No. 679,085. Patented July 23, 1901.

Z. Z. LINTON.

BAND SAW MILL ATTACHMENT.

(Application filed Jan. 30, 1901.)

(No Model.) 3 Sheets—Sheet 1.

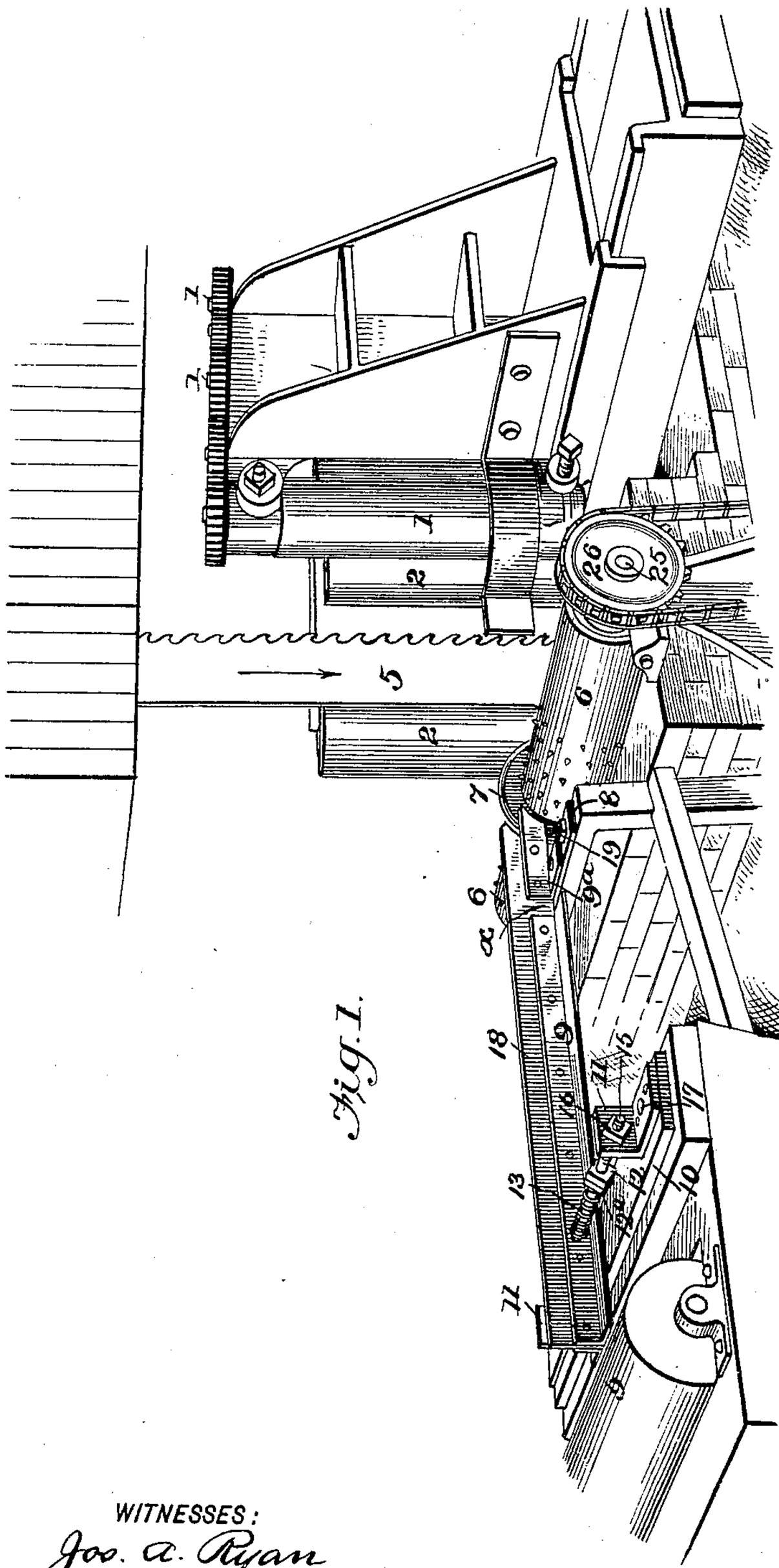

Fig. 1.

