

(No Model.)

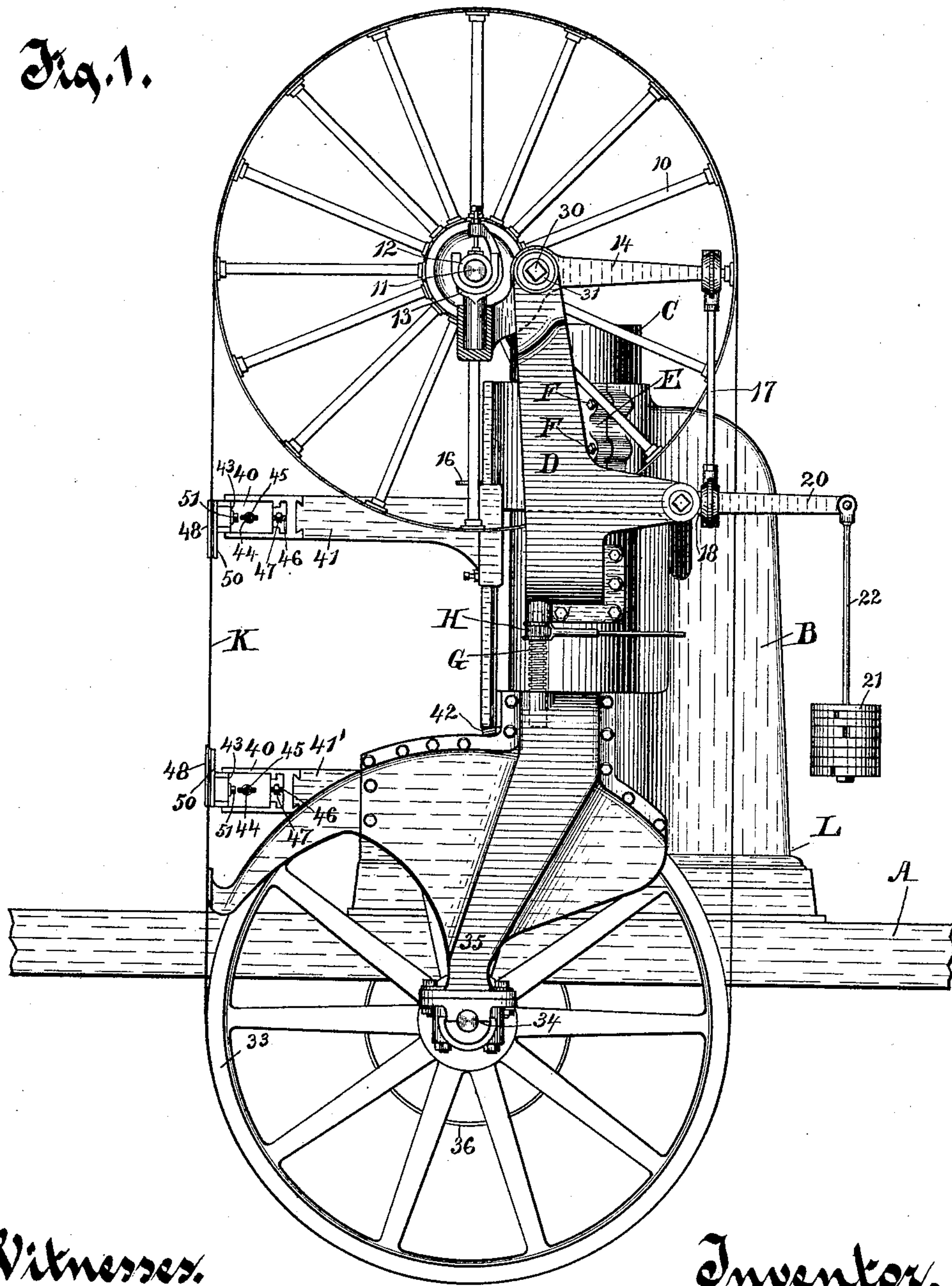
4 Sheets—Sheet 1.

J. C. SLOCUM.
BAND SAW MILL.

No. 434,731.

Patented Aug. 19, 1890.

Fig. 1.



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Fig. 2.

