

No. 712,229.

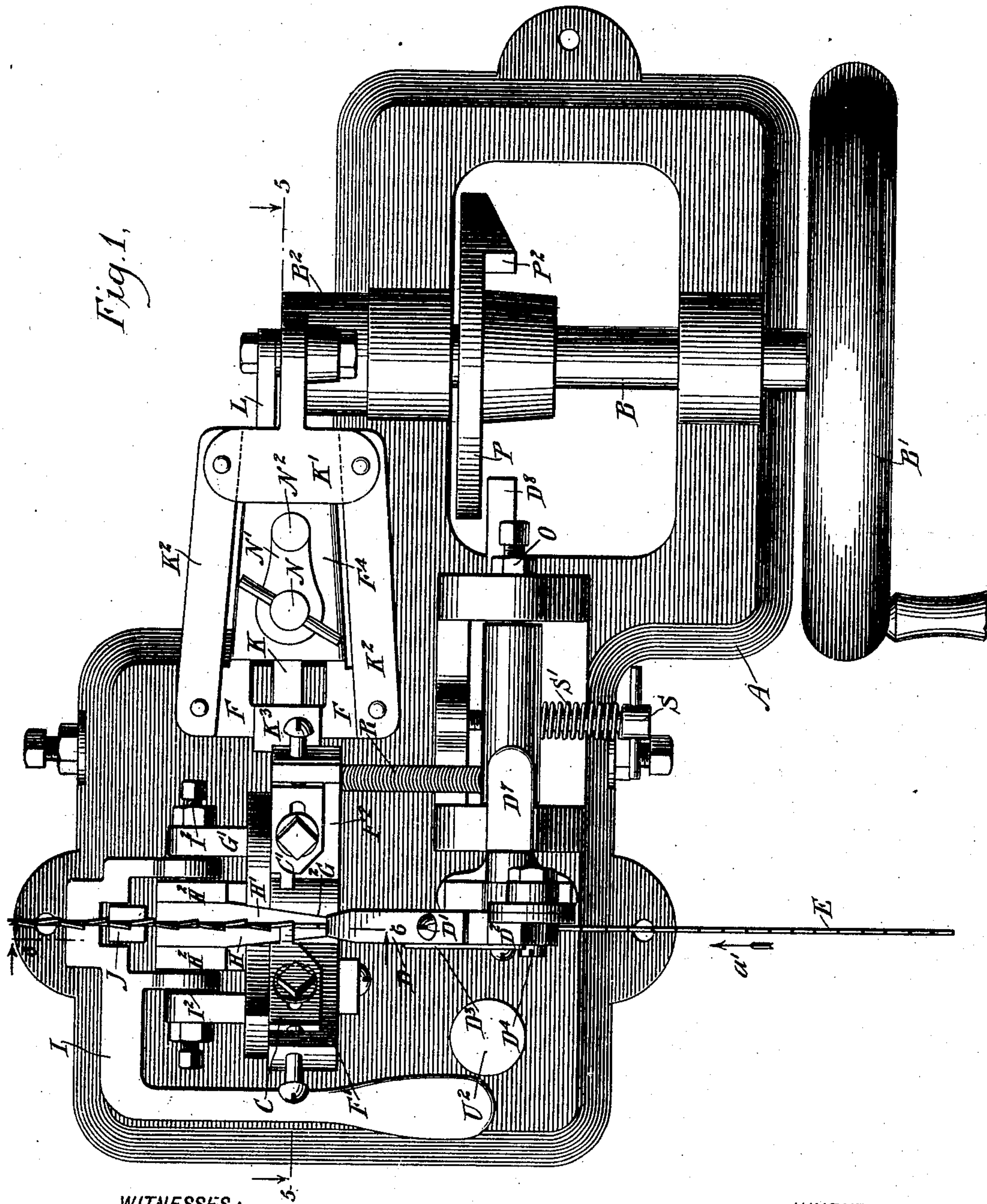
Patented Oct. 28, 1902.

C. YOUNG.
SAW SETTING MACHINE.

(Application filed Oct. 17, 1901.)

(No Model.)

6 Sheets—Sheet 1.



WITNESSES :

Edward Thorpe.
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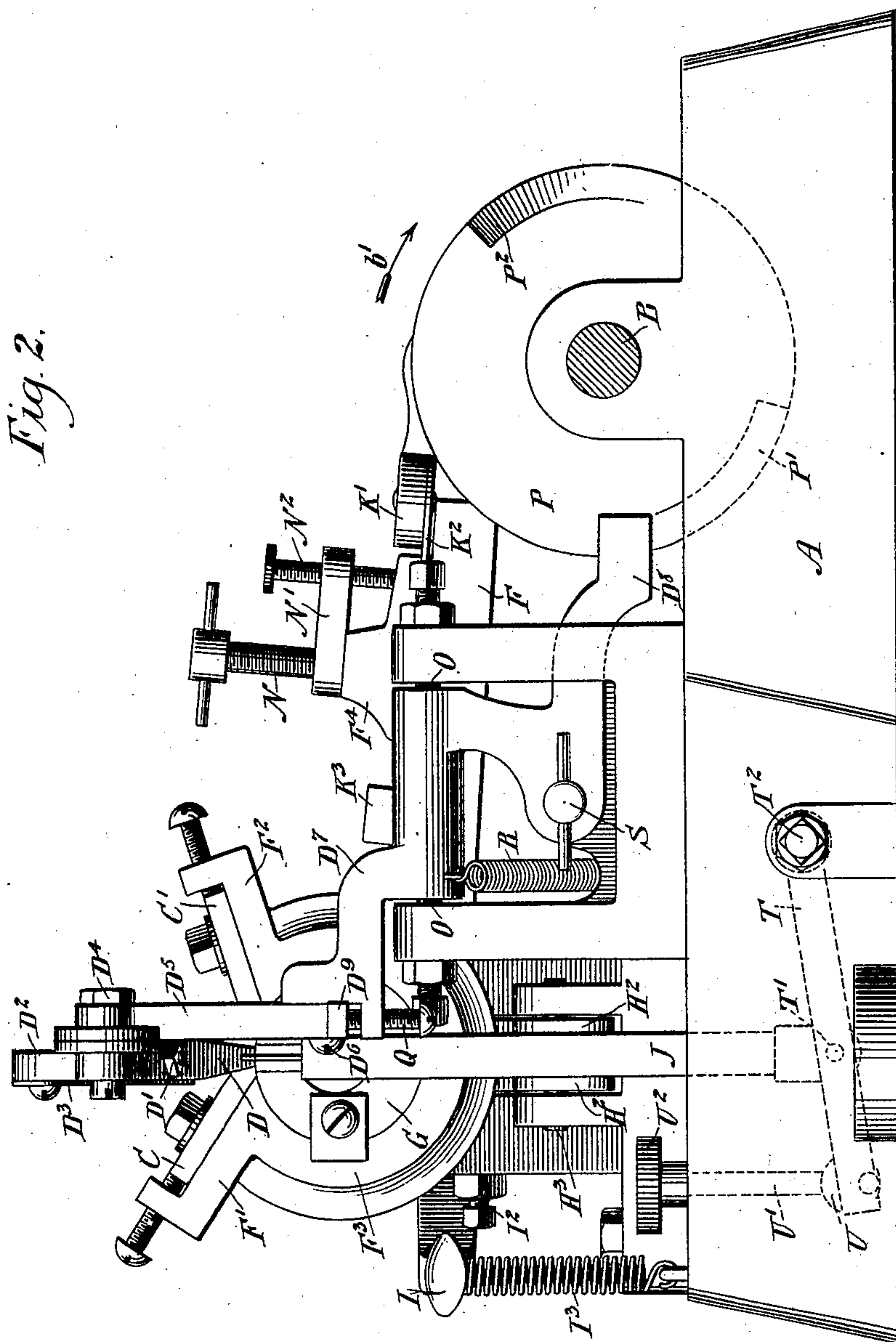
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6 Sheets—Sheet 2.



