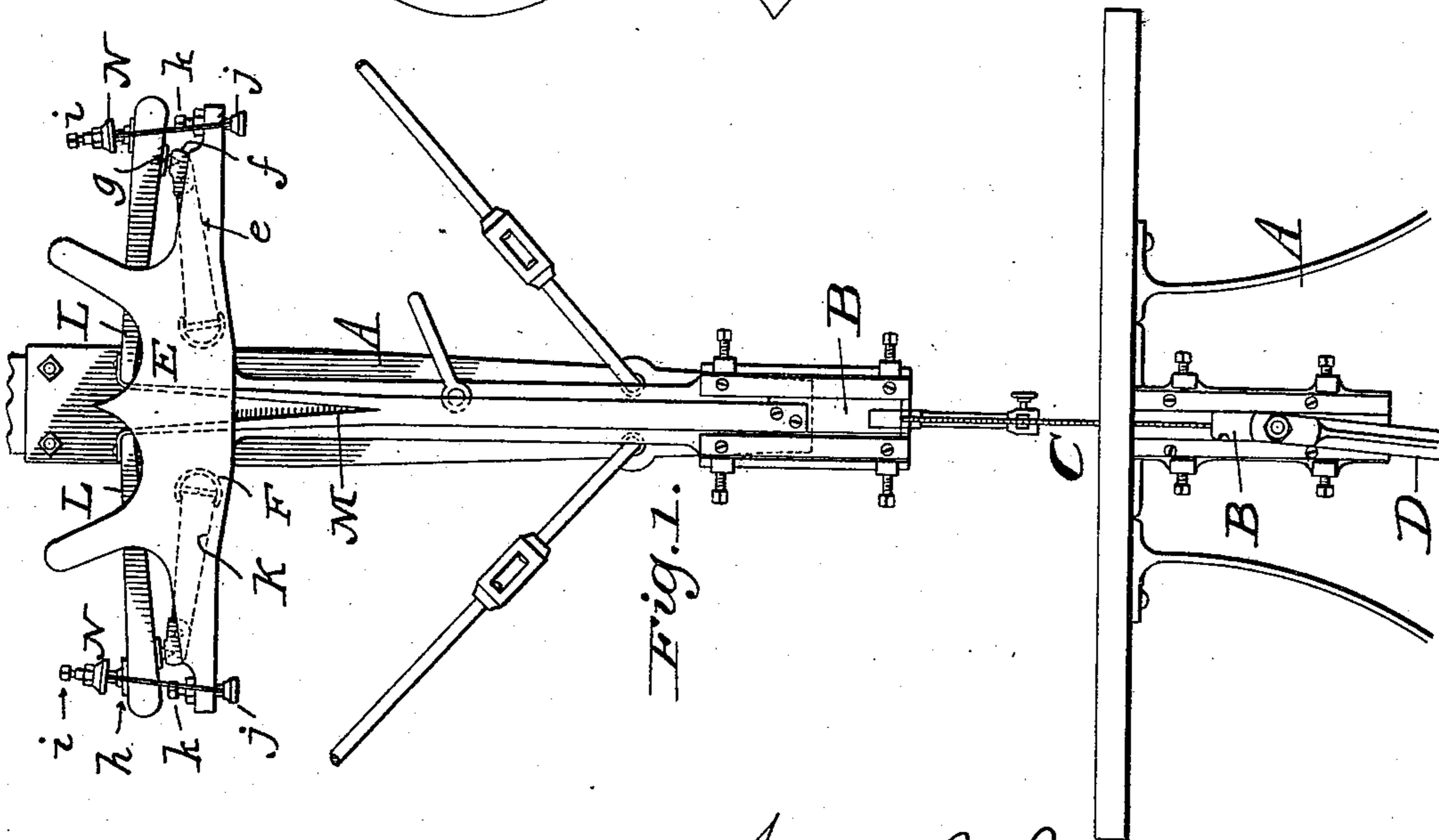


Fig. 1.



