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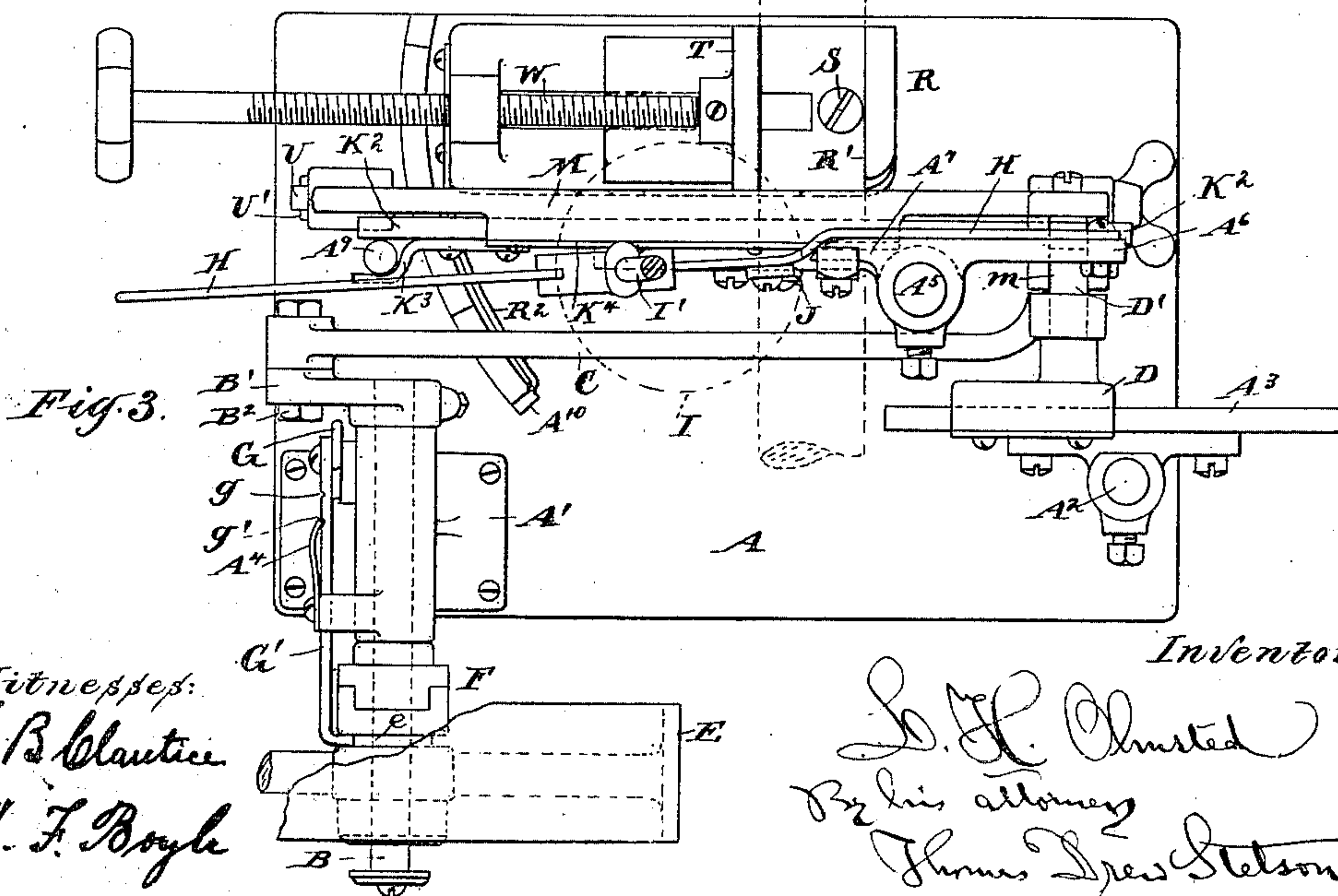
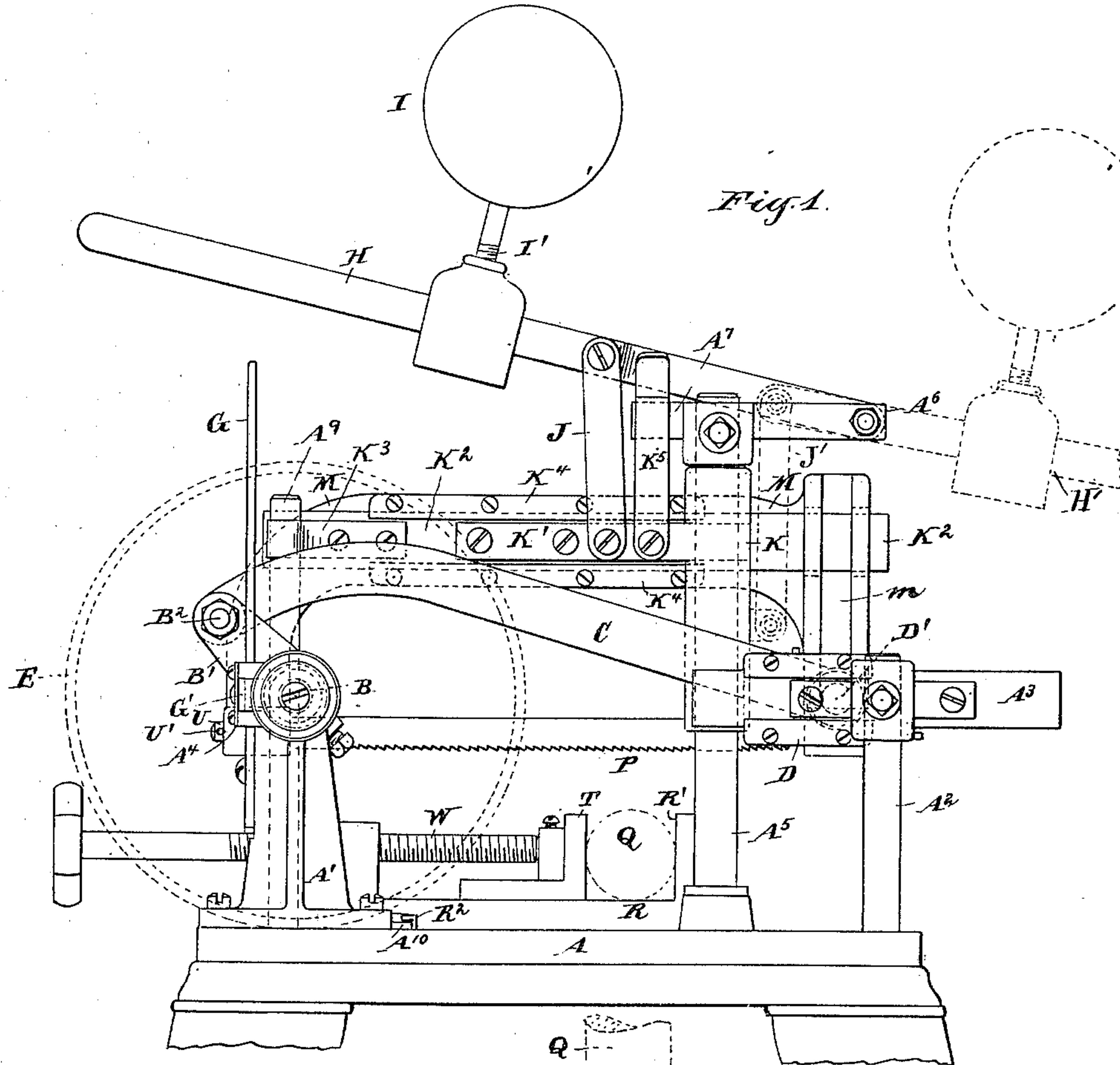
Patented Apr. 23, 1901.