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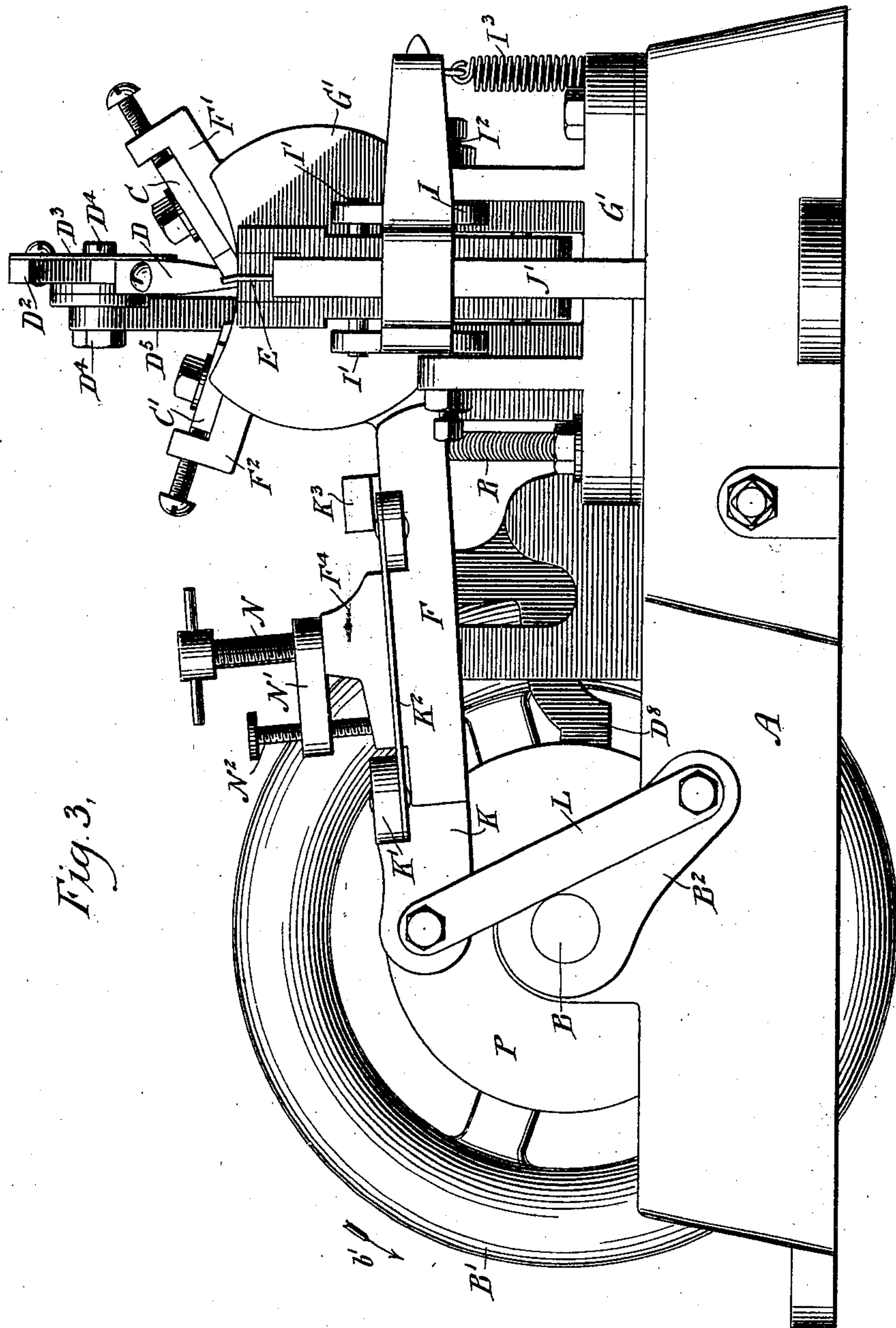
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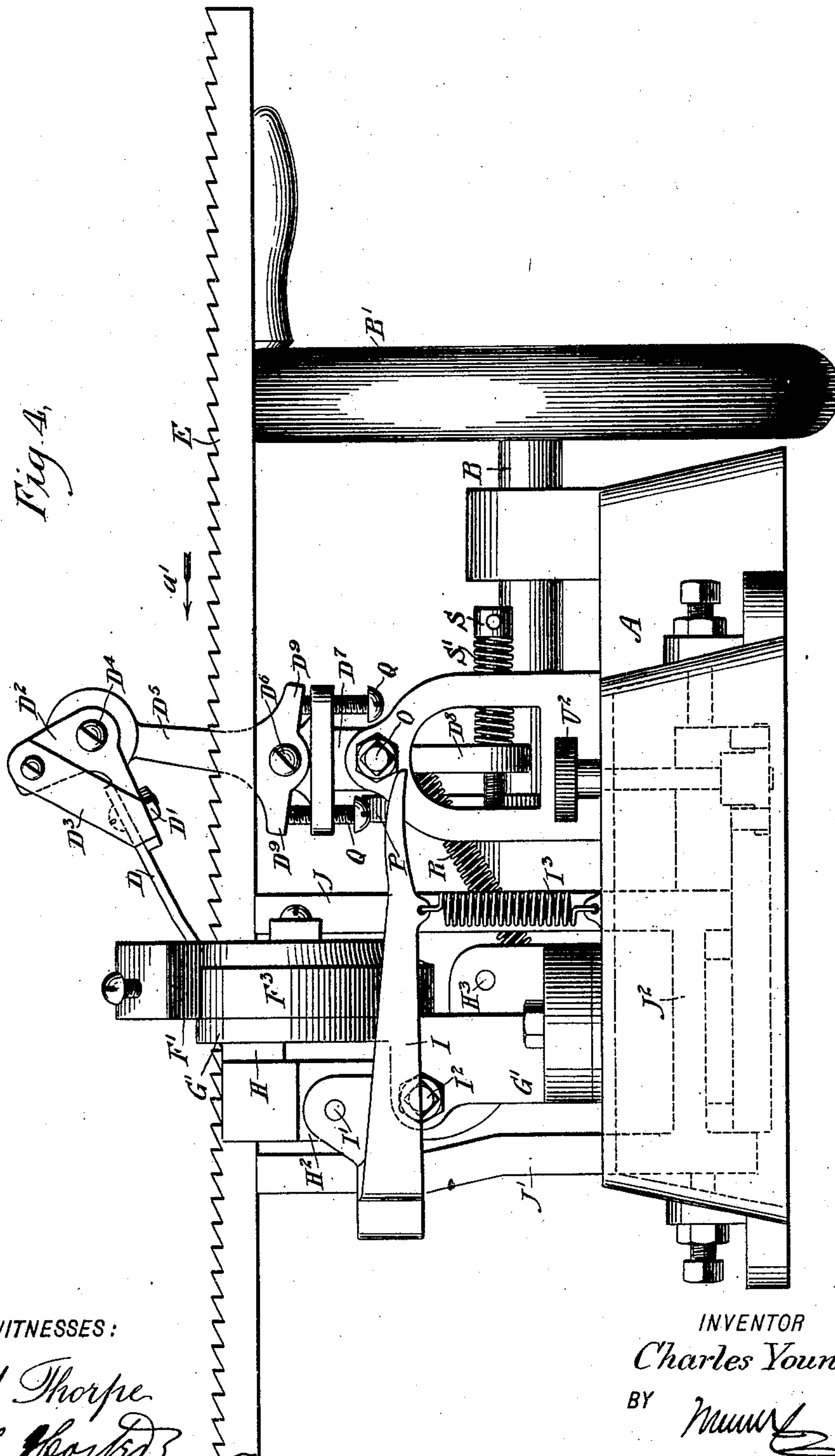
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Fig. 5.