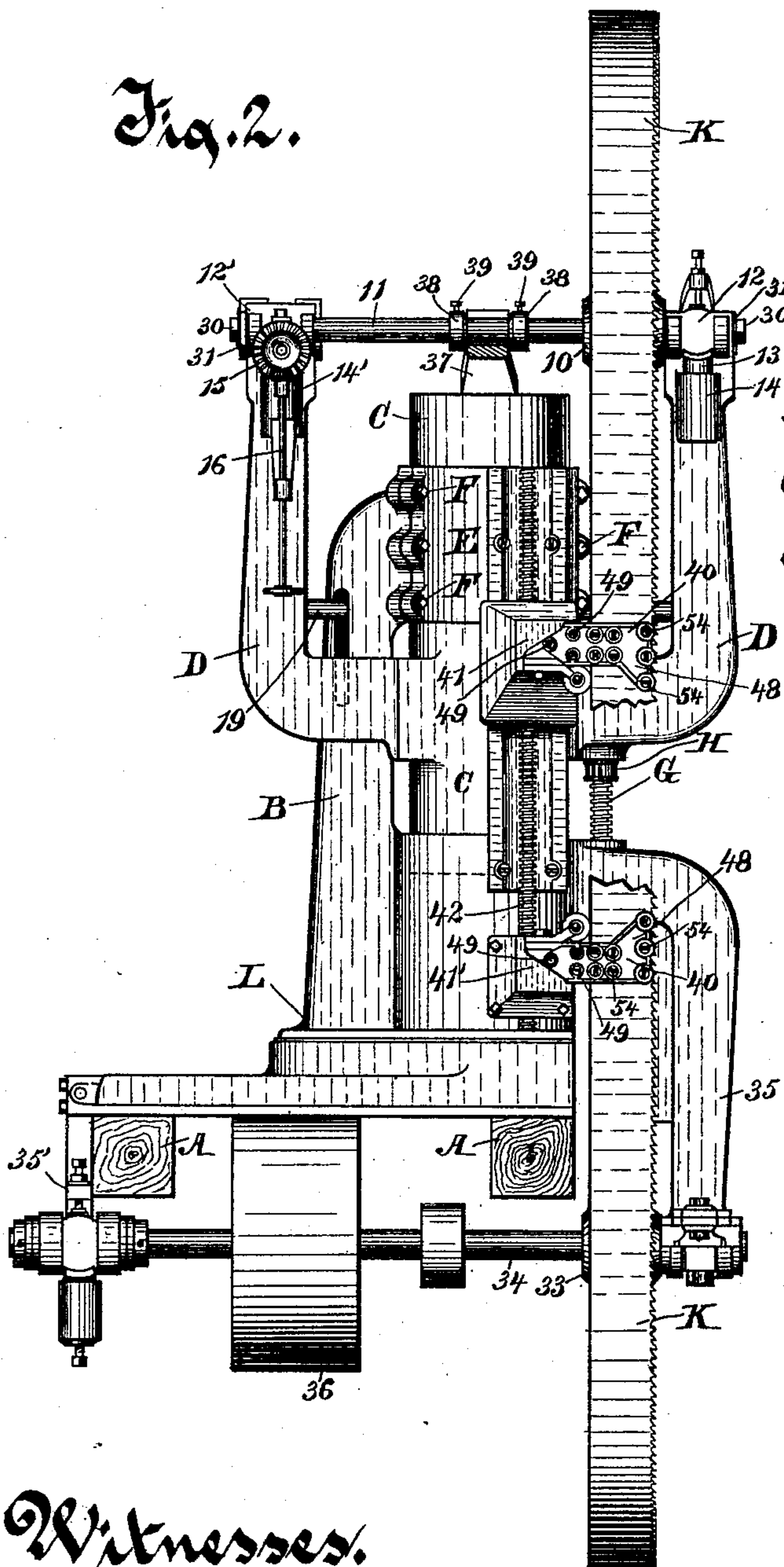
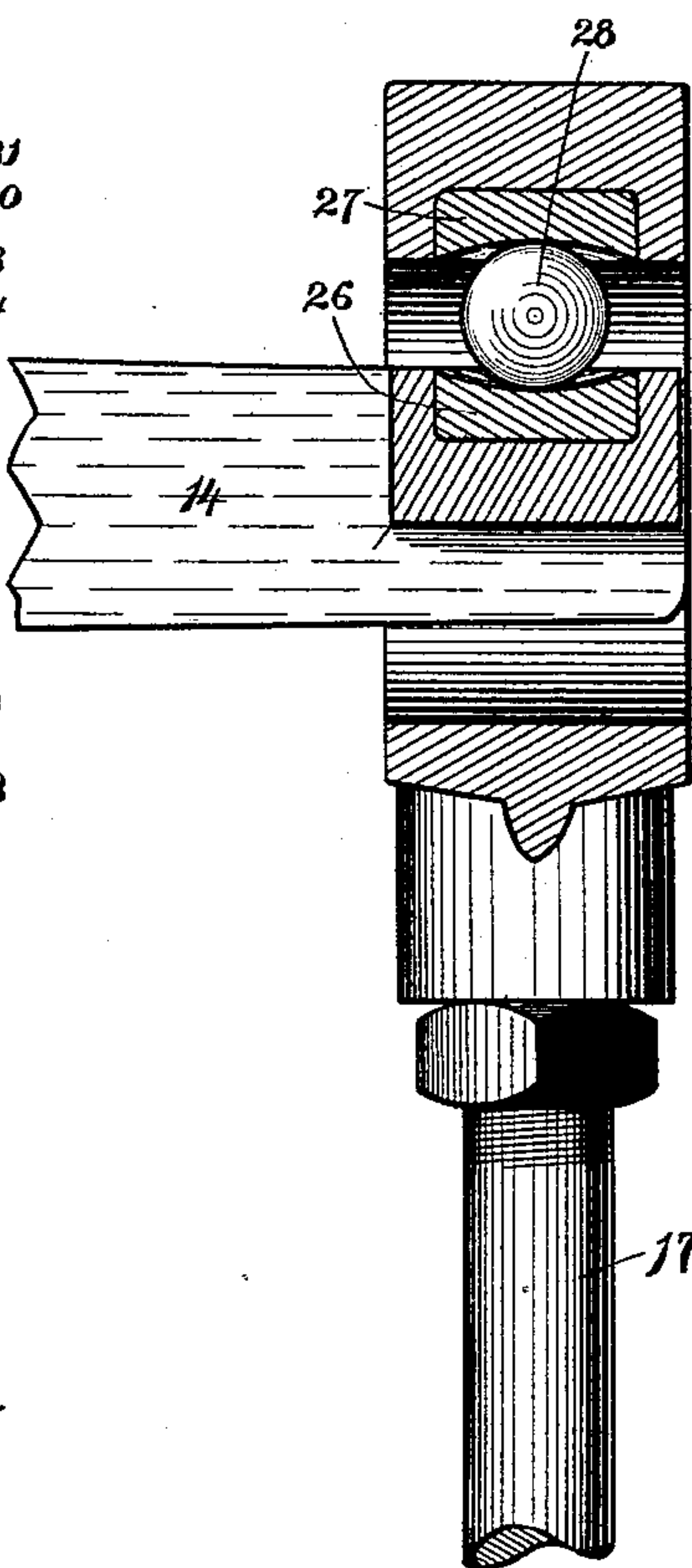