L. H. OLMSTED.
HACKSAW MACHINE.

(Application filed Jan. 14, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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M. F. Boyle

Inventor:
L. H. Olmsted
By his attorney
Thomas Drexel Stetson

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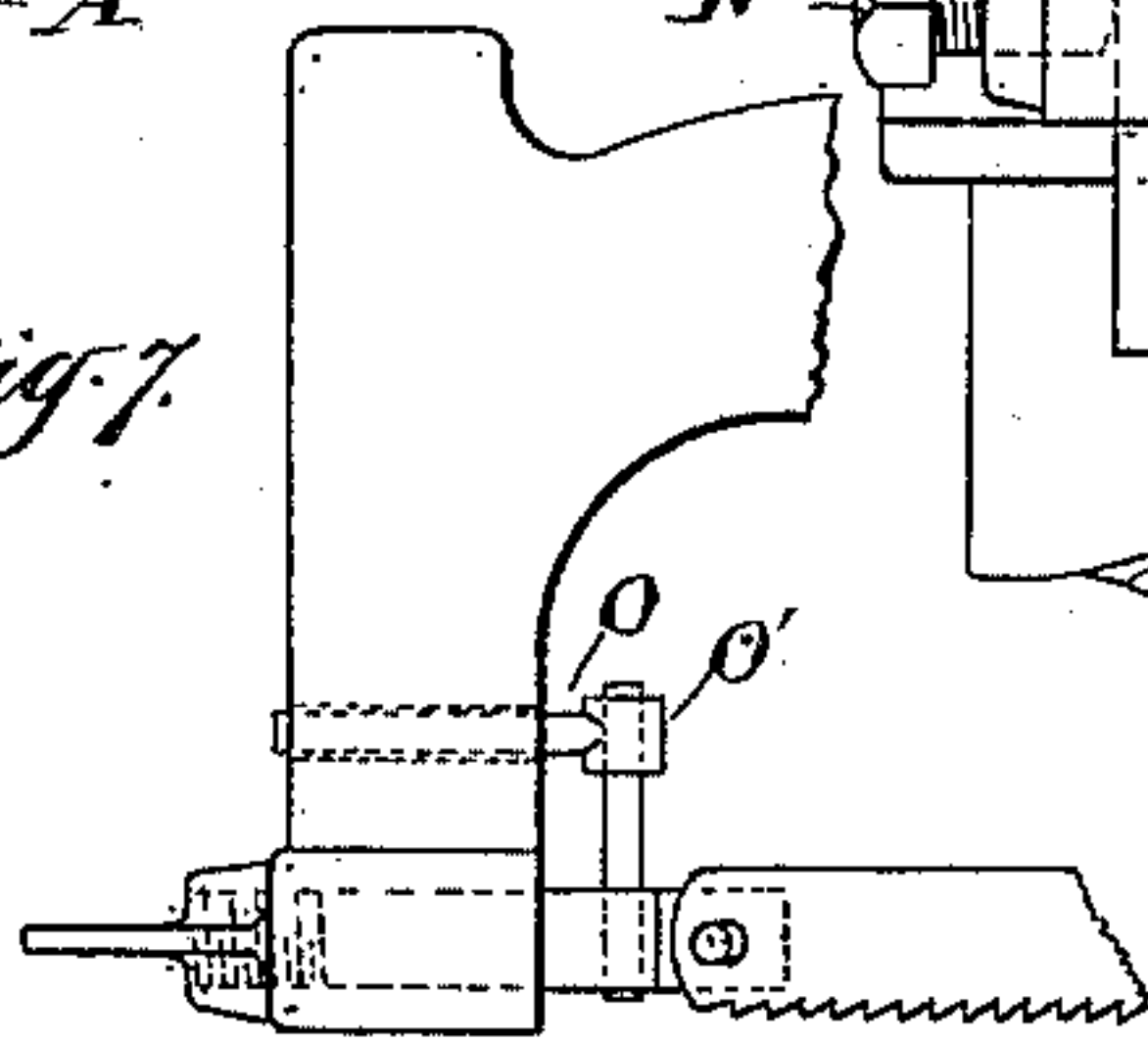
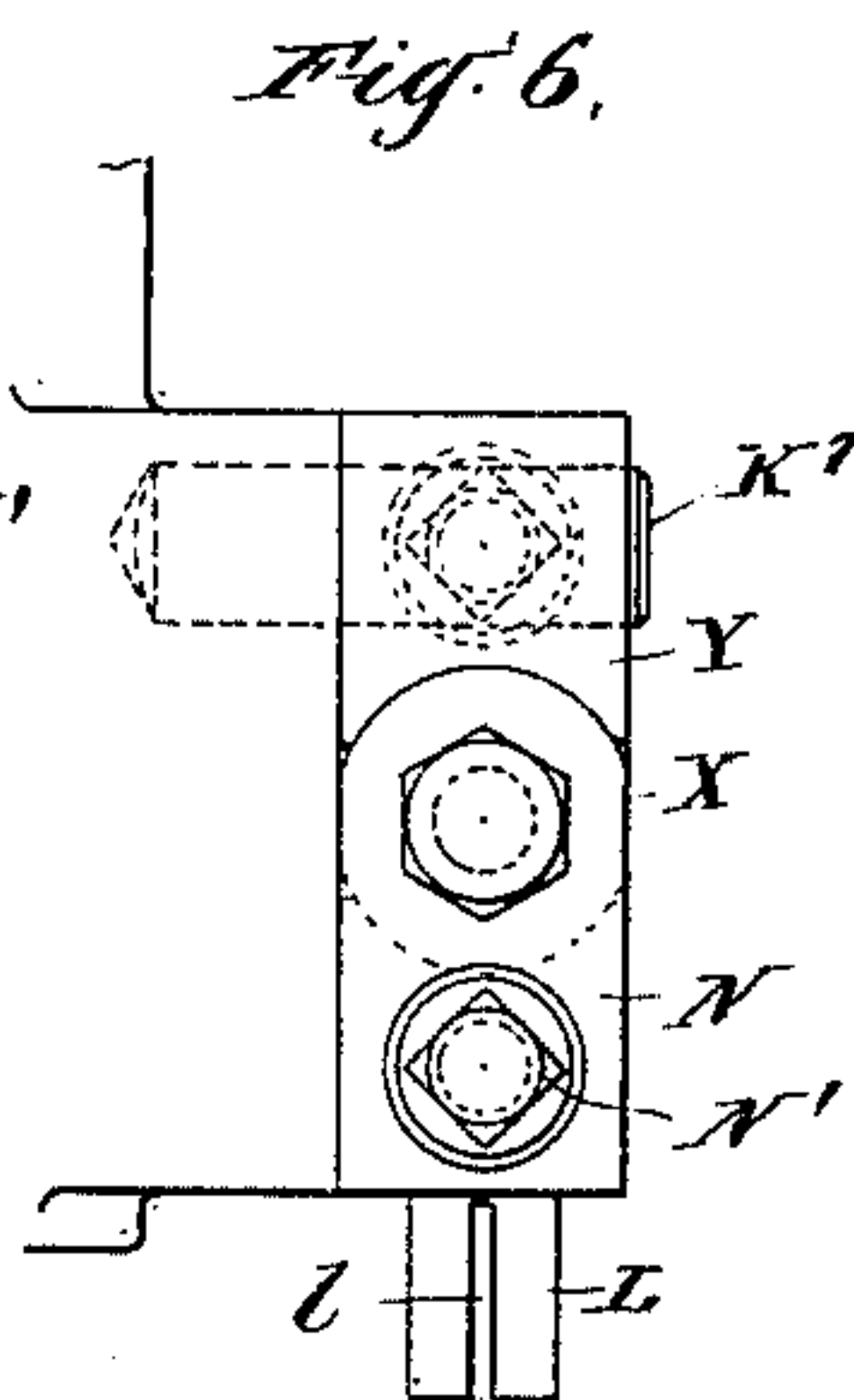
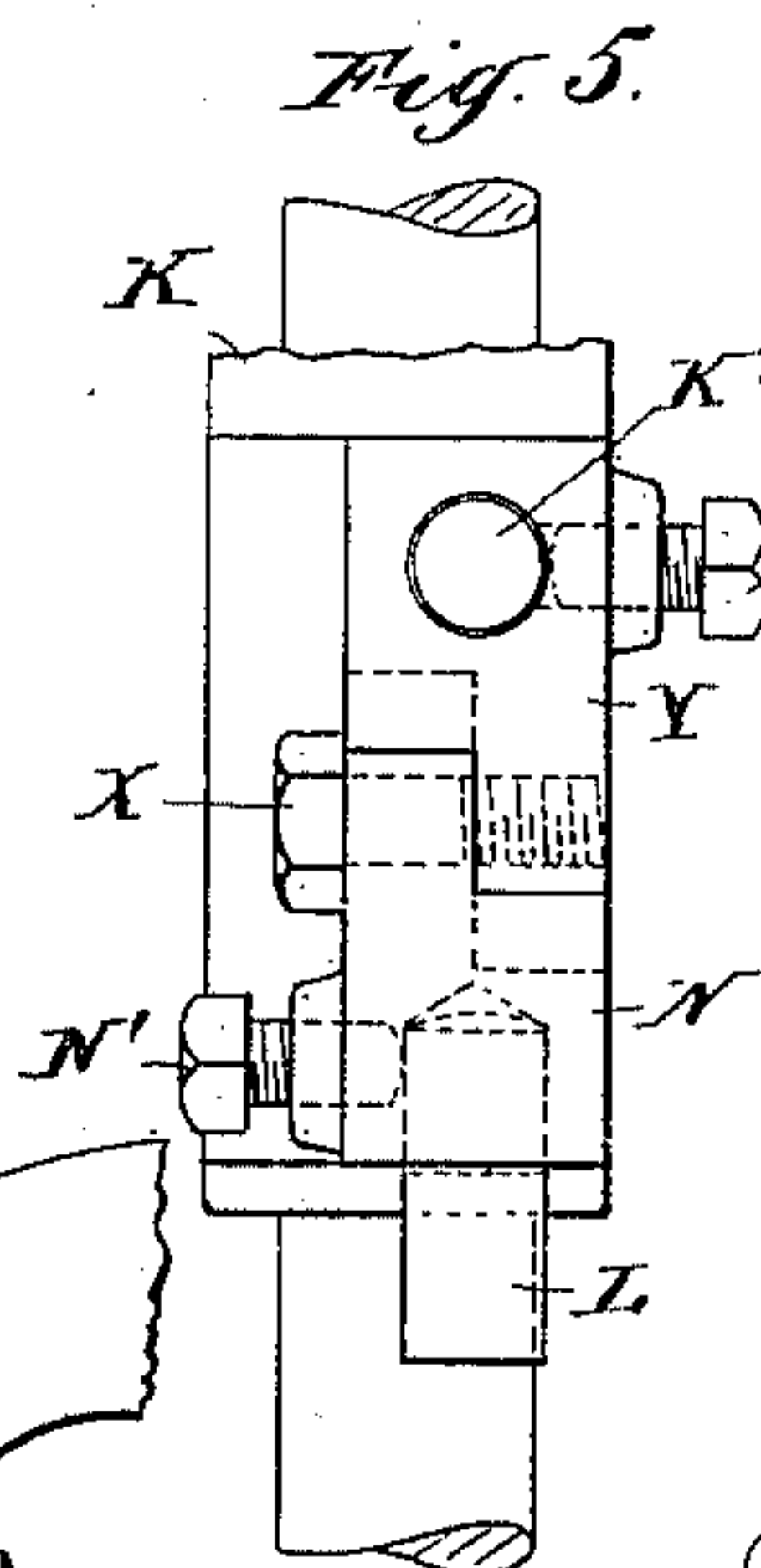
