

(No Model.)

2 Sheets—Sheet 1.

W. M. DICKERSON.

BAND SAW MILL.

No. 381,466.

Patented Apr. 17, 1888.

Fig. 1.

Fig. 2.

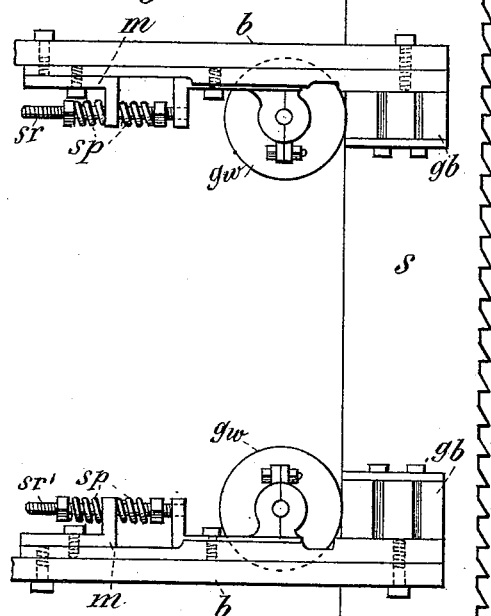
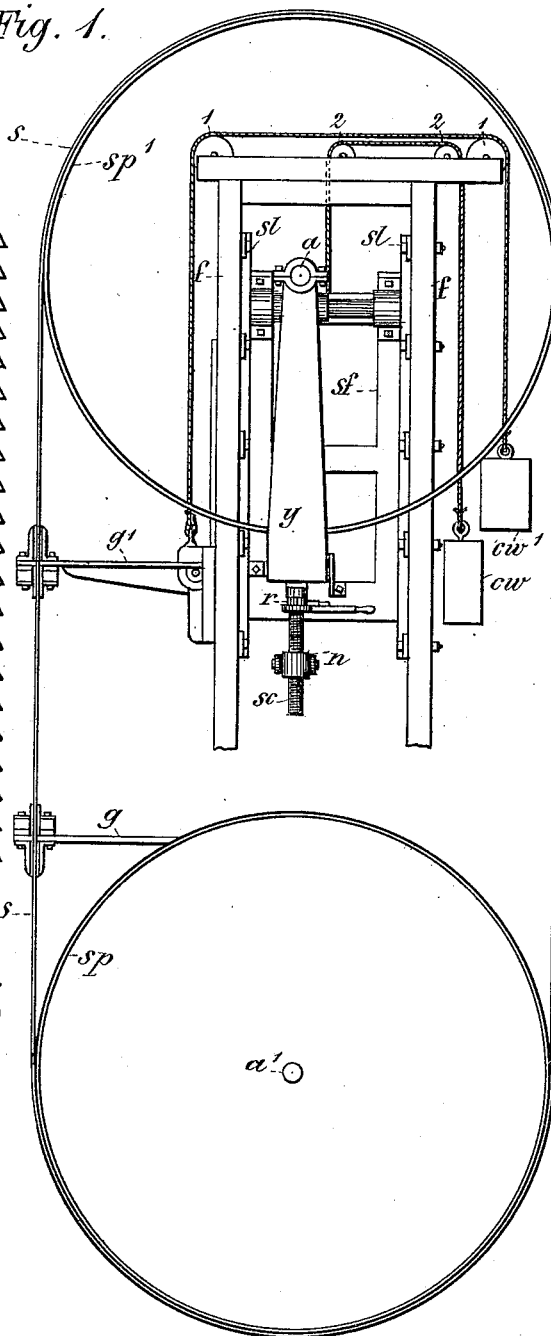
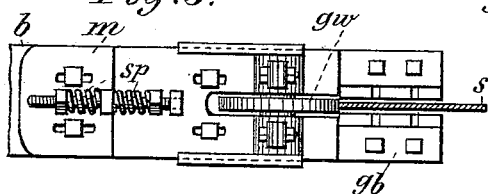


Fig. 3.



WITNESSES.

Gustav Bohn.  
E. B. Griffith.

INVENTOR.

Wm. M. Dickerson.

By C. F. Jacobs  
Atty.

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Fig. 4.

