

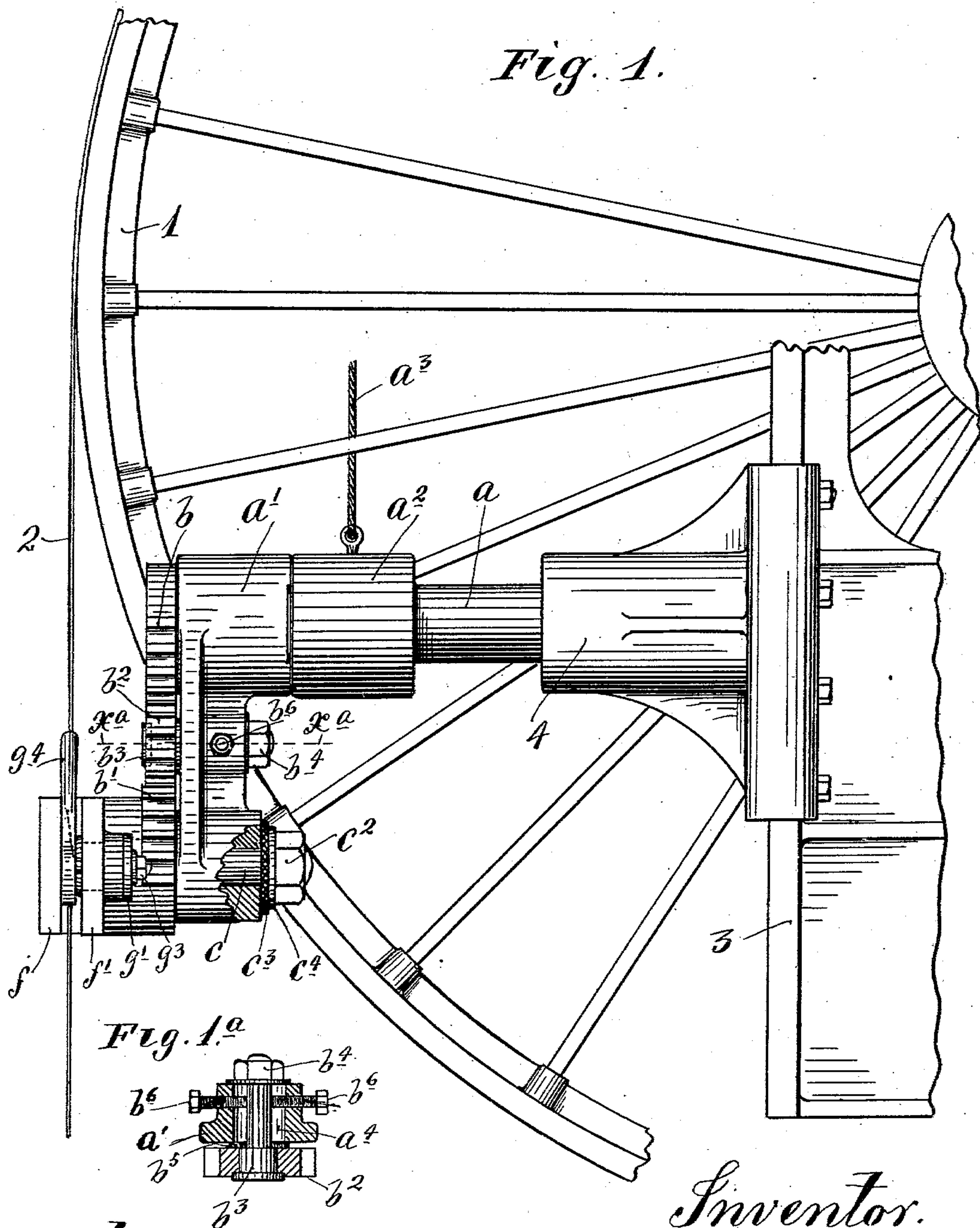
H. G. DITTBENNER.

UPPER SAW GUIDE FOR BAND SAW MILLS.

APPLICATION FILED JUNE 26, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses.
a. H. Opsahl.
H. D. Kilgus.

