No. 618,653. Patented Jan. 31, 1899.

F. S. FARR.

SAWMILL.

(Application filed June 27, 1898.)

(No Model.) 3 Sheets—Sheet 1.

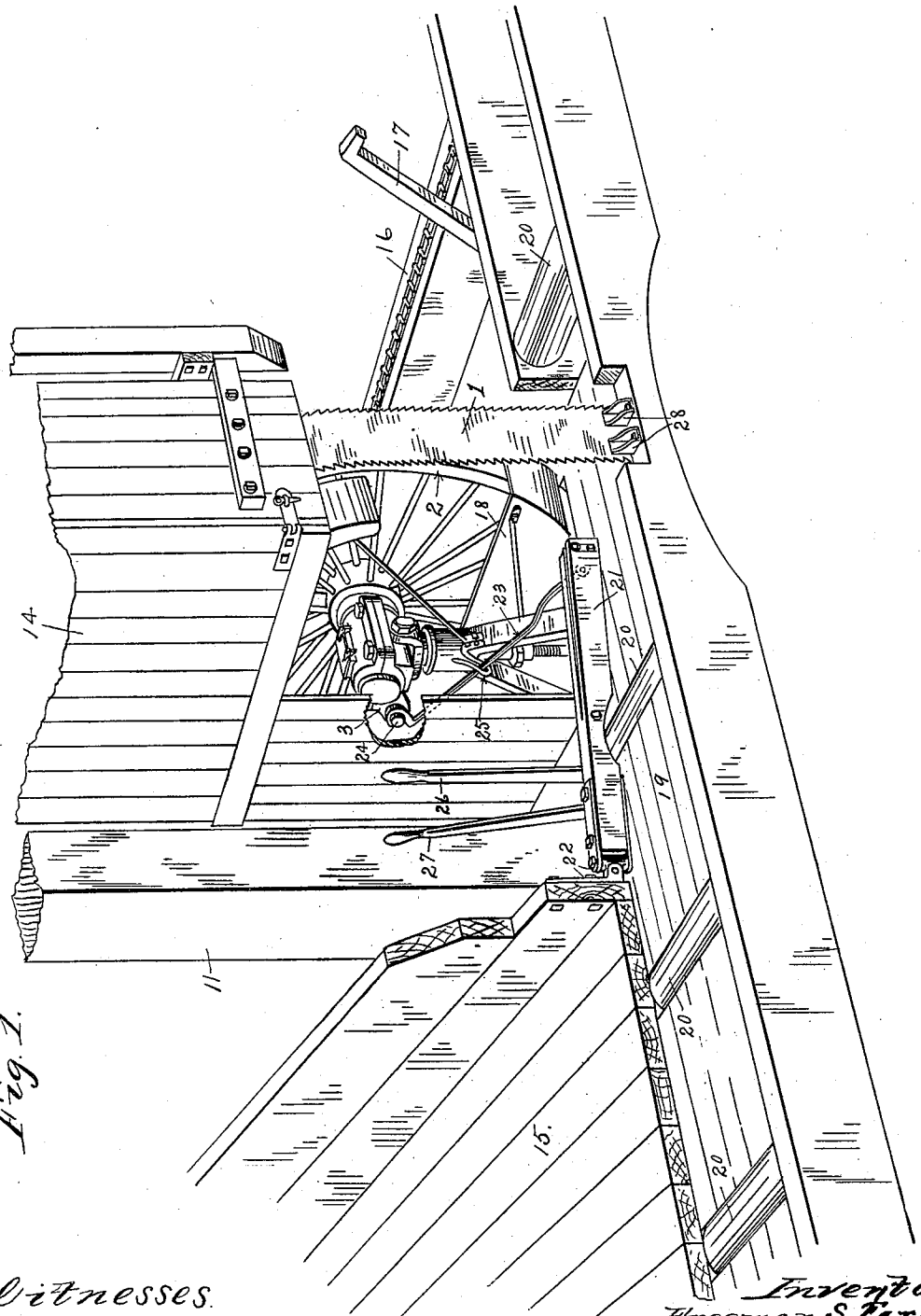


Fig. 1.

Witnesses.
C. F. Kilgore
A. D. Merchant.