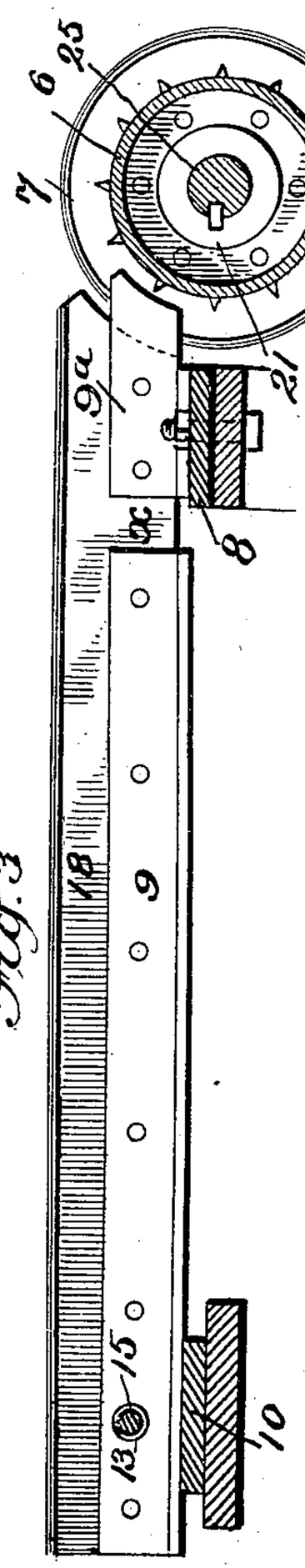

Fig. 3

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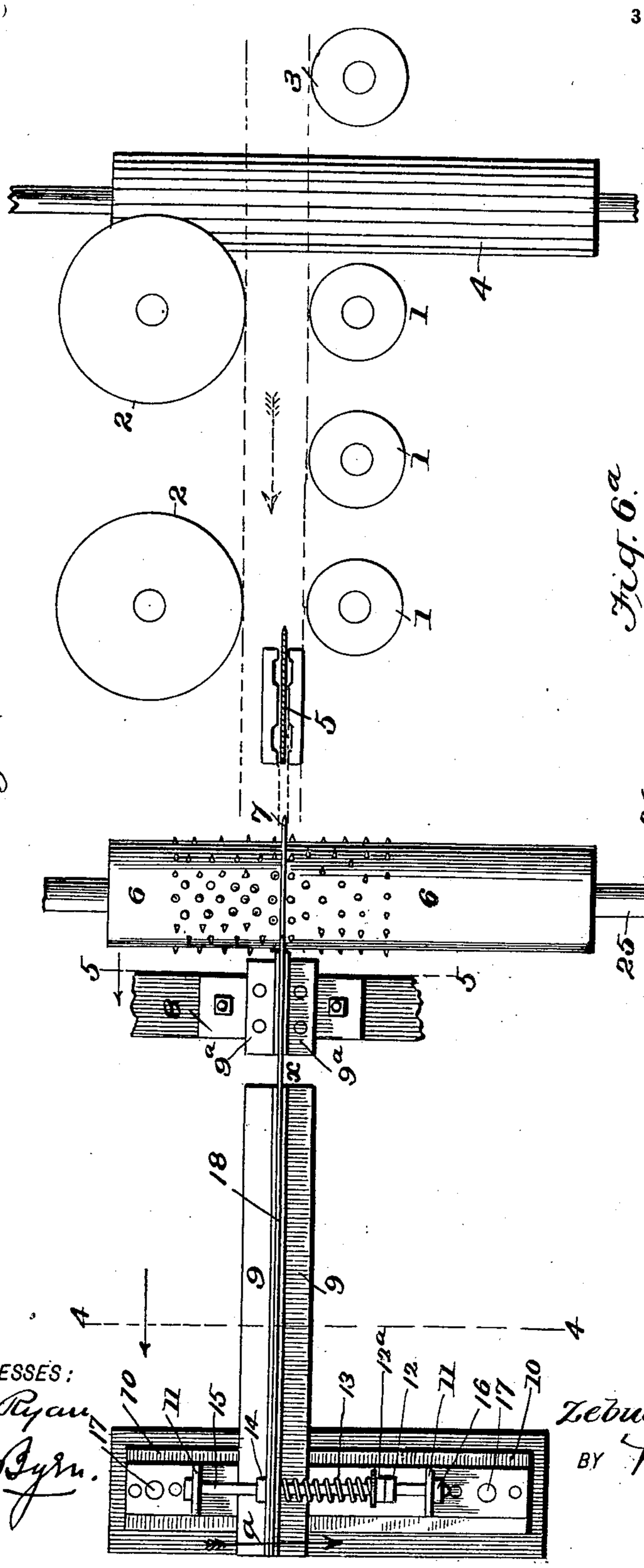

Fig. 2.

