

(No Model.)

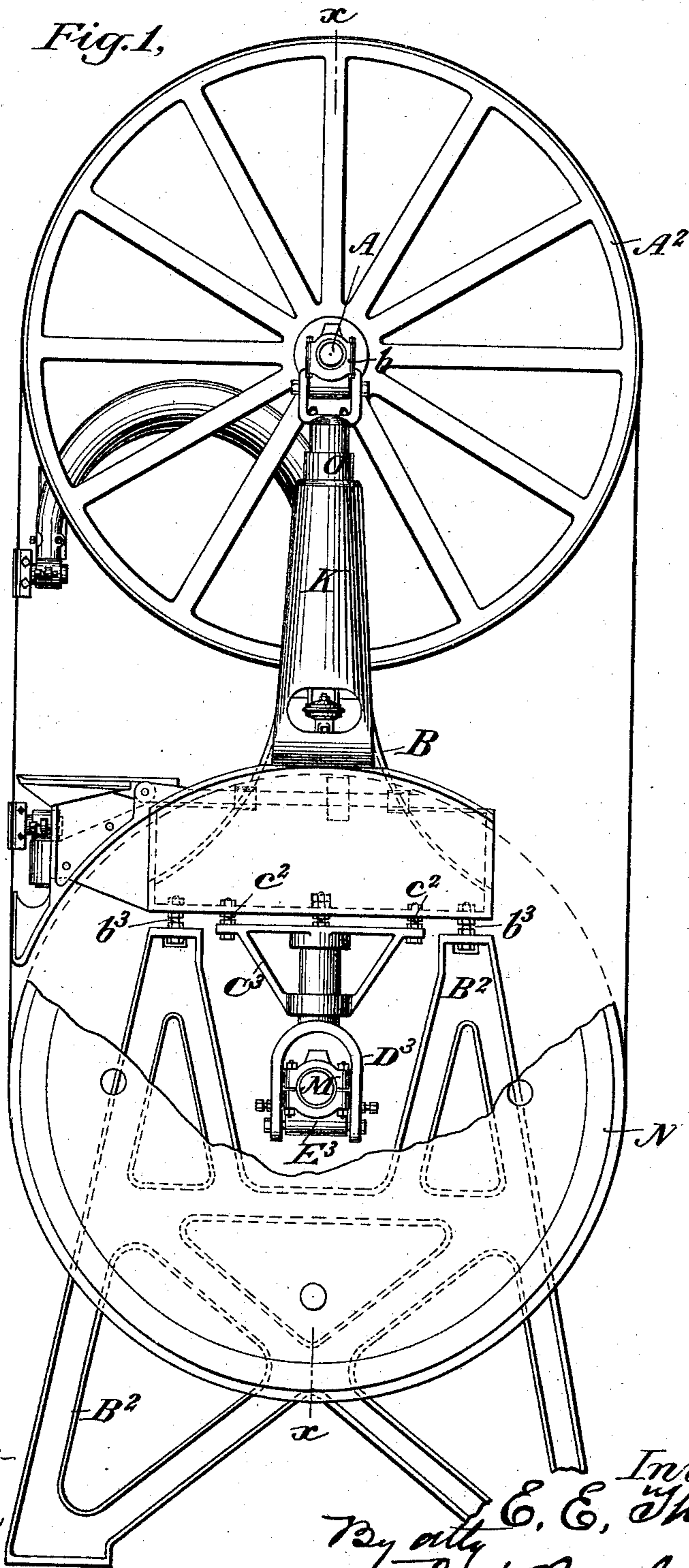
3 Sheets—Sheet 1.

E. E. THOMAS.  
BAND SAW MILL.

No. 545,000.

Patented Aug. 20, 1895.

*Fig. 1,*



Witnesses:  
D. H. Haywood  
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Inventor:  
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J. N. McIntire

(No Model.)

