

(No Model.)

6 Sheets—Sheet 1.

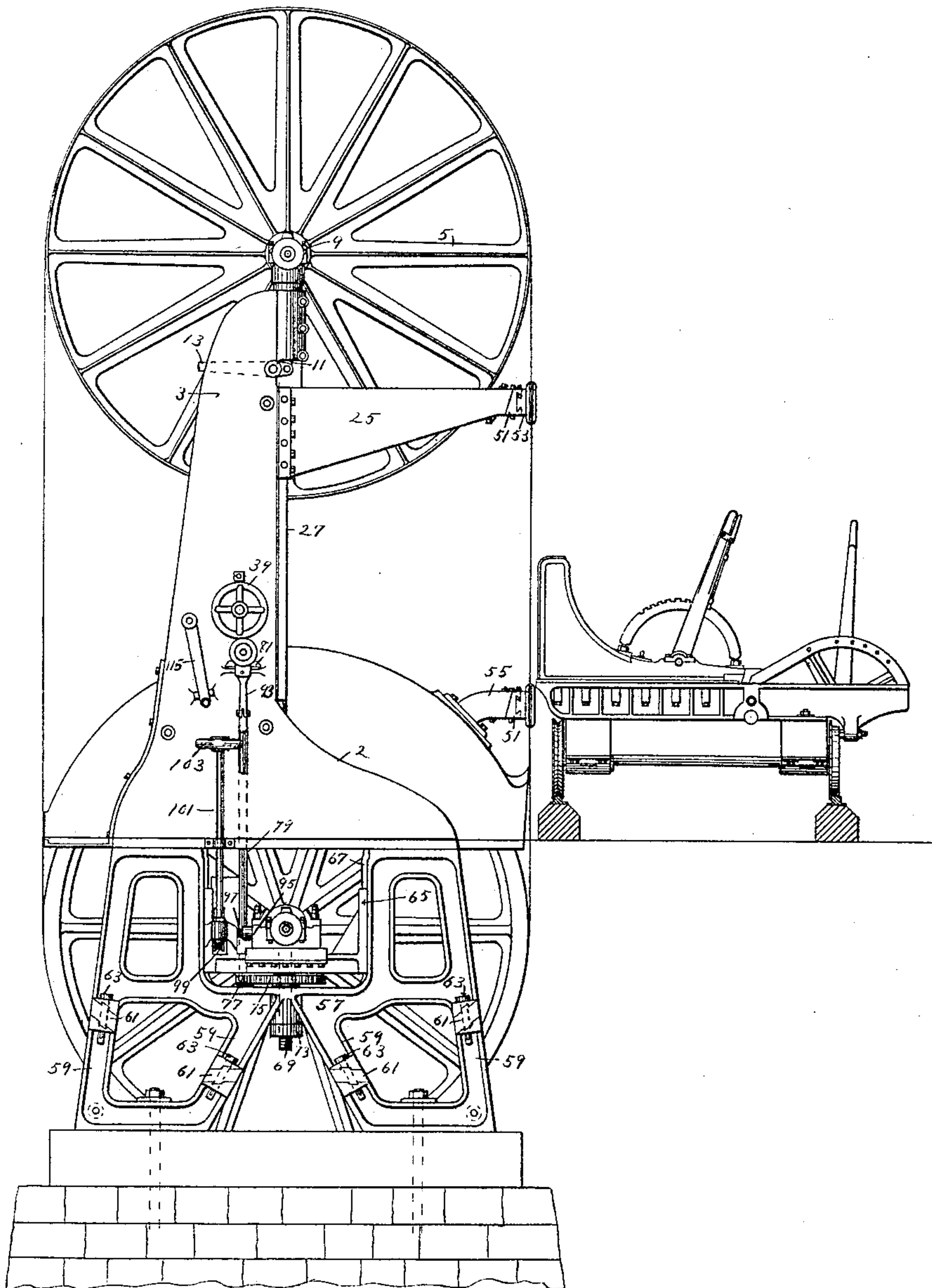
W. F. PARISH.

BAND SAW MILL.

No. 388,069.

Patented Aug. 21, 1888.

Fig. 1.



Witnesses,
J. Beardslee.
J. Jensen.

Inventor.

William F. Parish.

By *his* Attorneys,

Paul, Sanford & Merwin.

(No Model.)

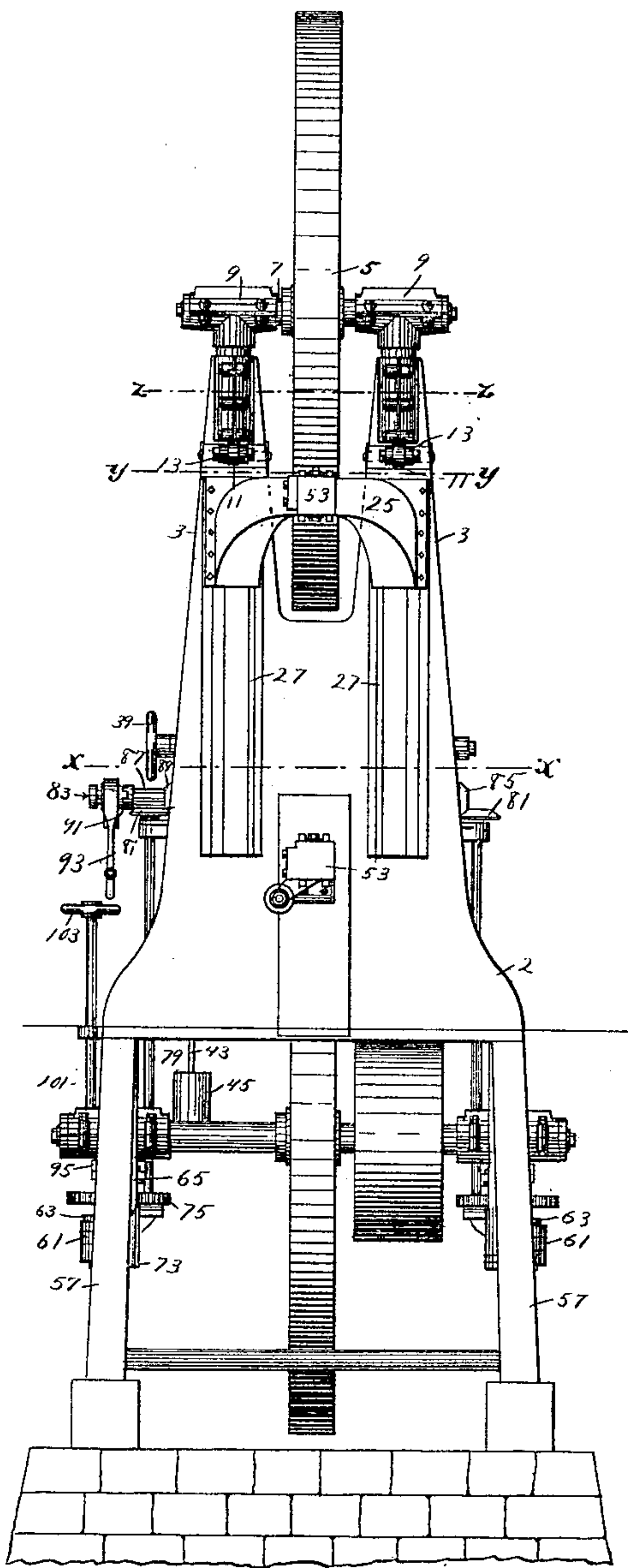
6. Sheets—Sheet 2.