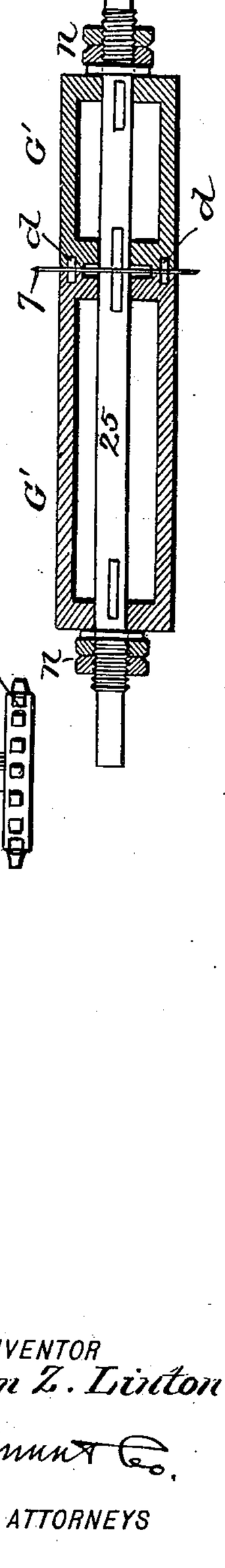

Fig. 6a.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

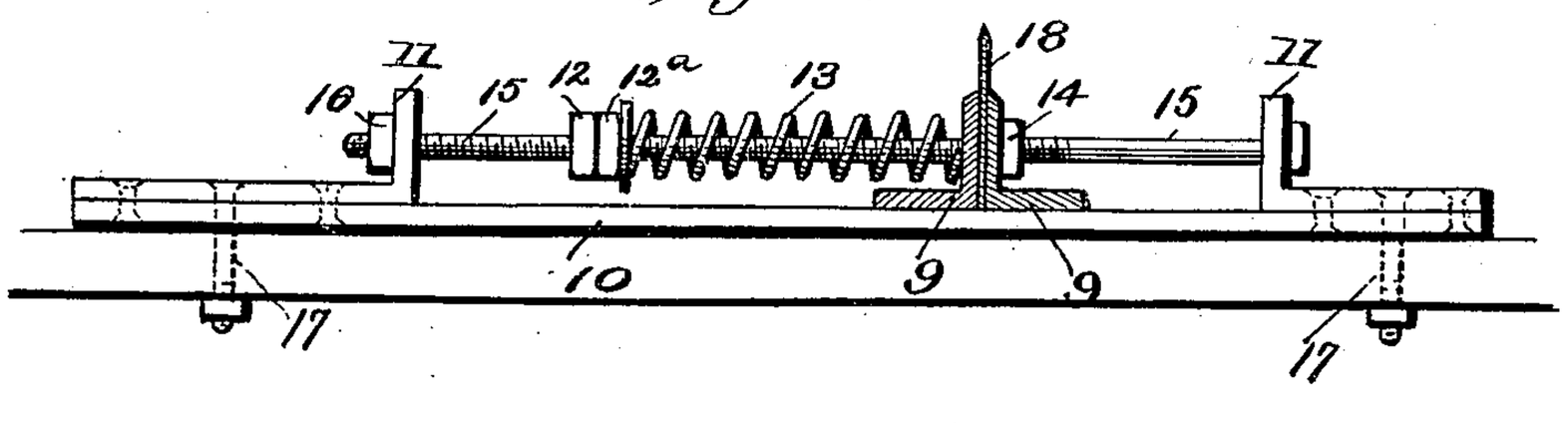


Fig. 5.

