J. M. VAN DEN BERGHE.

TREE SAWING MACHINE.

APPLICATION FILED JUNE 5, 1914.

1,136,852.

Patented Apr. 20, 1915.

3 SHEETS—SHEET 1.

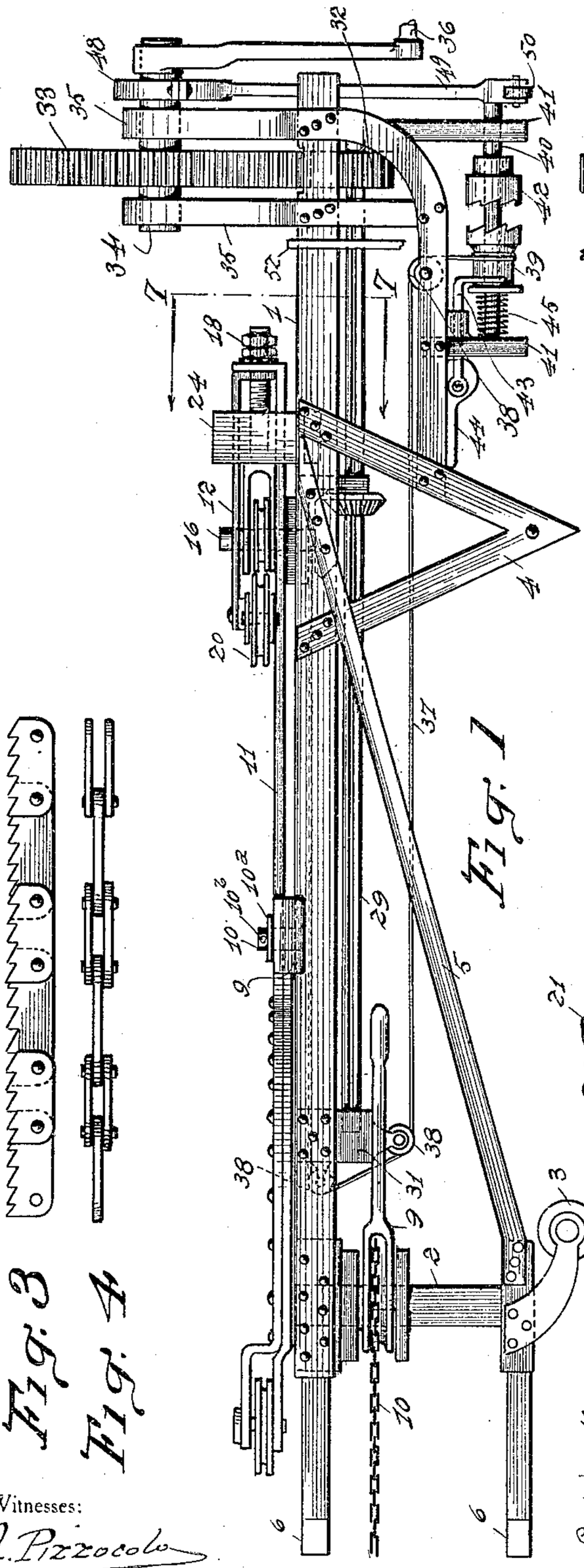