Witnesses

Arthur Ashley  
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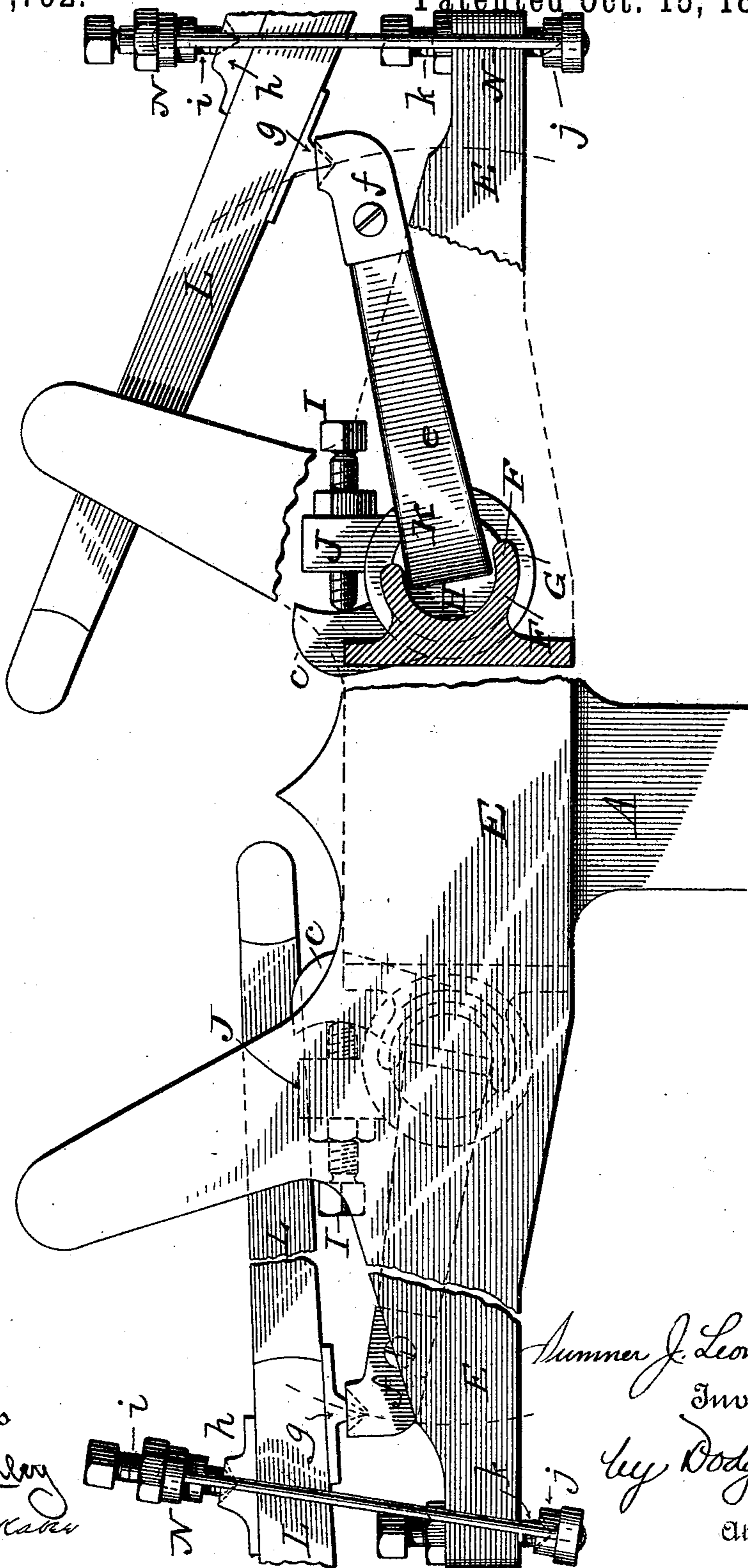



Fig. 2.

