No. 676,708. Patented June 18, 1901.

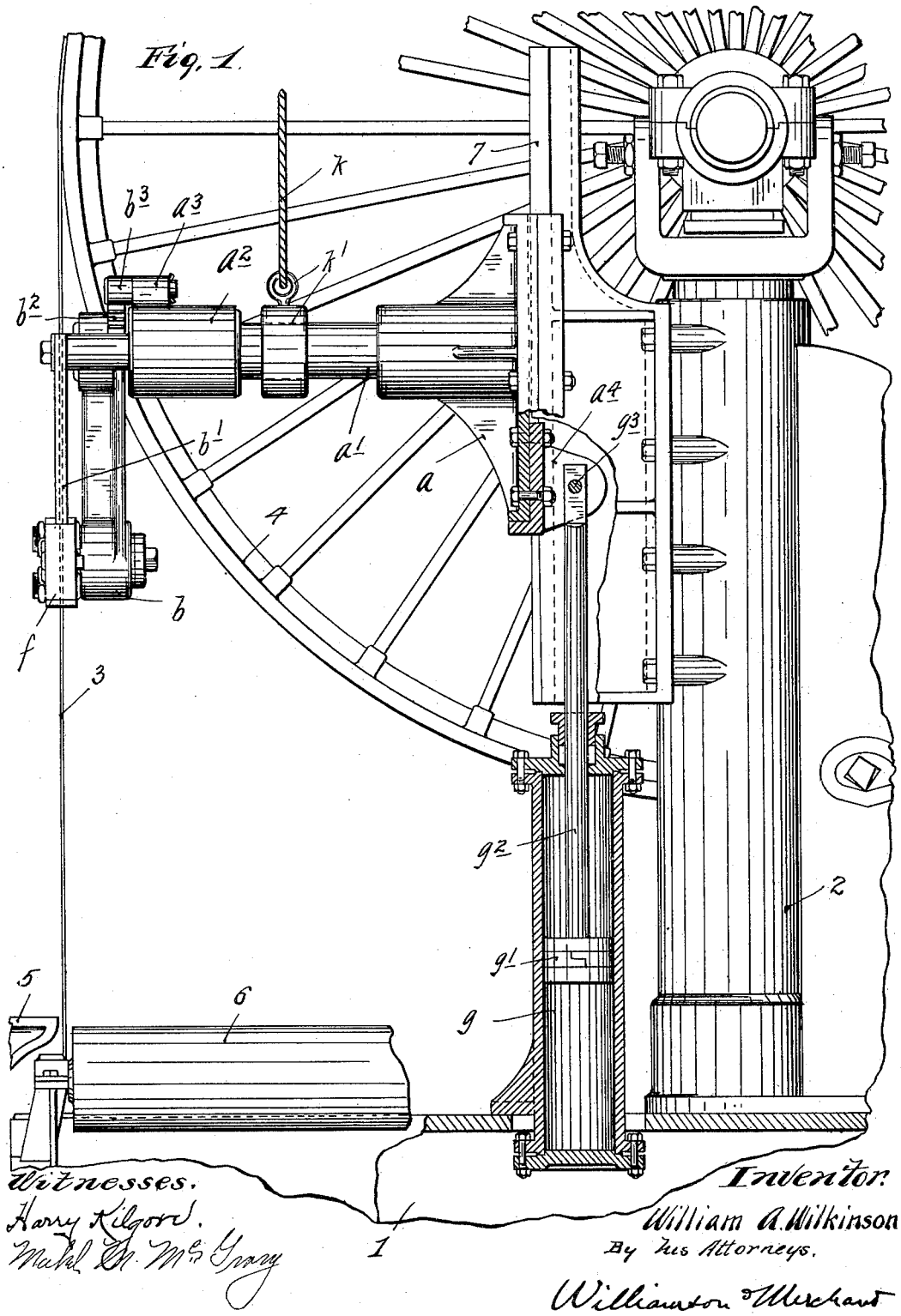
W. A. WILKINSON.

SAW GUIDE FOR BAND SAW MILLS.

(Application filed Nov. 16, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses.
Harry Kilgore.
Mabel H. McGrory

Inventor.
William A. Wilkinson
By his Attorneys.
Williamson & Merchant

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Fig. 2.