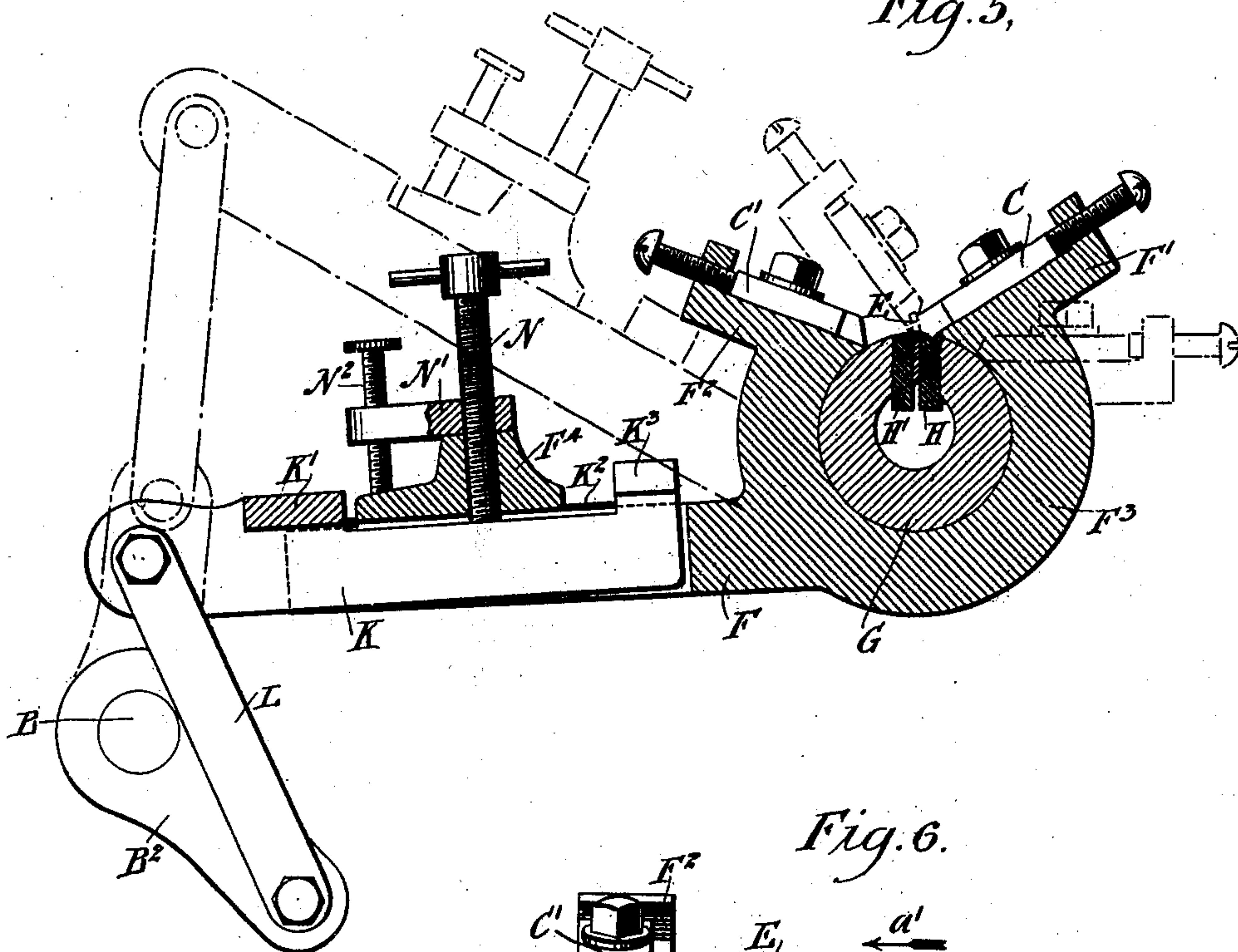
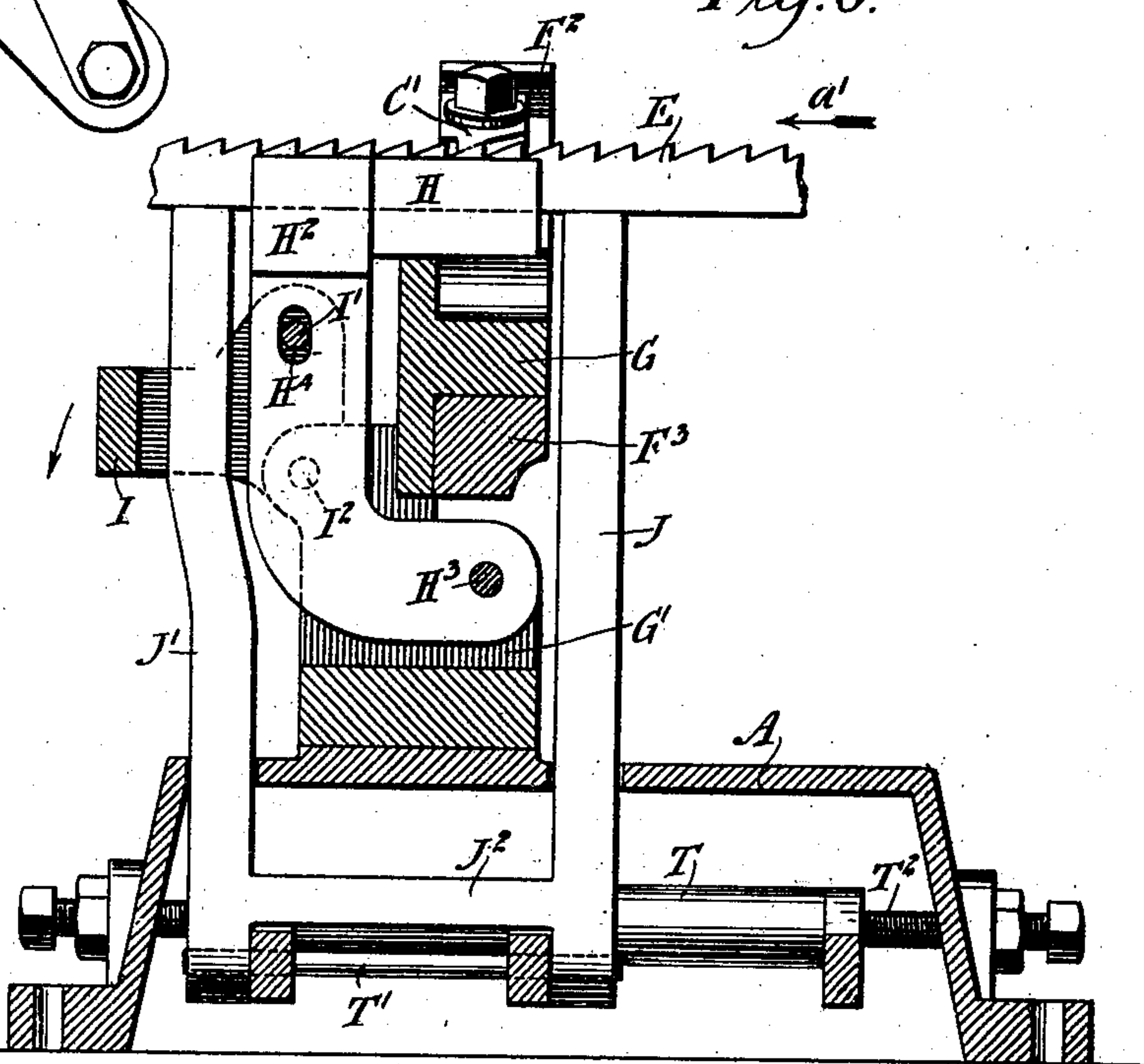