Inventor
Freeman S. Farr
By his Attorney
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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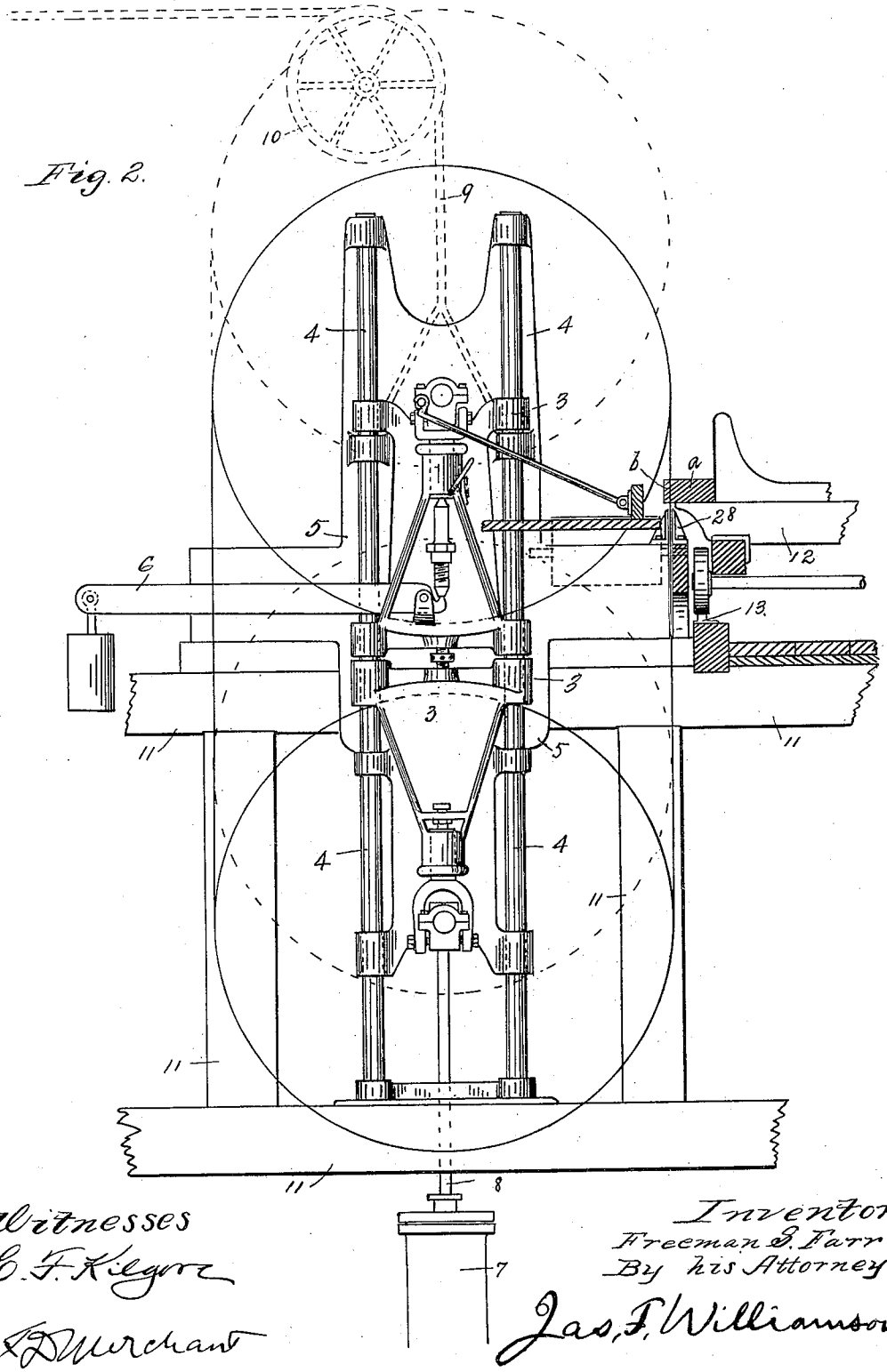
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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.



Witnesses
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(No Model.) 3 Sheets—Sheet 3.

Fig. 3.