Inventor.
Hermann G. Dittbenner.
By his Attorneys.
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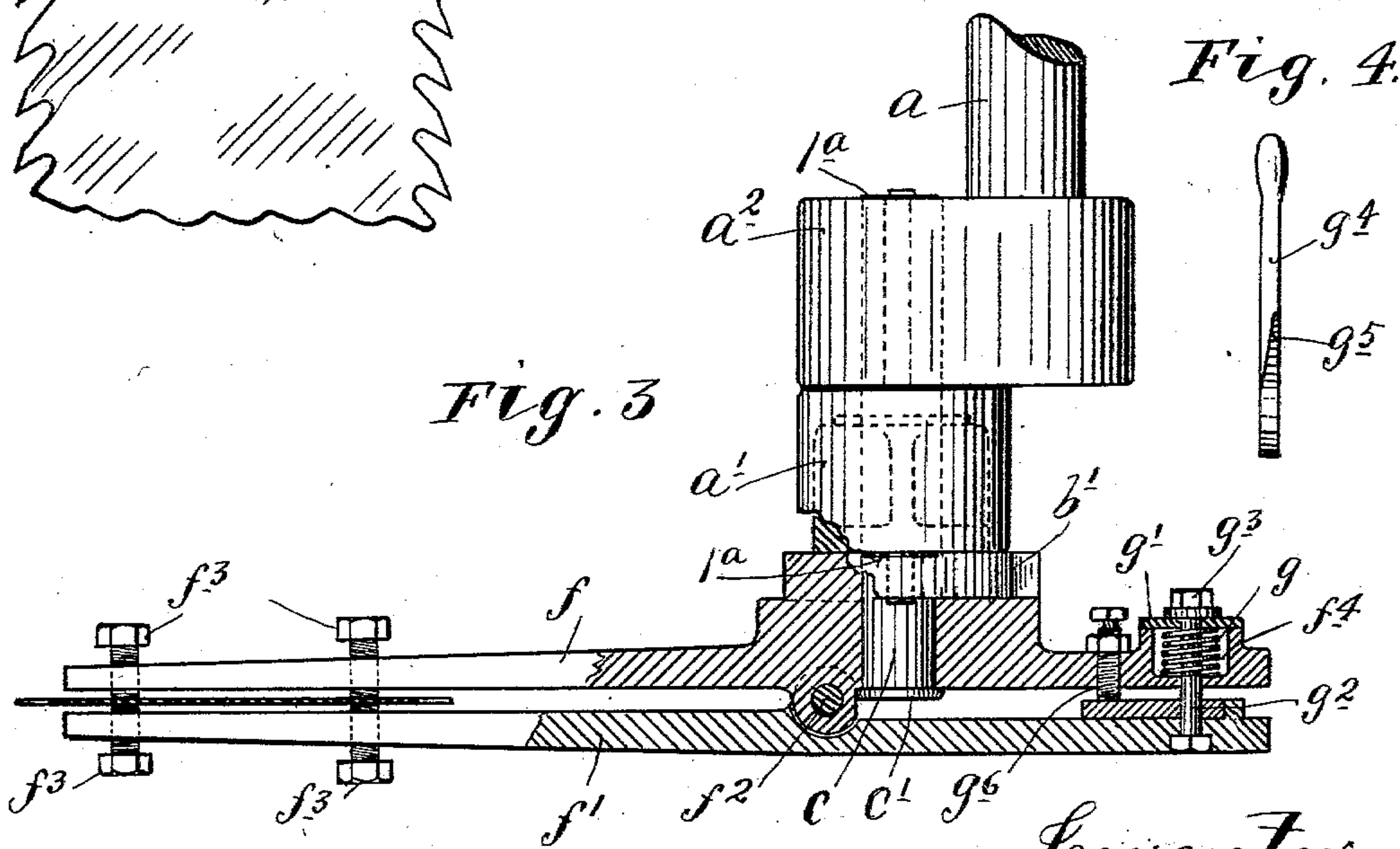
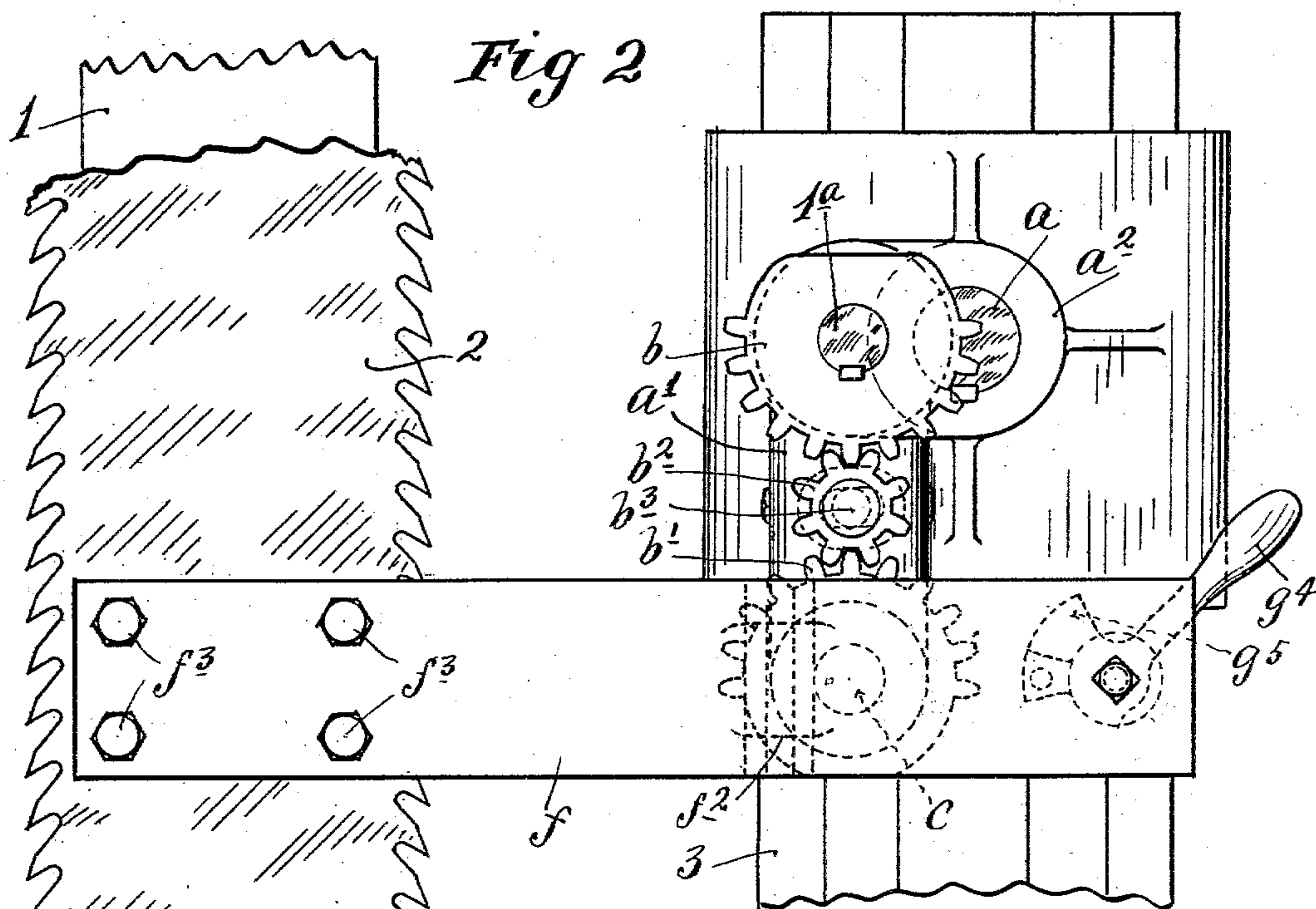
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3 SHEETS—SHEET 2.