Fig. 6.



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6 Sheets—Sheet 6.

Fig. 7.

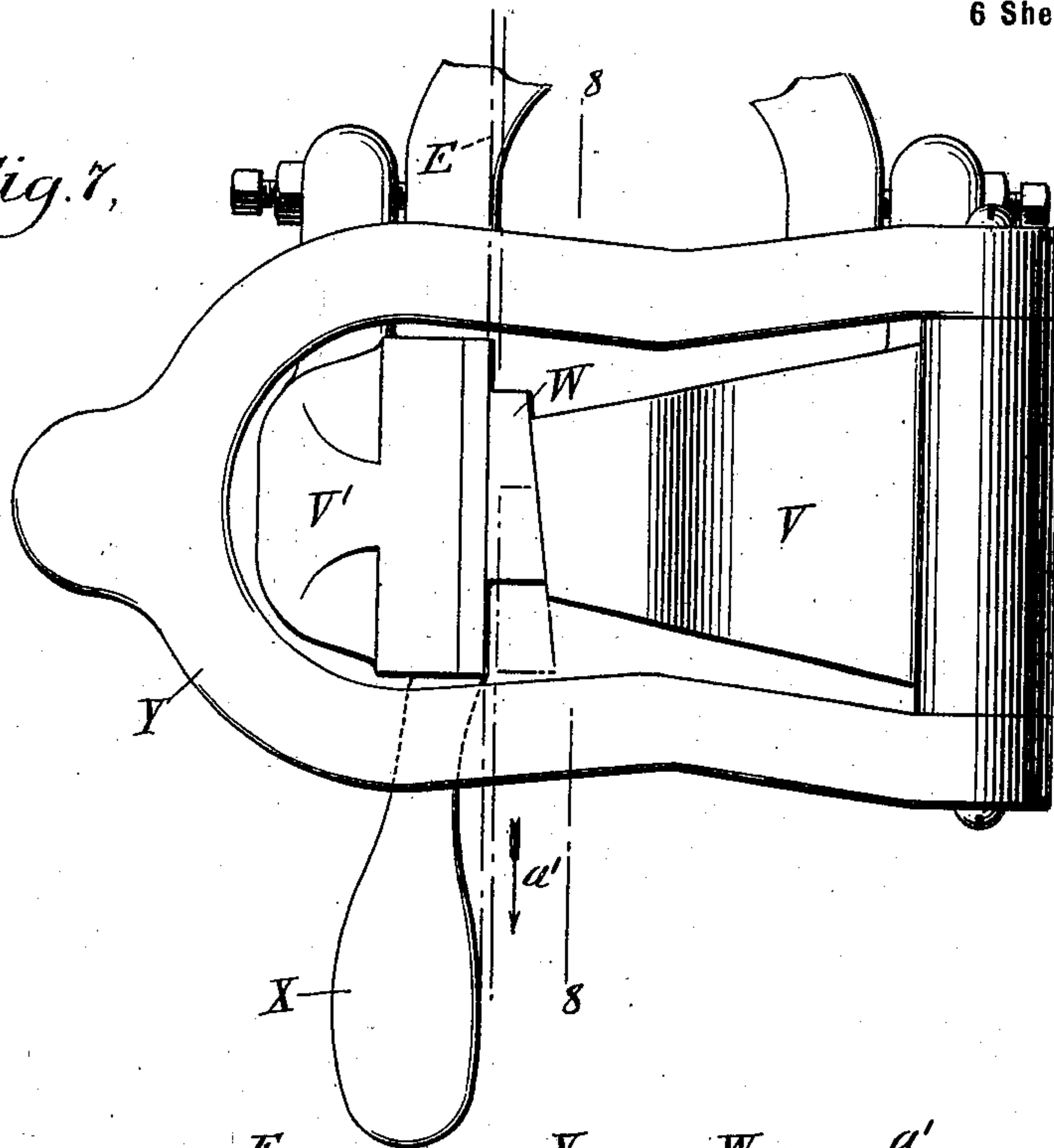
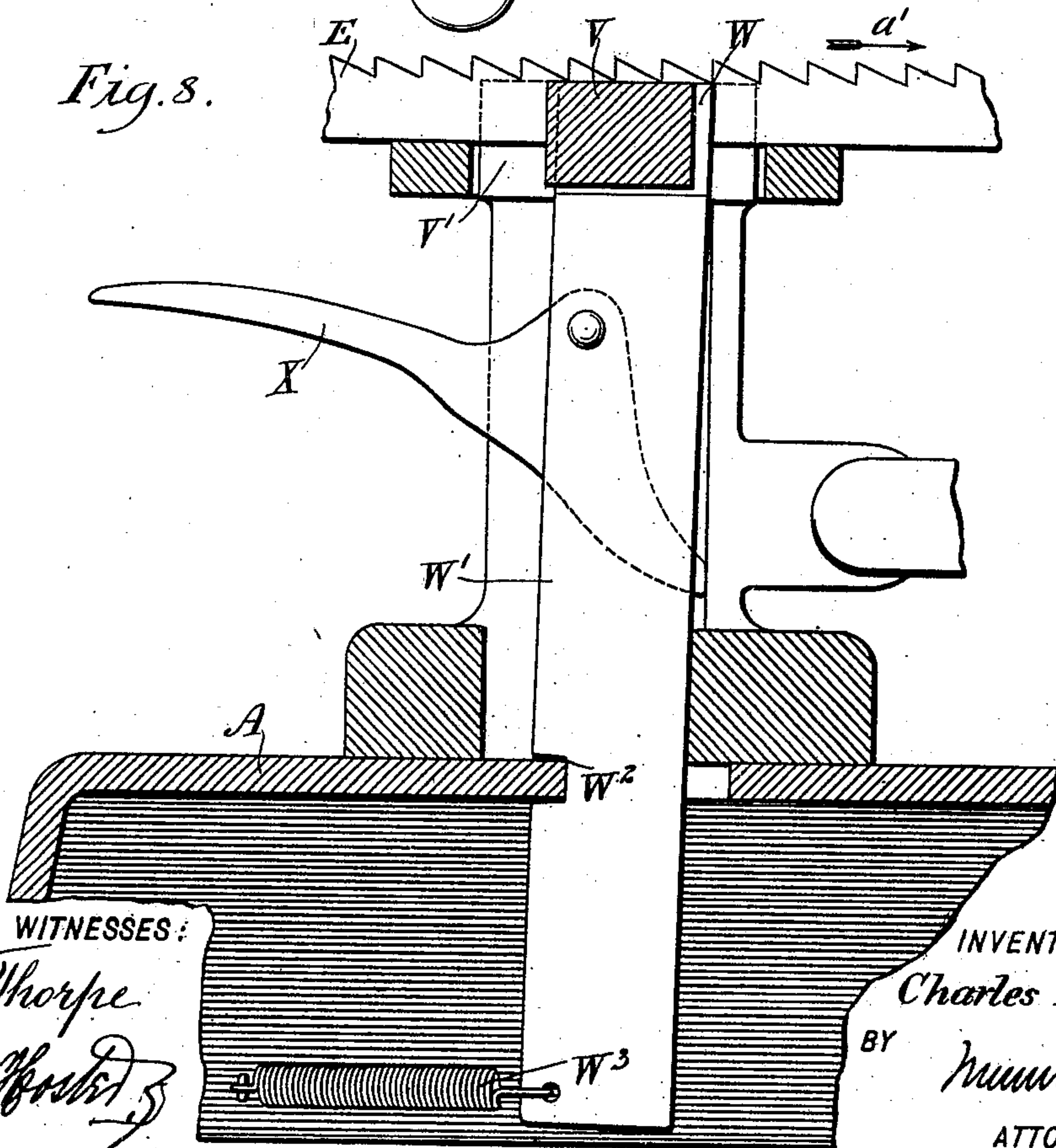


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES YOUNG, OF YORK, MAINE.

SAW-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 712,229, dated October 28, 1902.

Application filed October 17, 1901. Serial No. 78,970. (No model.)

To all whom it may concern:

Be it known that I, CHARLES YOUNG, a citizen of the United States, and a resident of York, in the county of York and State of Maine, have invented a new and Improved Saw-Setting Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved saw-setting machine designed for accurately and quickly setting the teeth of saws, notably band-saws, the arrangement permitting easy and quick adjustment of the several parts of the machine for readily treating all kinds of saws, whether wide, narrow, fine, or coarse.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a side elevation of the same, showing the main shaft in section. Fig. 3 is a rear side elevation of the same. Fig. 4 is an end view of the same. Fig. 5 is a rear sectional side elevation of the same on the line 5 5 of Fig. 1. Fig. 6 is a transverse section of the same on the line 6 6 of Fig. 1. Fig. 7 is an enlarged plan view of a modified form of vise, and Fig. 8 is a cross-section of the same on the line 8 8 of Fig. 7.