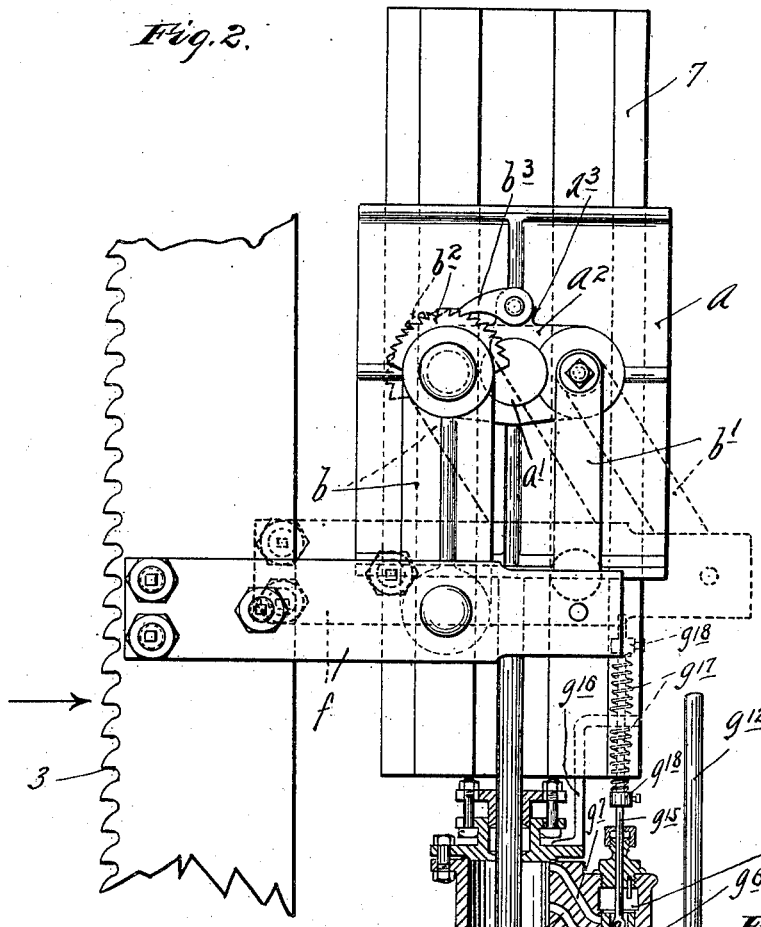


Fig. 3.

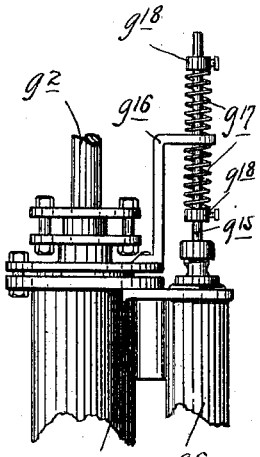
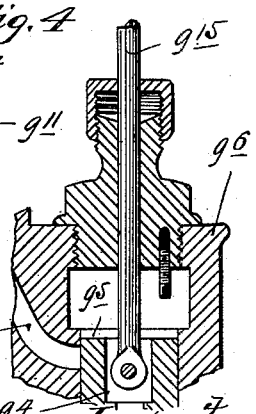


Fig. 4.



Witnesses,
Harry Kilgore
Mehl M. McGinty

Inventor,
William A. Wilkinson
By his Attorneys.
Williamson & Merchant

UNITED STATES PATENT OFFICE.

WILLIAM A. WILKINSON, OF MINNEAPOLIS, MINNESOTA.

SAW-GUIDE FOR BAND-SAW MILLS.

SPECIFICATION forming part of Letters Patent No. 676,708, dated June 18, 1901.

Application filed November 16, 1900. Serial No. 36,653. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. WILKINSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Saw-Guides for Band-Saw Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to saw-guides for band-saw mills, and has for its object to improve the same in the several particulars hereinafter stated.

The invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

It may be here further stated that the function of a saw-guide of the character to which this invention relates is to hold the band-saw against lateral and torsional movement while at work on a log or other article being sawed. Such saw-guides, especially when applied to a band-saw mill intended for sawing logs, are usually made adjustable, so that they may be moved for action on the saw close to the log and regardless of the size of the log.