Witnesses
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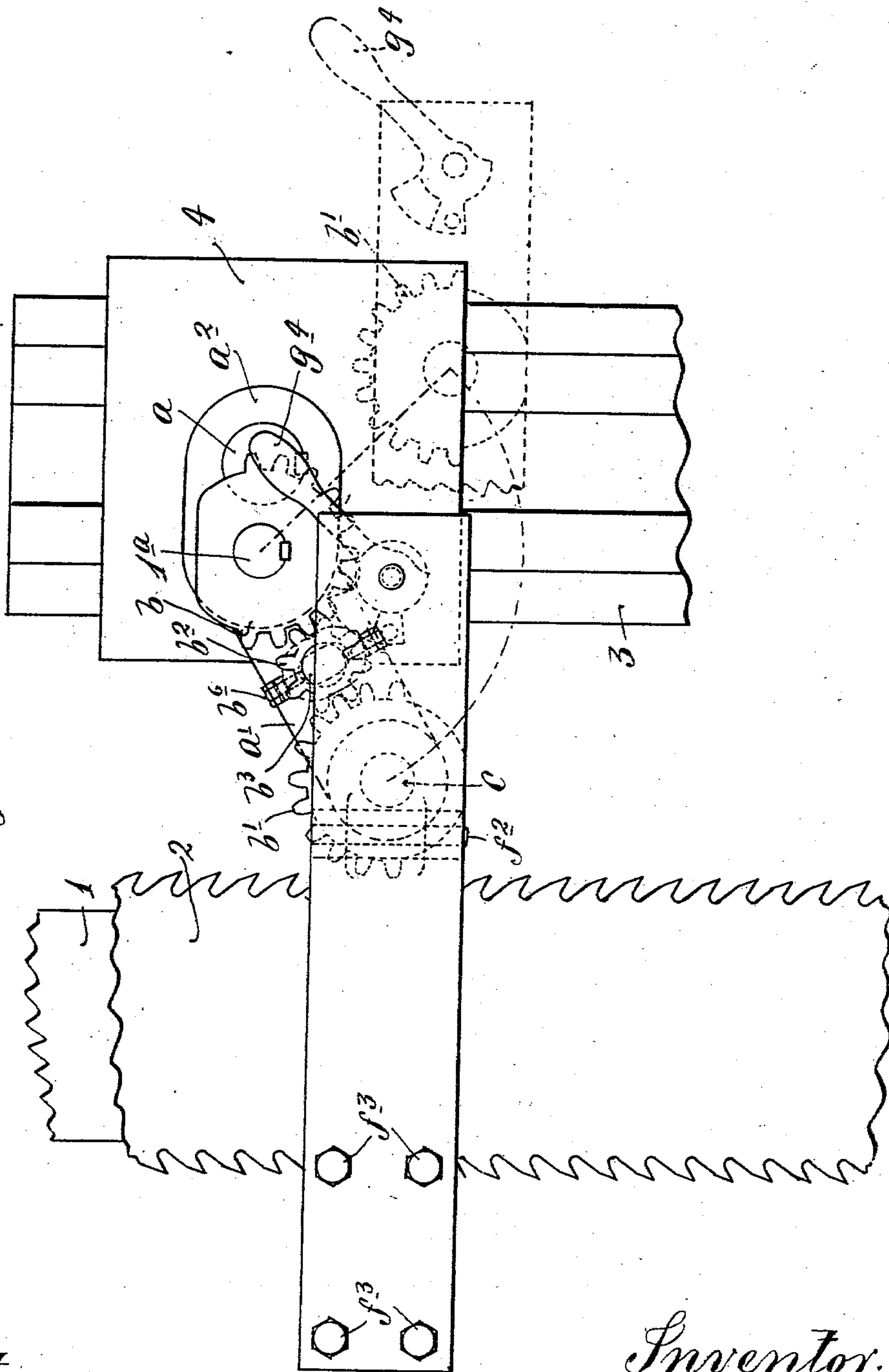
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3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

