

No. 664,188.

Patented Dec. 18, 1900.

E. E. THOMAS.
BAND SAW MILL.

(Application filed Jan. 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.

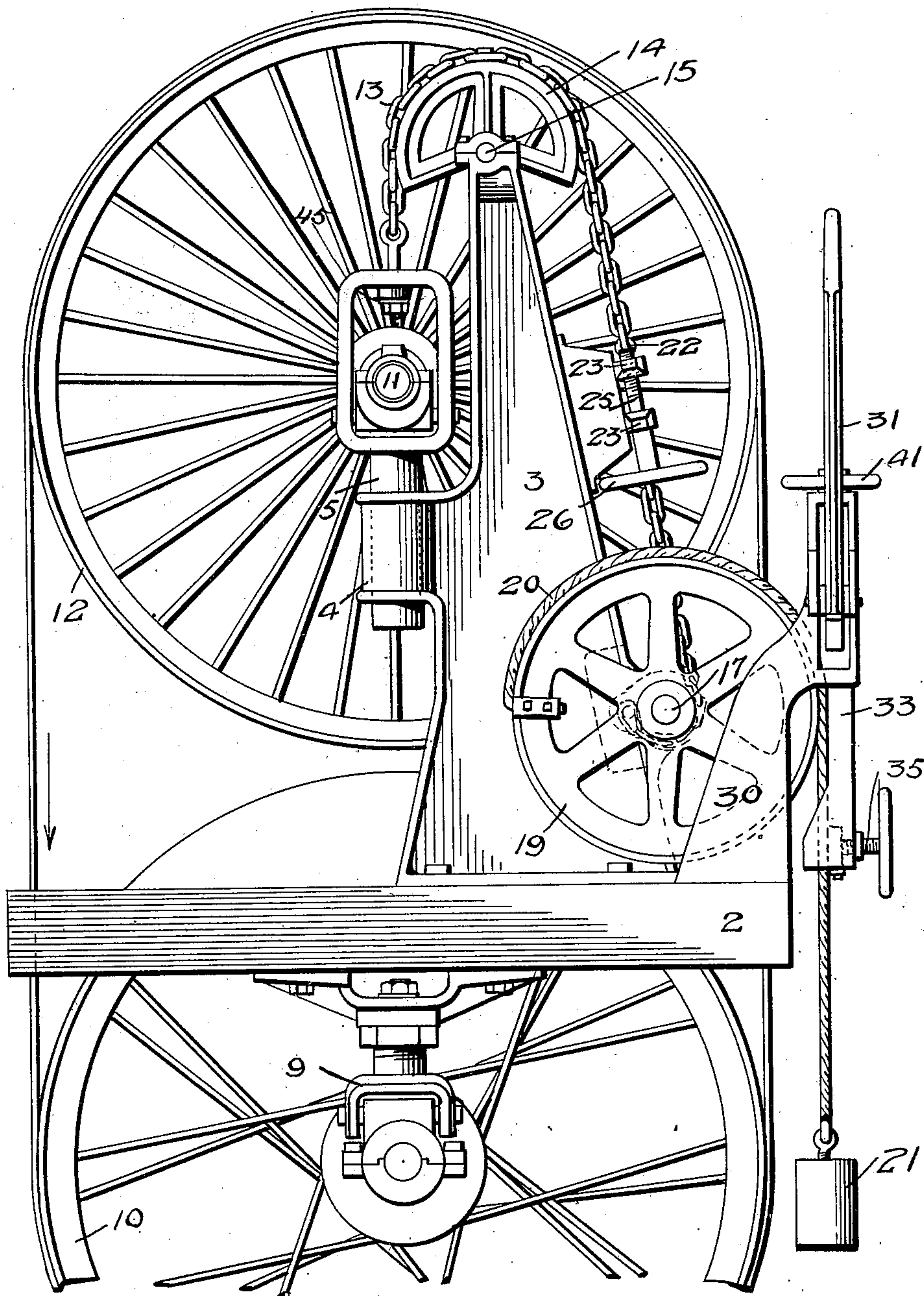


FIG. 1.