Fig. 1

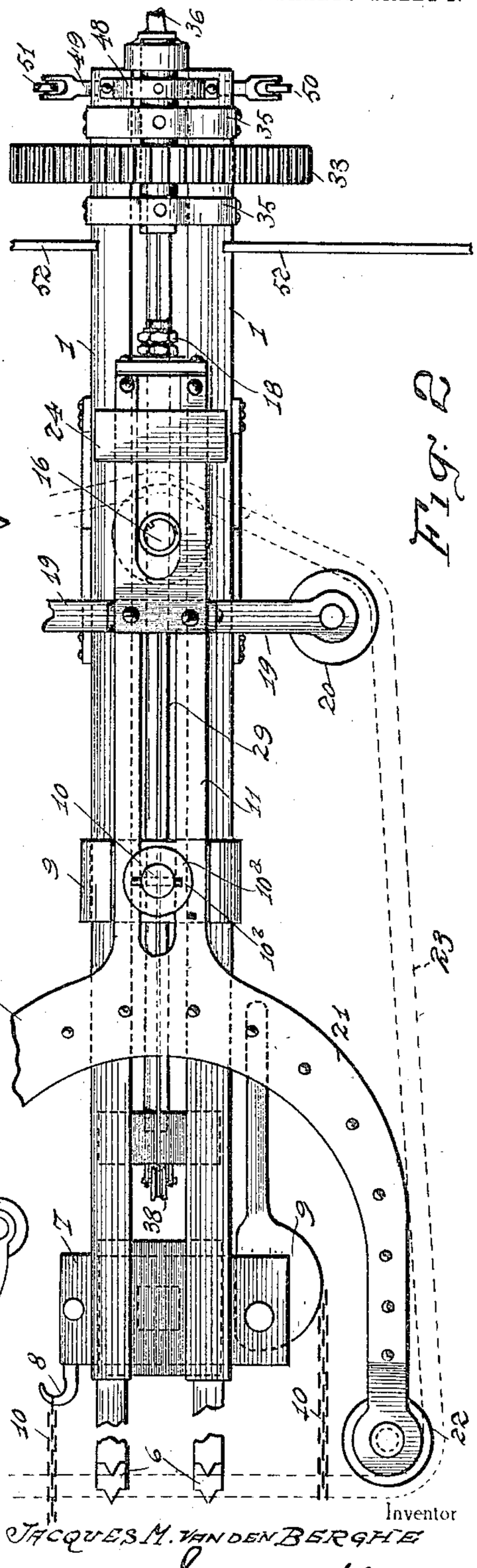


Fig. 2

Fig. 3

Fig. 4

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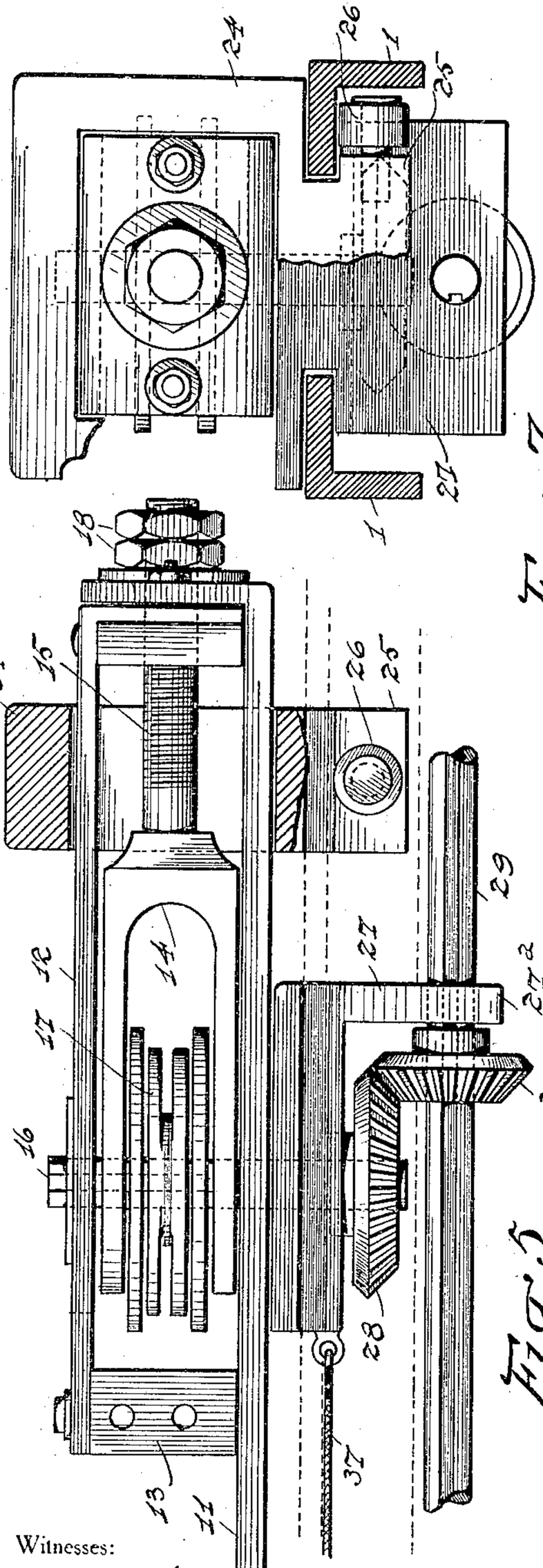