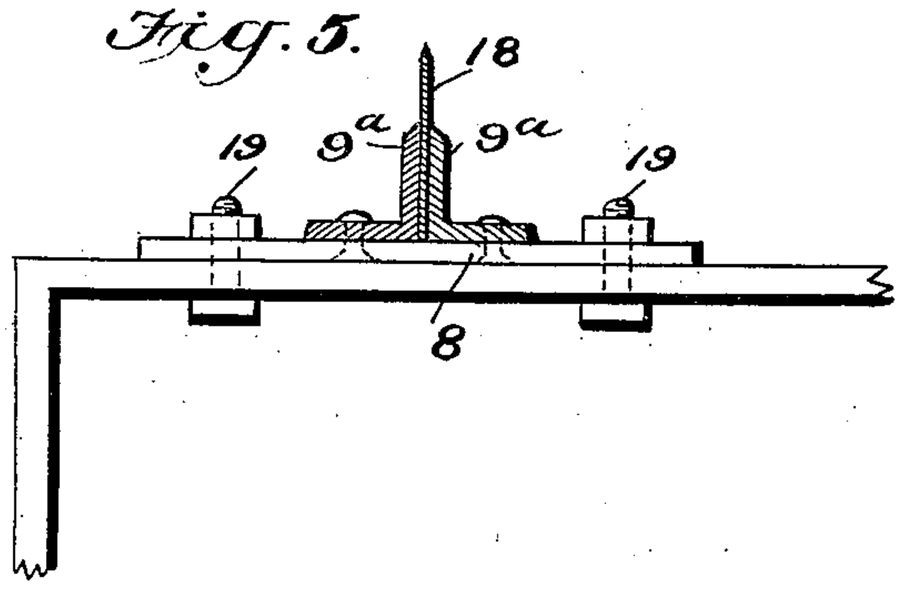


Fig. 6.

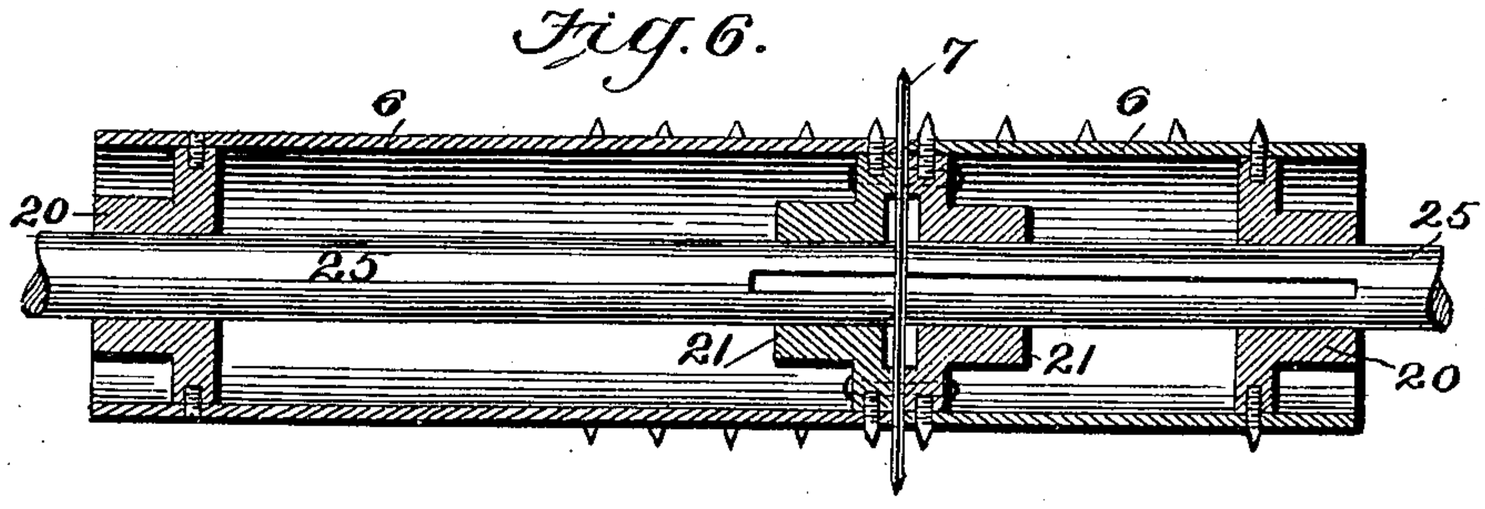
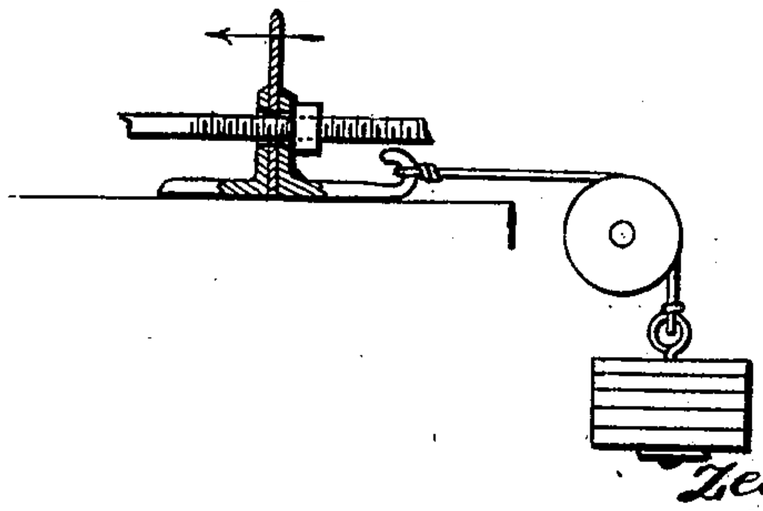