W. F. PARISH.
BAND SAW MILL.

No. 388,069.

Patented Aug. 21, 1888.

Fig. 2.



(No Model.)

6 Sheets—Sheet 3.

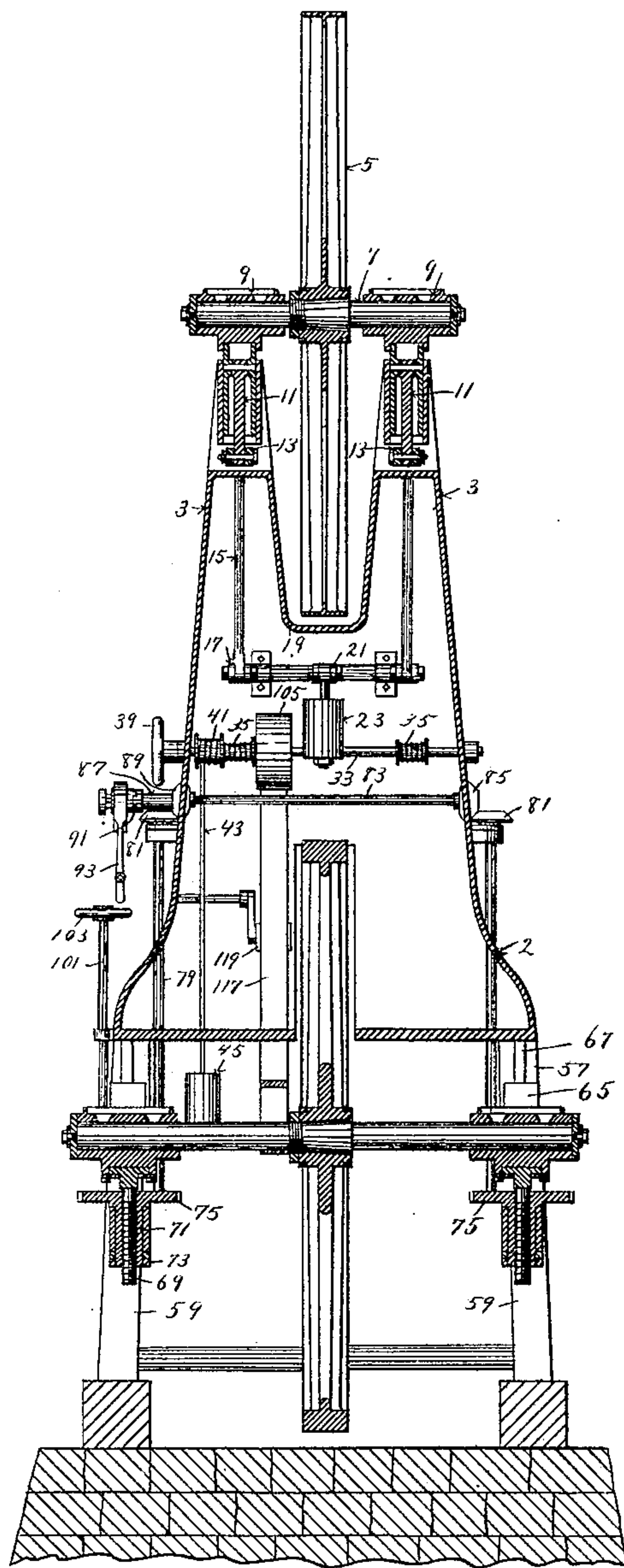
W. F. PARISH.

BAND SAW MILL.

No. 388,069.

Patented Aug. 21, 1888.

Fig. 3.



Witnesses.
J. B. Arnslee.
J. Jensen.

Inventor,

William F. Parish,

By his Attorneys

By his Attorneys
Paul, Sanford & Merwin.

(No Model.)

