No. 834,251. PATENTED OCT. 30, 1906.

B. L. BAILEY.

SAWING MACHINE.

APPLICATION FILED DEC. 14, 1904.

2 SHEETS—SHEET 1.

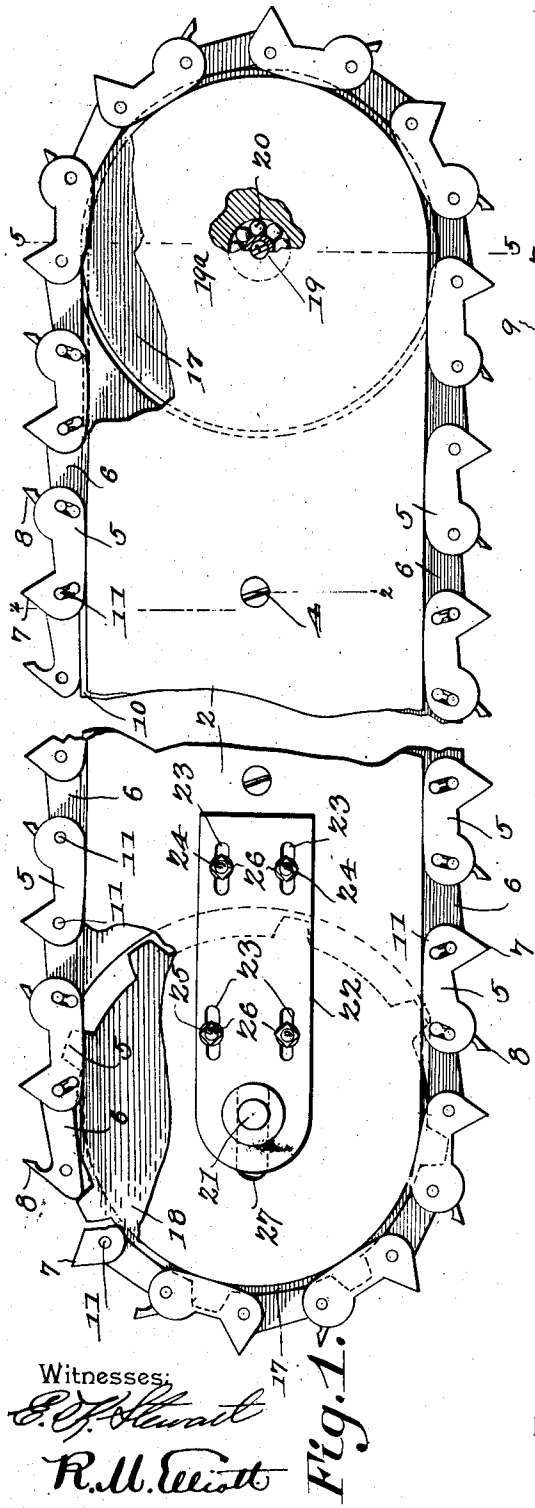

Fig. 1.

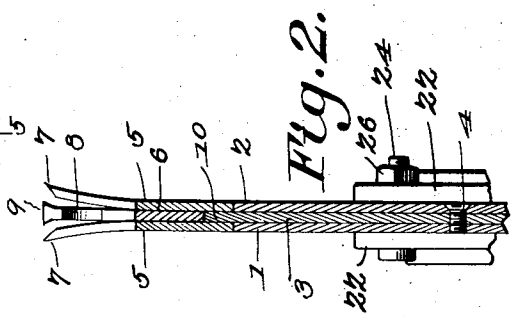

Fig. 2.

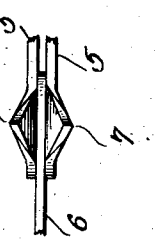

Fig. 4.

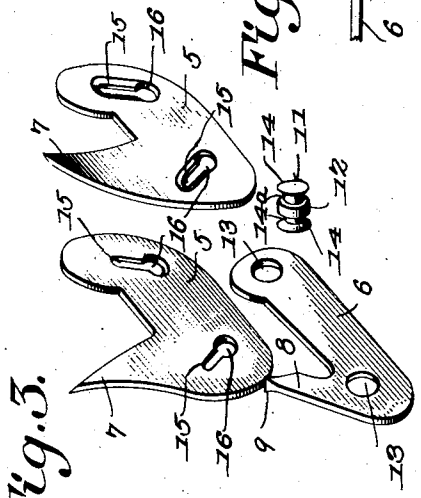

Fig. 3.