HERMANN G. DITTBENNER, OF MINNEAPOLIS, MINNESOTA.

UPPER SAW-GUIDE FOR BAND-SAW MILLS.

SPECIFICATION forming part of Letters Patent No. 745,581, dated December 1, 1903.

Application filed June 26, 1902. Serial No. 113,199. (No model.)

To all whom it may concern:

Be it known that I, HERMANN G. DITTBENNER, 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 Upper 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 band-saw mills, and has for its object to provide therefor an "upper saw-guide" of improved construction.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

More specifically stated, my invention relates especially to double-cutting band-saw mills—that is, to band-saw mills which employ saws having teeth on both edges or their equivalents and which cut under both directions of movement of the log-carriage.

My invention has for its primary object to provide an upper saw-guide which if struck by a log under either direction of movement of the log-carriage will swing in the direction in which the log is moving and will rise, so as to clear the log and thus prevent breaking of the saw-guide. Yielding saw-guides have hitherto been employed in connection with band-saw mills; but I believe I am the first to provide, in combination with a double-cutting saw-mill, a saw-guide which will yield or swing in either direction when struck by a log, and hence as the salient feature of my present invention I claim this combination broadly.

As an important though secondary feature of my invention I claim the particular means for mounting the saw-guide in such manner that when struck by a log it will not only recede, but will rise and clear the same whether used in connection with a double or a single cutting band-saw mill.

The invention also involves a novel device for manipulating the jaws of the saw-guiding head.