6 Sheets—Sheet 4.

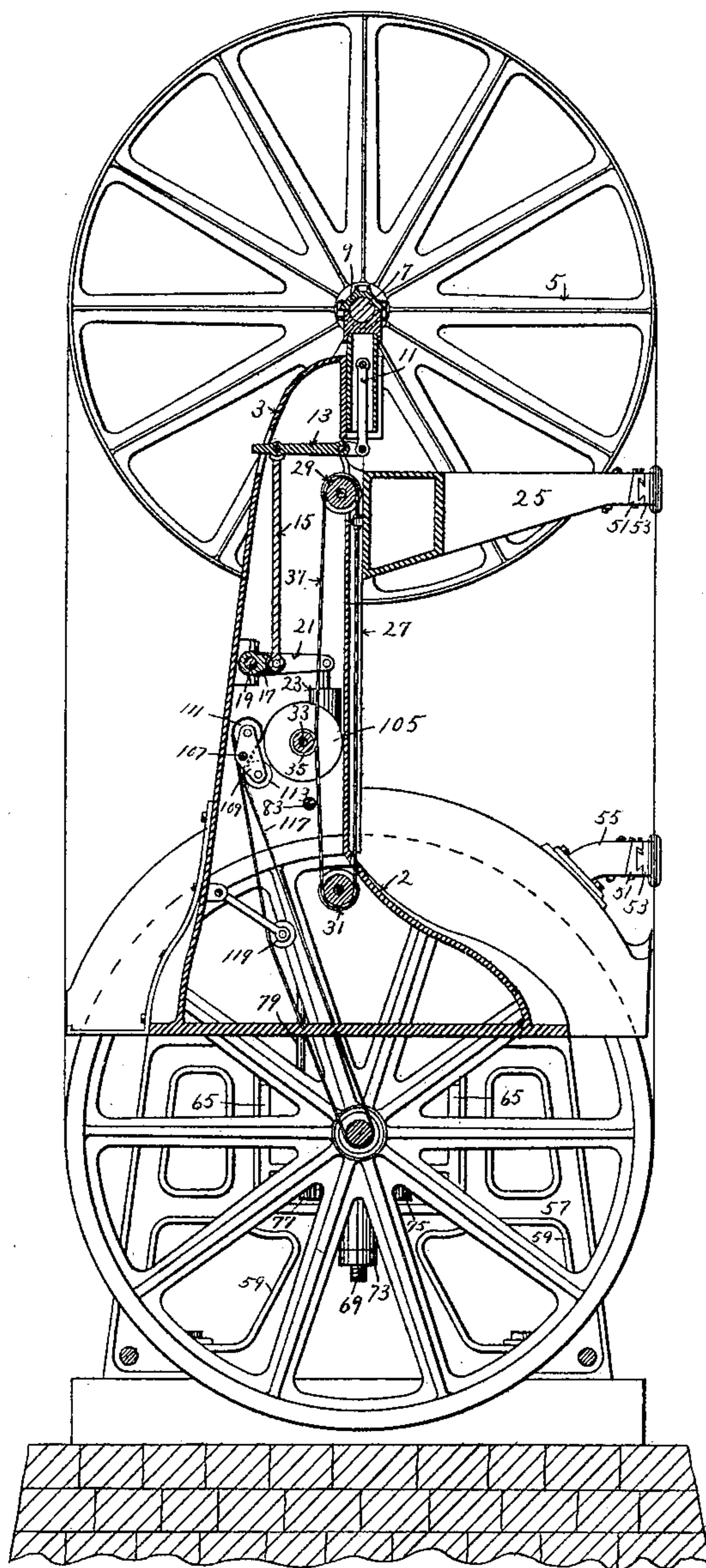
W. F. PARISH.

BAND SAW MILL.

No. 388,069.

Patented Aug. 21, 1888.

Fig. 4.



Witnesses.
J. Beardslee.
J. Jensen.

Inventor.

William F. Parish.

By *his* Attorneys

Paul Sanford & Merwin.

(No Model.)

6 Sheets—Sheet 5.

W. F. PARISH.
BAND SAW MILL.

No. 388,069.

Patented Aug. 21, 1888.

Fig. 5.

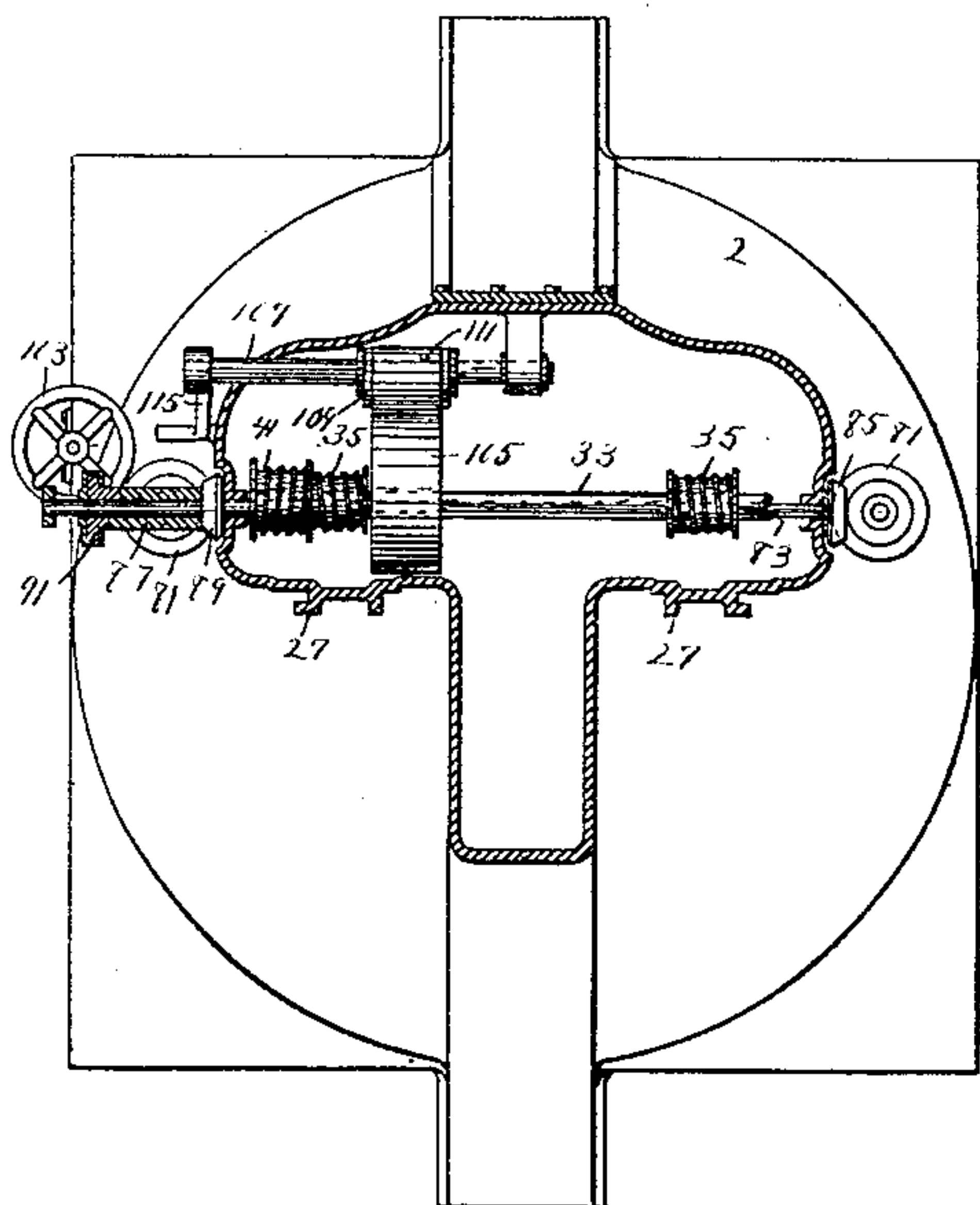


Fig. 6.