Fig. 6.



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Fig. 3.

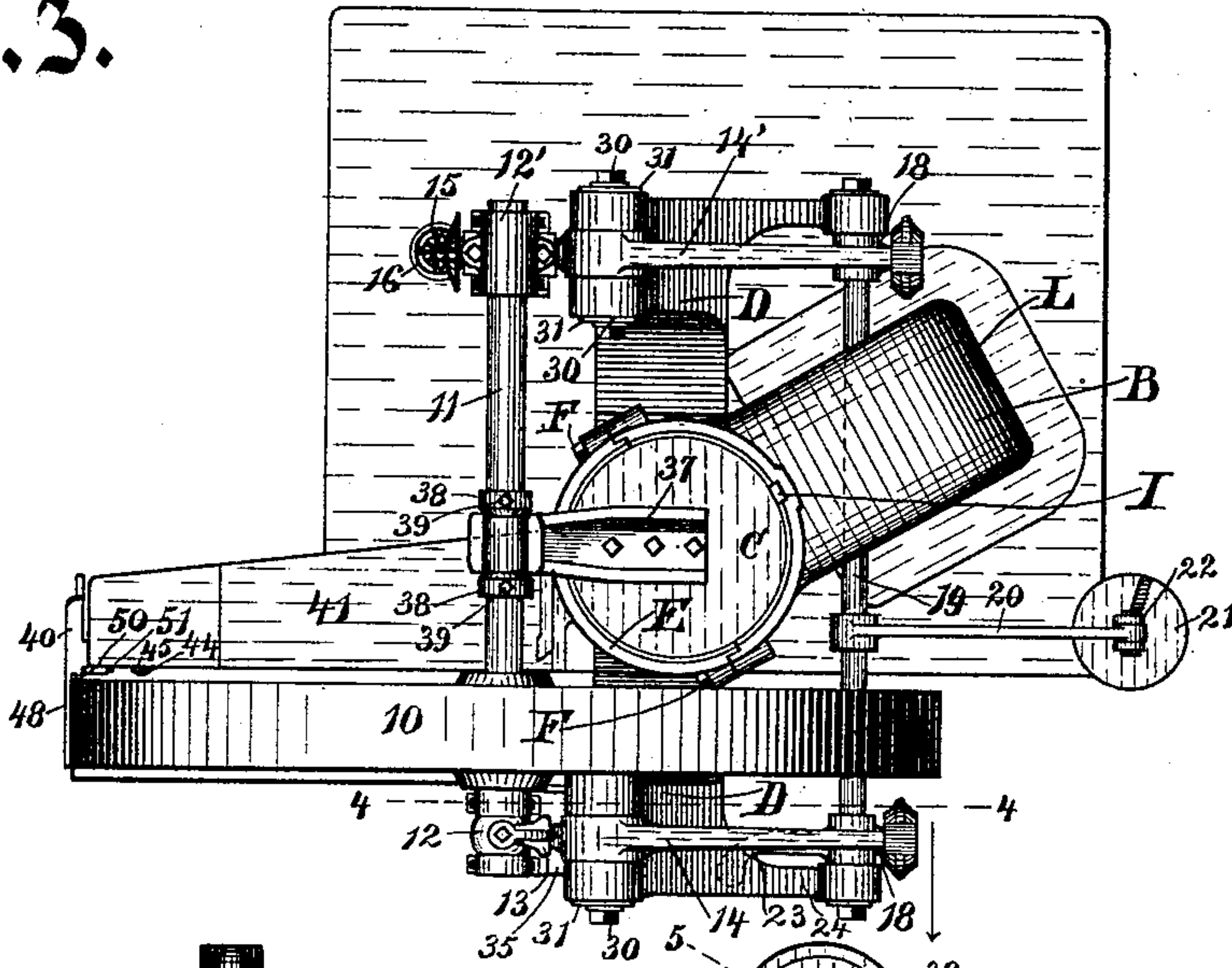


Fig. 4.