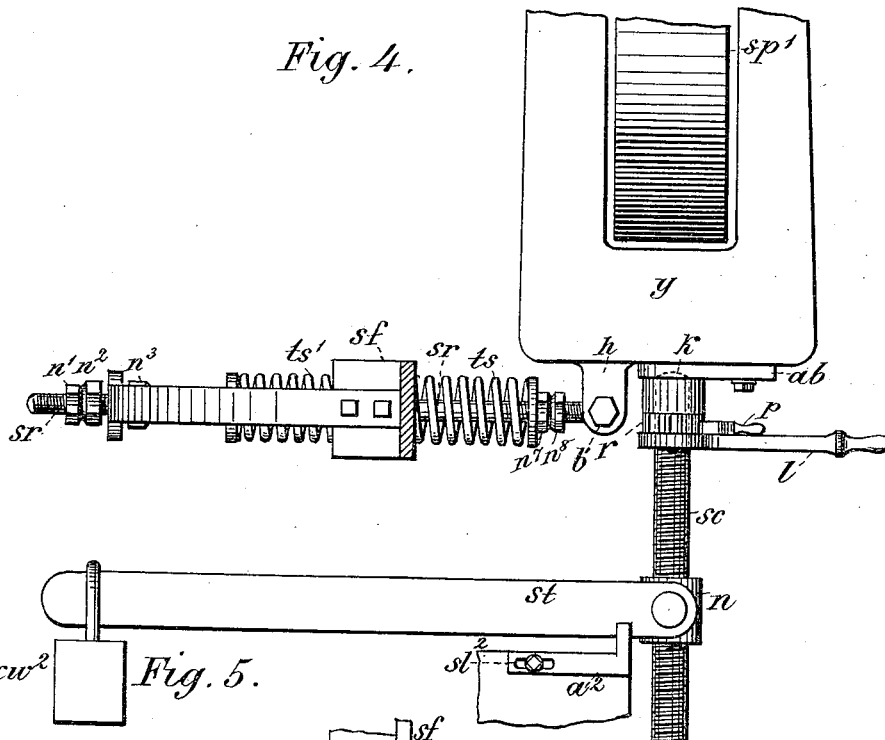


Fig. 5.

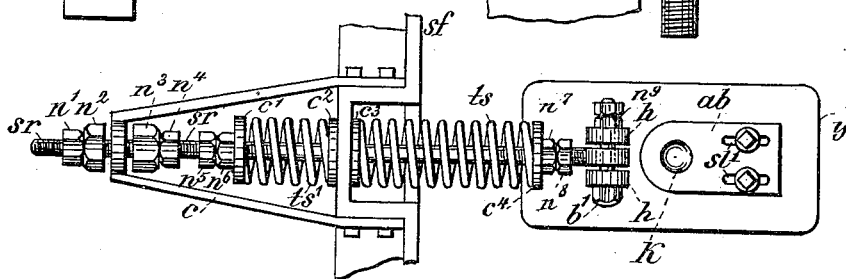
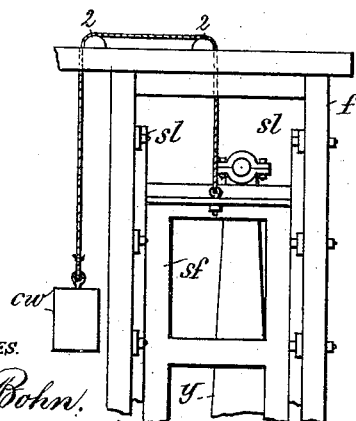


Fig. 6.



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Gustav Bohn.  
E. B. Griffith

INVENTOR.

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By C. F. Jacobs.  
Atty.

# UNITED STATES PATENT OFFICE.

WILLIAM M. DICKERSON, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO LEWIS W. HOLLOWAY, OF SAME PLACE.

## BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 381,466, dated April 17, 1888.

Application filed June 25, 1887. Serial No. 242,428. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. DICKERSON, of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Band-Saw Mills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

My invention relates to improvements in band-saw mills, and particularly to the mechanism which carries the band-saw and regulates its adjustment and its tension upon the pulleys, and will be understood from the following description.

In the drawings, Figure 1 is a side view of my device, the saw-pulleys being in outline. Fig. 2 is a detail view of a portion of the saw and the wheel mechanism at the back of the saw. Fig. 3 is a top view of the same. Fig. 4 is a detail side view of the lower portion of the yoke and the ratchet-and-screw mechanism for supporting the yoke and raising it so as to stretch the saw upon the pulleys, and the adjusting spring mechanism for regulating the tension upon the two sides of the saw. Fig. 5 is a bottom view of this adjusting spring mechanism. Fig. 6 is a detail view of the sliding frame, the weight that counterbalances it, and the upper portion of the main frame. Figs. 2, 3, 4, and 5 are on a larger scale than the others.

My present device is an improvement upon that shown in Letters Patent No. 340,990, issued to me May 4, 1886.