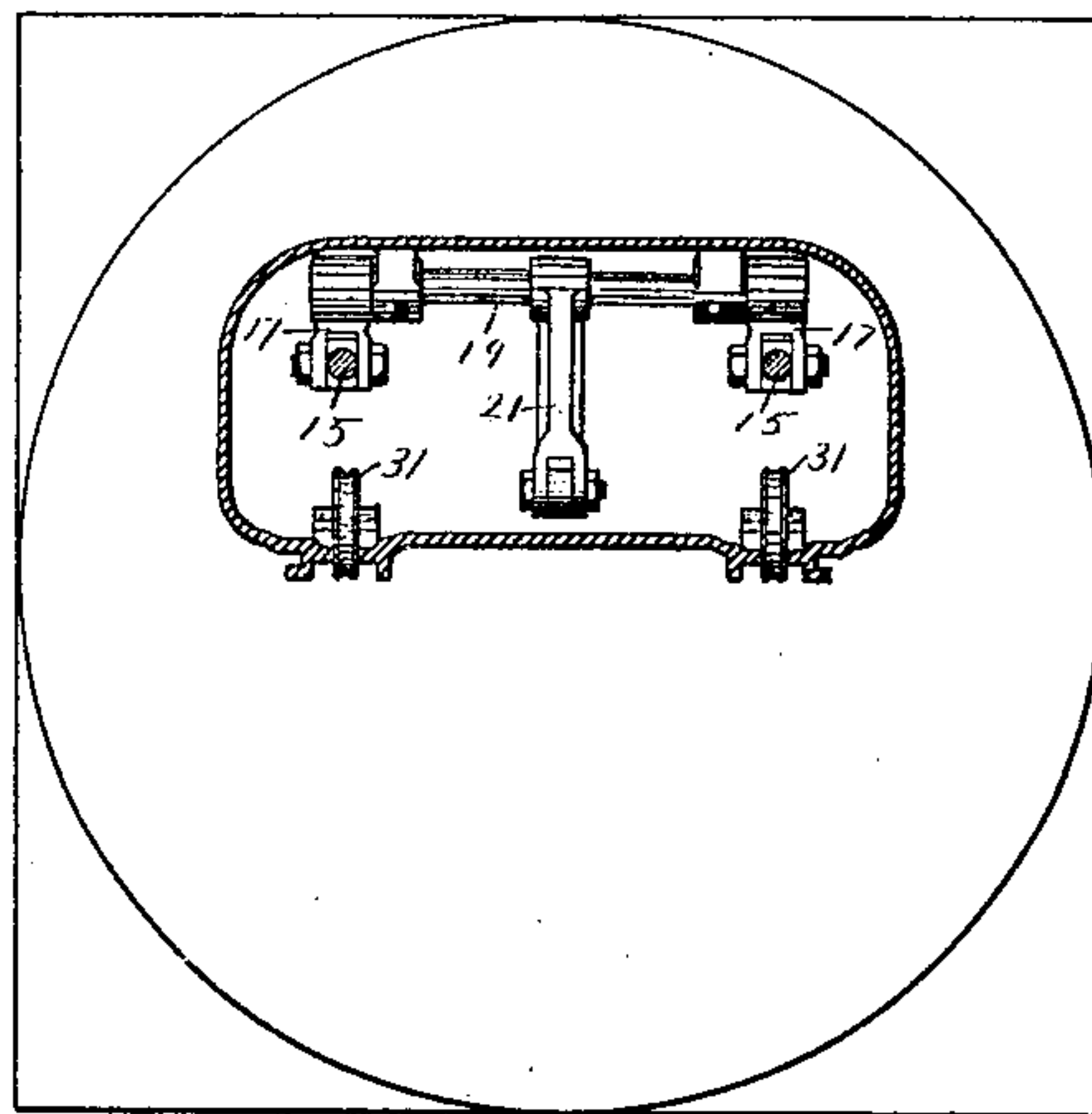
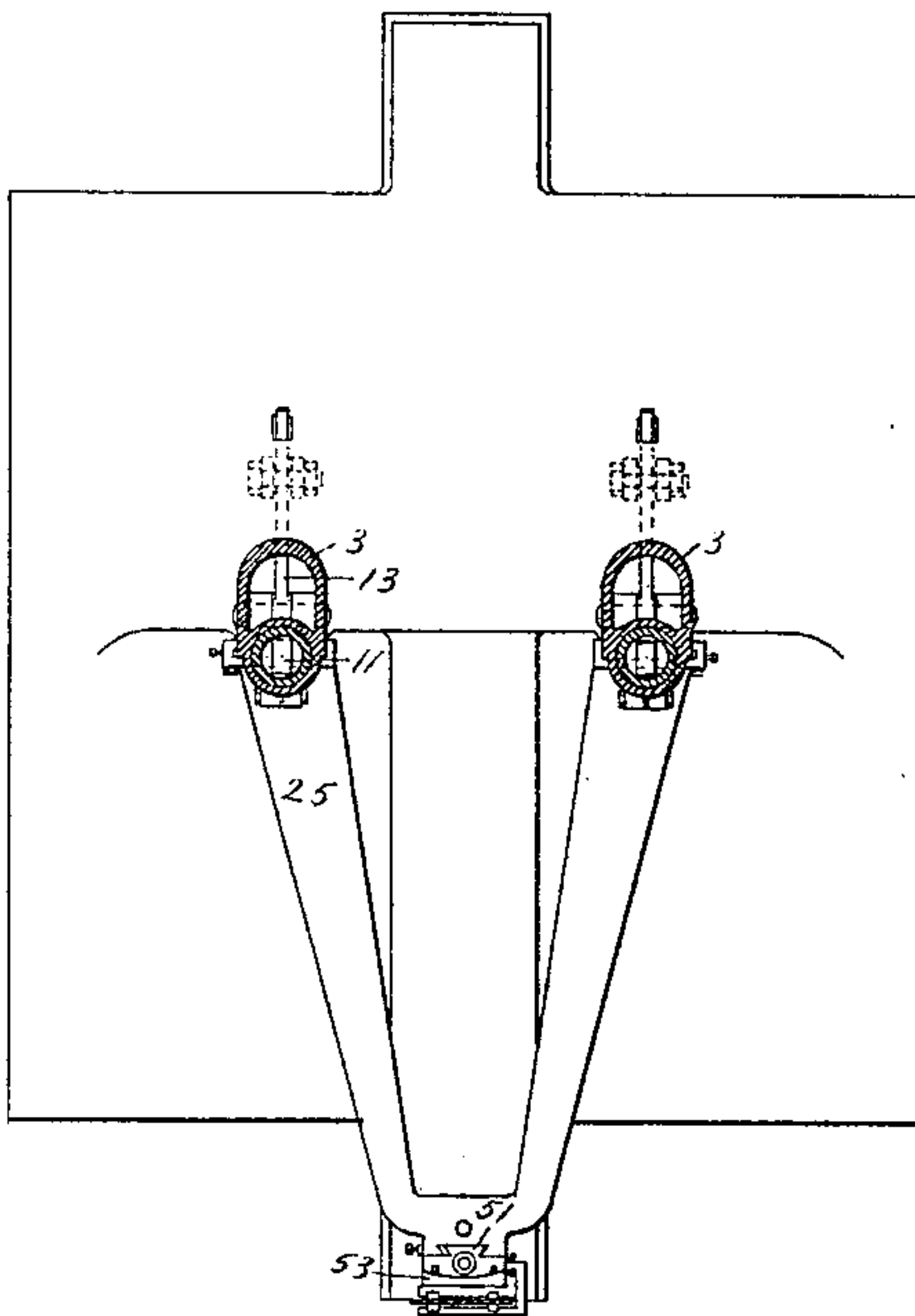