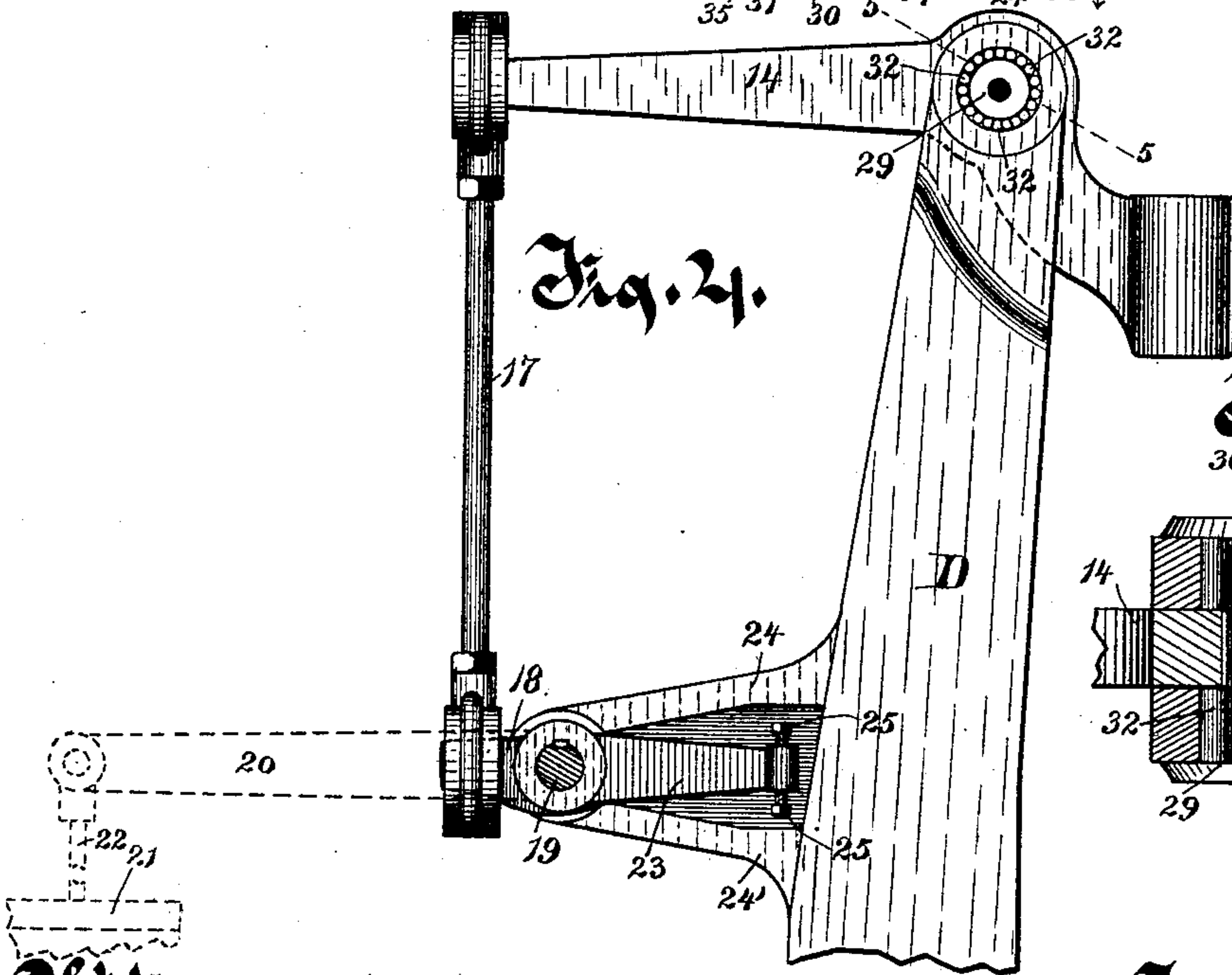