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2 SHEETS—SHEET 2.

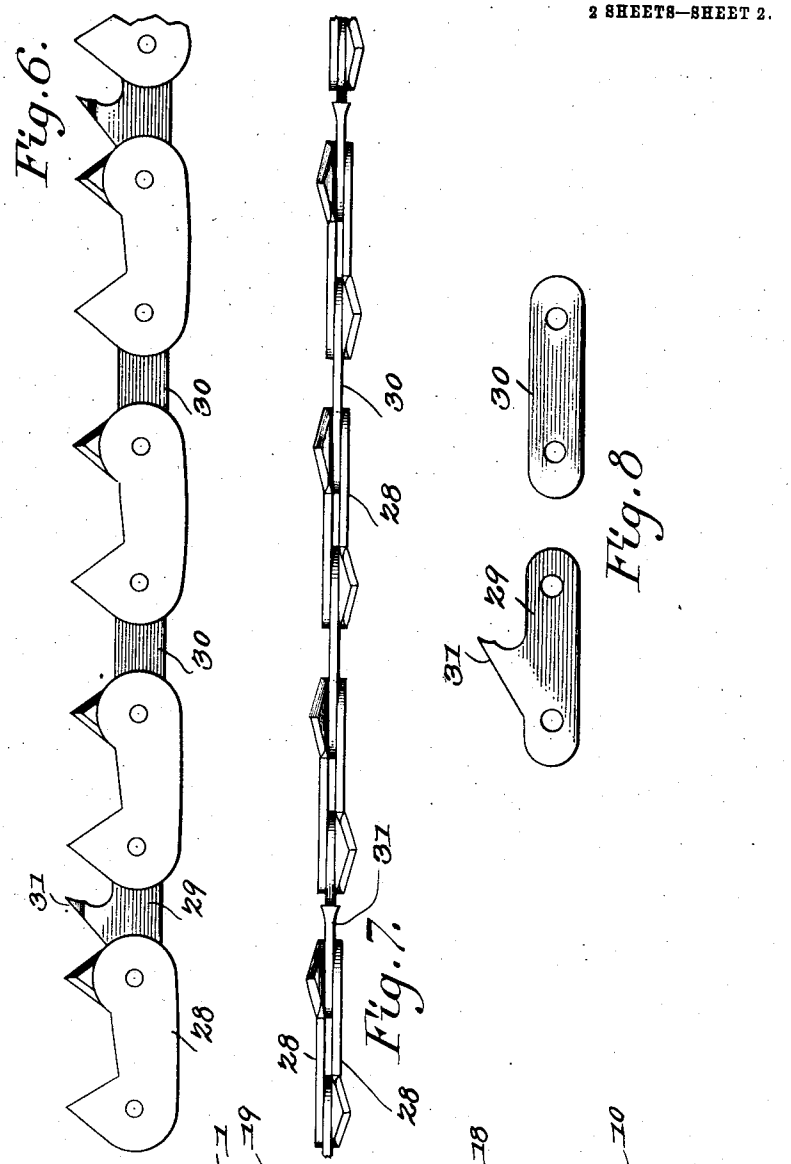

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 5.

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UNITED STATES PATENT OFFICE.

BERTON L. BAILEY, OF PORTLAND, OREGON.

SAWING-MACHINE.

No. 834,251. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed December 14, 1904. Serial No. 236,844.

To all whom it may concern:

Be it known that I, BERTON L. BAILEY, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Sawing-Machine, of which the following is a specification.

This invention relates generally to saws, and particularly to that class known as "chain-saws."