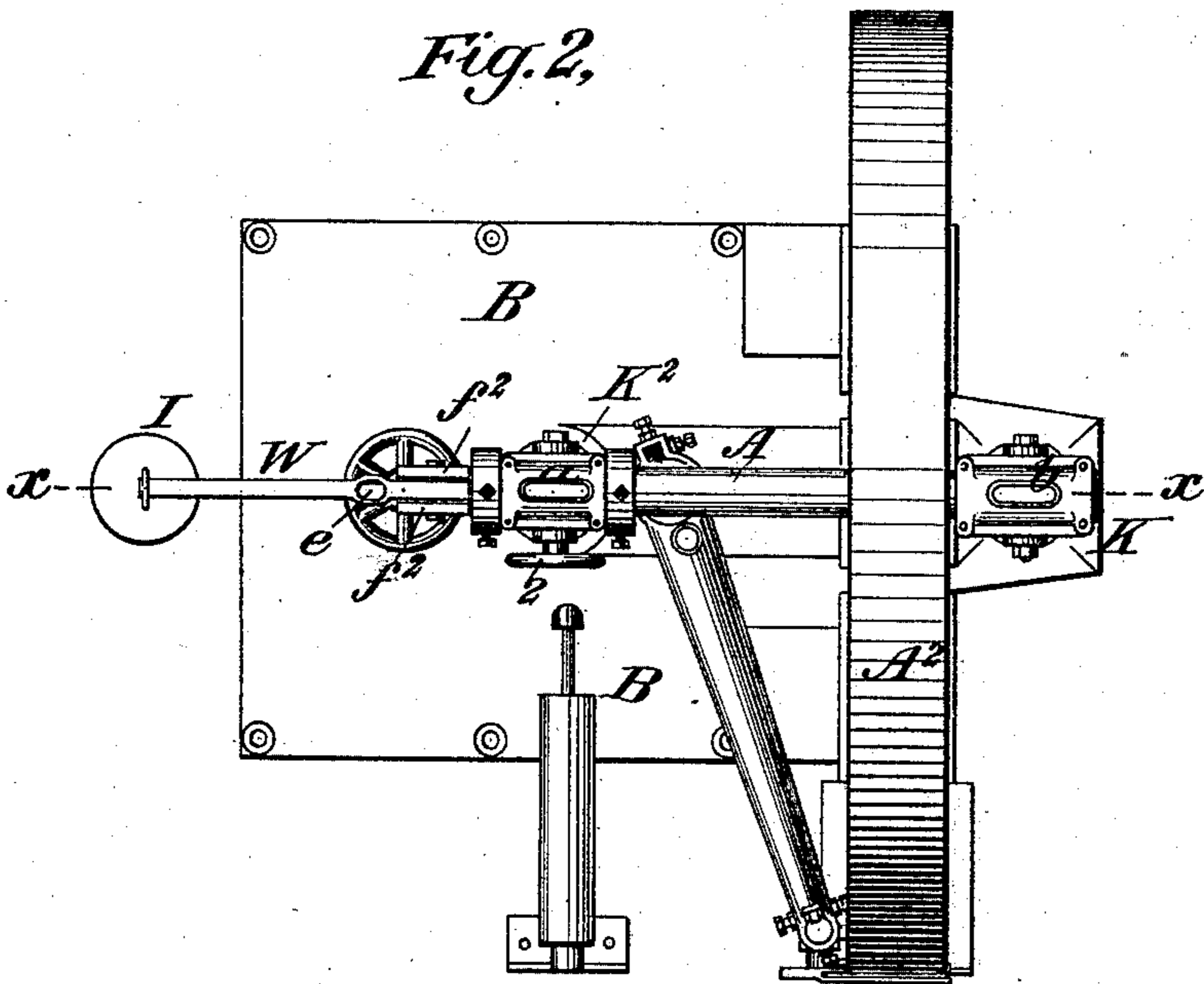
**3 Sheets—Sheet 2.**

**E. E. THOMAS.**  
**BAND SAW MILL.**

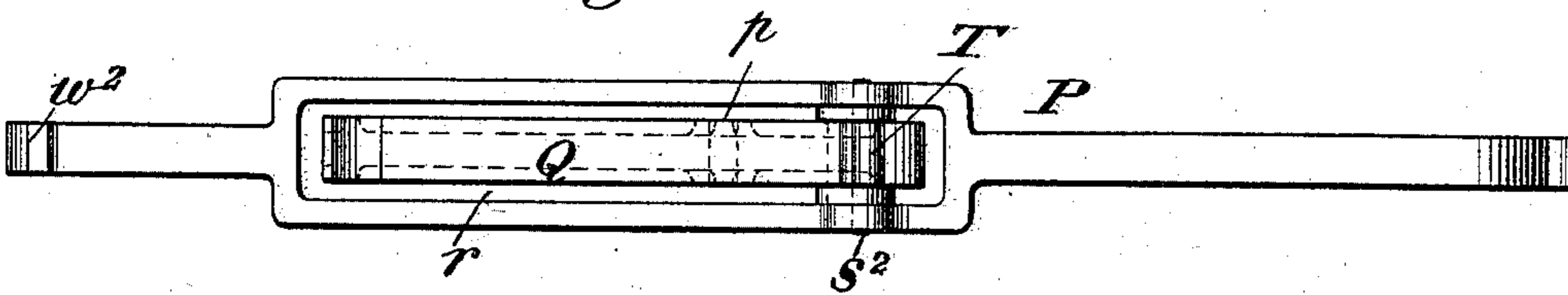
No. 545,000.