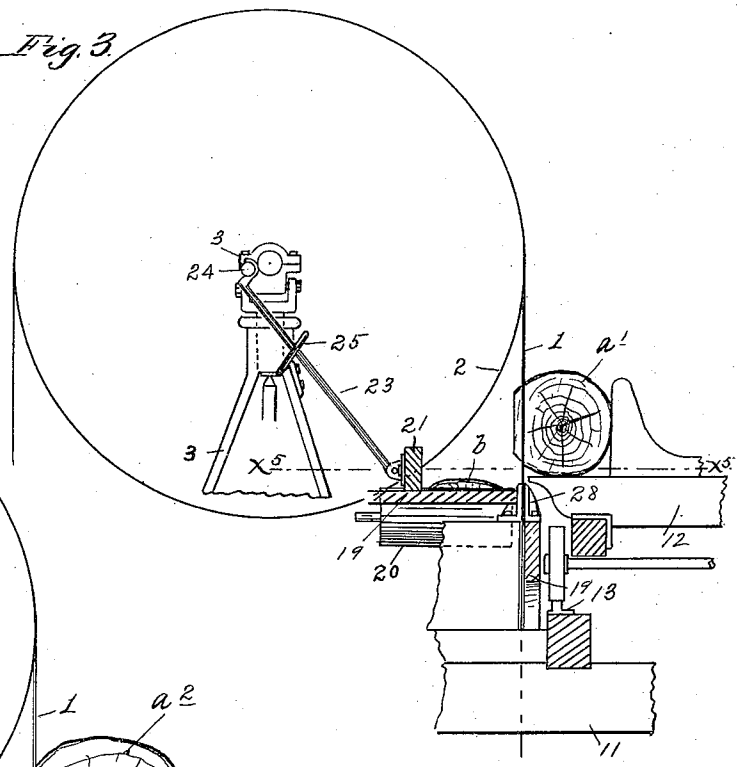


Fig. 4.

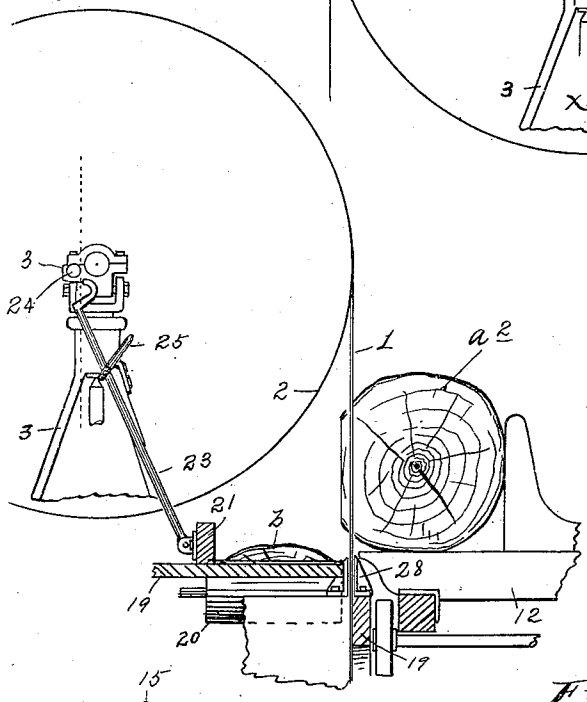
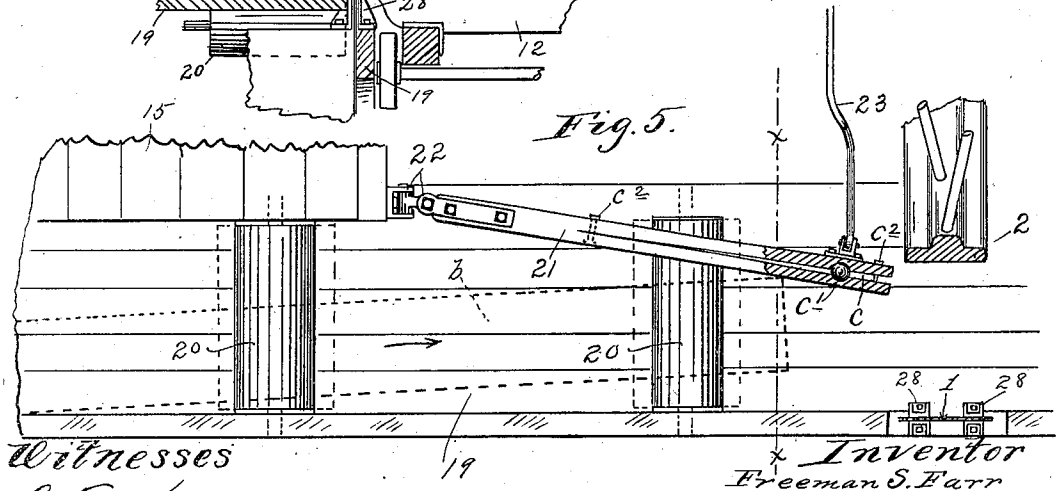