Fig. 7.



Witnesses.
J. Beardsley.
J. Jensen.

Inventor.

William F. Parish.

By *his* Attorneys

Paul, Sanford & Merwin.

(No Model.)

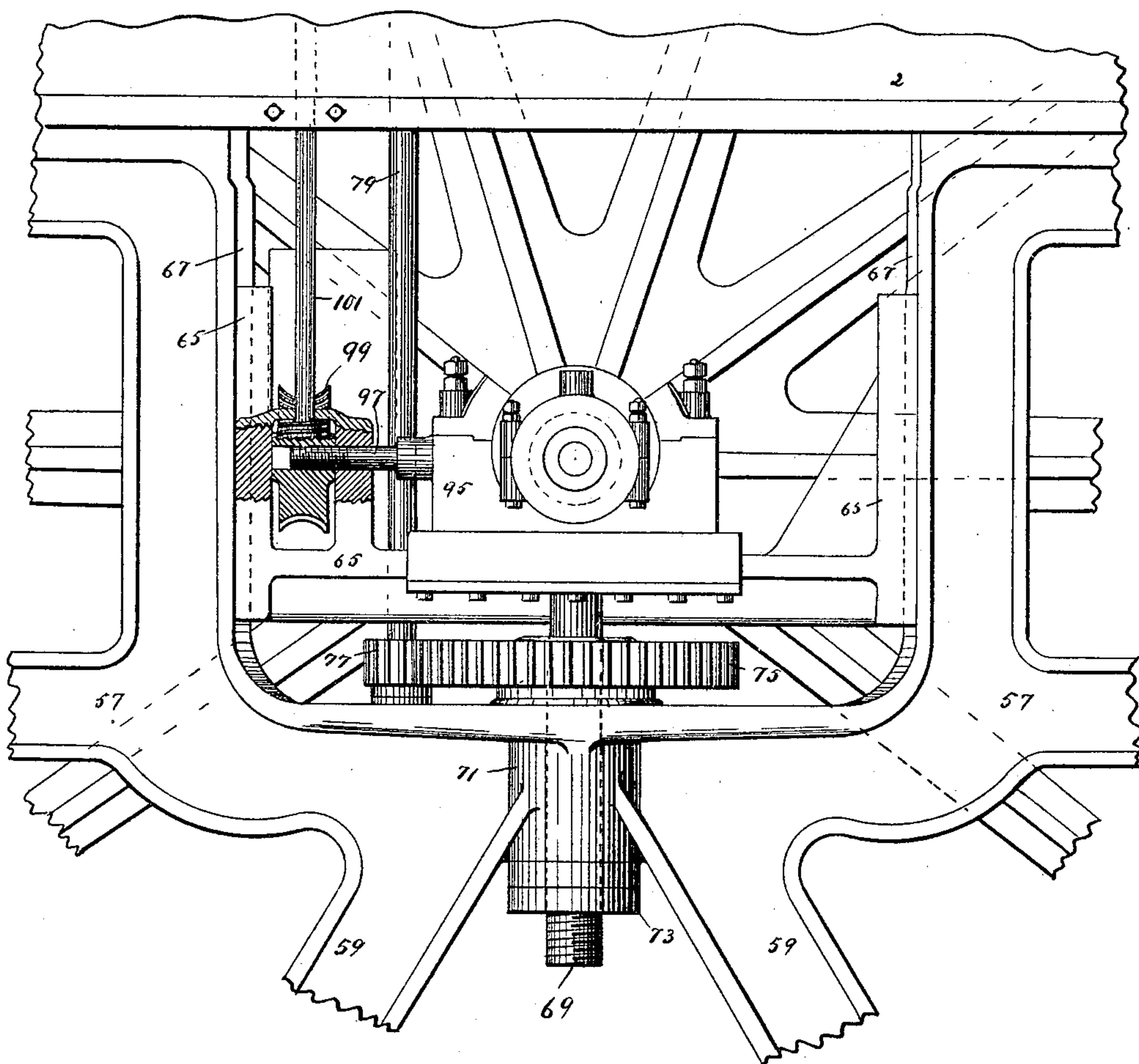
6 Sheets—Sheet 6.