The axle *a* of the upper saw-pulley, *sp'*, is journaled in bearings at the top of a cast-iron yoke, *y*, between the arms of which this pulley revolves. This yoke is connected to a sliding frame, *sf*, which moves freely up and down upon slides *sl*, bolted to the inside of the main frame *f*, and connected with this sliding frame is a rope passing over sheave-pulleys 22, a weight being connected at the other end of the rope of sufficient size to completely balance the sliding frame, the yoke being held up by the screw-rod *sc*, and the counter-balance connected therewith, as hereinafter described.

In my former device the yoke was pivoted

near the top of the slide, and had an arm or lever extending outward carrying a weight, while in the present device the entire weight of the sliding frame, in which the yoke is mounted, is balanced by the counter-weight *cw*. This arrangement relieves the springs of the load of the sliding frame and leaves them to act freely and easily in carrying the load of the yoke and the pulley, and there is no more pressure upon one side of the springs than upon the other.

At the bottom of the yoke *y* is fixed a screw-rod, *sc*, which passes through a pivot-nut, *n*, supported by a stay-lever, *st*, which carries a counter-balance, *cw'*, on its outer end, and rests upon a fulcrum-plate, *a'*, bolted to a part of the frame, this fulcrum being adjustable forward or backward the length of the slot *sl'*, as shown in Fig. 4. A lever, *l*, having a pawl, *p*, connected to it, and engaging with the teeth of the ratchet-wheel *rw*, is fastened to the screw-rod *sc*, and by means of this lever this screw-rod may be worked up and down in the nut *n*, so as to raise or lower the yoke *y*, that carries the upper saw-pulley, and thus adjust the tension of the saw upon the pulleys.

The saw moves in guides *g g'*, placed between the saw-pulleys, the upper guide, *g'*, being itself movable upon a slide connected to the outside of the main frame, and it is counterbalanced by a weight, *cw'*, connected to the outer end of a rope passing over the sheave-pulleys 11, the other end being connected to a bracket of the upper guide, *g'*. It will thus be seen that the weight *cw* counterbalances that of the sliding frame *sf*, the weight *cw'* balances the guide *g'*, while the weight *cw'* counterbalances the weight of the yoke *y* and the pulley which is carried in bearings thereon, and hence it is easy by means of the ratchet-screw mechanism to adjust the tension of the saw upon the pulleys at any time.

In operating a band-saw the greatest strain comes upon the tooth side of the saw, inasmuch as that side meets with the greatest resistance in passing through the log. If this side of the saw, then, were keyed up so as to be equally taut with the opposite or back side of the saw, there would be greater danger of

the saw breaking upon the tooth side. It is therefore desirable that this side of the saw should be eased up a little in its tension, and should be able to accommodate itself to the requirements of the work that is being done. I therefore provide for the automatic adjustment of the tension of the two sides of the saw by means of a pair of springs which are coiled upon a spring-rod carried in a small frame connected with the sliding frame. This device is illustrated in Figs. 4 and 5 of the drawings.

A spring-rod, *sr*, is mounted at its inner end upon a pivot-bolt, *b'*, having bearings in lugs *h h*, connected to the bottom of the yoke *y*. *ts* and *ts'* are tension-springs, which are coiled upon this rod, each being independent of the other, and are secured between the washers or collars *c' c<sup>2</sup> c<sup>3</sup> c<sup>4</sup>*, and, as will be seen, when the spring *ts* is drawn out the inner spring, *ts'*, is compressed. Near the outer end of this spring-rod are check-nuts *n' n<sup>2</sup> n<sup>3</sup> n<sup>4</sup>*, and, as will be seen in the drawings, the inner ones, *n<sup>2</sup> n<sup>3</sup>*, are set upon the rod a short distance at either side of the end of the collar *c*, so as to allow room for the movement of the rod when forced out or drawn in by the action of the spring *ts'*. Thus if the tension of the tooth-edge of the saw is too great it will be inclined to pull down upon that side of the yoke, compressing the spring *ts* and opening the spring *ts'*, so that the pressure is relieved. If the opposite side of the saw is drawn too taut, a reverse action of the parts will take place and the pressure will be relieved there. By means of this tension the springs are operated in different directions, the one responding to too great tension upon the one side of the saw and the other to too great tension upon the opposite side of the saw, and the strain is thus relieved and the proper tension preserved upon both sides of the saw.

*ab* is an adjustable block bolted to the under side of the yoke and connected to the upper end of the screw-rod *sc*, so that it may be thrown out or in, as may be desired, as the saw becomes narrower, to keep the center (in width) of the saw over the center of the screw-rod *sc*, so that any adjustment will be central. To correspond with the adjustment allowed by the movement of this block *ab* the angular plate or fulcrum *a<sup>2</sup>* of the lever *st* is also made adjustable within the limit of the slot *st<sup>2</sup>*, as shown in Fig. 4. This adjustment and that of the block *ab* keeps the screw *sc* in line, and its upper end, as will be seen, fits into the socket *k* formed in the adjustable block *ab*, as shown in the drawings.