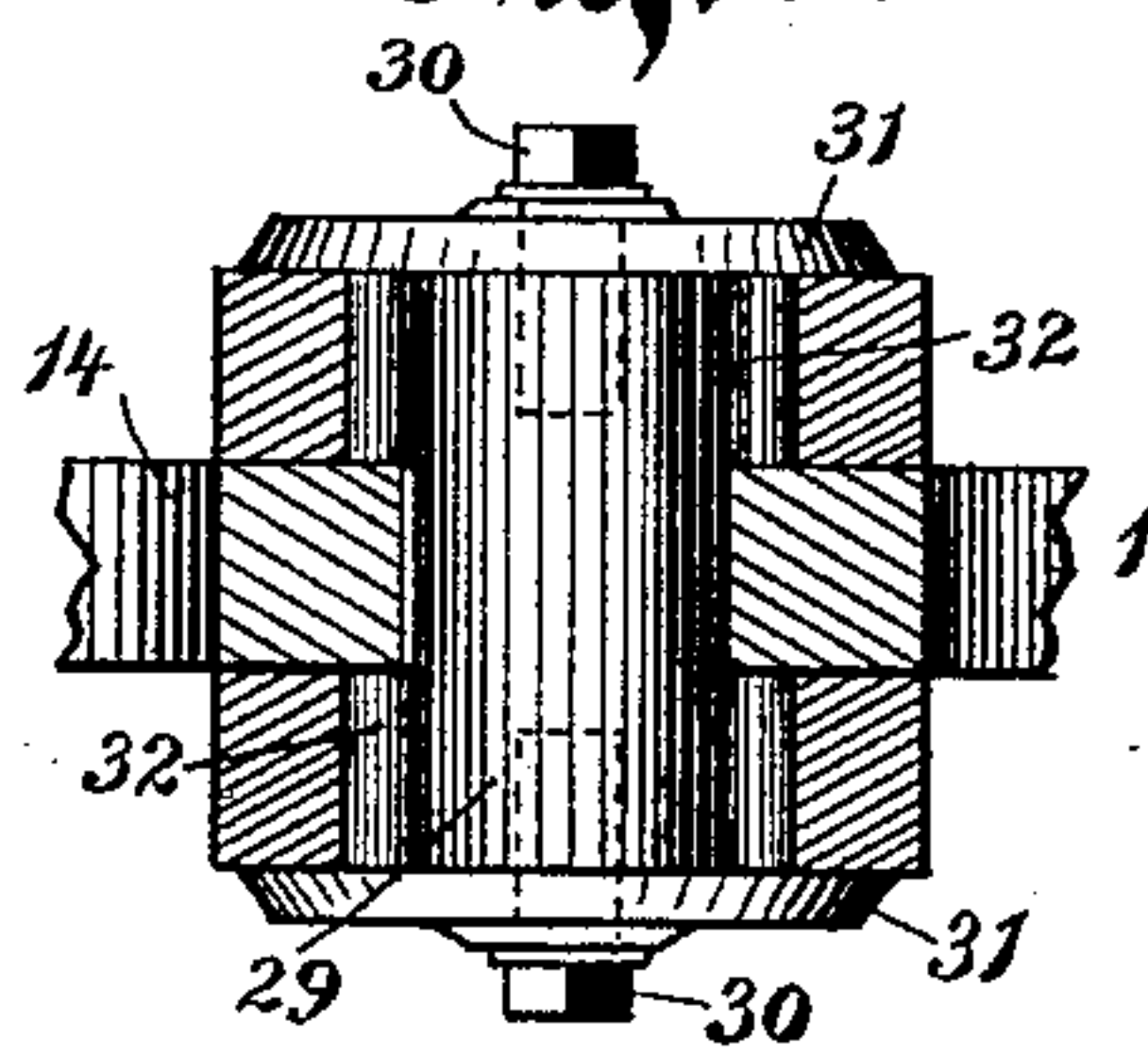