Patented Aug. 20, 1895.

*Fig. 2,*



*Fig. 4.*



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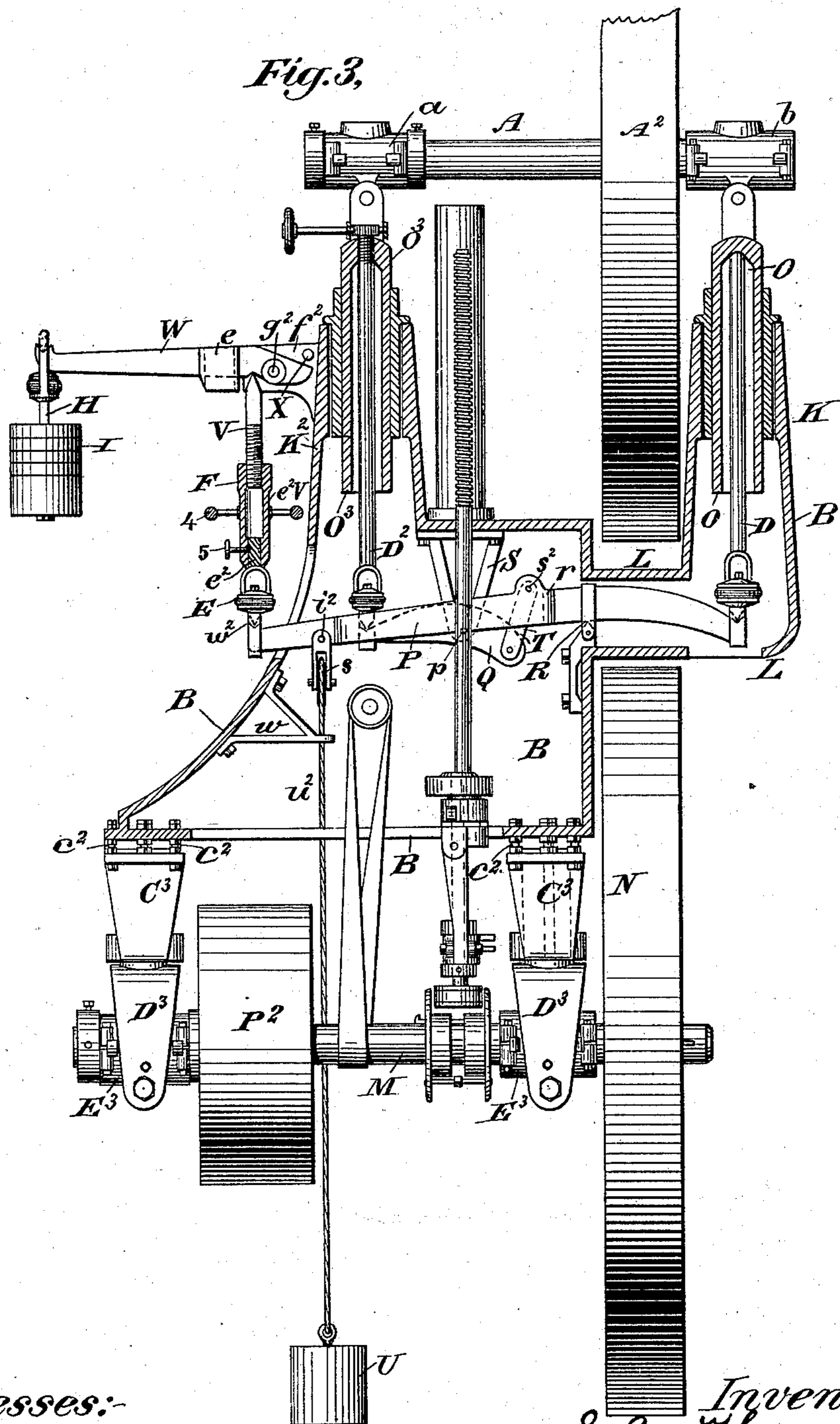
(No Model.)