On a suitably-constructed frame A is journaled a transversely-extending main shaft B, carrying a hand-wheel B' or a pulley for rotating the shaft either by hand or power, and the said shaft serves to actuate the rocking tooth-setting tools C C' and the reciprocating feed-pawl D for feeding the saw E rearwardly in the direction of the arrow *a'* between the tools C C', so that the rocking setting-tools alternately engage successive teeth at opposite sides to set the teeth the desired degree, as hereinafter more fully described. The setting-tools C C' stand at angles to each other and are adjustably secured by ordinary means on angular arms F' F², formed on the hub F³ of a rock-arm F, the said hub F³ being mounted to turn on a pivot G, extending

transversely from a bracket G', attached to the frame A. The saw E is fed through a vise and extends between the members H H' of a movable wedge-shaped jaw fitting into a correspondingly-shaped recess G², formed on top of the pivot G, which latter thus also forms a pair of fixed jaw members for receiving the loose jaw members H H'. The rear or base ends of the loose jaw members H H' are secured on arms H², fulcrumed at H³ on the bracket G', (see Fig. 6,) and the said arms H² are provided with elongated slots H⁴, through which extends a pin I', held on a hand-lever I, fulcrumed at I² on the bracket G' and drawn on in a downward direction at its handle end by a spring I³ to hold the jaw members H H' normally in a forward closed position in the fixed jaw members. Thus the movable jaw members H H' and the fixed jaw-members on the pivot G form the vise, and the jaw members have the arms at their rear ends to allow the jaw members H H' to open on their rearward movement and to close between the fixed jaw members on their forward movement—that is, in the inverse direction of the saw-feed (see arrow *a'*) the said members H H' tend to close firmly onto the sides of the saw E. The rearward feed of the saw E is in the reverse direction to that in which the jaw members H H' close, and hence the saw can be readily moved rearwardly by the pawl D, as the jaws then tend to open, and as soon as the pawl D stops the rearward feed of the saw then the spring I³, drawing on the lever I, causes the latter to swing the arms H², and consequently the jaw members H and H', forward to securely clamp the saw in position during the setting operation of the setting-tools C C'. The back of the saw E rests on vertically-disposed saw-rests J J', of which the rest J extends in front of the pivot G and the hub F³, while the other rest J' extends in the rear of the arms H², as plainly illustrated in Fig. 6.

The rocker-arm F carries a lever K, connected at its free end by a pitman L with a crank-arm B² on the main driving-shaft B, so that when the latter is rotated the crank-arm B², pitman L, and lever K impart a rocking motion to the rocker-arm F to cause the setting-tools C and C' to alternately engage succeeding teeth and press the same in oppo-

site directions to set the teeth the desired degree. The connection of the lever K with the rocker-arm F is by means of springs K², secured at their forward ends on a cross-piece K' integral with the lever K, the rear ends of the springs being secured to the rocker-arm F. The cross-piece K' is adapted to rest on the forward end of the rocker-arm F at the time the crank-arm B² swings into a lowermost position, (see Fig. 3,) and the inner end of the lever K is formed with a cross-piece K³, adapted to be seated on the rocker-arm F at the time the crank-arm B² swings into an uppermost position. (See dotted lines in Fig. 5.) An adjusting-screw N screws in a lug F⁴, extending integrally from the rocker-arm F, and the lower end of the adjusting-screw N is adapted to abut against the top of the lever K, so as to adjust the latter relative to the rocker-arm F for giving more or less rocking motion to the rocker-arm F to cause the setting-tools C and C' to set the teeth the desired degree. The adjusting-screw N is engaged by a lock-nut N', in which screws a screw-rod N², abutting against the lug F⁴, to hold the lock-nut in position after the adjusting-screw N has been set to hold the lever K in proper relation to the rocker-arm F. By mounting the lever K on the springs K² a yielding connection is established between the said lever and the rocker-arm to cause the setting-tools C and C' to yieldingly engage the saw-teeth to insure a gradual setting of the teeth—that is, until the cross-pieces K' and K³ make positive connection with the rocker-arm F to cause a positive rocking of the latter during the last period of setting the teeth.

It is understood that when the crank-arm B² swings into a lowermost position the setting-tool C sets a tooth on the saw E, and when the crank-arm B² swings into an uppermost position then the other setting-tool C' sets the final tooth of the saw E. By screwing the adjusting-screw N upward the lever K is adjusted to give less throw to the rocker-arm F, and by screwing the adjusting-screw N downward the lever is correspondingly adjusted to give more throw to the rocker-arm. The maximum of throw is obtained when the lever K is moved downward by the adjusting-screw N until its cross-pieces K' and K³ rest on the rocker-arm F, as the lever now becomes a fixed part of the rocker-arm and the yielding action between the lever K and the rocker-arm F ceases. It will thus be seen that the throw of the rocker-arm can be varied to suit different kinds of saws.

The saw-feed is constructed as follows: The pawl D is pivoted at D' on a pawl-arm D², so that the pawl D is free to swing sidewise, but is normally held in a central position by a spring D³, secured to the pawl-arm D² and engaging one side of the pawl D. This sidewise swinging of the pawl D is desirable in case the free end of the pawl is caught by one of the setting-tools C C', so that the pawl can

swing in the direction in which the setting-tool is moving without danger of the pawl being broken. The pawl-arm D² is fulcrumed at D⁴ on an adjustable arm D⁵, fulcrumed at D⁶ on a rock-arm D⁷, hung on centers O, carried by the main frame A, as plainly shown in Figs. 1, 2, and 4. The rock-arm D⁷ is formed with an extension D⁸, adapted to be engaged alternately by the cam-faces P' and P², formed or secured on the face of a cam P, secured to the main driving-shaft B. The rock-arm D⁵, previously mentioned, is provided with side arms D⁹, (see Figs. 2 and 4,) engaged by screws Q, screwing in the rock-arm D⁷, to permit of adjusting the arm D⁵ in a transverse direction to bring the pawl D in proper relation to the saw-teeth. A spring R draws on the rock-arm D⁷ to hold the extension D⁸ against the cam-faces P' and P², and an adjusting-screw S screws in the extension D⁸ and abuts against a fixed part of the main frame A, so as to regulate the extension of the arm D⁸ relative to the cam-faces P' and P² to give more or less throw to the rock-arm D⁷, and consequently to the pawl D, to permit of feeding saws having large or small teeth. When the main driving-shaft B is rotated in the direction of the arrow b', then the cam-faces P' and P² alternately impart an intermittent rocking motion to the rock-arm D⁷, so that the pawl D is caused to swing rearwardly to push the saw E in the direction of the arrow a'. The return movement of the pawl D and its rock-arm D⁷ is accomplished by the spring R, the return movement being limited by the adjusting-screw S abutting against the fixed part of the frame A. A spring S' presses the adjusting-screw S to hold the latter in the position in which it is moved by the operator. It is understood that when the adjusting-screw S is screwed inward then the free end of the extension D⁸ of the rock-arm D⁷ is moved farther from the face of the cam P, so that the cam-faces P' and P² give less feed throw to the rock-arm D⁷ and the pawl D. By screwing the adjusting-screw S outwardly more throw is given to the pawl D by the cam-surfaces P' and P², acting on the rock-arm D⁷. In either case it is understood that the pawl D moves the saw the length of a tooth at each upward stroke of the pawl.