WITNESSES
E. J. Staudt.
W. E. Goober

INVENTOR
EDWIN E. THOMAS
BY *Paul & Hawley*
HIS ATTORNEYS

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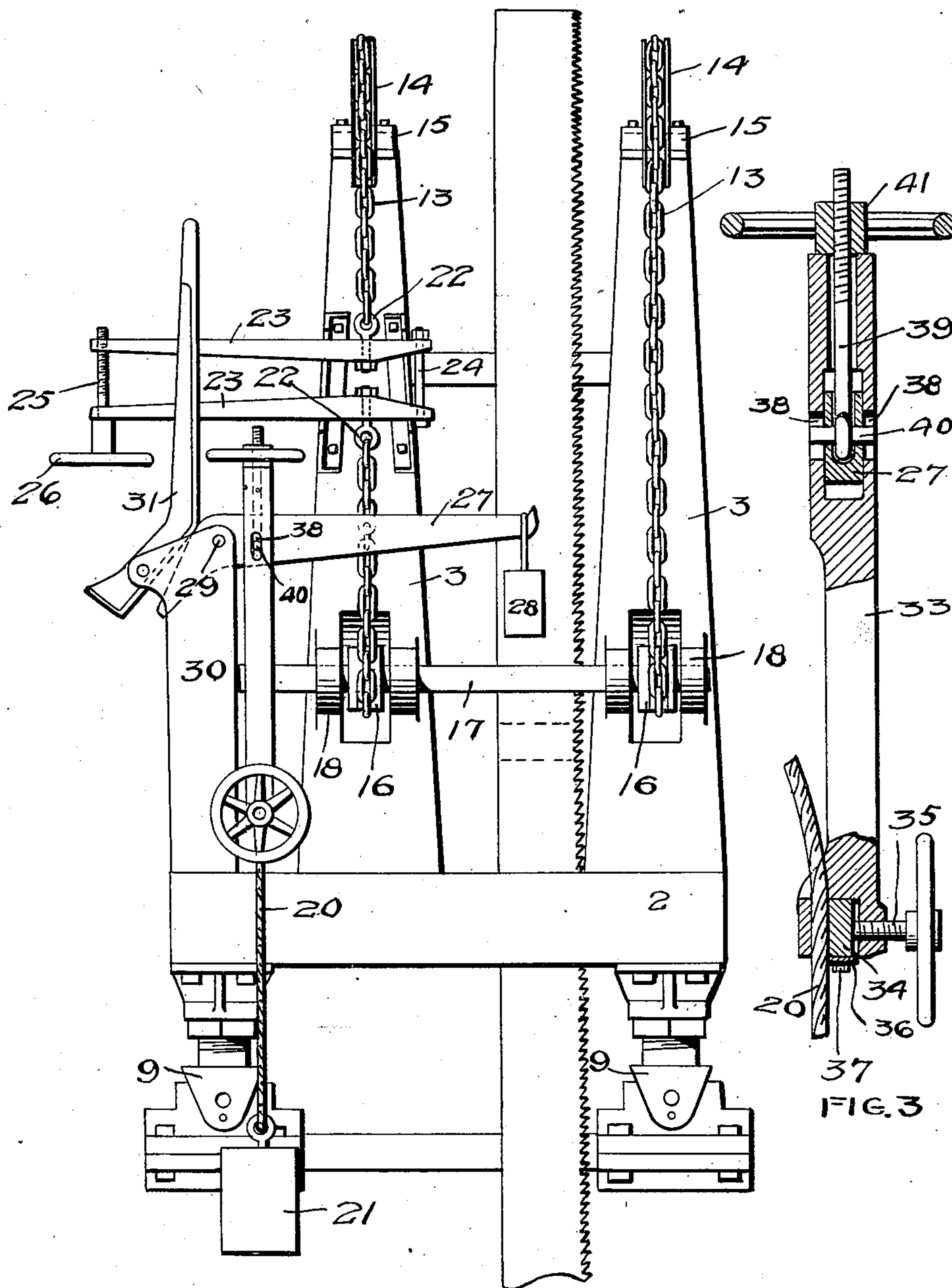


FIG. 2.