3 Sheets—Sheet 3.

E. E. THOMAS.  
BAND SAW MILL.

No. 545,000.

Patented Aug. 20, 1895.



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# UNITED STATES PATENT OFFICE.

EDWIN E. THOMAS, OF BAY CITY, MICHIGAN, ASSIGNOR TO MICHAEL GARLAND, OF SAME PLACE.

## BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 545,000, dated August 20, 1895.

Application filed February 3, 1894. Renewed January 4, 1895. Serial No. 533,822. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN E. THOMAS, of Bay City, in the county of Bay and State of Michigan, have invented a certain new and useful Improvement in Band-Saw Mills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to band-saw mills, and has for its main object to provide for use a mill or machine of this type which shall be very efficient in its operations, while at the same time exceedingly simple of construction and hence not liable to get out of perfect working order.

To enable those skilled in the art to which my invention relates to make and use saw-mills containing the same, I will now proceed to more fully describe the several novel structural features of my improved machine, referring by letters to the accompanying drawings, which make part of this specification, and in which all of said novel features are embodied, though I wish it understood, of course, that any part or parts of my invention which is or are separable from the rest may be used alone with more or less advantage.

In the drawings, Figure 1 is a front elevation of so much of a band-saw mill as need be shown to illustrate my invention. Fig. 2 is a top view of the same. Fig. 3 is a vertical section of the same, taken in a plane indicated by the dotted line  $xx$  at Fig. 1. Fig. 4 is a detail view showing certain levers detached to make plain their relative arrangement, and in the several figures the same part will be found always designated by the same letter of reference.

The main frame or husk B of the machine is in form and structure substantially like this part of the band-saw mills heretofore built, and in the case shown is firmly and rigidly supported by or upon a frame-like casting, or set of legs  $B^2$ , the said husk B being capable of vertical adjustment by the usual means (seen at  $b^3$ , Fig. 1,) of sustaining bolts provided with adjusting and jam nuts.

Depending from the base-plate of the husk or casting B are the usual hangers  $C^3$ , which are vertically adjustable by means of their at-

tachment bolts and nuts seen at  $c^2$ , which carry the yoke-like pendants  $D^3$ , in which are pivotally hung the laterally-adjustable journal-boxes  $E^3$  of the lower wheel-shaft M. This shaft, as usual, carries the pulley  $P^2$ , over which the driving-belt is banded, and the lower band-saw wheel N and other devices, but has, it will be observed, no outside journal-box such as usually located in front of the wheel N, and supported by a pendent column or hanger-like device, projecting down from the "neck" L of the husk, that, however, does carry the front column K of the machine, in which is telescopically mounted the vertically-sliding device O, which at its upper end carries the front journal-box  $b$  of the upper shaft A. This shaft carries the upper wheel  $A^2$ , and has its rear end journal-box  $a$  adjustably supported by a vertically-sliding device  $O^3$ , (similar to O,) that is arranged telescopically within the rear or back column  $K^2$  of the machine, all in the manner well known to those familiar with the construction of band-saw mills of the type shown.