The objects of the invention are to provide a saw of the character specified which shall be adapted for cutting either standing or fallen timber, which shall be simple of construction, thoroughly efficient and durable in use, and in which the parts shall be so constructed and combined as to reduce liability of breakage in use to a minimum, which shall be capable of being separated into its component parts to facilitate repairs when necessary, in which the teeth may readily be sharpened without removing them from the machine, and generally to improve and render more efficient saws of the above character.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a chain-saw, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, Figure 1 is a view in elevation, partly in section, of a chain-saw embodying one form of the present invention. Fig. 2 is a view in vertical transverse section, taken on the line 2 2, Fig. 1. Fig. 3 is a collective detail view of a raker-tooth and a pair of cutter-teeth. Fig. 4 is a view in plan of a portion of the saw. Fig. 5 is a view in vertical section, taken on the line 5 5, Fig. 1. Fig. 6 is a view in elevation of a portion of a slightly-modified form of saw. Fig. 7 is a view in plan of the saw shown in Fig. 6. Fig. 8 is a collective detail view showing a form of raker-tooth and link that may be employed in connection with the saw shown in Fig. 6.

The saw of the present invention, as exhibited in Figs. 1 to 5, inclusive, embodies a stock consisting of three plates 1, 2, and 3, which are held assembled by screws 4, the heads and ends of which lie flush with the outer faces of the two outside plates, thus to obviate the presentation of obstructions that would interfere with the passage of the saw through a log, tree, or other piece of timber. The outer plates 1 and 2 are coextensive in length and width; but the intermediate plate is shorter and wider than the others, the added width serving as a guide to direct the saw to cause it to move in a right line, as will hereinafter more fully appear.

The saw is constructed of pairs of cutter-teeth 5 and alternate raker-teeth 6, the cutter-teeth having their points deflected laterally to secure proper clearance. The points 8 of the raker-teeth are swaged at 9, and these, in conjunction with the points 7 of the cutters, will effect smooth and rapid cutting through the timber without danger of clogging. The points 7 are set so as to project a sufficient distance beyond the sides of the stock to insure free passage of the saw through the timber operated upon.

As clearly shown in Fig. 2, the portions of the intermediate plate 3 that project beyond the edges of the outside plates form guides 10, that are straddled by the pairs of cutter-teeth, and thus operate positively to guide the saw in a right line. The pairs of cutter-teeth are held assembled with the raker-teeth by rivets 11, provided with enlarged intermediate portions 12, which are firmly seated in openings in the raker-teeth, it being designed that the rivets shall be a permanent part of the raker-teeth and be associated therewith so long as said teeth are available for use. Each rivet is provided with truncated cone-shaped terminals 14, that are factory-swaged for the purpose, and with intermediate reduced portions 14^a. The swaged terminals or heads 14 are designed to engage keyhole-shaped slots 15 in the cutters, the walls of the openings being beveled to conform to the opposed inner faces of the heads 14, thus allowing the outer face of the latter to lie flush with the outer faces of the cutter-teeth. The eyes 16 are of greater diameter than the heads 14 to permit the latter to pass readily therethorough, so that when it is desired to remove the teeth for any purpose the tension of the saw is relaxed through the mechanism presently to be described, whereupon the cutters may be readily separated from the raker-teeth in a manner that will be obvious. The keyhole-slots, as clearly shown in Fig. 1, converge

toward each other, in this instance in the direction of the stock or frame, so that the rivets will be positively held against disconnection from the cutter-teeth when the saw is under tension.

As clearly shown in Fig. 1, the ends of the outer plates are rounded, while the terminals of the inner plate terminate short of the ends of the outer plates to provide space for an idler 17 and a sprocket 18. The idler projects beyond the ends of the side plates a distance equal to the guides 10 of the intermediate plate and forms a continuation thereof, whereby the saw is guided throughout its entire length. One of the plates, in this instance the plate 1, has brazed to it a hub 19, a screw 19^a, disposed flush with the plate 2 and engaging a threaded opening in the hub, operating to hold the three plates properly assembled at this point. The idler is provided with a hub-opening of sufficiently greater diameter than the hub to permit inclusion between the parts of ball-bearings 20, which, as will be obvious, will reduce the friction to a minimum. The sprocket-wheel 18, which has its body portion also projected beyond the ends of the outer plates, may be of the usual or any preferred construction and is carried by a shaft 21, driven from any suitable source of power, not necessary to be shown.