WITNESSES.

E. J. Blau
W. C. Goolley

INVENTOR

EDWIN E. THOMAS

BY *Paul & Hawley*
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UNITED STATES PATENT OFFICE.

EDWIN E. THOMAS, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
UNION IRON WORKS, OF SAME PLACE.

BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 664,188, dated December 18, 1900.

Application filed January 8, 1900. Serial No. 665. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. THOMAS, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Band-Saw Mills, of which the following is a specification.

This invention relates to improvements in band-saw mills, and particularly to band-saw mills of the class described in my pending application, filed July 22, 1899, Serial No. 724,731.

The objects I have in view are particularly to provide means for suspending the upper band-wheel and its shaft, and thereby to dispense with the usual means for supporting said upper band-wheel and its shaft.

Other objects of the invention will appear from the following detail description, taken in connection with the accompanying drawings, in which—

Figure 1 is a rear end elevation of a band-saw mill embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail.

As shown in the drawings, 2 represents the base of the band-saw mill, and 3 3 are brackets mounted thereon and each provided with a vertical sleeve or bearing 4 for the vertically-sliding columns 5 5, provided upon each side of the upper band-wheel. The hangers or boxes 9 for the shaft of the lower band-wheel 10 are preferably adjustable. The boxes for the shaft 11 of the upper band-wheel 12 are arranged in the upper parts of the sliding columns 5 5. The columns 5 5 are each suspended by a chain 13, which passes over a segment-wheel 14, mounted upon a suitable pivot or bearing 15 in the upper part of the bracket 3. The opposite ends of these chains 13 are secured to pulleys 16 upon a countershaft 17, that is mounted in suitable bearings 18 upon the brackets 3. The shaft 17 also carries a suitable grooved wheel 19, to which is secured a cable 20, that passes over a portion of the circumference of said wheel and is provided with the counterweight 21. This counterweight is intended to balance the weight of the upper band-wheel and its shaft and the columns in which said shaft is mounted. One of the chains 13 is divided, as shown

in Fig. 2, and each part is connected by a suitable eyebolt 22 to a lever 23. These levers are connected at their inner ends by a bolt 24 and at their outer ends by a threaded rod 25 and hand-wheel 26. By adjusting the hand-wheel 26 the outer ends of the levers 23 are adjusted toward or from each other, and thereby the chain 13 is shortened or lengthened, as desired, and by this means the end of the shaft of the upper band-wheel that is supported by this chain may be raised or lowered, thereby tilting the upper band-wheel in either direction, as desired.

For the purpose of straining the band-saw or applying tension thereto I provide the pivoted tension-lever 27, carrying the adjustable weight 28. The lever 27 is pivoted at 29 upon a standard 30, and another lever 31 is also pivoted upon said standard, said levers 27 and 31 being provided with ends or heels adapted to engage each other, as shown in Fig. 2. When the tension-lever 27 is in use, the lever 31 will stand in the vertical position shown in Fig. 2. By throwing the upper end of the lever 31 downward its heel may be brought into engagement with the heel of the lever 27, thereby raising the weight 28 and relieving the tension from the saw. I also provide suitable means for connecting the tension-lever 27 with a counterbalance-cable 20. This means is shown in detail in Fig. 3 of the drawings. A rod or bar 33 is provided at its lower end with an opening through which the cable 20 passes and with a block 34, that may be brought against said cable by means of an adjusting-screw 35, and thereby clamping the bar 33 to said cable. The block 34 is preferably arranged in a recess in the bottom of the bar 33 and is held in place by means of a plate 36 and screw or screws 37. The upper part of the bar 33 is provided with a transverse slot through which the lever 27 passes, and said bar is also provided with the vertical slots 38 at opposite sides of the opening through which the lever 27 passes. An eyebolt 39 has its eye arranged in a slot in the lever 27, and a pin 40 passes through the lever 27 and through the eye in the bolt 39, and the ends of said pin project into the slots 38. The upper end of the eyebolt 39 is threaded, and a hand-wheel 41,

