To all whom it may concern:

Be it known that I, EDWIN E. THOMAS, of Tacoma, county of Pierce, State of Washington, have invented certain new and useful Improvements in Tension Mechanisms for Band-Saw Mills, of which the following is a specification.

The object of my invention is to provide a band-saw tension or straining device that is simple in construction, fully exposed to view, and easily accessible for the purpose of operation and repairs.

A further object is to provide a tension or straining mechanism in which the use of gears, usually partially concealed, worms, and similar devices that are liable to become clogged with dirt and sawdust and render the tension device less sensitive and interfere with the successful operation of the mill is entirely avoided.

A further object is to provide a tension mechanism which can be easily and quickly manipulated for the purpose of lowering the upper band-wheel to release the saw or raise the said wheel to tension the saw.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as herein-after described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a front view of a band-mill with my tension device applied thereto. Fig. 2 is a side view of the same. Fig. 3 is an enlarged detail view of the tension mechanism. Fig. 4 is a section substantially on the line y y of Fig. 3.

In the drawings, 2 represents the base or bed of a band-mill, beneath which is the shaft 3 of the lower band-mill, mounted in bearings supported by depending hangers 4. A driven pulley 5 is provided on said shaft, and a belt 6 connects the said shaft with a mechanism for operating the lumber-roll 7. Upon the base or bed 2 I arrange standards or brackets 8, whereon sleeves 9 are mounted. 10 represents vertical columns that are slideable in said sleeves and have bearings 11 at their upper ends for the shaft 12 of the upper band-wheel 13.

14 represents the saw (shown in Fig. 2) provided with a double cutting edge; but I do not wish to confine myself to this construction, as a saw with a single cutting edge may be provided, if preferred.

15 represents the upper guide for the saw and forms the subject-matter of a companion application for Letters Patent of the United States filed herewith, and I make no claim, therefore, in this application thereto, it being sufficient to say that it is pivotally mounted upon a vertically-movable support 16, that is operated by means of a steam-cylinder 17 and an oscillating bar 18, having its ends connected to the piston of said cylinder and with said support.

A rock-shaft 19 is mounted on the upper ends of the brackets 8 and is provided with oscillating arms 20, having curved surfaces that form bearings for chains 21, connected to said arms and to the bearings 11 of the upper band-wheel shaft. The oscillation of these arms serves to raise or lower the upper band-wheel and tension the saw or relieve the same. A rock-shaft 22 is mounted in bearings on the brackets 8 below the upper band-wheel and is provided with arms 23, pivotally connected by rods 24 with the arms 20, and a quadrantal-shaped arm 25 is secured on one end of the rock-shaft 22 and connected by a chain 26 with a counterbalance-frame 27, carrying a series of counterbalance-weights 28. This counterbalance mechanism for the upper band-wheel is substantially the same in construction and operation as that shown and described in Letters Patent of the United States issued to me February 11, 1902, No. 638,937, and I make no claim, broadly, to the same herein.

Loosely mounted at one end of the rock-shaft 22 is a tension-arm 29, on the outer end of which a tension-weight 30 is suspended. A bracket 31 is provided on the bed of the
mill and supports a lever 32, that is pivoted near one end thereon, and the long arm of the lever 32 extends under the rock-shaft 32 and is pivotally connected by a rod 33 with the loosely-mounted tension-arm 39 near its inner end. A similar arm 34 is pivoted on the short arm of the lever 32 and carries a grip-block 35 at its upper end. This block has a recess 36 in one side to receive the rim 37 of a wheel 38, that is secured on the rock-shaft 22, and has its spokes all arranged on one edge of the rim to allow the opposite edge to enter the recess 36. A movable gripping-jaw 39 is provided in the block 35, arranged to be engaged by the end of a screw 40, having an operating-wheel 41, and moved into contact with the outer surface of the rim 37. By means of this jaw and screw the grip-block can be securely locked on the arm of the wheel and through the lever 32 and its connections the power of the tension-weight applied to the wheel and saw. A hand-lever 42 is pivoted at one end on the bracket 31 and is provided with a short arm 43, pivotally connected with the arm 29 by a link 44. When this hand-lever 42 is thrown down to a horizontal position, as shown by dotted lines in Fig. 3, the loosely-mounted arm 29 will be elevated to and locked in the position shown by dotted lines in said figure and the lever 32 will be relieved of the tension-weight 30, and the grip-block having been released from the wheel the latter may be revolved in either direction to raise or lower the counterbalanced upper band-wheel.