The invention is illustrated in the accom-

panying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a view in side elevation showing a portion of a band-saw mill of the double-cutting type having one of my improved saw-guides applied thereto. Fig. 1^a is a section on the line $x-x$ of Fig. 1. Fig. 2 is a front elevation of the parts shown in Fig. 1. Fig. 3 is a plan view of the parts shown in Figs. 1 and 2, some parts being broken away and others sectioned. Fig. 4 is a plan view showing in detail a cam-lever for actuating the jaws of the saw-guiding head; and Fig. 5 is a view corresponding to Fig. 2, but showing the saw-guide thrown into inoperative positions, the one position being indicated by full lines and the other by dotted lines.

Of the parts of the sawmill illustrated the numeral 1 indicates the upper saw-wheel or pulley; the numeral 2, a double-edged saw; the numeral 3, a vertical guide supported by one of the columns, (not shown,) and the numeral 4 a vertically-adjustable guide-shoe which is adapted to be moved in the ordinary or any suitable way over the guide 3.

The shoe 4 has a rigidly-secured and horizontally-projecting shaft a , to the outer end of which is rigidly secured a laterally-projecting head a^2 , provided with a stud 1^a, which is located eccentric to the shaft a . To the stud 1^a is keyed or otherwise secured a non-rotary gear b , which may be a segmental gear. The upper end of an oscillating arm or support a' is pivotally mounted on the stud 1^a between the gear b and the head a^2 . The character a^3 indicates a rope or flexible connection attached to the head a^2 and forming a part of a counterbalancing device for the saw-guide and shoe 4, which device, however, while ordinarily employed in connection with overhead saw-guides forms no part of my present invention and need not be further illustrated.

A bolt c is passed loosely through the free lower end of the arm a' , as best shown in Figs. 1 and 3. At its outer end this bolt is provided with a flanged head c' , and at its inner end is provided with a nut c^2 . Between the nut c^2 and the adjacent lower hub portion of the oscillating link or arm a' is placed a fric-

tion-washer c^3 , preferably of rubber, and also, preferably, a metal washer c^4 , the latter of which directly engages said nut.

The saw-guiding head is made up of a pair of flat jaws $f f'$, which are preferably pivotally connected at f^2 . The inner jaw f has rigidly secured to it, preferably by being cast integral therewith, a gear b' , which is preferably of the same diameter as the gear b on the shaft a . This gear b' , as well as the gear b , may be a segmental gear. The jaw f and its gear b' are loosely pivoted on the projecting outer end of the bolt c , as best shown in Fig. 3.

Meshing with both of the gears b and b' is a spur gear or pinion b^2 , loosely pivoted on a stud b^3 , which stud works through a transverse slot a^4 in the intermediate portion of the arm or link a and is provided on its inner end with a nut b^4 . The nut b^4 clamps a shoulder of the bolt b^3 against a washer b^5 , which is placed between the gear b^2 and the arm a' and is in turn clamped against the said arm as best shown in Fig. 1^a. The slot a^4 permits the bolt b^3 , together with the intermediate gear b^2 , to be adjusted transversely of the arm a' , and the said bolt is adapted to be rigidly held in whatever adjustment it may be set by a pair of reversely-acting set-screws b^6 , which work through the said arm and impinge upon the said bolt, as also best shown in Fig. 1^a. This transverse adjustment of the gear b^2 serves an important function, which will be hereinafter noted.

As will be noted by reference to the drawings, the longer ends of the jaws f and f' embrace and guide the saw 2. These guiding ends of the jaws are put under strain to separate, preferably by a spring g , applied within a pocket f^4 , formed in the shorter end of the jaw f . This spring g reacts against said jaw f and against a washer g' , held on a bolt g^2 by a nut g^3 , which bolt passes through the shorter ends of the said two jaws f and f' , as best shown in Fig. 3.

Loosely pivoted on the bolt g^2 between the jaws f and f' is a cam-lever g^4 , which is provided with a cam-surface g^5 . The cam-lever g^4 bears against the jaw f' , and its segmental cam-surface g^5 works against an adjustable set-screw g^6 , passed through the short end of the jaw f .

At their free or long ends the jaws f and f' are, as is usual, provided with saw-engaging bosses or projections, preferably afforded by short set-screws f^3 . When the cam-lever g^4 is turned into its operative position, (indicated in the drawings,) the shorter ends of the jaws $f f'$ are forced apart against the tension of the spring g and the long ends of the said jaws are closed up, so that the set-screws f^3 closely engage the saw 2. When a saw is to be removed or placed in working position or when the guide is to be removed from the saw or to be applied thereto, the free ends of the jaws may be separated or spread apart to the desired extent by moving the cam-lever g^4 from its normal position (shown) about

ninety degrees toward the left or toward the saw.