Witnesses  
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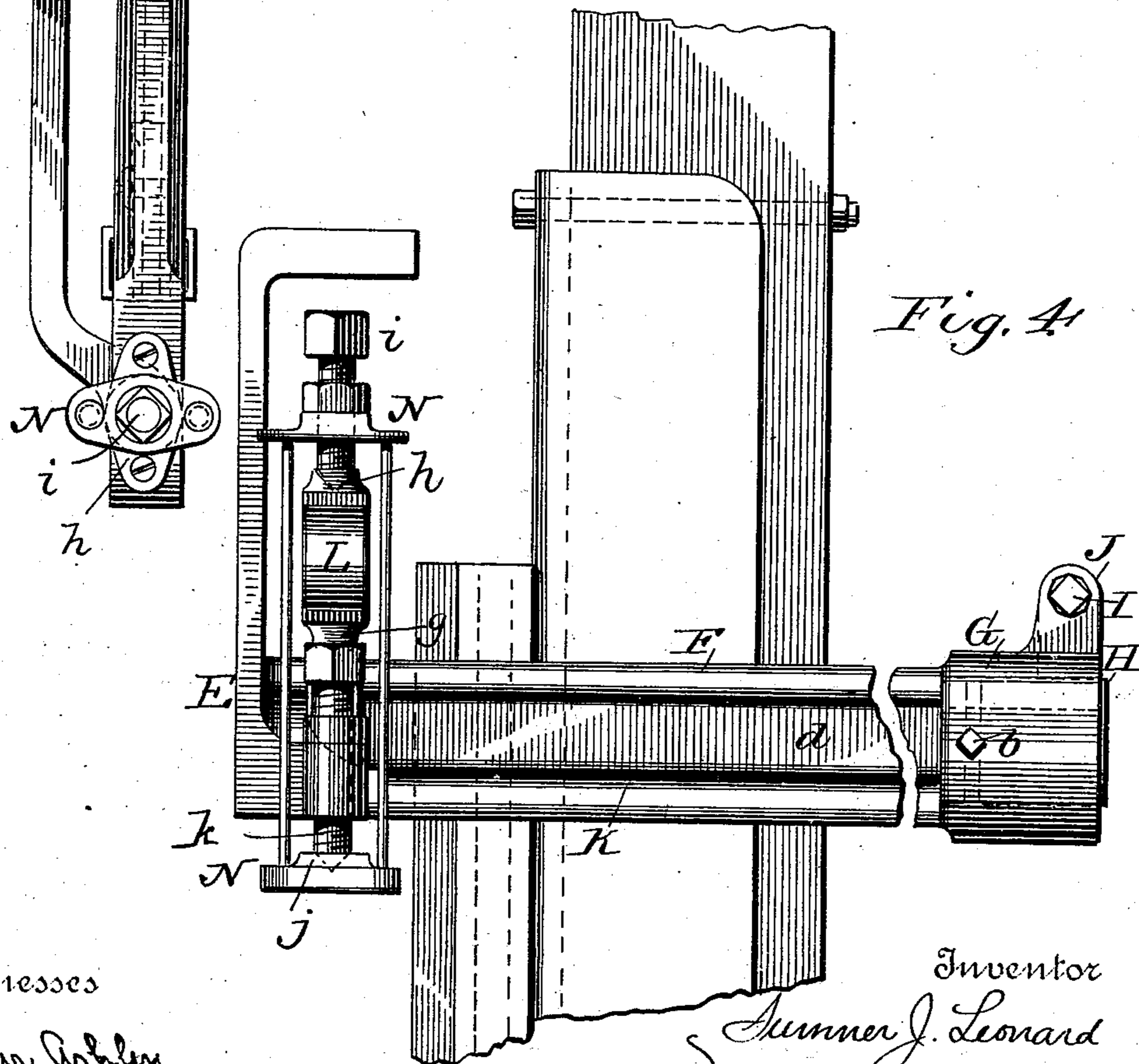
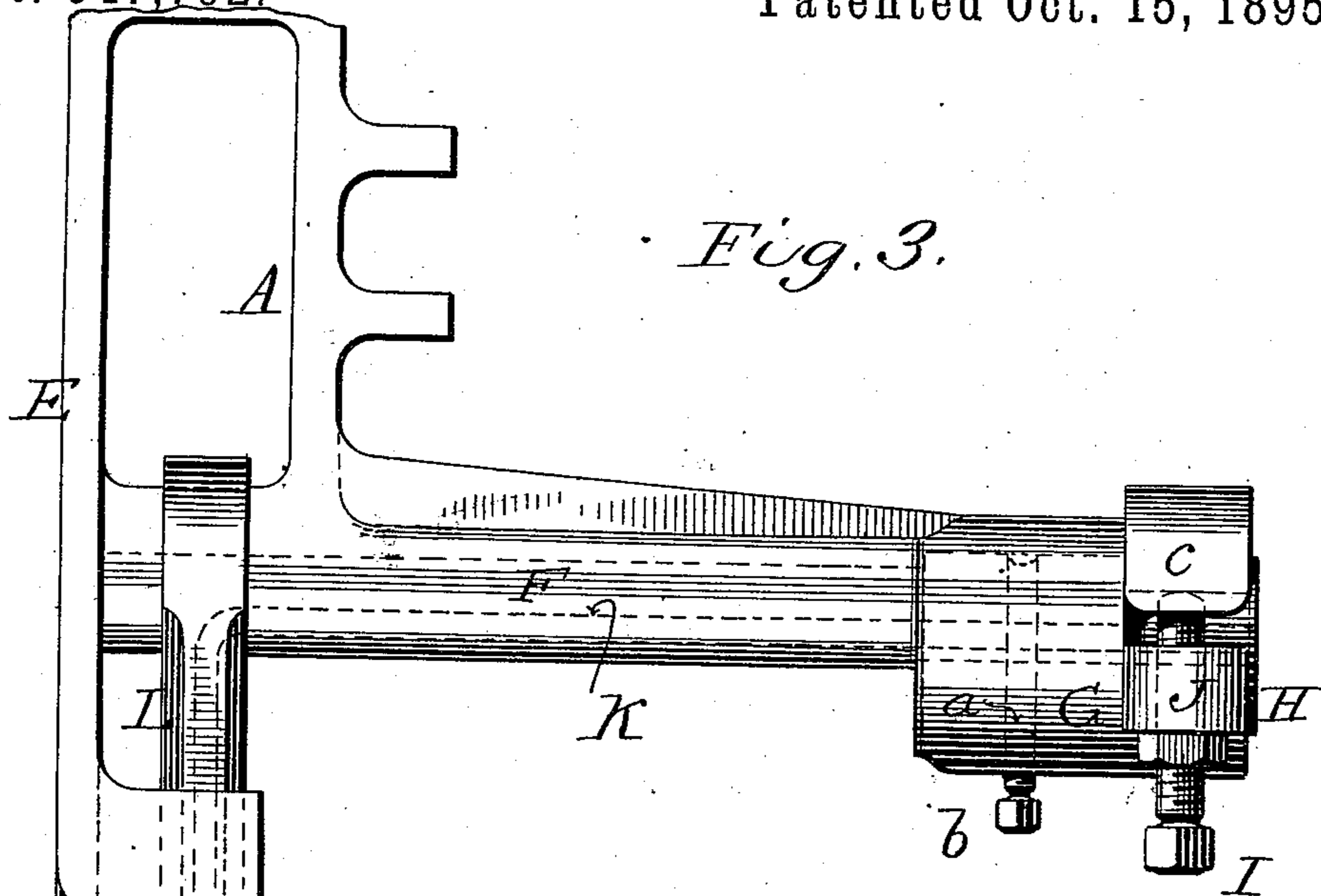
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3 Sheets—Sheet 3.