W. F. PARISH.
BAND SAW MILL.

No. 388,069.

Patented Aug. 21, 1888.

Fig. 8



Witnesses,

J. Jensen.

C. L. Macthurb.

Inventor,

William F. Parish.

Paul Sanford & Merwin.

By

attys

UNITED STATES PATENT OFFICE.

WILLIAM F. PARISH, OF MINNEAPOLIS, MINNESOTA.

BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 388,069, dated August 21, 1888.

Application filed March 2, 1888. Serial No. 265,948. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. PARISH, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Band-Saw Mills, of which the following is a specification.

The object of my invention is to provide a band-mill with an improved construction of supporting-frame, with improved means for supporting the upper wheel, with an improved construction of upper guide and means for adjusting the same, with improved means for supporting and adjusting the lower wheel, and with improved means for permitting the saw to be placed upon and removed from the lower wheel.

In the common type of band-mills the upper wheel is mounted at or near the end of its shaft, and the shaft is supported in bearings upon a column or pillar, so that the wheel overhangs the standard or column upon which the shaft is mounted. Sometimes these mills are provided with a light bearing outside of the overhanging wheel. The lower wheel is likewise usually mounted upon the end of the shaft and outside both of its bearings. The main objection to this construction is that the great strain brought upon the saw tends to throw downward the free or unsupported end of the upper shaft, or the end that carries the wheel, so that the saw does not run evenly. The main difference between my band-mill and the band-mills of the prevailing type consists in the fact that in my machine both the upper and the lower wheels are secured to their shafts at points substantially midway between their bearings. Both wheels are therefore firmly supported, and there is no possibility of the shafts being tipped in either direction by the strain brought upon them by the saw.

There are other material and essential points of difference between my construction and those heretofore used, all of which will be fully understood from the following detailed description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is an end elevation of the same. Fig. 3 is a central vertical section. Fig. 4 is a vertical section at right angles to the plane of Fig. 3. Fig. 5 is a horizontal section taken on line $x x$ of Fig. 2. Fig. 6 is

a horizontal section on line $y y$ of Fig. 2, the upper guide being omitted. Fig. 7 is a horizontal section on line $z z$ of Fig. 2. Fig. 8 is a detail.

In the drawings, 2 represents the main frame or standard of the machine, which is preferably formed of a hollow casting having a broad base adapted to be supported upon a suitable foundation, a single upright column rising therefrom to a point a short distance below the lower edge of the upper wheel, where it is divided into two standards, 33, having an opening between them, in which the wheel is received, and each provided with a suitable movable bearing or journal-box for one end of the shaft of the upper wheel. The upper wheel, 5, is mounted upon its shaft 7 between the two journal-boxes 9. These boxes therefore receive substantially equal proportions of the weight of the wheel and shaft and of the strain exerted by the saw. The journal-boxes 9 are each provided with a depending bar, which is received in a vertical bearing in the upper end of the single standard 3, and is adapted to move vertically therein. The lower ends of these bars are connected by links 11 with the pivoted levers 13, that are arranged within the upper parts of the standards 3. These levers have their opposite ends connected by rods 15 with short arms 17 on a shaft, 19. The shaft 19 has an arm, 21, secured to it, and upon this arm is suspended a boss, 23, adapted to receive weights for counterbalancing the upper wheel. A sufficient weight may be applied in this manner to hold the upper wheel with a yielding tension against the saw and cause it to take up the slack of the saw in a manner well understood in the art. In order to prevent the weight from dropping too far and moving the wheel up too far should the saw break, or when there is no saw on the wheels, I extend the ends of the levers 13 through slots in the wall of the standards and the ends of these slots form stops which limit the movement of the levers 13, and consequently the movement of the upper wheel.

The support for the upper guide consists of a substantially U-shaped frame or casting, 25, which is supported upon ways 27 upon the main standard of the machine. These ways are parallel to each other, and the guide-frame 25 is adapted to move vertically thereon to

bring the upper guide into its proper position over the log that is on the carriage. This construction of the guide-frame 25 permits the guide to be moved very close to the point where the saw passes off from the upper wheel. The lower portion of the upper wheel projects into the open space between the two legs of the guide-supporting frame. A sheave, 29, is mounted within the hollow standard at a point near the upper end of the ways 27, and a similar sheave, 31, is mounted at a point near the lower ends of the ways. A shaft, 33, is mounted in bearings in the main standard and extends through it from one side to the other, and is provided with the spools 35, which are arranged in line with the sheaves 29 and 31. A cable, 37, is secured at one end to the guide-frame 25, passes over the sheave 29, several times around the spool 35, and under the sheave 31, and has its other end attached to the guide-frame 25. The shaft 33 is provided with the hand-wheel 39, arranged inside of the standard, and by means of this hand-wheel the shaft may be turned upon its axis, and thereby the guide-frame and the guide supported by it be raised or lowered upon the ways 27. In order to counterbalance the weight of this guide-frame the shaft 33 is provided with a spool, 41, around which a cord, 43, is wound in the opposite direction from the cord 37. A weight, 45, is supported upon this cord, and by this means the weight of the guide-frame and guide will be counterbalanced, and the guide may be easily operated by turning the hand-wheel 39. The outer end of the guide-frame 25 is inclined, as shown in Fig. 1, and is provided with a groove in which is mounted a block, 51, that is adapted to be moved up and down in this groove. The block 51 is provided with a curved face having a transverse groove, in which the guide proper, 53, is mounted. By moving the guide 53 forward and back in the grooved slot in the block 51 the guide may be given a rotary adjustment as it is moved forward and back, and by adjusting the block 51 up and down in the groove in the inclined face of the frame 25 the guide will be moved toward or from the main standard, and thereby the saw will be moved in one direction or the other, as desired. The lower guide is preferably similar in construction to the upper guide; but its block 51 is mounted on a stationary arm, 55, that is secured to the base of the standard, as shown in Fig. 1.

The base of the main standard rests upon a foundation that is usually arranged upon a level with the floor-line of the mill. Beneath this the lower shaft is mounted, preferably, upon supports 57, arranged at the front and back of the main standard, already described.