Fig. 7.



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UNITED STATES PATENT OFFICE.

ZEBULON Z. LINTON, OF FERNWOOD, MISSISSIPPI.

BAND-SAW-MILL ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 679,085, dated July 23, 1901.

Application filed January 30, 1901. Serial No. 45,334. (No model.)

To all whom it may concern:

Be it known that I, ZEBULON Z. LINTON, of Fernwood, in the county of Pike and State of Mississippi, have invented a new and useful Improvement in Band-Saw-Mill Attachments, of which the following is a specification.

My invention is in the nature of an attachment to band-saws which are employed for resawing; and it has for its object the production of a suitable mechanism whereby the following objects may be accomplished: first, to prevent springy timber from clamping the band-saw; secondly, to hold the timber in proper alinement as it passes from the saw, so as to insure uniform and straight lumber, and, thirdly, to provide a spring-seated kerf-guide yielding laterally to heavy pressure and allowing springy timber to follow the proper course.

It has heretofore been impossible to obtain satisfactory results from resawing band-mills doing heavy work on account of the fact that the feeding devices on the front side of the saw would lose control of the timber after the greater portion had gotten past the saw, more especially as the last end was passing the two rolls nearest the saw. At this time in the travel of the log any obstruction at the outer end or jar caused by feeding in another piece following the one being fed out would cause the latter to change its course, thereby leaving an ill-shaped board, as well as an ill-shaped face on the quarter flitch or timber, which is to be fed through again, probably several times. Such crooked face would never change for the better, but would get worse and worse on each piece or board which was afterward taken off. My invention is designed to overcome these difficulties; and to that end it consists in the construction and arrangement of a cambined spreader-guide and feed-out roll and also an automatically-adjustable kerf-guide, which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view showing the position of my spreader-guide and kerf-guide arranged on the feed-out or discharge side of the band-saw. Fig. 2 is a plan view of my guide devices with the saw in cross-section in front of the same and the feed-rolls for the saw shown diagrammatically in front of the saw. Fig. 3 is a side view of my spreader and kerf guide, partly in section. Fig. 4 is a cross-section on line 4 4 of Fig. 2, and Fig. 5 a cross-section on line 5 5 of Fig. 2. Fig. 6 is a sectional detail of the feed-out roller and spreader-guide. Fig. 6ª is a modification of same, and Fig. 7 is a view of a modification of the yielding devices for the kerf-guide.

My devices may be applied to any make of resawing band-mill.

Referring to Fig. 1, which best shows the general arrangement of my attachments to one form of band-saw, 5 is the active vertical portion of the band-saw. In front of the band-saw (or the right side in Fig. 1) there are arranged the vertical feed-rolls, and behind the band-saw (or the left side in Fig. 1) are arranged my attachments, consisting of the combined feed-out roll 6 and spreader-disk guide 7, driven by a sprocket and chain or other devices, and immediately behind the spreader-disk guide and in alinement with it is arranged the horizontal kerf-guide 18, which enters the kerf and lies between the board being detached and the solid stick of the log.