The spindles D and  $D^2$  of the tubular and sliding devices O and  $O^3$ , which respectively hold up the box  $b$  and  $a$  of the upper shaft A, are steeped with knife-edge bearings in angular seats, formed respectively in the ends of the shorter and longer arms of two sustaining and band-saw straining levers P and Q, which levers are mounted or fulcrumed in the husk B, are linked together, and are combined with a counterbalancing-weight and a tension-weight, as I will now explain.

By reference particularly to Fig. 3 it will be seen that the main lever P is fulcrumed (on a knife-edge, preferably) at the point R in the husk B, and that the supplemental lever Q is fulcrumed at the point  $p$  in a hanger S, which depends within the husk B from the top plate of the latter, and, as is plainly shown by said figure and Fig. 4, the lever Q is arranged within the longitudinal slot or elongated eye  $r$  of the lever P, and has its shorter arm coupled by a link T to the pivot or pin  $s^2$  of the longer arm of the lever P.

At the rear end of the lever P is stepped in an angular bearing at  $w^2$  the lower knife-edged end of a straining bar or spindle  $e^2$ , the upper vertically-adjustable portion V of which is

similarly stepped in a notch in the lower edge of a lever W, which, as clearly shown, is fulcrumed at  $g^2$  in a hollow stand  $f^2$ , and carries at its outer end a hanging tension-weight I.

5 The stand  $f^2$  projects laterally and rearwardly from the upper part of the back column  $K^2$  of the machine, and is provided at X with a stop-pin, against which in its ascent the shorter arm of lever W abuts under certain conditions, to be presently described.

10 The lever W is formed with a vertical aperture or eye at  $e$ , (for a purpose to be presently explained,) and the weight I suspended by the rod H is variable, being composed of separate pieces, (or weights,) several of which are removable, so that the gravity of the aggregate mass I may be varied at pleasure, after the fashion of increasing and diminishing the weight hung on the free end of the

20 scale-beam of a platform-scale.  
From the point  $i^2$  of lever P (which point is intermediate of that at which the lower end of spindle  $D^2$  is stepped in lever Q and that at which the device  $e^2$  rests on the lever P) there depends, as clearly shown at 25 Fig. 3, a hanger, in which is journaled an ordinary sheave or rope-wheel S, and over this wheel passes a rope  $w^2$ , one end of which is made fast to a stationary arm or bracket  $w$  of the husk, and the other (lower) end of which carries a counterbalancing-weight U. This weight, it will be understood, just about fully counterbalances the movable parts of the machine that rest upon or are held up by the 30 two levers P and Q, so that were no pressure exerted (downwardly) on the rear end of lever P by the spindle  $e^2$  of the tension device a person taking hold of said end of said lever could move the same upward to lower the 40 parts supported by the two levers P and Q.

Inasmuch as any descent of the rear end of lever P effectuates a lifting up by its other end of the spindle D and its attachments, and at the same time causes the longer arm of 45 lever Q to vibrate upwardly, and so lift the spindle  $D^2$  and its attachments, and as the proportions and movements of the elevating devices are such that the synchronous movements of the levers P and Q will effect about 50 the same extent of movement in each of the two spindles D and  $D^2$ , it follows that through the media of these two spindles and their attachments the journal-boxes  $b$  and  $a$ , in which is mounted the shaft that carries the upper 55 wheel  $A^2$ , will be elevated to strain up the band-saw with a force or power exactly proportionate to that which may be exerted upon the rear end of lever P at the point  $w^2$  by the tension mechanism, which tension mechanism consists, as I have explained, of the spindle  $e^2$  V, acted upon by the weighted lever W.

65 As will be plainly seen by reference to Fig. 3, the upper end of the portion  $e^2$  of the tension-device spindle is arranged to revolve or turn freely within the lower end of a tubular device F, that is provided near its middle lengthwise with a hand-wheel 4, the said parts

F and  $e^2$  being prevented from having any relative movement lengthwise, by reason of the inner end of the thumb-screw 5 engaging 70 with an annular groove in the exterior surface of the part  $e^2$ . The upper end portion of the tube or casing F is internally threaded to engage with the male thread of the upper part V of the tension-spindle, and so that by 75 turning the hand-wheel 4 in one or another direction the tension-spindles will be either lengthened or shortened, as may be required.