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Patented Oct. 15, 1895.



Witnesses

Arthur Ashley  
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# UNITED STATES PATENT OFFICE.

SUMNER J. LEONARD, OF MONTGOMERY, PENNSYLVANIA.

## TENSION DEVICE FOR SAWS, &c.

SPECIFICATION forming part of Letters Patent No. 547,792, dated October 15, 1895.

Application filed July 16, 1895. Serial No. 556,174. (No model.)

*To all whom it may concern:*

Be it known that I, SUMNER J. LEONARD, a citizen of the United States, residing at Montgomery, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Tension Devices for Saws, &c., of which the following is a specification.

My invention relates to sawing-machines, and has reference more particularly to that class of machines in which a vertically-reciprocating saw is employed.

The object of the invention is to equalize the strain on the saw at all points and in all positions. In the preferred construction I employ two arms or levers and corresponding torsion-springs, with intermediate bearings, and so arrange the parts that by increasing the leverage as the strain on the spring increases and decreasing the leverage as the strain on the spring decreases the saw strain will be equalized.

In the drawings, which show the preferred embodiment of the invention, Figure 1 is a front face view of a portion of a machine with my improvements applied; Fig. 2, a face view, partly in section, of a portion of the upper part of the machine, showing the levers and attendant parts; Fig. 3, a plan view of one of the levers, springs, housings, &c.; Fig. 4, a side or end view of the same, and Fig. 5 a perspective view of the spring and attendant parts separated.

A indicates a portion of the frame of the sawing-machine, B B the reciprocating blocks or holders to which the saw C is attached, and D the pitman for imparting motion to the saw, all of which parts are or may be of the usual construction.