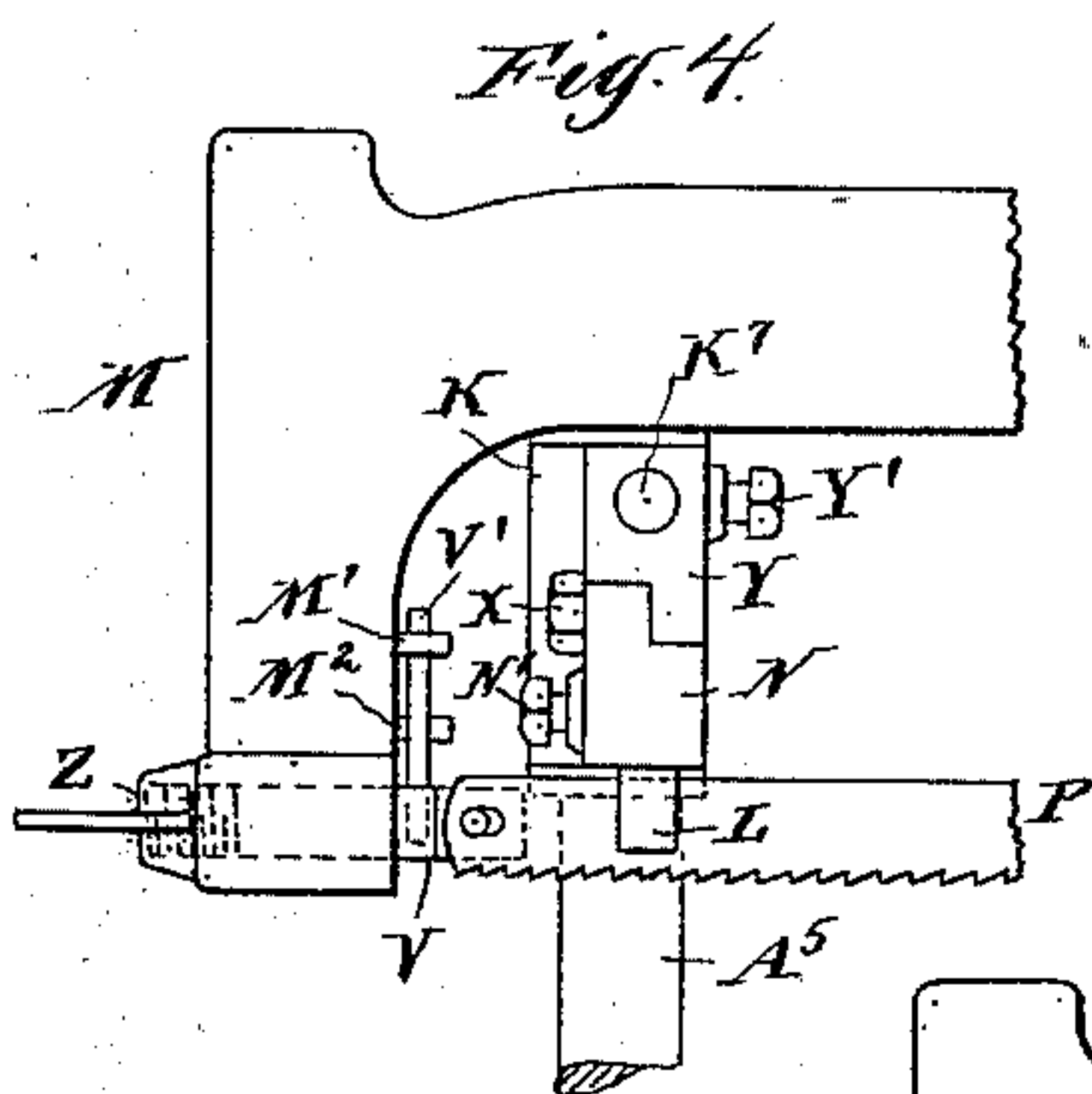
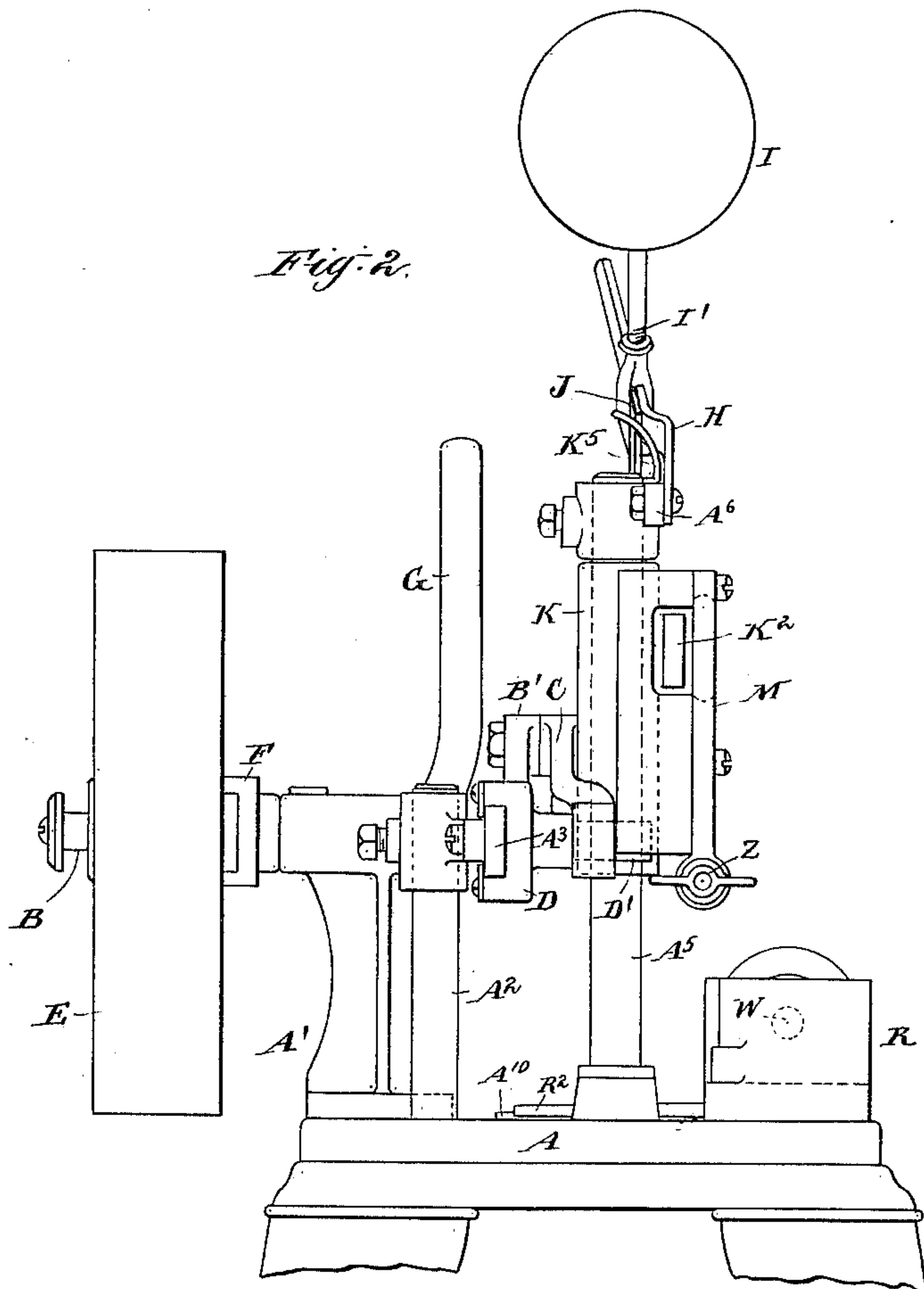
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2 Sheets—Sheet 2.