Fig. 5.



Witnesses

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F. D. Merchant.

Inventor

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UNITED STATES PATENT OFFICE.

FREEMAN S. FARR, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE EDWARD P. ALLIS COMPANY, OF MILWAUKEE, WISCONSIN.

SAWMILL.

SPECIFICATION forming part of Letters Patent No. 618,653, dated January 31, 1899.

Application filed June 27, 1898. Serial No. 684,571. (No model.)

To all whom it may concern:

Be it known that I, FREEMAN S. FARR, 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 Sawmills; 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 invention relates to two-way or double-acting band-saw mills of the kind disclosed in my application for United States Letters Patent filed May 31, 1898, and has for its object to adapt that organization to the use of what is known as the "vertically-adjustable" or "sliding" band-mill. A mill of that type is disclosed in the Fitzgerald patent, No. 491,047, dated January 31, 1893, and the advantages of the vertically-adjustable or sliding mill are so great that the same is now most generally employed in all the best-equipped modern mills.

In my above-identified application it was not specified that the mill would have a vertical adjustment, for the reason that that was not necessary to the general organization or invention therein disclosed. When, however, I came to incorporate my invention in a full-sized working mill, I used a mill having the vertical adjustment. It is incidental to my organization of the two-way or double-acting band-saw mill, as disclosed in my above-noted application, that the live-roll way should be encompassed by the saw, or, otherwise stated, should extend through the passage-way between the saw and its supporting-wheels in order to dispose of the lumber thrown from the carriage onto the live roll-way at the head or log-deck end of the mill. On starting up my two-way mill, wherein I employed the vertical adjustment above noted, it was found that the lumber, especially for the wide cuts, would strike the upper supporting-wheel of the mill when at or near the lowest point of its vertical adjustment. It was necessary, therefore, to provide some device which would overcome this defect and insure the passage of the lumber through the lumber throat or space between the saw and its upper supporting-wheel at all times under the up-and-down or vertical adjustment of the mill. To this end I have provided the invention which is hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like notations refer to like parts throughout the several views.

Figure 1 is a perspective view, with some parts broken away, showing my improved mill with the mill at or near the lowest point of its vertical adjustment. Fig. 2 is a view chiefly in side elevation, but partly in vertical section, showing the mill at the lowest point of its vertical adjustment. Fig. 3 is a view, partly in diagram, approximately on the line $x\,x$ of Fig. 5, with some parts broken away and the mill shown at an intermediate point of its vertical adjustment. Fig. 4 is a view similar to Fig. 3, but with the mill shown at or near the highest point of its vertical adjustment. Fig. 5 is a view, partly in plan and partly in horizontal section, on the line $x^5\,x^5$ of Fig. 3.

The numerals 1 to 10, inclusive, represent different parts of the vertically-adjustable or sliding band-saw mill, which may be of the Fitzgerald or any other suitable design, with the exception of the substitution of the two-edged saw 1. It is not deemed necessary to detail the different features of the mill proper, as the same are well known, and numbers have been applied to certain parts thereof simply for convenience of reference in the further description necessary to show the construction and action of my improvement.

The numeral 11 represents the framework of the building, 12 the carriage, and 13 the track for the same.

14 represents the cover for the upper part of the mill; 15, a part of the log-deck; 16, a part of the cant-deck, and 17 one of the cant-delivering devices.

The numeral 18 represents the wheel-guard for the upper supporting-wheel for the saw.