Fig. 5.



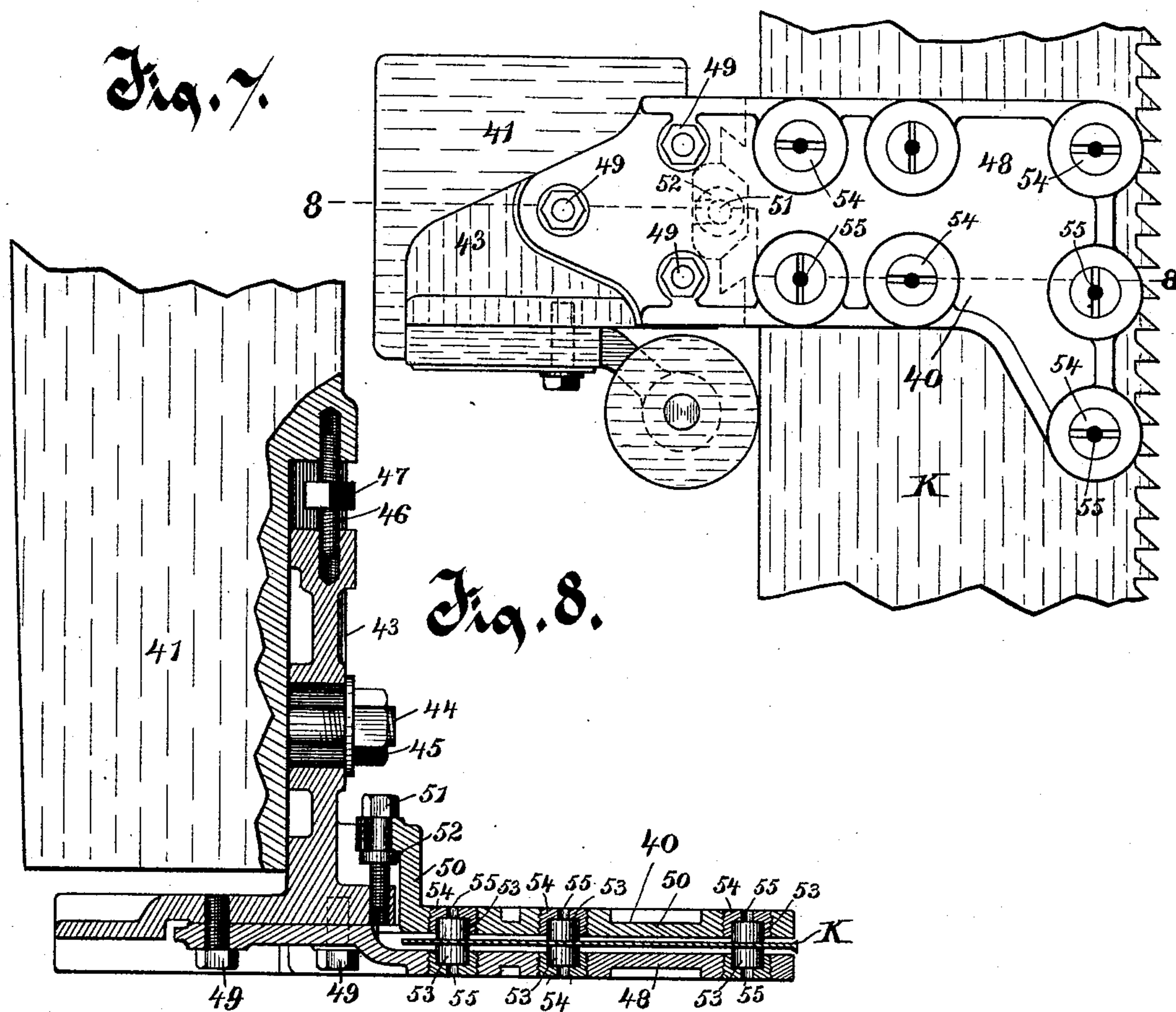
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UNITED STATES PATENT OFFICE.

JOHN C. SLOCUM, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE FILER & STOWELL COMPANY, (LIMITED,) OF SAME PLACE.

BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 434,731, dated August 19, 1890.

Application filed November 12, 1889. Serial No. 330,056. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SLOCUM, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful
5 Improvements in Band-Saw Mills; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of
10 this specification.

My invention relates to devices for supporting the mechanism against the strain of its load and work, for adjusting and controlling
15 the mechanism while in operation, and for securing incidental and auxiliary results, all of which are hereinafter described, and the novel features of which will be generically and specifically claimed.

20 In the drawings, Figure 1 is an elevation of my improved mill, parts being broken away to show interior portions. Fig. 2 is a side view of the mill shown in Fig. 1, parts being broken away to show interior and rear parts.
25 Fig. 3 is a top view of the same mechanism shown in Figs. 1 and 2. Fig. 4 is a detail of one of the levers on which the shaft of the upper band-saw wheel is supported, with the upright or arm on which the lever is supported and devices attached to the lever for
30 adjusting and controlling it. The view is on line 4 4 of Fig. 3, looking in the direction of the arrow. Fig. 5 is a detail in section of the fulcrum-joint of the lever, taken on line 5 5
35 of Fig. 4. Fig. 6 is a detail in section of the joint at the outer end of the tail of the lever shown in Fig. 4. Fig. 7 is a side view of one of the guides for the saw. Fig. 8 is a horizontal section of the saw-guide shown on line
40 8 8 of Fig. 7.

A A are the timbers of the floor of the mill-building.

B is a post, on which the mechanism to my improved mill is mostly supported.

45 C is a column movable and adjustable vertically on the post B, on which column the shaft of the upper band-wheel and other devices are supported.

50 D D are arms affixed to the column C, projecting outwardly and upwardly therefrom. The lower end of the column C is in a verti-

cal socket therefor in the lower part of the post B, and the upper portion of the column C is retained and guided in the upper part of the post B in a vertical aperture therefor, 55 this part of the post being constructed with a semicircular collar or cap E, secured removably to the fixed portion of the post conveniently by means of bolts F F, turning through lugs therefor. A screw G, turning by its
60 thread in a hanger rigid on the post B, bears at its upper end against the under side of one of the arms D, and is adapted for raising and lowering the column C with its supported mechanism. A ratchet-wrench H, in which
65 there is a pawl that engages teeth on the screw G, is adapted for rotating the screw. The column C is held against rotary motion by the feather I thereon, which enters a groove therefor in the post B. By raising or lowering the
70 column C in the manner described the upper band-saw wheel, which is carried on the upright arms D D, is raised and lowered, whereby the band-saw may be made taut or its tension regulated, as desired. As all the
75 mechanism for supporting the upper band-saw wheel is also carried on the column C, either directly or indirectly, as will be hereinafter described, a complete adjustment of the tension of the saw and of the upper wheel
80 and its connected mechanism is accomplished by raising or lowering this column C in the manner described.