having a threaded central opening, engages the threaded portion of said eyebolt and bears upon the top of the bar 33. It will be seen that through the lever 27 and the bar 33 the tension exerted by the weight 28 is transmitted to the wheel 19 and the shaft 17, and thereby any desired tension is applied to the saw. The described means for connecting the lever 27 to the bar 33 permits an adjustment between said bar and said lever, and thereby an adjustment between said lever and the cable 20, without releasing said cable from the bar 33. It frequently occurs that when the mill is adjusted for commencing work there will be some sawdust or similar material between the saw and the surfaces of the wheels. This will be thrown out after the saw begins to run, and the lever 27 will drop farther down. The greatest efficiency of the lever 27 and counterbalance-weight will be obtained when the lever 27 stands at right angles to the bar 33, and by means of the hand-wheel 41 and the threaded eyebolt 39 the lever 27 may at any time be adjusted so as to cause it to stand substantially at right angles to the bar 33 without changing the adjustment between the bar 33 and the cable 20.

The advantages of this band-mill are many. I believe I am the first to provide a band-mill in which the upper band-wheel and the shaft upon which said wheel is mounted are suspended. By suspending these parts I am enabled to do away with all vibration of the columns which carry the bearings for the upper shaft. This construction also leaves a clear space below the upper wheel, makes the mill much more substantial, reduces the number of working parts, and gets the band-wheel-shaft-supporting parts out of the way of sawdust and other refuse that accumulate around the band-mill. This construction also renders the mill much more convenient of access. I also provide a cushion 45, preferably formed of rubber, above the nut which connects the end of one of the supporting-chains to the upper end of the sliding column which supports one end of the upper band-wheel shaft.

By arranging the cushion above the shaft I get it out of the way of dust, grease, and other foreign material and have it in position to act quickly upon the column and the end of the shaft supported thereby whenever there is any slight stretching of the saw, such as frequently occurs when the saw is at work.

It is obvious that suitable cables or ropes might be substituted for the chains for suspending the vertically-sliding columns and other details of the construction may obviously be changed without departing from my invention.

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

1. The combination, in a band-saw mill, with suitable standards or brackets, of verti-

cally-sliding columns provided with bearings for the upper band-wheel shaft, chains connected to said columns, and passing over suitable bearings on the upper portions of said brackets, a counter-shaft to which said chains are connected, a counterbalance device connected with said shaft, and a lever mechanism connected with said counterbalance and whereby the tension may be applied to the saw, substantially as described.

2. The combination, in a band-saw mill, with suitable brackets 3, of vertically-sliding columns 5, 5 provided with bearings for the upper band-wheel shaft, segment-wheels 14 pivotally supported on said brackets, chains connected to said columns and passing over said segment-wheels, a counter-shaft to which said chains are connected, a counterbalance connected with said shaft and a weighted lever mechanism connected with said counterbalance and whereby tension may be applied to the saw, substantially as described.

3. The combination, in a band-saw mill, with the standards or brackets 3, of the vertically-sliding columns 5, 5, arranged to move in guides upon said brackets and provided with bearings for the upper band-wheel shaft, segment-wheels mounted upon said brackets, chains connected with said columns and passing over said segment-wheels, a counter-shaft to which said chains are connected, a counterbalance connected to said shaft, and co-acting levers for adjusting one of said chains, substantially as described.