The general arrangement of the feed-rolls for the saw is best seen in Fig. 2, in which 1 1 1 are vertical driven guide-rolls, and 2 2 are pressure-rolls, also arranged vertically and of larger diameter than the driven rolls. The log passes between these two sets of rolls 1 1 1 and 2 2, being mainly actuated by a long corrugated roll 4, arranged horizontally in front of rolls 1 and 2, and upon which roll 4 the log lies and is fed by the joint action of these rolls to the band-saw, (shown in cross-section at 5.) In front of the roll 4 is the vertical dead-roll 3, which is simply a back-stop for the log in lining it up into position to be passed onto the feed-roll 4. As the log passes the saw 5 and a board is severed the log and board pass on to my attachments, (seen on the left of Fig. 2,) consisting of the combined spreader-guide 7 and feed-out roll 6 and the kerf-guide 18, which is made to yield automatically in lateral direction at its outer end, as shown by the arrow *a*, for the purpose and in the manner hereinafter described.

I will first describe my combined feed-out roll 6 and spreader-guide 7, referring espe-

cially to Fig. 6. It is made of one shaft 25 of proper length to suit the machine for which it is intended and the class of work to be done. Four cast-iron heads, with hubs 20 20 21 21, are then provided of proper dimensions to fit the size shaft and roller required. The heads are to be bored and key-seated and are trued up on the flanges to the proper size. One circular disk 7, of steel, (tempered saw-steel preferred,) to be from one and one-half to three inches larger in diameter than the outside diameter of the roll, is provided with a hole in the center to fit the shaft. This circular disk of steel forms the spreader-guide, which enters the saw-kerf immediately behind the saw, and this disk is tapered almost to a cutting edge all around the rim. It is placed between the two inside heads 21 21 (they first being faced and concaved like a saw-collar) and is riveted securely between them. These heads are then placed at the proper location on the shaft and are keyed securely. I then take two pieces of extra heavy pipe 6 6 the size required, the same having first been cut true to lengths required and then press one piece on each side of the inside heads 21. I then press in the end heads 20 20 and key or set-screw same rigidly to the shaft. I then place the roller in a lathe and true up the outside of the pipe and spreader-guide, beveling the spreader, as above mentioned, and then take the roll to a drill-press and drill staggered holes for teeth or spikes through the pipe, drilling one set of holes into flange of each head. I then tap out all the holes, and thread steel spikes of one-fourth or three-eighths inch round steel and screw into holes, allowing those over each head to screw well down into flanges of the heads to tie all parts together. After all the spikes are in and cut off to uniform lengths (approximately) the roll is put in a lathe again and the spikes trued up to the exact size the roller is wanted to be on the outside or spike measure—say one-fourth-inch projection of spikes. The spikes are then sharpened in a lathe by beveling two sides, and the roll is then provided at its end with a sprocket-wheel 26 to be driven by sprocket-chain, as shown, or is provided with a straight gear, bevel-gear, or any other driving mechanism.

I will now describe the construction of the continuous and automatically-adjustable kerf-guide, referring to Figs. 2, 3, 4, and 5. It is made up of four pieces of angle-iron 9 9 9^a 9^a, one piece of band-saw steel 18, two wrought or cast iron plates 8 and 10, two flanged plates 11 11, one bolt 15 with head and four nuts 14, 16, 12, and 12^a, and one spring 13. Two pieces of angle-iron 9^a 9^a are cut six inches long, square at back end, and the perpendicular web projecting at the end next to combination-roll (see Fig. 3) sufficient to straddle the spreader-guide 7 and curved to suit the radius of roller. The strip of band-saw steel 18 runs the full length of the kerf-guide and is the main feature of the same, being from one to one and one-half inches wider than web of angle-iron and curved at the end next to the combination-roller to the same radius as the spreader-guide and drilled for rivets and tension-bolt hereinafter described. This strip of steel is placed between the two six-inch pieces of angle-iron mentioned above, the ends of the web of the angle-pieces extending one inch beyond the circled end of the plate, and the web is riveted securely through the plate. The two other pieces of angle-iron 9 9 are of sufficient length to make up the full length of steel plate or kerf-guide 18, with the exception of a one-and-one-half or two inch space at x just back of the six-inch pieces of angle-iron 9^a, this space being left to allow the guide to spring laterally at this point. These angle-pieces 9 9 are then riveted on each side of the steel-plate firmly, holes for tension-bolt being provided directly opposite the one in the plate. The bases of the six-inch angle-plates are then riveted to an iron plate 8, which is held in position by two bolts 19, passing through an iron stand of proper dimensions and height. The outer end of the kerf-guide rests on a transverse base-plate 10, having an upturned piece 11 riveted on top of same near each end to form bearings for the tension-bolt 15. The tension-bolt 15 is put through a hole in one angle-piece 11, and nut 14 is then run up on the bolt, which then passes through the kerf-guide. Tension-spring 13 is then put on the tension-bolt on the opposite side, and jam-nuts 12 and 12^a (with plate or washer next to spring) are run up to get required tension. Nut 16 is then put on the bolt behind the other angle-piece 11, and plate 10 is bolted securely at 17 to the bed of the rolls which take lumber from machine.