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A. F. Boyle

Inventor:

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UNITED STATES PATENT OFFICE.

LEVERETT H. OLMSTED, OF HACKENSACK, NEW JERSEY.

HACKSAW-MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,802, dated April 23, 1901.

Application filed January 14, 1901. Serial No. 43,128. (No model.)

To all whom it may concern:

Be it known that I, LEVERETT H. OLMSTED, a citizen of the United States, residing at Hackensack, in the county of Bergen, in the State of New Jersey, have invented a certain new and Improved Hacksaw-Machine, of which the following is a specification.

My invention relates to improvements in hacksaw-machines in which a hacksaw is secured to a frame to which is given a horizontal reciprocating motion by means of a revolving crank and connecting-rod operating in a plane parallel thereto and alongside thereof.

The objects of my improvement are to occupy but little space, avoid friction, adjust the weight upon the saw-blade, provide a firm support for the saw-frame and for the saw-guide, provide facilities for lowering and raising the saw to and from the work, insure a true vertical cut through the work, and provide a swiveled vise for holding work with a pointer or indicator to move along a segment marked to indicate various angles, and provide a counterbalance to the saw-frame and its attachments to be used when sawing soft-metal pipe and the like, in which the saw may feed down too rapidly.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a rear elevation. Fig. 2 is an end view seen from the right in Fig. 1. Fig. 3 is a plan view. Fig. 4 is a front view of a portion. Fig. 5 is a front elevation of a portion on a larger scale. Fig. 6 is a corresponding side elevation seen from the left in Fig. 5. Fig. 7 is a side view corresponding to a portion of Fig. 4, showing a modification.