The saw-rests J J', previously mentioned, are rigidly connected with each other at their lower ends by a cross-bar J², and the said rests are pivotally connected at T' with a lever T, fulcrumed at T² on the main frame A, and the said lever is provided at its free end with a trunnion-nut U, in which screws an upwardly-extending screw-rod U', provided with a head U², adapted to rest on the top of the main frame A and under the control of the operator, so that when the latter turns the head U² in one direction to screw the screw-rod U' in the nut U then an upward-swinging motion is given to the lever T to raise the rests J J' for accommodating narrow saws in

the machine, and when the operator turns the head U^2 in the opposite direction and screws the screw-rod U' correspondingly in the nut U then the lever T swings downward, and thereby carries the rests $J J'$ in the same direction to accommodate wide saws.

The operation is as follows: When the shaft B is turned in the direction of the arrow b' , then the rocking motion given to the rocker-arm F causes the setting-tools C and C' to rock with it and engage succeeding teeth alternately on opposite sides—that is, during one half-revolution of the shaft B the tool C presses a tooth to the right, and during the other half-revolution of the shaft B the tool C' sets a succeeding tooth to the left, it being understood that between the actions of the tools C and C' the saw E is fed forward the length of a tooth by the action of the pawl D . Thus the tools $C C'$ act alternately on the succeeding teeth to properly set the same.

From the foregoing it will be seen that the several parts of the machine can be readily and conveniently adjusted by the operator to set the machine for treating narrow or wide saws or saws having fine or coarse teeth.

The modified form of vise shown in Fig. 7 consists, essentially, of the fixed jaw members $V V'$, between which fits the movable jaw member W , having one side beveled to engage the correspondingly-beveled face of the fixed jaw member V , the saw being clamped between the straight faces of the members V' and W . The movable jaw member W is provided with a depending arm W' , fulcrumed near its lower end at W^2 on the platform of the main frame or bed A , and the end of the arm W' below the fulcrum W^2 is drawn on by a spring W^3 to yieldingly hold the jaw W between the fixed jaw members. A lever X is fulcrumed on the arm W' between the fulcrum W^2 and the member W and abuts with one end against a fixed part, and its other handle end is under the control of the operator, so that when the latter presses the handle end a swinging motion is given to the arm W' to move the jaw member W outward. The saw-rest Y is in the form of a pivoted yoke, as shown. The vise above described functions in the same manner as the vise previously described—that is, the jaw W yields transversely on the rearward feeding of the saw in the direction of the arrow a' by the saw-feed pawl, and the spring W^3 securely holds the jaw W in clamping position during the period of rest of the saw-feed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A saw-setting machine having a fixed pivot formed with a passage for the saw, a saw-feed to move the saw intermittently through the pivot-passages, and a rocker-arm mounted to rock on the said pivot and carrying setting-tools disposed on opposite sides of the saw, to alternately engage successive saw-teeth to set the same, as set forth.

2. A saw-setting machine having a fixed pivot, a rocker-arm mounted to rock on the said pivot and carrying the tooth-setting tools, a crank-arm and an adjustable connection between the said crank-arm and the rocker-arm, to allow of varying the throw of the rocker-arm, as set forth.

3. A saw-setting machine having a fixed pivot, a rocker-arm mounted to rock on the said pivot and carrying the tooth-setting tools, a crank-arm and an adjustable connection between the said crank-arm and the rocker-arm, to allow of varying the throw of the rocker-arm, the said connection comprising a lever on the rocker-arm, a pitman between the lever and crank-arm and an adjusting means to adjust the lever on the rocker-arm, as set forth.

4. A saw-setting machine having a fixed pivot, a rocker-arm mounted to rock on the said pivot and carrying the tooth-setting tools, a crank-arm and a yielding connection between the crank-arm and the said rocker-arm, as set forth.

5. A saw-setting machine having a rocker-arm for carrying the tooth-setting tools, a spring secured on the said rocker-arm, a lever fulcrumed on the rocker-arm and attached to the spring, means for limiting the movement of the lever relative to the rocker-arm and means for imparting an up-and-down movement to the lever, as set forth.

6. A saw-setting machine having a rocker-arm for carrying the tooth-setting tools, a spring secured on the said rocker-arm, a lever attached to the spring, stops for limiting the relative movement of the lever and rocker-arm, means for imparting an up-and-down movement to the lever, and an adjusting-screw for regulating the movement of the lever relative to the rocker-arm, as set forth.

7. A saw-setting machine having a rocker-arm for carrying the tooth-setting tools, a spring secured on the said rocker-arm, a lever fulcrumed on the rocker-arm and attached to the spring, means for imparting an up-and-down movement to the lever, and arms on the lever for engaging the said rocker-arm, as set forth.

8. A saw-setting machine having a rocker-arm for carrying the tooth-setting tools, a spring secured on the said rocker-arm, a lever attached to the spring, means for imparting an up-and-down movement to the lever, an adjusting-screw for regulating the movement of the lever relative to the rocker-arm, and arms fixed on the lever for engaging the rocker-arm, as set forth.

9. A saw-setting machine having a fixed support provided with a V-shaped slot, and a pair of pivoted and spring-pressed clamping-jaws corresponding in shape to the slot of the support, and having longitudinal movement therein, said jaws opening on their rearward movement and closing on their forward movement, as set forth.

10. A saw-setting machine having a fixed

support provided with a V-shaped slot, a pair of pivoted clamping-jaws corresponding in shape to the slot of the support, and a spring-pressed device connected with the jaws for swinging them on their pivot to hold them normally in the slot of the support, as set forth.