One feature of my invention is directed to an improved device in the nature of a direct-acting fluid-pressure engine which is controllable at will and the piston of which is connected to the saw-guide, whereby the said saw-guide may with ease and rapidity be adjusted according to the size of the log which is to be sawed. To prevent these saw-guides from being broken or torn from their supports in case they are struck by the log, they have hitherto been yieldingly mounted.

A very important feature of my invention resides in a novel device for mounting the saw-guide, whereby it will not only yield when struck, but will rise vertically and move out of the path of the log, so that it cannot be struck or engaged by the log while the latter is making its return movement.

Still another feature consists in providing a latch, which is applied so as to latch or lock the guide in the highest position to which it may be forced or raised by the log. A pawl-and-ratchet device is the best form of the latch.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a view, partly in side elevation and partly in vertical section, some parts being broken away, illustrating a band-saw mill having my improved devices above indicated applied thereto. Fig. 2 shows the parts illustrated in Fig. 1, partly in front elevation and partly in vertical section, some parts being broken away. Fig. 3 is a detailed view, in rear elevation, some parts being broken away, showing a portion of the straight-line fluid-pressure engine; and Fig. 4 is a detail in section, showing a portion of the distribution-valve and the valve-chest of the engine.

The numeral 1 indicates the bed-plate, the numeral 2 one of the supporting-columns, the numeral 3 the band-saw, the numeral 4 one of the saw wheels or pulleys, the numeral 5 the log-carriage, and the numeral 6 one of the table-rollers, of an ordinary band-saw mill.

The character a indicates the guide-shoe of the upper saw-guide, which is mounted to slide on a vertical guide 7 of the standard or column 2. This shoe a has a rigidly-secured and horizontally-projected shaft a', to the outer end of which in turn is rigidly secured a head a^2. To the head a^2 is pivoted a pair of depending links b b'. The links b b' extend parallel and are of the same length. The saw-guide f is shown as made up of a pair of parallel and horizontally-extended straps, between and to the rear ends of which the links b b' are pivoted, as best shown in Fig. 2. At the forward ends the straps f normally embrace the saw 3, and they may be provided, as is ordinary, with wearing-plates for direct engagement with the sides of the saw. One of the links—as shown, the link b—has rigidly secured at its upper end a segmental ratchet b^2. As shown, the ratchet b^2 has ratchet-teeth which extend reversely from its central portion, so as to make the same reversible. For coöperation with the ratchet b^2 a pawl b^3, which, as shown, is gravity held, is pivoted to a lug or projection a^3 of the head a^2. With this construction if the log moving in the direction indicated by the arrow marked on Fig. 2 should engage the forward end of the saw-guide f the said saw-guide will be moved rearward, and at the same time

under the action of the links b b' it will be gradually raised and always kept in a horizontal position. The pawl b^3, by its engagement with the teeth of the ratchet b^2, will hold the saw-guide f in the highest position into which it is forced by the log. By this means the saw-guide is positively held upward in such a position that it will not be engaged by the log when the log makes its return or reverse movement.

Of the parts of the straight-line engine or fluid-pressure motor, g indicates the cylinder, which is vertically disposed and rigidly secured to the bed-plate 1, and g' indicates the piston, the stem g^2 of which projects upward and is attached at g^3 to a bracket a^4 on the shoe a. The distribution-valve g^4, which is of tubular form, is mounted to slide in a suitable seat g^5, formed in the valve-chest g^6. This valve g^4 coöperates with admission-ports g^7 and exhaust-ports g^8, which lead from the valve-seat g^5 to the ends of the cylinder. Live steam or other motive fluid is admitted to one end of the valve-seat g^5 through a pipe g^9, and the exhaust from the ports g^8 passes first to an enlarged central portion g^{10} of the valve-seat g^5 and then outward through an exhaust-pipe g^{11}. When the distribution-valve g^4 stands in its intermediate position, (shown in Fig. 2,) live steam is cut off from both ends of the cylinder, and the piston g' will not be forced in either direction, but will be left standing where set. When the distribution-valve is moved upward, the lower admission-port g^7 and the upper exhaust-port g^8 will be open, with the obvious result that the piston g', shoe a, and saw-guide f will be moved upward. When the said valve is moved downward, it is of course evident that a reverse action will take place and the said piston saw-guide, with intermediate parts, will be moved downward. To readily actuate the valve g^4, a pivoted hand-lever g^{12} is pivoted to a suitable support g^{13}, and a projection thereof is connected by a stem g^{14} to the said valve g^4.