To line up the combination-roll with the saw, so that the spreader-guide will come exactly behind the band-saw, will be provided for according to the style of mill; but it is best done by set-screws working on the ends of the roll-shaft. To adjust kerf-guide, nut 14 is turned in the required direction. The tension required can be gotten by means of nuts 12 and 12^a, compressing the tension-spring. The purpose of my invention is to hold the material before mentioned in proper position as it passes from the band-saw. The spreader-guide entering saw-kerf at bottom side of the same passes it onto the kerf-guide, which is held directly behind the spreader-guide by the plates projecting and straddling the spreader. The kerf-guide, thirty-six inches long, holds the timber in line as it passes from the saw. The tension-spring 13 is always placed on the board side. This is done in order that logs which are sprung in a concave or hollow toward the guide-rolls will be allowed to swing as they pass out, and press-rolls are held tight against opposite side, thus giving a uniform board. The kerf-guide is held stationary on the log side by nut 14. Timbers sprung in convex form on

the guide side will play off from outer end of the kerf-guide, while the board will hug tight against kerf-guide and guide the piece properly, the spreader taking care of the pieces at the point nearest the saw at all times.

In splitting half-logs the perpendicular rolls 1 1 1 and 2 2 are thrown back far enough not to touch log at any point. Half the log is then lined up and fed in on the horizontal feed-in roll. The kerf is taken up with the spreader and kerf guide, and the piece is fed out by the combination feed-out roll perfectly straight, providing straight faces for the next cut.

As a modification of my invention I may substitute for the spring 13 at the outer end of the kerf-guide a cord, pulley, and adjustable weight, as shown at Fig. 7, as it is obvious that this would secure the same resilient action of the automatically-adjustable kerf-guide.

Instead of making the feed-out roll as shown in Fig. 6 I may construct it as seen in Fig. 6ª, in which G′ G′ are cast-iron cylinders which clamp the spreader-disk 7 on the shaft 25 by means of jam-nuts *n n* on the shaft outside of the cylinders, the two cylinders being connected through the spreader-disk by dowel-pins *d d*. These cylinders are to be provided with spikes like those of Fig. 6.

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

1. A feed-out attachment to a saw, consisting of a horizontal roll having a projecting disk-shaped blade arranged behind the saw in its plane, and a horizontal kerf-guide, arranged in line with the said disk and having a laterally-yielding motion at its outer end substantially as and for the purpose described.

2. A feed-out attachment to a saw, consisting of a horizontal roll having a projecting disk-shaped blade arranged behind the saw in its plane, and a horizontal kerf-guide arranged in line with said disk, said kerf-guide having its end next the disk rigid, a flexible portion in the middle, and its outer end made laterally movable and resilient substantially as described.

3. A feed-out attachment to a saw consisting of a horizontal roll having a projecting disk-shaped blade arranged behind the saw in its plane, and a horizontal kerf-guide arranged in line with the said disk and made yielding at its outer end from the log side toward the board, and an adjustable tension-spring for regulating the yielding tension as described.

4. In a feed-out attachment to a saw, a combined spreader-guide and roll consisting of a central shaft having four heads with hubs keyed thereto, a disk-shaped blade clamped between the two inner heads, and two spiked cylinders secured to the heads on opposite sides of the disk-shaped blade substantially as and for the purpose described.

5. In a feed-out attachment to a saw, a horizontal kerf-guide made as a thin blade fixed at one end and laterally yielding at the other and arranged parallel to or longitudinally with the line of log travel substantially as described.

6. In a feed-out attachment to a saw, an elongated horizontal kerf-guide made as a thin blade fixed rigidly at its end nearest the saw flexible in its middle portion, and having its outer end laterally movable and resilient as described.

7. In a feed-out attachment to a saw, an elongated horizontal kerf-guide made as a thin blade fixed rigidly at its end nearest the saw, and flexible in its middle portion, and a transverse guide bolt or rod passing through the outer end of the kerf-guide and having on the board side a spiral spring wound about the rod and tension-adjusting devices, substantially as and for the purpose described.

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