The frame A is provided at or near its upper end with a cross-bar E, from the rear side of which project the arms F F, which arms, as shown in Figs. 2, 3, and 4, are preferably semi-circular throughout the greater part of their length and then terminate in the hollow hubs G. Fitting into each hub is a cylindrical block H, which is grooved circumferentially, as at *a*, to receive a set-screw *b*, by means of which the block is held in place, and which block is further provided with a lug or ear *c*, projecting up through a slot or opening in the hub. An adjusting-screw I, carried by a lug

or extension J on the hub, is designed to bear upon or against the lug or ear *c* of the block, and thereby effect a rotary adjustment of the latter. Block H is further provided with a socket to receive one end of an L-shaped torsion-spring K, the torsional member *d* of which is seated loosely in the hollow or open arm F, while the lever end or part *e* extends parallel with and in rear of the cross-bar E. At the end of part or arm *e* of the spring is a bearing foot or plate *f*, which has a socket to receive the pointed or knife-edged bearing-block *g*, secured to the under side of a lever L near its outer end, as shown in Figs. 1 and 2. Lever L is connected at its inner end by means of a strap M with the upper saw-holder B and is provided on its upper face, near its outer end, with a socketed bearing-plate *h* to receive the pointed screw *i*, carried at the upper end of the yoke N. This yoke N is in turn provided at its lower end with a socketed bearing-plate *j* to receive the end of the pointed bearing-screw *k*, carried at the end of cross bar E, as shown in Figs. 1, 2, and 4. I desire to state here that there are two levers and springs and attendant parts; but as they are similar only one set has been specifically described, and, further, while these levers move up and down in unison, both being attached to the strap M, I have, in Fig. 2, shown one of them raised and the other lowered, in order to illustrate the position the parts assume when the lever is moved to its different positions. When the lever is raised, as at the right-hand end of Fig. 2, the spring is relieved of tension or torsional strain, and the pivots or bearing-point *f g*, *h i*, and *j k* are at the farthest distances apart. When, however, the saw descends and the lever is carried down, as at the left-hand end of Fig. 2, the said lever rocks upon the pivot or bearing *h i* and through the pivot or bearing *f g* on the spring carries the free end of the spring down with it; but as the spring is held rigid at its opposite end by the block H the depression of the arm or member *e* tends to twist the torsional member *d*. It will be noted that when the lever is rocked as just described the upper bearing or the connection between the yoke and lever is thrown inward. Of course, as the lever descends the resistance of the spring increases, and to afford an increase in

the resistance the upper or yoke-and-lever bearing *h i* moves inward or over toward the end of the spring-arm *e*. From this it will be seen that the fulcrum *h i* for the lever *L* will  
5 be shifted automatically and in proportion to the movement of the point of contact of the spring-arm *e* with the lever, the fulcrum moving inward as the arm is carried down by the lever and moving outward as the arm rises.  
10 By turning the screw *I* the tension of the spring may be varied, as required.

While I have shown two sets of levers and springs, I do not wish to be understood as being confined to such arrangement, one spring  
15 and lever being obviously capable of accomplishing the same result.

The invention is obviously applicable to other devices than sawmills—in fact, to any reciprocating device upon which it is desired  
20 to exert a constant pull or strain.

Having thus described my invention, what I claim is—

1. In combination with a main frame and a saw; a lever; a connection between the inner  
25 end of the lever and the saw; a spring carried by the main frame and provided with a vertically-movable arm for supporting the lever at a point between the ends of the latter; and a yoke pivotally connected at its lower  
30 end to the main frame and provided at its upper end with a fulcrum for the lever;

whereby the fulcrum of the lever will be moved inward as the spring is put under tension by the lever and the point of contact of the lever with the spring is depressed, and  
35 moved outward as the tension is decreased.

2. In combination with a frame having an arm *F* and hub *G*; a block *H* fitting the hub and provided with lug *c* and groove *a*; a set screw *b*; an adjusting screw *I* carried by the  
40 hub to engage the lug; an L-shaped spring secured at one end to the block; and a lever acting upon the other end of the spring.

3. In combination with a main frame and a reciprocating device; a lever connected at its  
45 inner end with said device; a spring on the main frame provided with a vertically-movable arm for supporting said lever between the ends of the latter; and a yoke pivotally connected at its lower end with the main  
50 frame and provided at its upper end with a fulcrum for the lever; whereby the fulcrum of the lever will be shifted as the arm of the spring rises and falls according to the tension applied to the spring by the lever.  
55

In witness whereof I hereunto set my hand in the presence of two witnesses.

SUMNER J. LEONARD.

Witnesses:

E. B. KETNER,  
M. S. HIGH.