Another improvement is in mounting the guide-wheels *gw*, which are journaled so that their peripheries will operate against the back of the saw in bearings connected with a plate, *m*, which is allowed a movement upon its base *b* when demanded by the exigencies of the work, this movement being controlled by springs *sp*, coiled upon a small screw-rod, *sr'*, having bearings in projections on the movable

plate *m*, as shown in Figs. 2 and 3. Heretofore these guide-wheels have been mounted in fixed bearings, and the result has been that the back-pressure against the saw would in some cases crack or strain the band or cut the wheel. Any such pressure as this against the front edge of the saw will be received against the force of the coiled springs, which operate practically as buffers, and when the pressure against the saw is removed these springs will throw the guide-wheels forward, so that they are always kept in proper position, bearing firmly but yieldingly against the back of the saw.

*gb* are guide-blocks of wood set on either side of the saw, as shown in Fig. 3, and far enough apart to admit the saw to move easily between them.

The lower saw-pulley is shown in position in Fig. 1, (marked *sp*), its axle being indicated by *a'*.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. A band-saw mill wherein the axle of the upper saw-pulley is journaled upon a yoke carried upon a secondary frame moving upon slides inside the main frame, such secondary frame and its load balanced by a counterweight, substantially as shown and described.

2. A band-saw mill comprising, in combination, an upper and lower saw-pulley, the former carried in bearings upon the top of a yoke having a screw-rod connected at its lower end for adjusting the tension of the saw upon the pulleys, a lever connected with such screw-rod carrying a weight which supports the load of the yoke and the saw-pulley, such lever resting upon an adjustable fulcrum and its upper end entering a socket in an adjustable block, whereby the center of the screw-rod may be brought into line with the center of the saw upon the upper pulley, substantially as shown and described.

3. A band-saw mill comprising, in combination, a saw carried upon upper and lower saw-pulleys and moving in guides between such pulleys, such guides provided with guide-wheels which press against the back of the saw, mounted in bearings upon a movable plate, which also provides bearings for a spring-rod carrying a coiled spring thereon, whose force holds the periphery of the guide-wheel against the back of the saw, and having an elastic backing that allows the saw to recede under overpressure brought against its cutting-edge, substantially as shown and described.

4. A band-saw mill comprising, in combination, upper and lower saw-pulleys supported upon suitable axles, the axle of the upper pulley having bearings upon the top of a yoke, a spring-rod connected at the bottom of such yoke carrying a pair of tension-springs having independent action, the compression of one operating to loosen the other, thus compensating for any undue strain upon either side of the saw, substantially as shown and described.

5. A band-saw mill comprising, in combina-

tion, upper and lower saw-pulleys, the former  
journalled in bearings upon the top of a yoke  
attached to a frame sliding in the main frame,  
a ratchet-and-screw mechanism connected to  
5 the lower end of the yoke for adjusting the ten-  
sion of the saw upon the pulleys, and provided  
with a lever carrying a weight on its outer  
end, which balances that of the yoke and the  
saw-pulley, a spring-rod fastened at one end  
10 to such sliding frame carrying a pair of ten-  
sion-springs mounted thereon having inde-  
pendent action, such spring-rod also connected  
to the yoke, to which the upper saw-pulley is  
journalled, whereby undue tension on either  
15 side of the saw acting upon the yoke will be  
compensated by a corresponding movement of  
the spring-rod compressing one and loosening  
the other of such tension-springs, substantially  
as shown and described.

20 6. A band-saw mill comprising, in combina-  
tion, a lower saw-pulley mounted upon an axle  
having bearings in a part of the foundation-  
frame, an upper saw-pulley whose axle is  
journalled in bearings upon the top of a yoke

which is connected with a secondary frame 25  
movable vertically in the main frame, a ratch-  
et-and-screw mechanism connected to the  
lower end of such yoke for adjusting the ten-  
sion of the saw upon the pulleys, a lever carry-  
ing a pivot-nut which works upon such screw- 30  
rod, carrying a weight on its outer end for bal-  
ancing the weight of the yoke and pulley, a  
spring-rod connected at one end to such yoke,  
and also to the sliding frame, carrying springs  
mounted thereon having independent action, 35  
whereby an unequal tension on one side of the  
saw will operate to relieve the pressure upon  
one of the springs and to compress the other,  
and thus equalize the tension upon both sides  
of the saw, substantially as shown and de- 40  
scribed.

In witness whereof I have hereunto set my  
hand this 22d day of June, 1887.

WILLIAM M. DICKERSON.

Witnesses:

C. P. JACOBS,

E. B. GRIFFITH.