Similar letters of reference indicate like parts in all the figures where they appear.

A is a foundation piece or bed of cast-iron or other suitable material mounted on legs of convenient height, the upper portions of which are shown in Figs. 1 and 2.

A' is a stout pedestal fixed on A and equipped to form a bearing for a shaft B, on which is fixed a crank B', carrying a crank-pin B², which latter acts through a connecting-rod C on a bearing D', which extends at right angles from a sliding head D, running

on a horizontal slideway A³, firmly supported on a fixed post A². A pulley E, turning constantly by a belt (not shown) from any suitable power, revolves or releases the shaft B, controlled by a clutch F, operated by a hand-lever G, acting through a link G', which is bent at the end to engage in the groove *e* in the hub of the pulley E. The link is formed with two vertical notches *g g'*, in which engages a spring A⁴, fixed on the stationary pedestal A' and serving to hold the lever G and the connected clutch in or out of engagement until it shall be strongly operated by the hand.

A⁵ is a smoothly-finished cylindrical post set in the bed A. On its upper end is fixed a boss having longitudinally-extending arms A⁶ A⁷. In the front arm A⁶ is pivoted a lever H, carrying an adjustable weight I, secured by a pinching-screw I'. A link J is pivoted to this lever and extends downward. This link connects to a horizontal arm K' on a stout sleeve K, which latter embraces and is self-adjusting up and down on the cylindrical post A⁵. The arm is firmly secured by screws to a horizontal slideway K², the rear end of which is steadied by a post A⁹, which it partially embraces by means of a bracket K³.

M is a reciprocating frame carrying the saw P and receiving motion through an extension of the bearing D' into a deep vertical groove *m*, so that it is reciprocated the same whether it is in a high or low position. This carrier M is guided on the slideway K², partially embracing it by the aid of narrow plates K⁴. A spring-catch K⁵, extending upward from the arm K', engages automatically over the arm A⁷ when this frame is lifted and holds it in its highest position. The saw is engaged by means of slightly-hooking pins set in flat faces near the plane of the axis of the cylindrical pieces. The cylindrical piece U at the right hand is held by a transverse pin U'. The cylindrical piece V at the left side is held adjustably by a thumb-nut Z. Resistance to its rotation is obtained through an arm V', engaging with two pins M' M² in the frame M. The saw is further held in the required plane at the working point by the aid of a guide L, having a narrow slot *l*, receiving the saw-blade and allowing it to play through it in an obvious manner. This guide is re-

ceived in a block N, which is adjustable laterally by turning on a pivot-screw X, set in a block Y, which latter is capable of turning and also of being shifted bodily to the right and left on a horizontal pin K⁷, set in the sleeve K. The adjustment of the block Y on the pin K⁷ is secured by a pinching-screw Y'. The adjustment of the block N at any required angle is secured by tightening the pivot-screw X. The guide L may be adjusted in its close-fitting hole in the block N, either up and down or by partially revolving it, after which it is secured by a pinching-screw N'. The latter adjustment—the turning of the pin L slightly to a greater or less extent—gives a capacity for supporting the saw firmly by a just sufficiently tight pressure on each face. Whenever through wear or other cause the fit becomes too easy, it is only necessary to slacken the screw N' and partially rotate the guide L and again tighten the screw.

The adjustment of the block N on its pivot-pin X allows the changing of the inclination of the saw. This will usually be only to very small extents, sufficient to attain absolute truth in sawing through a thick piece of metal. The adjustment on the pin K⁷ allows the position of the guide-block L to be changed bodily to the right or left. The partial turning on the pin K⁷ allows the guide L to be adjusted to the right or left, so as to be always close to the piece to be cut without contact with it.

The piece to be sawed is shown as a cylindrical bar, which may be of soft steel and is indicated in dotted lines Q in Figs. 1 and 2. It is firmly confined in a holder R, which is pivoted to the bed A by an adjustable screw S and is firmly clamped between an upright face R' and a sliding jaw T, which latter is operated by a screw W. For square cuts the holder R is set exactly longitudinal to the bed; but to adjust for various angles the pivot-screw S is slackened and the holder R is partially revolved thereon and the screw is again tightened. A raised arc A¹⁰ is formed just in rear of the holder R, the upper face of which is graduated and the inner face—that toward the holder R—receives a spring-index R², which aids in determining the angle.

The revolutions of the shaft B give a uniform reciprocating motion to the saw. The weight of the carriage M and its attachments and also the downward force transmitted through the link J from the loaded lever H urge the saw down to its work. For sawing small pieces the weight I may be set inward—to the right in Figs. 1 and 3—so as to reduce its leverage. For heavy sawing it should be shifted outward—to the left in Figs. 1 and 3—thereby increasing the force holding the saw down to its work.