An upper band-saw wheel 10 is fast on a shaft 11, which shaft has its bearings in jour- 85 nal-boxes 12 12'. The journal-box 12 has a curved or ball bearing in a block 13, which block rests in a socket in the short arm of a lever 14. The other end of the shaft 11 has its bearing in a box 12', supported movably
90 in the short arm of a lever 14'. This box 12' is so constructed as to be movable laterally, and is adapted to be adjusted laterally by means of a worm 15, on which is a gear meshing with the pinion of the revoluble handle- 95 rod 16, whereby the adjustment of the shaft laterally in the box 12' may be accomplished. This end of the lever 14' is also provided with an adjusting-screw, whereby the box 12' may be raised or lowered, which adjusting-screw
100 is not shown herein, as there is no novelty in that nor in the means here shown and de-

scribed for adjusting the end of the shaft 11 up and down or laterally, as such devices are in common use. The levers 14 and 14' are fulcrumed by a pivotal joint on the arms DD, respectively. The front arms of the levers 14 14' are each carried downwardly and forwardly, and are provided with sockets, in which are the blocks on which the journal-boxes 12 and 12' are supported. The other arm or tail of each of the levers 14 and 14' extends rearwardly horizontally and enters an aperture therefor in a connecting-rod 17, which connecting-rod extends downwardly, and at its lower end receives in an aperture therefor a short arm 18, rigid on a rock-shaft 19, which rock-shaft has bearings and is supported in projections therefor on the arms DD. A lever-arm 20, rigid on the rock-shaft 19, projecting outwardly therefrom, carries a counterpoise or weight 21 on a rod 22, suspended from the outer end of the arm 20. This counterpoise is adapted to tilt the forward ends of the levers 14 14' upwardly, raising the band-saw wheel 10 yieldingly and tightening the band-saw running thereon. The counterpoise 21 can be made lighter or heavier, as desired, by adding a weight or weights thereto or removing them therefrom.

A safety device to provide against any great movement of the arms 14 and 14' by reason of any sudden or powerful strain on the saw is provided, which consists of an arm 23, secured rigidly to the rock-shaft 19 and projecting inwardly horizontally therefrom, the free end of which arm curves inwardly between upper and lower flanges 24 24', extending laterally from one of the projections on the post B, in which the rock-shaft is supported. In the upper and lower edges of the arm 23, at its inner end, are set-screws 25 25, which may be adjusted out or in, as desired, to regulate the throw of the arm 23, the heads of which set-screws 25 25 are so located as to engage the flanges 24 24', respectively, and check the movement of the arm 23 and the levers 14 and 14' under any sudden or great strain on the saw. The bearings at both ends of the rods 17 17 are constructed with reference to anti-friction and sensitive qualities, and are formed by a small block 26, set in the lower support and a counter-block 27, set in the upper support, the inner surfaces of the two blocks 26 and 27 being concave, and a ball-bearing 28, of less sphericity than the concave surfaces of the blocks, being inserted between them. The levers 14 14' are fulcrumed on the upright arms D D by means of the short cylinders 29 29, fixed in the levers and secured in apertures therefor in the arms D D by means of the screws 30 30, tapped into the ends of the cylinders 29, the heads of which screws bear against the plates or caps 31 31, which bear against the sides of the arms D D and hold the cylinders 29 29 securely in position. The cylinders 29 29 are secured rigidly in the levers 14 14'. About the cylinders 29 29 within the aperture therefor in the arms D D

and bearing against those arms, are series of small cylindrical anti-friction rollers 32 32, whereby the friction is reduced to the minimum, while at the same time a true and reliable fulcrum-joint is obtained. A band-saw K runs on the upper wheel 10 and on the lower wheel 33. The wheel 33 is carried on a shaft 34, which shaft has its bearings in hangers 35 35', suspended rigidly from the post B. A band-wheel 36, fast on the shaft 34, is adapted for transmitting the power to the saw.

On account of the rapid motion and great strain on the saw, the upper band-wheel shaft 11 is liable to considerable endwise thrust, and to prevent the motion therefrom a guide 37 is fixed rigidly on the top of the column C and is provided with an aperture through which the shaft passes medially, and collars 38 38 are secured removably to the shaft 11, one on each side of the guide 37, bearing against the guide. These collars 38 38 are secured to the shaft 11 by means of the set-screws 39 39 turning through them against the shaft. The guide 37 is made slightly concave on its two faces through which the shaft passes and the collars correspondingly convex, whereby the slight swinging of the shaft 11 in its bearings is provided for.