The saw-guiding head is normally set approximately horizontal, and it will maintain this approximately-horizontal position throughout all of its movements. This parallel or horizontal movement is afforded by the three gears $b b' b^2$. The said movement is due to the fact that the gear b being fixed or non-rotary acts through the intermediate gear b^2 to impart to the loose gear b' of the jaw f an angular rotary movement equal in degrees to the oscillation of the arm a' , but in a reverse direction. To illustrate, suppose the arm a' to be oscillated toward the left through the arc of forty-five degrees. This would, of course, tend to throw the saw-guiding head—to wit, the jaws $f f'$ —into an upward incline of forty-five degrees; but the gear b' under the said oscillation of the arm a' will receive a rotary movement toward the right through forty-five degrees, thereby maintaining its horizontal position. However, it will be noted that the saw-guiding head while maintained in a horizontal position whenever moved toward the right or toward the left will continuously rise, so that if struck by a log it will not only yield and move in the direction of travel of the log, but will rise out of engagement therewith and permit the log to pass.

It is equally evident that the saw-guide will move in either direction, so that it matters not in which direction the log may be moving when thrown into engagement with the same. When struck by a log moving toward the right, the saw-guide will move into the position indicated by dotted lines in Fig. 5. When struck by a log moving toward the left, it will move into the position indicated by full lines in Fig. 5, and in this connection it is important to note that the saw-guiding head is open from its free end to the hinge c and that this hinge is so located that the saw-guide may be moved to its extreme position toward the left without being brought into engagement with the teeth of the saw.

By putting sufficient tension on the friction-washer c^3 the saw-guide may be so tightened that it will remain in whatever position it may be set or in whatever position it may be thrown either by design or accident, but may nevertheless be returned to normal position or set in a different adjustment by applying a considerable force thereto.

By adjusting the intermediate gear b^2 transversely of the supporting-arm a' the free or saw-engaging ends of the jaws $f f'$ may be raised or lowered considerably without moving any other of the parts of the saw-guiding device. In this way should the saw-guiding head made up of the jaws $f f'$ not normally stand exactly horizontal it may be set in a horizontal position, or, if desired, it may at any time be thrown slightly out of a horizontal position.

From what has been above said it will of

course be understood that the device above described is capable of many modifications within the scope of my invention as herein set forth and claimed.

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

1. The combination with a double-cutting band-saw mill, of a double-acting saw-guide arranged to swing in either direction when
10 struck by a log, and to rise and clear the same, substantially as described.

2. The combination with a double-cutting band-saw mill, of a double-acting saw-guide having a saw-engaging head arranged to move
15 in either direction when struck by a log and to rise horizontally and clear the same, substantially as described.

3. The combination with a band-saw mill, of a saw-guide comprising an oscillating arm or support, a saw-guiding head pivoted to the
20 free end of said oscillating arm, a non-rotary gear located concentric to the pivot of said oscillating arm, a gear carried by said head concentric with its pivotal connection to said
25 arm, and an intermediate gear meshing with the said two gears, substantially as described.

4. The combination with a band-saw mill, of a saw-guide comprising an oscillating arm or support, a saw-guiding head pivoted to the
30 free end of said arm and provided with a gear concentric with its pivotal connection to said

arm, a non-rotary gear concentric with the supporting-pivot of said arm, and an intermediate gear meshing with the said two gears and adjustable transversely on the said arm
35 to raise or lower the free end of said guide-head, substantially as described.

5. A saw-guide having pivotally-connected jaws which embrace the saw, a spring device tending to separate the saw-engaging
40 ends of said jaws, and a cam device for overcoming said spring device and closing the said jaws onto the saw, substantially as described.

6. A saw-guide comprising the jaws $f f'$
45 hinged or pivoted at f^2 the nutted bolt g^2 passed through the shorter ends of said jaws, the spring g reacting against one of said jaws and the said bolt g^2 and tending to separate
50 the saw-engaging ends of said jaws, the set-screw g^6 working through one of said jaws, and the cam-lever g^4 pivoted on said rod g^2 and provided with the cam-surface g^5 for co-
operation with said set-screw g^6 , substantially
55 as described.

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

HERMANN G. DITTBENNER.

Witnesses:

ELIZABETH H. KELIHER,
F. D. MERCHANT.