In order to provide suitable bearings for the shaft, there is disclosed on each side of the stock a plate 22, provided with a plurality of longitudinal slots 23, through which pass pairs of bolts 24 and 25, the bolts 25 being projected only through the outer plate and having their heads countersunk and arranged next to the spocket-wheel, while the bolts 24 pass entirely through the three plates. These bolts carry nuts 26, by which they may be tightened, thus to clamp the plates against the sides of the stock. These plates are furnished for the purpose of permitting the sprocket-wheel to be removed when the saw is to be detached, and to effect this it will only be necessary to loosen the bolts 24, when the side plates may be sprung laterally, and thus free the sprocket-wheel. As it will be necessary to adjust the tension of the saw to compensate for loss of motion, each of the outer plates is provided with a longitudinal slot 27, through which the shaft projects, and it will be seen that by moving the plates 22 toward the ends of the stock the required take-up of the chain may be effected.

In the form of embodiment of the invention shown in Figs. 6 and 7 the cutter-teeth 28 are rights and lefts, and but one tooth is arranged at each terminal of a link, whereas in the form shown in Fig. 1 there are two points at one terminal. By having one tooth at each terminal of a link this will permit sharpening without the necessity of separating the cutter-teeth, as described in connection with the form of invention shown in Figs. 1 to 5.

The cutter-teeth are connected by raker-teeth 29 and plain links 30, the raker-tooth 31 being shown as disposed intermediate of the ends of the link, although, if preferred, it may be at either end. In the form of invention shown in Fig. 1 each cutter-tooth is alternated by a raker-tooth, but in the form shown in Fig. 6 there will be, say, one raker-tooth and two plain links 30 and another raker-tooth, and so on, or there may be a greater number of plain links employed than two between each of the raker-teeth. Where this form of saw is employed and as above stated, it is not necessary to separate the links for the purpose of sharpening, but, if preferred, the hole arrangement and rivets shown in Fig. 3 may be employed and still be within the scope of the invention, and as this will be readily understood detailed illustration thereof is deemed unnecessary.

It will be seen from the foregoing description that although the saw of this invention is exceedingly simple of construction it combines in a ready and practical manner all the essentials necessary in the production of a thoroughly effective device, and, further, that it will be positive in its operation when operated either as a crosscut or a rip saw. It will of course be understood that where used for a rip-saw the teeth will have to be somewhat differently shaped than when used for a crosscut, and as this will be obvious detailed illustration thereof is deemed unnecessary.

Having thus described the invention, what is claimed is—

1. An implement of the class described, comprising a plurality of cutter-teeth, each having pairs of keyhole-shaped slots that converge toward each other, and connecting elements having rivets provided with tapered heads to engage the slots.

2. An implement of the class described comprising a multipart stock the members of which are rigidly connected and a chain-saw guided for movement by the intermediate stock member, said saw comprising pairs of cutter-teeth each having pairs of keyhole-shaped slots that converge toward each other and intermediate raker-teeth, connecting elements carried by the raker-teeth and having tapered heads to engage the slots the points of the cutter-teeth being deflected beyond the sides of the stock and the points of the raker-teeth being swaged.

3. A chain-saw having a stock made up of an intermediate plate and side plates embracing and rigidly secured to the intermediate plate, the intermediate plate being shorter than the side plates and of a width to project beyond the edges of the side plates, corresponding ends of the side plates being

provided with alined longitudinal slots located beyond the intermediate plate, a shaft adjustable in the slots, bearings adjustably carried by the side plates and receiving the shaft, a sprocket carried by the shaft and projecting beyond the edges of the side plates, an idler mounted between the other ends of the side plates and projecting beyond the edges thereof, two spaced series of toothed links working upon the edges of the side plates, and an intermediate series of links located between and connecting the toothed links, said intermediate links traveling upon the edge of the intermediate plate, and certain of the intermediate links having raker-teeth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

BERTON L. BAILEY.

Witnesses:
JOHN STEWART,
K. V. LIVELY.