11. A saw-setting machine having a fixed support formed with a tapering slot and a pair of clamping-jaws fitting the side walls of the said slot and having longitudinal movement therein, and spring-pressed means for holding the jaws in position in the support, the said means comprising pivoted arms for carrying the jaws, and a spring-pressed lever engaging the arms to press the jaws in firm engagement with the slot-walls, as set forth.

12. A saw-setting machine having a pair of connected saw-rests, a pivoted lever to which the said rests are pivoted and a screw-rod connected with the lever, as set forth.

13. A saw-setting machine having reciprocating setting-tools, a pawl-support, and a feed-pawl carried by the support and mounted to yield laterally, as and for purpose set forth.

14. A saw-setting machine having reciprocating setting-tools, a saw-feed for feeding the saw intermittently between the said setting-tools, the said saw-feed comprising a rock-arm rocking in the direction in which the saw is to be moved, a pawl-arm pivoted on the said rock-arm, and a pawl pivoted on the said pawl-arm to swing sidewise thereon, as set forth.

15. A saw-setting machine having reciprocating setting-tools, a saw-feed for feeding the saw intermittently between the said setting-tools, the said saw-feed comprising a rock-arm rocking in the direction in which the saw is to be moved, a pawl-arm pivoted on the said rock-arm, a pawl pivoted on the said pawl-arm to swing sidewise thereon, and a spring pressing the pawl to return it to a normal position, as set forth.

16. A saw-setting machine having reciprocating setting-tools, a saw-feed for feeding the saw intermittently between the said setting-tools, the said saw-feed comprising a rock-arm rocking in the direction in which the saw is to be moved, a pawl-arm pivoted on the said rock-arm, and a pawl pivoted on the said pawl-arm to swing sidewise thereon, the said rock-arm consisting of two members one adjustable on the other, as set forth.

17. A saw-setting machine having reciprocating setting-tools, a saw-feed for feeding the saw intermittently between the said setting-tools, the said saw-feed comprising a rock-arm rocking in the direction in which the saw is to be moved, a pawl-arm pivoted on the said rock-arm, a pawl pivoted on the said pawl-arm to swing sidewise thereon, a cam for imparting motion to the rock-arm in one direction, a spring for returning the rock-arm, and an adjusting-screw for limiting the return movement of the rock-arm, as set forth.

18. In a saw-setting machine, the combina-

tion with a rocking support for tooth-setting tools, of a lever, a connection between the lever and support, whereby the lever will have movement on the support, means for adjustably regulating the range of movement of the lever on the said support, and means for imparting an up-and-down movement to said lever, as set forth.

19. In a saw-setting machine, the combination with a rocking support for tooth-setting tools, of a lever fulcrumed on said support, bars having one end secured to the lever and their other ends to the support, whereby the lever will have movement on the support, means for adjustably regulating the range of movement of the lever on the support, and means for imparting an up-and-down movement to said lever, as set forth.

20. In a saw-setting machine, the combination with a rocker-arm carrying tooth-setting tools, of a lever provided with a cross-bar at each end, springs having one end secured to one of the cross-bars and their other ends to the rocker-arm, a screw carried by the rocker-arm and engaging the lever, and means for imparting an up-and-down movement to the said lever, as set forth.

21. In a saw-setting machine, the combination with a bifurcated rocker-arm carrying tooth-setting tools, and provided with a lug connecting the members of said arm, of a lever arranged between the members of the rocker-arm and provided with cross-bars, springs having one end secured to one of the cross-bars of the lever and the other to the rocker-arm, a screw mounted in the lug of the rocker-arm and engaging the lever, and means for imparting an up-and-down movement to said lever, as set forth.

22. In a saw-setting machine, the combination with a support provided with a slot, of pivoted jaws extending into the slot, and a pivoted and spring-pressed lever loosely connected with the jaws and normally holding the jaws in the slot of the support, as set forth.

23. In a saw-setting machine, the combination with a support provided with a tapering slot, of jaws having a pivotal connection with the frame and provided with beveled outer faces and extending into the said slot, and a pivoted and spring-pressed lever loosely connected with the jaws, as set forth.

24. In a saw-setting machine, the combination with a rock-arm, of a pawl-arm carried by the rock-arm, a pawl pivoted to the pawl-arm, and a spring for holding the pawl in a central position, as set forth.

25. In a saw-setting machine, the combination with a rock-arm, of an adjustable arm carried by the rock-arm, a pawl-arm pivoted on the adjustable arm, and a pawl carried by said pawl-arm, as set forth.

26. In a saw-setting machine, the combination with a rock-arm, and means for operating the same, of an adjustable arm carried by the rock-arm, a pawl-arm carried by the adjustable arm, a pawl carried by said arm, and

means for regulating the throw of the rock-arm, as set forth.

27. In a saw-setting machine, the combination with a rock-arm, cams engaging the rock-arm to operate it, and a spring connected with the rock-arm for holding it in engagement with the cams, of an adjustable arm on the rock-arm, a pawl-arm pivoted to the adjustable arm, a pawl carried by said arm, and a screw screwing into the rock-arm and engaging a fixed support, as set forth.

28. A saw-setting machine, comprising, a stationary pivot provided with a slot, a saw-clamp mounted in the slot, a rocker-arm mounted on the pivot, and provided with oppositely-projecting tool-carrying arms, a driving-shaft, an adjustable connection between the rocker-arm and drive-shaft for regulating the throw of the rocker-arm, a saw-feeding device, and means for operating said feeding device, as set forth.

29. A saw-setting machine, comprising a stationary pivot, provided with a slot, a saw-clamp mounted in the slot, a rocker-arm mounted on the pivot and provided with oppositely-arranged and inclined tool-carrying

arms, a driving-shaft, a yielding and adjustable connection between the shaft and rocker-arm, a pivoted saw-feed dog, and means for operating the dog from the drive-shaft, as set forth.

30. A saw-setting machine, comprising a stationary pivot provided with a slot, a rocker-arm mounted on the pivot and provided with oppositely-arranged and inclined tool-carrying arms, a drive-shaft, a yielding and adjustable connection between the drive-shaft and rocker-arm, an adjustable saw-support, a saw-clamp in the slot of the pivot and having longitudinal movement therein, means for operating the clamp, a pivoted and adjustably-supported feed-dog for feeding the saw, and means for operating the said dog from the drive-shaft, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES YOUNG.

Witnesses:

CHARLES H. JUNKINS,
HERMON A. GOSS.