The numerals 19 and 20 represent, respectively, the framework and the rollers, which together constitute the live-roll way for disposing of the cuts from the saw and the cants from the carriage. This live-roll way in the present instance extends through the space

between the saw 1 and its supporting-wheels 2. This space between the saw and the upper wheel 2 or its guard 18 may be conveniently called the "lumber-throat," as the different cuts which are delivered from the carriage at the head or log-deck end of the mill onto the live-roll way must pass therethrough. The size of this lumber-throat will vary in height and also in width at the live-roll way or lumber level under the vertical adjustment of the mill. This may be readily seen, for example, by comparison of Figs. 3 and 4. The mill is thus adjusted vertically for securing the best action on logs of different sizes. The larger the log the more width is needed at the lumber-throat in order to pass the same along the live-roll way. If the board or slab cut from the log always fell to exactly the same point crosswise of the rollway, or, otherwise stated, if the cut always dropped on the rollway parallel thereto and with its outer edge directly adjacent to the carriage side of the rollway, the up-and-down adjustment of the mill might vary the throat so as to adapt the same to pass the different cuts without material interference with the mill; but the cuts from the log do not always drop parallel to the rollway and will drop at different points crosswise of the rollway. Hence if the mill is at or near its lowest level the cuts from the logs are liable to strike the upper member of the saw-supporting wheels 2. To avoid this result, I provide the lumber-guide 21, which is so mounted as to be automatically adjustable under the up-and-down movement of the mill. As shown, the said guide 21 is pivoted at its forward end—to wit, the end toward the log-deck—to a part of the fixed structure on the inner or log-deck side of the rollway. As shown, it is pivoted to the corner of the log-deck by a suitable hinge 22. At its opposite or mill end the guide 21 has attached thereto a hook-ended operating-rod 23. The upper or hook end of the rod 23 is adapted to engage over a stud 24, projecting from a part of the vertically-adjustable frame 3 of the mill. The operating-rod 23 also passes through a hook-shaped keeper 25, which is also fixed to the vertically-adjustable frame 3 of the mill.

With this construction the operation is as follows: When the mill is in its lowermost position, as shown in Fig. 2, the hook end of the operating-rod 23 will be in engagement with the stud 24 of the adjustable mill-frame, and the guide 21 will be forced outward at its mill end to its limit crosswise of the rollway, thereby contracting the lumber-throat to the minimum width. As the mill then moves upward the connecting-rod 23 will remain engaged with the stud 24 on the mill-frame until a certain predetermined point is reached in the vertical adjustment of the mill. When this point is reached, the operating-rod 23 reaches a bearing in its keeper 25, thereby limiting any further angular movement under the action of gravity of the operating-rod 23, and hence the stud 24 will disengage itself from the hook end of the rod 23 under the continued upward movement of the mill, or, otherwise stated, the parts will assume the position shown in Fig. 4. On the return or downward movement of the mill the stud 24 will strike the hook-body of the operating-rod 23, and thereby become reëngaged with the rod and immediately begin to push outward the free end of the guide 21. Three positions of the guide 21 are illustrated in Figs. 2, 3, and 4. The position shown in Fig. 5 is the same as that shown in Fig. 3. The stud 24 and the keeper 25 must of course be properly located for securing the engagement and disengagement of the stud 24 with the hook end of the rod 23 at the proper times. The keeper 25 is preferably in the form of an open-ended hook, so as to permit the rod 23 to be turned back into an idle position at will. With this construction it is obvious that as the mill moves up and down the free end of the lumber-guide 21 will be automatically adjusted inward and outward crosswise of the live-roll way, so as to determine the available width of the lumber throat or passage-way between the saw and its upper supporting-wheel 2 or wheel-guard 18. By its angular position in respect to the live-roll way the guide 21 serves to direct the cut to the lumber-throat as required. Hence whether the mill be in its lowermost position for action on a small stick of timber a, as shown in Fig. 2, or in an intermediate position for action on a small log a', as shown in Fig. 3, or near its uppermost position for action on a comparatively large log a^2, as shown in Fig. 4, the cut b, regardless of its width, will always be forced by the guide 21 in cooperation with the live-rolls 20 of the live-roll way to pass through the lumber-throat without striking any part of the mill. In Fig. 5 a cut b is shown in dotted lines as it might appear on the rollway under the action of the guide 21 and the live-rolls.