The supports 57 are preferably formed as open castings or frames having a series of independent legs, 59. In order that the endless saw may be readily applied to or removed from the lower wheel, I prefer to provide one of the supports 57 with a portion which may

be taken out or moved, so as to leave a gap or opening through which the saw may be carried into the space between the supports and beneath the shaft of the lower wheel or be taken out therefrom. This portion of the support, as here shown, consists of a section, 61, in each of the legs 59, that is adapted to be held therein by means of a bolt, 63. With this construction each of the sections may be removed in turn, the saw carried through the opening formed thereby, and the section replaced before another section is removed. The support will in this way always be sufficient for the weight which comes upon it, as any one section may be removed without materially weakening it. I do not wish to confine myself, however, to this arrangement of the removable sections or portions of the support, as the same may be obviously varied without departing from my invention, or to confine myself to the form of support shown, as any suitable support may be used. It is desirable, however, that the movable portion of the support shall be so arranged that only a part of it need be moved at a time. Each support is also preferably provided with a substantially rectangular opening, in which the supporting and adjusting devices for the ends of the shaft are arranged.

A cast-metal frame, 65, is arranged to move upon vertical ways 67, formed upon the opposite sides of this rectangular opening. A threaded rod, 69, is secured to the frame 65 and projects downward therefrom. A revolving nut, 71, engages this threaded rod, and is supported in the opening in the frame 57, which forms a bearing therefor, and is held in position by means of a collar formed on it at its upper end and resting upon the frame 57, and a collar, 73, secured upon its lower end, as shown in Fig. 1. The nut is thus permitted to revolve in bearings in the frame 57, but vertical movement thereof is prevented. A gear-wheel, 75, is secured to the revolving nut 71, and is engaged by a pinion, 77, upon a vertical shaft, 79, that extends above the floor-line of the mill, and is provided at its upper end with a beveled gear, 81. The construction and arrangement of these devices at the two ends of the shaft are preferably the same, as shown in the drawings.

A shaft, 83, is mounted in bearings in the main standard of the machine, and is provided at one end with a bevel-gear, 85, engaging the bevel-gear 81 upon one of the vertical shafts 79. A sleeve, 87, arranged at the other end of the shaft, is provided with the bevel-gear 89 that engages the bevel-gear 81 upon the other vertical shaft, 79. The sleeve 87 is mounted loosely upon the shaft 83, but is constructed to be engaged by a sleeve, 91, that is splined to the shaft and turns therewith.

The sleeve 91 is arranged to slide on the shaft 83, and is provided with a suitable handle, 93. When the sleeve 91 engages the sleeve 87, this sleeve and the shaft 83 may be turned together, and thereby both shafts 79

will be operated simultaneously, and the two frames 65, which support the ends of the lower shaft, will be simultaneously raised or lowered.

When the sleeve 91 is out of engagement with the sleeve 87, only the shaft that is engaged by the bevel-gear on the shaft 83 will be turned when the shaft 83 is operated, and only one end of the lower shaft will be raised or lowered. The lower shaft is mounted at each end in a block, 95, supported upon the frame 65, and adapted to be moved transversely thereon. One of these bearing-blocks is provided with means by which it may be laterally adjusted on the frame 65. This, as here shown, consists of a threaded stud or rod, 97, projecting from one end of the bearing-block 95, and passing through a worm-gear which has a threaded opening in its center that engages the rod 97. A shaft, 101, supported in suitable bearings and provided at its upper end, which is above the floor-line of the mill, with a hand-wheel, 103, has at its lower end a worm which engages the wheel 99. By turning this shaft the bearing-block 95 and the end of the shaft supported by it may be laterally adjusted on the frame 65.

It is sometimes desirable to adjust the upper guide by a power-driven device instead of adjusting it by hand. For this purpose the shaft 33 is preferably provided within the main standard with a friction-wheel, 105. A shaft, 107, is also mounted in this frame parallel to the shaft 33, and is provided with arms 109, in which are mounted the friction-wheels 111 and 113. A handle, 115, is provided on the outer end of the shaft 107. By turning the shaft 107 upon its axis either one of the wheels 111 or 113 may be thrown into contact with the wheel 105, or both of them may be held out of contact with it. A belt, 117, passes from the shaft of the lower wheel over both of the wheels 111 and 113, and drives them in opposite directions. An idler, 119, is preferably arranged to engage this belt. With this arrangement when one of the wheels 111 or 113 is thrown into contact with the wheel 105, the upper guide will be moved in one direction, and when the other wheel is thrown into engagement with this wheel 105, the upper guide will be moved in the other direction. The tightener keeps the belt taut, even though the shaft of the lower wheel may be raised or lowered a considerable distance. The shaft 101 moves vertically with the frame supporting the box of the lower shaft.

It will be seen that the front and rear of the standard are exactly similar, and that both wheels and both saw-guides are arranged centrally thereon. The blocks 53 may be turned upside down, so as to bring the open side of the guide in the other direction.

The driving-pulley and the shaft 101 for adjusting one of the boxes of the lower wheel may be applied on either side of the lower wheel, as preferred. The hand-wheel 39 may be applied to either end of its shaft, and the shaft 83 may be reversed end for end and its

operating-lever and clutch applied at the other side of the standards. In this way all of the adjusting and operating devices can be applied to the other side of the machine and the mill changed from a right-hand to a left-hand machine. The machine is so constructed that the adjusting and operating devices may be applied when the mill is set up either in front or back of the saw at the option of the sawyer, and may be changed in a few moments from one side to the other at will at any time. This enables the sawyer to stand in front or back of the saw at his pleasure, and it also permits the same construction of the machine to be used either as a right-hand or a left-hand mill.

The manufacturer can construct the machines all alike without regard to the way in which they are to be used, so that only one kind need be carried in stock, and when they are set up the guides may be forced in either direction and the adjusting and operating devices applied to either side of the standard and the machine used as a right-hand or a left-hand mill, and may at any time, without reconstruction, be changed from one to the other.

I claim as my invention—

1. The combination, in a band-mill, of the cast-metal main standard provided at its top with the independent standards 3, projecting vertically therefrom and formed integrally therewith, the vertically-movable boxes mounted on said standards, the upper shaft mounted in said boxes, and the upper wheel arranged upon said shaft between said standards 3, substantially as described.