Whenever it may be necessary to disconnect the spindle  $e^2$  V and the weighted lever 80 W, it is only necessary to shorten up the spindle, by turning the hand-wheel 4 in the proper direction, until the weight I is permitted to descend to an extent sufficient to let the shorter arm of lever W come to a bearing 85 against the top X, whereupon the spindle will be relieved of all pressure, and, being further shortened up, may have the upper end of its part V swung backwardly into line with the eye or oblong aperture  $e$  of the lever W, (see 90 also Fig. 2,) through which said part V will easily ascend, when the rear end of lever P may be raised.

In the operation of the machine shown and so far described mostly as to its construction, 95 the band-saw works after the fashion of that in analogous machines; but by reason of the front column K having no weighty parts to support, said part K having only to hold and guide laterally the vertically-movable part O 100 with its attachments, the neck L does not spring and vibrate as usual heretofore with this part of the mill, and by having the combined devices for sustaining, through the media of the usual spindles D and  $D^2$ , arranged 105 within the columns K and  $K^2$ , the weight of the upper shaft-wheel, &c., located within the husk B, and so that all the thrusts and strains generated in straining up and holding under 110 tensional strain the banded saw come within the bounds of the supporting-base of said husk, the mill is made capable of doing more and better work, because there are no over- 115 hanging or projecting supports that are overweighted and so unduly strained as to cause objectionable vibration or tremor in the running parts of the machine.

The saws can be removed and replaced or changed with great ease, because one man can easily lower and return to its elevated 120 position the upper shaft and wheel by simply taking hold of and properly manipulating the rear end of lever P, after the tension device shall have been properly adjusted to permit the upper end of part V to drop back within 125 the eye or aperture  $e$  of the lever W, so as to be free to pass up through said eye when the rear end of lever P has to be lifted.

In a readjustment of the parts, after the rear end of lever P shall have been lowered to the proper extent, (with the assistance 130 of the suspended weight U,) the tension-device spindle has only to be swung forward at its upper end and the hand-wheel 4 turned in

the proper direction and to a sufficient extent to force the upper end of part V into contact with the lever W, and turn the latter on its fulcrum  $g^2$  until the shorter end shall have  
 5 been forced clear away from the fixed stop X and the tension-weight lifted so as to bring it into full action.

The mechanism comprising the wheel-supporting and saw-straining rig is, it will be  
 10 seen, very simple, and at the same time perfectly efficient and easily managed.

The two levers combined and operating as shown and described, with one arranged within a central opening in the other and both located in a vertical plane coincident with the  
 15 middle of the machine, results in a strong and compact organism of working parts, while at the same time all the strains created are borne by perfectly stable and immovable  
 20 parts of the mill structure.

Of course variations may be made in the way of mere modifications without departing from the novel principle of construction and mode of operation involved in my improved  
 25 machine, and hence without departing, essentially, from my invention.

Having now so fully explained the construction and operation of my improved band-saw mill that those skilled in the art can  
 30 readily make and use machines comprising, either in whole or in part, the novel structural features I have devised, what I claim as new, and desire to secure by Letters Patent, is—

1. In a band-saw mill of the type shown, the combination with the sustaining and adjusting levers P and Q mounted within the husk; and a counterbalancing weight depending from the longer arm of lever P, of a tension device, comprised of a spindle stepped on the rear end portion of lever P, and a weighted lever W pivoted to a bracket of the rear column and adapted to be held by a stop when not acting on said spindle; as and for the purposes set forth.

2. In the tension device of a band-saw straining mechanism, the combination with the distensible presser spindle  $e^2 V$ , (adapted to press down on the rear end of the main lever of said straining mechanism,) of a weighted lever fulcrumed to a fixed point, and having an eye, or vertical aperture, through which the upper end of said presser spindle may be passed; as and for the purpose hereinbefore described.

In witness whereof I have hereunto set my hand this 6th day of November, 1893.

EDWIN E. THOMAS.

In presence of—

A. B. LENNOX,  
 R. A. MCKAY.