To control and secure a true motion of the saw through the material being sawed, two guides 40 40 are provided—one located above and the other located below the material being operated on—through which guides the saw runs and by which it is set and guided properly for its work. These guides 40 are supported, respectively, on the outer ends of two arms 41 and 41'. The lower arm 41' is rigid to the post B, and the upper arm 41 is adjustable vertically thereon, being supported and guided in ways on the post and caused to travel up and down by means of a screw 42, having bearings at its upper and lower ends revolubly in the posts B and turning through the arm 41. The guides 40 40 are constructed in the same general form, being merely reversely secured to their supporting-arms 41 41'. Each guide 40 consists of a plate 43, secured movably in a groove therefor in the end of the arm 41 or 41', which plate is provided with a slot through which projects a screw-threaded bolt 44, fixed in the supporting-arm and having a nut 45 thereon which turns down against the plate 43, whereby an adjustment endwise of the plate 43 on the arm is provided for. The adjustment of this plate 43 on the arm is accomplished by means of a right and left handed dowel-screw 46, provided with a central-faced head thereon 47, which screw turns into the arm and into the plate 43, respectively. An outer guide-plate 48 is secured rigidly to the plate 43 at right angles thereto by the headed screws 49 49, turning through the plate 48 into the plate 43, and an inner guide-plate 50 is secured movably on the plate 43, opposite to the plate 48, and is adjustable on the plate 43 in ways therefor, (shown in dotted lines

in Fig. 7,) toward and from the outer plate by means of a screw 51, turning through a part of the plate 50 into the plate 43. The screw 51 is provided with a collar 52, formed integrally therewith, which bears against the under side of the plate 50, while the head of the screw bears against the outer surface of the plate 50, the bolt being let into the plate 50 in a recess therefor. Bearing-blocks 53 53, preferably formed of wood, are let into sockets therefor in screw-threaded plugs 54 54, which turn into the plates 48 and 50, respectively, which plugs are so located that the blocks 43 43 are opposite to each other and project slightly inwardly beyond the inner faces of the blocks 48 and 50, respectively. These plugs are adapted to be adjusted in or out, whereby by means of the bearing-blocks in them, which bear against the saw passing between them, the saw may be twisted or guided, as desired, between the plates 48 and 50. Small apertures 55 are provided through the bottoms of the plugs 54, whereby access may be had to the blocks to push them inwardly out of the plugs when the plates 48 and 50 are moved sufficiently far apart for that purpose.

To provide most satisfactorily against the strain on the mechanism and at the same time to properly arrange the mechanism with reference to the work it is to perform, the foot or base L of the post B is constructed to project horizontally from the post at an angle of about sixty degrees to the shaft 11, which carries the upper band-saw wheel. This position of the base L with reference to the shaft of the band-wheel sustains the supported mechanism firmly against the strain on the saw rearwardly from its cutting-edge, caused by its engagement with the lug, and also supports it against the lateral upsetting strain from the same cause; and while thus supporting the mechanism against the rearward and laterally unsettling strain, the location of the base also provides room for the movable and adjustable shaft-supporting devices, supported directly on the post B in convenient and mechanically desirable positions with reference thereto.

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

1. In a band-saw mill, the combination, with a stationary post, of a thereon-supported vertically-adjustable column provided with rigid upright arms, tilting levers pivoted medially on the upright arms of the column, a band-wheel journaled in the arms of the tilting levers at one side of their pivotal support, and a counterpoise secured to the other

arms of the tilting levers for supporting the band-wheel, substantially as described.

2. In a band-saw mill, a pair of levers fulcrumed medially on supporting-arms, the levers having short forwardly-extending arms and longer rearwardly-extending horizontal arms, and a counterpoise directly or indirectly suspended on and depressing the rearwardly-extending arms, in combination with the shaft of a band-wheel having its bearings directly in the front short arms of the lever and entirely independent of the lever-supporting arms, substantially as described.

3. In a band-saw mill, the combination, with two levers fulcrumed medially on supporting-arms, which levers have short forwardly-extending arms, in which the shaft of a band-saw wheel is journaled so as to oscillate therewith, and rearwardly-extending horizontal arms, of a rock-shaft supported in fixed bearings, which rock-shaft is provided with an arm carrying a counterpoise and with short arms which are connected to the rear arms of the levers, substantially as described.

4. In a band-saw mill, a pair of medially-fulcrumed levers, on the front arms of which the shaft of a band-saw wheel is carried, and a rock-shaft having arms, to which the rear arms of the shaft-carrying levers are connected, in combination with an arm fixed on the rock-shaft and adjusting-nuts therein adapted to engage flanges on a stationary post, as and for the purpose set forth.

5. In a band-saw mill, the combination, with the shaft of the upper band-wheel, of a guide fixed on the supporting-column, through which guide the wheel-shaft passes medially in an aperture therefor, and collars secured on the shaft, one at each side of and bearing against the guide, whereby endwise movement in the shaft is prevented, substantially as described.

6. In a band-saw mill, the combination, with a rod connecting the arm of a lever on which the band-wheel is supported to an arm of a rock-shaft, of concave-faced blocks set opposite to each other, respectively, in the rod and in one or both arms with which the rod has bearings, and a ball of less sphericity than the concave surfaces of the blocks inserted between them and forming a bearing therefor, substantially as described.

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

JOHN C. SLOCUM.

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