The guide 21 is preferably split or bifurcated for a portion of its length inward from its free end, as shown at c in Fig. 5, and between the spring-jaws thus formed is preferably placed a body of rubber c'. The jaws are then drawn together by tie-bolts c^2 or otherwise to hold the said parts in proper working position. With this construction the guide 21 will yield when struck by the lumber or cuts b, thereby avoiding injury to the mechanism.

The hand-levers 26 and 27 (shown in Fig. 1 of the drawings) control one the "nigger" or log-turner, (not shown,) and the other the feed of the log-carriage in the ordinary way through connections. (Not shown.) The saw 1 has no top guides, but the bottom guides 28 for the same are shown in Fig. 1 as secured to the outer rail of the live-roll-way frame 19.

As hitherto noted, it was not deemed necessary to detail the construction of the vertically-adjustable mill. As shown, the vertical movement is effected by hydraulic pres-

sure applied through a suitable motor, the cylinder and piston-rod of which are shown at 7 and 8 in Fig. 2. The mill is counterbalanced. The cable 9 runs over a guide-sheave 10, as shown in dotted lines in Fig. 2, and connects with a counterweight. (Not shown.) The movable frame 3 travels on suitable vertical guides 4, and the tension on the saw is secured by a suitable tension device 6, acting on the upper member of the supporting-wheels 2, which is suitably mounted for adjustment in the movable frame 3. The bed or main frame 5 of the mill is secured in any suitable way to the building structure 11.

By actual usage in a working mill I have demonstrated the efficiency of the invention herein disclosed for the purposes had in view.

It will be understood, of course, that I do not limit myself to the specific construction illustrated in the drawings. The details may be varied, and the device itself may take different forms and be variously mounted. I believe I am the first to provide any guide capable of the functions of the guide illustrated, and I desire to claim the same, broadly, as a pioneer invention for the purposes had in view.

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

1. The combination with a vertically-adjustable band-saw mill, of a live-roll way encompassed by the saw, and a lumber-guide adjustable to vary the width of the lumber throat or passage-way between the saw and its upper supporting-wheel, in compensation for the up-and-down motion of the mill, for insuring the passage of the lumber, without striking the mill, substantially as described.

2. The combination with a vertically-adjustable band-saw mill, of a live-roll way encompassed by the saw, and a lumber-guide automatically adjustable, under the up-and-down motion of the mill to vary the width of the lumber throat or passage-way between the saw and its upper supporting-wheel, substantially as and for the purposes set forth.

3. The combination with a vertically-adjustable band-saw mill, of a live-roll way encompassed by the saw, and a lumber-guide pivoted at its forward end to a part of the fixed structure, at the inner side of the live-roll way, and movable crosswise of the rollway, at its opposite or free end, to vary the width of the lumber throat or passage-way between the saw and its upper supporting-wheel and direct the lumber therethrough under the action of the rolls, substantially as described.

4. The combination with a vertically-adjustable band-saw mill, of a live-roll way encompassed by the saw, and a lumber-guide pivoted, at its forward end to the fixed structure, at the inside of the live-roll way, and movable at its opposite or free end crosswise of the rollway, under the movement of the mill, in its up-and-down adjustment, substantially as and for the purposes set forth.

5. The combination with a vertically-adjustable band-saw mill, of a live-roll way encompassed by the saw, the lumber-guide pivoted at its forward end, to a part of the fixed structure, at the inside of the live-roll way, a hook-ended operating-rod 23 secured to the free end of said lumber-guide, a stud 24 and a guide-keeper 25, for said rod, on the movable mill-frame, with said parts so arranged as to cause the hook end of said rod to engage and disengage said stud at the proper times, under the up-and-down motion of the mill, for effecting the angular adjustment of said guide crosswise of the rollway, substantially as and for the purpose set forth.

6. The combination with a vertically-adjustable band-saw mill, of a live-roll way encompassed by the saw, a lumber-guide pivoted, at its forward end to a part of the fixed structure, at the inner side of the live-roll way, and movable crosswise of the rollway, at its opposite or free end, under the up-and-down motion of the mill, which guide is bifurcated and provided with a mass of spring material embraced by its two jaws, to afford a yielding action, substantially as described.

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

FREEMAN S. FARR.

Witnesses:
JAS. F. WILLIAMSON,
BESSIE B. NELSON.