2. The combination, in a band-mill, with the standard, of the upper shaft mounted in vertically-movable boxes on said standard, the upper wheel secured upon said shaft between said boxes, and the upper guide-frame, 25, projecting from said standard upon opposite sides of said wheel, and the saw-guide secured to said frame at its outer end, substantially as described.

3. The combination, in a band-mill, with the standard, of the upper shaft mounted in vertically-movable boxes on said standard, the upper wheel arranged upon said shaft between said boxes, the U-shaped guide-frame 25, mounted in vertical ways upon said standard and extending upon opposite sides of said wheel, and the saw-guide secured upon said frame, substantially as described.

4. The combination, in a band-mill, of the hollow standard, the upper shaft mounted in vertically-movable boxes thereon, the wheel mounted upon said shaft between said boxes, the U shaped guide-frame 25, mounted in vertical ways upon said standard, the sheaves 29 and 31, arranged within said standard near the upper and lower ends of said way, the shaft 33, arranged in said standard, provided with the spools 35, and the cables 37, secured to said guide-frame, passing over said sheaves and around said spools, substantially as described, and for the purpose set forth.

5. The combination, in a band-mill, with the hollow standards provided with the vertical ways 27, the U-shaped guide-frame mounted in said ways, the sheaves 29 and 31, arranged in said standard near the upper and lower ends of said ways, the shaft 33, mounted in said standard and provided with the spools 35 and 41, the cables 37, secured to said guide-frame, passing over said sheaves and around said spools 35, and the cable 43, wound upon said spool 41 and provided with the counterbalance-weight 45, all substantially as described.

6. The combination, in a band-mill, with the standard, of an arm secured thereto and projecting toward the saw, and provided at its outer end with an inclined groove, a block mounted in said groove and adapted to be adjusted therein, and be thereby moved toward and from the standard, and provided in its outer face with a transverse groove, and a saw-guide, 53, mounted in said transverse groove and adapted to be adjusted therein across the face of said block, substantially as described.

7. The combination, in a band-mill, with the main standard, of the upper shaft mounted in vertically-adjusted boxes thereon, the upper wheel arranged upon said shaft between said boxes, the U-shaped guide-frame 25, adjustably mounted upon said standard and projecting therefrom upon opposite sides of said wheel, and provided at its outer end with an inclined face having a groove therein, a block mounted in said groove and adapted to be adjusted therein, and a saw-guide adjustably mounted upon said block, substantially as described.

8. The combination, in a band-mill, with the hollow standard provided with the independent oppositely-projecting portions 33, the vertically-movable boxes mounted in bearings upon said independent portions of the standard, the pivoted levers 13, arranged within said standard and connected with said sliding boxes and projecting through slots in the walls of the standard, the shaft 19, provided with the short arm 17, connected with said levers 13, and also provided with the arm 21, having the weight-receiving box 23 suspended thereon, substantially as described.

9. The combination, in a band-mill, of the lower shaft, bearing-blocks supporting its opposite ends, the lower wheel secured upon said lower shaft between said boxes, suitable frames supporting said boxes, one of said frames being provided with a movable portion through which the saw may be carried in applying it to or removing it from said lower wheel, substantially as described.

10. The combination, in a band-mill, of the lower shaft, boxes supporting the ends thereof, the lower wheel mounted upon said shaft between said boxes, suitable supports for said boxes, one of said supports being provided with a movable portion formed in separate sections, which, when moved, forms an opening in said support through which the saw may be carried in applying it or removing it from said lower wheel.

11. The combination, in a band-mill, of the lower shaft, boxes supporting the ends thereof, the lower wheel mounted upon said shaft between said boxes, the frames 57, supporting said boxes and provided with the legs 59, and the movable blocks 61 in said legs 59, substantially as described, and for the purpose set forth.

12. The combination, in a band-mill, of the lower shaft, boxes supporting the ends thereof, the lower wheel mounted and secured upon said shaft between said boxes, means for simultaneously raising or lowering both of said boxes, and means for independently raising or lowering one of said boxes, and means for horizontally adjusting one of said boxes.

13. The combination, in a band-mill, of the shaft mounted upon the vertically-movable boxes, the revolving nuts engaging threaded rods supporting said boxes, the gear-wheels 75, secured upon said nuts, the shafts 79, provided with pinions engaging said gear-wheels, and provided also with bevel-gears 81, the shaft 83, having the pinion 85, engaging the bevel-gear on one of said shafts 79, the sleeve 87, having a pinion, 89, engaging the bevel-gear 81 on the other of said shafts 79, and the sleeve 91, splined upon the shaft 83 and adapted to engage the sleeve 87 or to be disengaged therefrom, whereby both the said shafts 79 may be simultaneously operated to raise or lower both of said boxes, or one of said shafts may be operated independently of the other, substantially as described.

14. The combination, in a band-mill, with the lower shaft and wheel, of the vertically-movable frames 65 and means for adjusting the same, the boxes 95, mounted upon said frame 65 and adapted to be laterally adjusted thereon, the threaded rod 97, secured to one of said boxes, the threaded worm-wheel 99, engaging said rod, and the shaft 101, for operating said worm-wheel, said rod 97, worm-wheel, and shaft being mounted upon and moving with said frame, substantially as described.

15. The combination, in a band-mill, with the standard having its front and rear sides counterparts of each other, of the upper wheel centrally mounted upon said standard, the lower wheel mounted beneath said upper wheel and the upper and lower guides mounted centrally upon said standard between said upper and lower wheels, substantially as described.

16. The combination, in a band-mill, of the standard having its front and rear sides counterparts of each other, the adjusting and operating devices constructed to be mounted on either side of said standard, the upper wheel mounted centrally upon said standard, the lower wheel arranged beneath said upper wheel, and the upper and lower saw-guides arranged centrally upon said standard between said upper and lower wheels, substantially as described.

17. The combination, in a band-mill, of the

standard having its front and rear sides counterparts of each other, the upper wheel centrally mounted upon said standard, the lower wheel arranged beneath said upper wheel, the
5 upper and lower guide-supports arranged centrally upon said standard between said upper and lower wheels, and the reversible guides mounted on said supports, substantially as described.

In testimony whereof I have hereunto set to my hand this 27th day of February, 1888.

WILLIAM F. PARISH.

In presence of—

A. M. GASKELL,
A. C. PAUL.