4. The combination, in a band-saw mill, with the standards or brackets, of vertically-movable bearings for the upper band-wheel shaft, segment-wheels mounted upon said brackets, chains connected with said bearings and passing over said segment-wheels, one of said chains being divided, a counter-shaft to which said chains are connected, a counterbalance for said shaft, and coacting levers connecting the divided ends of said chain to permit them to be drawn together or separated, for the purpose specified.

5. In a band-saw mill, the combination, with standards or brackets, of vertically-movable bearings for the upper band-wheel shaft provided on said standards, a counter-shaft, chains connected with said upper band-wheel bearings and with said counter-shaft and whereon said upper band-wheel is suspended, one of said chains being divided, levers 23 provided near the divided ends of said chains, means connecting the short arms of said levers, adjustable means connecting the long arms of said levers and whereby the tension on the saw may be regulated, and a suitable counterbalance connected with said counter-shaft, substantially as described.

6. In a band-saw mill, the combination, with a counter-shaft, of chains connected to said shaft and whereon the upper band-wheel is suspended, a wheel 19 provided on said shaft, a cable 20 connected to said wheel and provided with a suitable counterweight, a stand-

ard 30, a weighted lever 27 pivoted thereon, a lever 31 also pivoted on said standard and engaging the heel of said lever 27, a bar 33 secured on said cable and adjustable connections provided between said bar and said lever 27, substantially as described.

7. In a band-saw mill, the combination, with standards or brackets, of vertically-movable bearings for the upper band-wheel shaft, a counter-shaft carried by said brackets, chains connecting said counter-shaft and the bearings for the upper band-wheel and whereon said wheel is suspended, a counterbalance connected with said shaft, a weighted lever 27 pivoted near said shaft, a pivoted lever 31 adapted to engage the heel of said lever 27 and raise its weighted end, and suitable means connecting said lever 27 and said counterbalance whereby the tension of the saw may be regulated, substantially as described.

8. In a band-saw mill, the combination, with a counter-shaft, of the chains connected thereto and to the upper band-wheel bearings and whereon the same are suspended, a wheel provided on said shaft, a cable connected therewith and provided with a suitable weight, a weighted tension-lever 27 pivoted near said shaft, means for elevating the weighted end of said lever, a bar secured on said cable, and adjustable connections provided between said bar and said tension-lever and whereby any desired tension may be applied to the saw, substantially as described.

9. In a band-saw mill, the combination, with a counter-shaft, of chains connected thereto and to the upper band-wheel bearings and whereon the same are suspended, a counterbalance cable and weight connected to said shaft, a weighted lever pivoted near said shaft, and means adjustably connecting said lever and said cable, whereby any desired tension may be applied to the saw, substantially as described.

10. In a band-saw mill, the combination, with the upper band-wheel bearings and means whereon the same are suspended, of the counter-shaft connected with said suspending means, a weighted cable connected with said shaft and forming a counterbalance therefor, a tension device provided near said shaft and means adjustably connecting said tension device and said cable whereby any desired tension may be applied to the saw, substantially as described.

11. In a band-saw mill, the combination, with the vertically-movable upper band-wheel, of a shaft, suspending means connecting said shaft and said band-wheel, a counterbalance for said shaft, and a tension device connected with said counterbalance whereby any desired tension may be applied to the saw, substantially as described.

12. The combination, in a band-saw mill, with the vertically-movable band-wheel, of a shaft, suspending means connecting said band-wheel and said shaft, a counterbalance for said shaft, and a lever mechanism connected with said suspending means, whereby the band-wheel may be tilted in either direction, for the purpose specified.

13. In a band-saw mill, the combination, with the vertically-movable upper band-wheel, of a shaft, suspending means connecting said shaft and said band-wheel, a counterbalance for said shaft and means adjustably connected with said counterbalance whereby any desired tension may be applied to the saw, substantially as described.

In testimony whereof I have hereunto set my hand, this 4th day of January, 1900, at Minneapolis, Minnesota.

EDWIN E. THOMAS.

In presence of—

M. C. NOONAN,
M. E. GOOLEY.