The operation of my improved tension device is as follows: Supposing the mechanism is in the position indicated by Fig. 1 and it is desired to alter the tension of the saw or replace it with another, the operator grasping the lever 42 will swing it down to the position indicated by dotted lines in Fig. 3, elevating the arm 29 and its tension-weight to their inoperative position and tilting the lever 32, the gripping device having first been released from the wheel-rim. The grip-wheel will now be relieved of the tension-weight, and the operator grasping it (the wheel) can lower the upper band-wheel if it is desired to relieve the tension or take off the saw. After the saw has been removed and another put in place thereof in the usual way the operator will revolve the grip-wheel and with the aid of the counterbalance raise the upper band-wheel to its highest position or until the saw is taut, then lock the grip-jaw securely to the end of the wheel and raise the lever 42 to its upright position, when the force exerted by the weight 30 will again be applied to the lever 32 and from thence transmitted through its connections to the grip block and wheel and finally applied to the saw to tension the same.

I claim as my invention—

1. In a band-saw mill, the combination, with the upper band-wheel and its shaft, of a rock-shaft having operative connections with said band-wheel shaft, a grip-wheel secured on said rock-shaft, an arm loosely mounted on said rock-shaft, a tension-weight carried by said arm, a grip-block having a jaw arranged to engage the rim of said wheel, means for operating said jaw, operative connections provided between said arm and said block, and means for raising and lowering said arm.

2. In a band-saw mill, the combination, with the upper band-wheel and its shaft, of a rock-shaft having operative connections with said band-wheel and shaft, a grip-wheel secured on said rock-shaft, an arm loosely mounted on said rock-shaft, a tension-weight carried by said arm, a grip-block having a jaw arranged to engage the rim of said wheel, means for operating said jaw, operative connections provided between said arm and said block, and means for raising and lowering said arm.

3. A tension device for band-saw mills, comprising a rock-shaft having operative connections with the upper band-wheel shaft, a wheel secured on said rock-shaft, an arm loosely mounted on said shaft, a weight carried by said arm, a grip-block having a jaw for engaging the rim of said wheel, a mechanism for operating said jaw, a tension-weight carried by said arm, a mechanism connecting said arm and said block for transmitting the strain of said weight to said block and wheel, a mechanism within control of the operator for relieving the strain on said block and wheel, for the purpose specified.

4. A tension device for band-saw mills, comprising a rock-shaft, a wheel secured thereon having its spokes connected to one edge of its rim, an arm loosely mounted on said shaft, a grip-block having a recess to receive the opposite edge of said rim from said spokes, a movable jaw provided in said grip-block, means for operating said jaw, a tension-weight carried by said arm, a mechanism connecting said arm and said block for transmitting to said block and wheel the power of said weight, and means for raising and lowering said arm to relieve said block and wheel, substantially as described.

5. In a tension device for band-saw mills, the combination, with a rock-shaft, of a grip-wheel secured thereon, a grip-block having a jaw to engage the rim of said wheel, a mechanism connected with said grip-block having a tension-weight for applying a strain thereto and said wheel, and means for temporarily relieving the strain on said block and wheel, for the purpose specified.

6. In a tension device for band-saw mills, the combination, with a rock-shaft, of a grip-wheel secured thereon, a grip-block having a movable jaw to engage said wheel, a loosely-mounted member having a weight and operatively connected with said grip-block to apply the strain of said weight thereto, and a...
lever device within control of the operator for relieving the strain in said block and wheel, substantially as described.

7. In a tension device for band-saw mills, the combination, with the upper band-wheel and its shaft, of a rock-shaft having operative connections with said band-wheel shaft, a grip-wheel secured on said rock-shaft, a counterbalance also mounted on said rock-shaft, an oscillating arm, a tension-weight carried thereby, a movable jaw arranged to engage and grip the rim of said wheel, operative connections provided between said weighted arm and said jaw for transmitting the power of said tension-weight to said jaw, and means for locking said oscillating arm to relieve said jaw of the weight thereon, substantially as described.

8. In a tension device for band-saw mills, the combination, with the upper band-wheel and its shaft, of a rock-shaft having operative connections with said band-wheel shaft and provided with a suitable counterbalance mechanism, a grip-wheel secured on said rock-shaft, an oscillating arm, a tension-weight carried thereby, a movable jaw arranged to engage and grip the rim of said wheel, a lever mechanism connecting said arm and said jaw, a pivoted operating-lever, and a link connecting said operating-lever and said arm for raising the latter to relieve said jaw of said weight, substantially as described.

In witness whereof I have hereunto set my hand this 4th day of January, 1904.

EDWIN E. THOMAS.

In presence of—

HERBERT S. GRIGGS,

M. HAGERTY.