There are some cases in which it is important to diminish the downward pressure of the saw, even beyond what would be attained by taking off the weight I entirely. For such cases I rig another lever H' and link J'. (Both

shown in dotted lines in Fig. 1.) Such lever H' is pivoted on a boss on the rear face of the arm A⁶ and connected by the aid of the link J' to a lug on the sleeve K. These parts may be permanently attached to the machine, if preferred, the weight I being transferred from the lever H to the lever H', according as the downward pressure on the saw is required to be augmented or diminished. I prefer to remove the lever H' and the link J' when they are not required.

It will be understood that whenever the weight of the saw and the connected parts presses down with too much force on the work I take the weight I off from the lever H and apply it on the lever H', securing it in such position as will give the required amount of force to partially balance the saw and its connections.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The inner face of the arc A¹⁰ may have V-shaped notches to receive the corresponding wedge-shaped end of the lip on the spring R' and aid the eye in setting the work for certain angles. It may be specially desirable to provide such a notch at the required point to aid in setting the holder for cutting squarely across a straight-faced piece.

Parts of the invention can be used without others. I can omit the steadying-post A⁹ and support the slideway K and its attachments entirely on the main post A⁵. The thickness and curvature of the connecting-rod C may be varied. It is only important that it shall communicate the motion properly and avoid hitting the work under all conditions.

Fig. 7 shows a modification of the provisions for maintaining the saw in the vertical plane. In this modification, as in the form shown in Fig. 4, there is an upright arm V', set in the cylinder V; but in this form, instead of holding it between two pins M' and M², the arm extends smoothly through an upright hole in the head O' of a pin O, which pin is allowed to play smoothly through a corresponding hole bored in the saw-frame.

In applying the parts together with either form of the invention the cylinder V is inserted from the right, as shown in Fig. 7, and the pin O being inserted in the hole for its reception the parts are moved easily into position, and after the saw is engaged the nut Z is tightened, drawing it to the proper tension. In this movement the pin O O' moves easily in the hole for its reception. Either form of the invention holds the saw upright satisfactorily.

In the provisions for steadying the slideway the post A⁹ may be grooved and the end of the slideway K² made to enter the groove, or the end of the slideway K² may be enlarged and a hole made through it for the post A⁹ to pass through, or two posts may be placed a sufficient distance apart for the end of the slideway K² to work freely between them.

I claim as my invention—

1. As an improvement in hacksaw-machines, the saw-frame guided on a self-adjusting slideway K^2 and having a vertical groove m , in combination with a sliding head D, having an extension D' performing the double function of receiving motion from the connecting-rod C and transmitting it directly to the saw-frame in all positions, all substantially as herein specified.

2. As an improvement in hacksaw-machines, the firmly-supported main post A^5 , the sleeve K carrying the slideway K^2 , the link J and lever H combined and arranged to serve substantially as herein specified.

3. As an improvement in hacksaw-machines, the firmly-supported main post A^5 , the sleeve K carrying the slideway K^2 , the second post A^9 engaged with the slideway through a bracket or fork K^3 , and the link J, and lever H combined and arranged to serve substantially as herein specified.

4. As an improvement in hacksaw-machines having the reciprocating saw-frame M, bed-piece A, pedestal A' , shaft B, crank B' and the swiveling holder R R' T and operating means W, in combination with each other and with the index R^2 and graduated arc A^{10} , all arranged for joint operation substantially as herein specified.

5. In a hacksaw-machine having the reciprocating saw-frame M with the saw P adjustable in the latter, the rising and sinking sleeve K and slideway K^2 , in combination with the guide L, l , embracing the saw and

with the block N, screw N' , pivot X, block Y and screw Z, arranged for joint operation substantially as herein specified.

6. In a hacksaw-machine having a reciprocating saw-frame and adjustable saw-holder in combination with the upright arm V' , cylinder V, and supporting means $M' M^2$ for holding such arm upright and allowing it to move longitudinally of the frame, arranged to serve substantially as herein specified.

7. In a hacksaw-machine having a reciprocating saw-frame in combination with the arm A^6 , lever H' , link J' and sleeve K, all arranged to serve substantially as herein specified.

8. In a hacksaw-machine having a reciprocating saw-frame, a pedestal A' , a foundation piece or bed A and shaft B, in combination with the grooved hub-pulley E, notched link $G' g g'$, hand-lever G and spring A^4 , substantially as herein specified.

9. As an improvement in sawing-machines a saw-frame having horizontal and vertical movement, a vertical groove therein and means freely engaging said groove and connecting the frame to the actuating mechanism, whereby the frame may be operated at any level as set forth.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

LEVERETT H. OLMSTED.

Witnesses:

M. F. BOYLE,
J. B. CLAUTICE.