It is desirable that the valve g^4 assume its intermediate position (indicated in Fig. 2) automatically whenever the lever g^{12} is released. Hence the said valve is provided with a projecting stem g^{15}, which works through the upper end of a bracket g^{16}, (shown as secured on the upper cylinder-head.) On the stem g^{15}, one above and one below the upper end of the bracket g^{16}, is a pair of coiled springs g^{17}, compressed between the said bracket and adjustable collars g^{18} on the said stem. The centering-springs g^{17} when properly set neutralize when the valve g^4 is in its normal intermediate position. (Indicated in Fig. 2.) The one spring or the other may of course be readily overcome by means of the lever g^{12}; but whenever the said lever is released the distribution-valve will, by the said springs, be centered or thrown to its intermediate normal position, in which position, as already indicated, the saw-guide will be left standing in whatever position, with respect to vertical adjustments, it may be set.

The guide-shoe a, saw-guide f, and parts movable therewith are advisably counterpoised, so that they will have no tendency to move from any vertical position in which they may be set. In Fig. 1 a rope k, which at one end would run over a suitable guide and be provided with a weight or counterpoise, (not shown,) is shown as connected at its other end to a collar k' on the shaft a' of the shoe a.

The advantages of the several features of construction above set forth are thought to have been made clear by the foregoing description. It may, however, be added that the application of the straight-line engine directly as a means for raising and lowering the saw-guide permits the same to be moved from one position to the other with much greater rapidity and ease than with devices hitherto used for the same purpose.

It will of course be understood that the saw-guide having been struck by a log and forced into its retracted position is released and reset by the operator, the pawl b^3 having been raised out of engagement with the teeth of the ratchet b^2.

A retracted position of the saw-guide is illustrated by dotted lines in Fig. 2. Another advantage afforded by the adjustment of the saw-guide always in a horizontal position is that the said guide may be projected onto the saw more or less for proper action on a saw of any width or face and will always be left in a horizontal operative position. It is also desirable to call attention to the fact that when the links b b' and saw-guide f are set as shown by full lines in Fig. 2 the downward strain on the end of the guide, due to friction, will be transmitted to the said links b b' in direct line with their pivotal centers, so that there is little or no tendency to force the guide rearward or in its retracted position under the action of the saw itself.

It will of course be understood that the device shown in the drawings is capable of many modifications within the scope of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination of a saw, of a saw-guide yieldingly mounted for movement into an inoperative position, and an automatic lock for said guide, permitting the same to move into an inoperative position, and then operating to hold the same in such inoperative position, substantially as described.

2. The combination with a saw, of a saw-guide, a yielding support for said guide, and a pawl-and-ratchet device operating automatically as a latch, to positively hold the said saw-guide in its retracted position, substantially as described.

3. The combination with a saw, of a saw-guide, a pair of parallel pivoted links supporting said saw-guide for receiving movement always in a horizontal position, and a

pawl-and-ratchet device operating automatically to hold the said links and saw-guide in their retracted positions, substantially as described.

4. The combination with a saw, of a head or support, the pair of parallel links *b b'* pivoted to said support, the one having the ratchet b^2, the pawl b^3 pivoted to said support and coöperating automatically with said ratchet, and the saw-guide *f* pivoted to the lower ends of said links *b b'*, for receding movement, always in a horizontal position, substantially as described.

5. In a band-saw mill, the combination with a vertically-adjustable saw-guide, of a straight-line or direct-acting engine, operating the same, said engine having a distribution-valve, which is operative at will, and a yielding device arranged for action on said distribution-valve to automatically restore the same to its normal position, substantially as described.

6. In a band-saw mill, the combination with a vertically-adjustable saw-guide of a straight-line or direct-acting engine operating the same, said engine having a distribution-valve which is operative at will, and a pair of opposing centering-springs arranged for action on the said valve to automatically restore said valve to its normal or intermediate position, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM A. WILKINSON.

Witnesses:
M. M. McGRORY,
F. D. MERCHANT.