Fig. 7

Fig. 5



Fig. 8

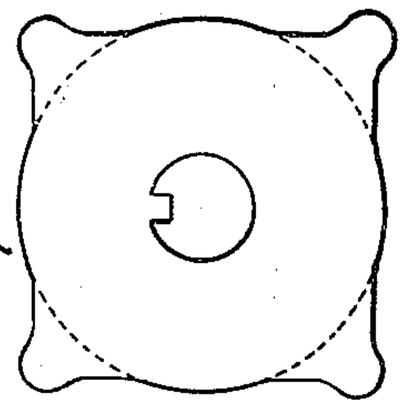


Fig. 9

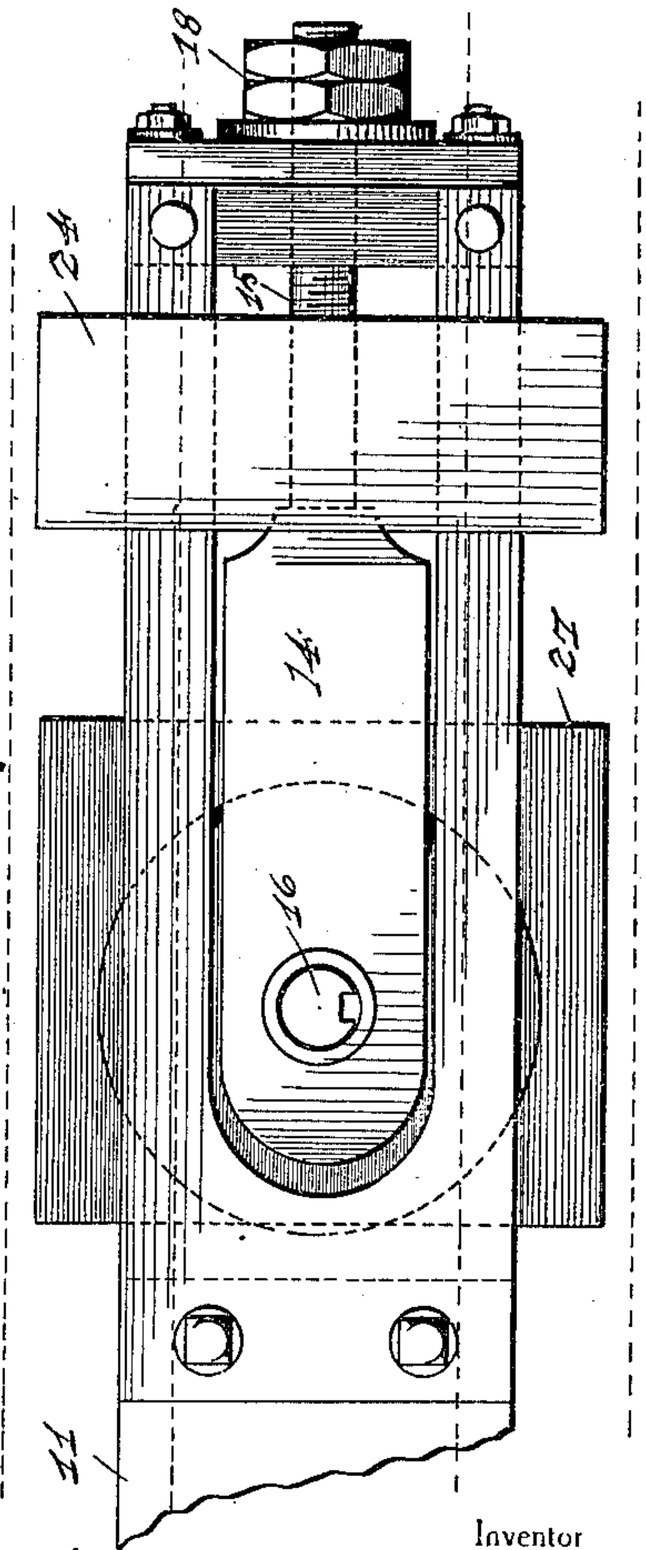


Fig. 6

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3 SHEETS—SHEET 3.

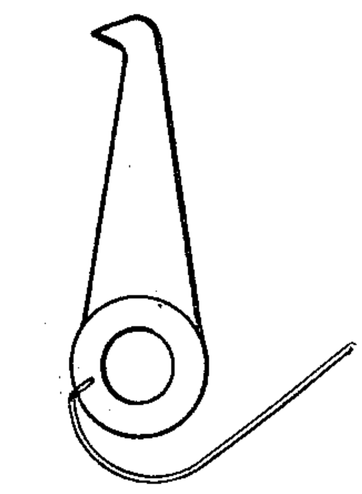


Fig. 12

Fig. 10

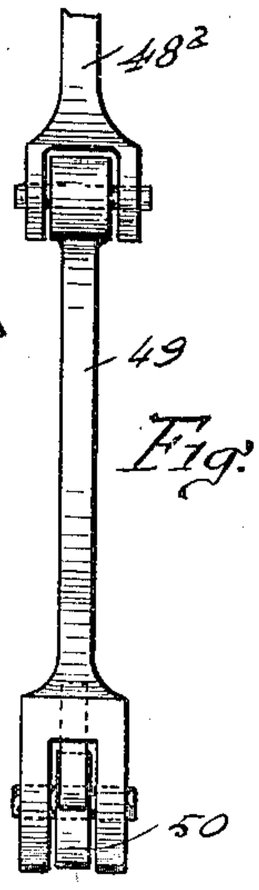


Fig. 13

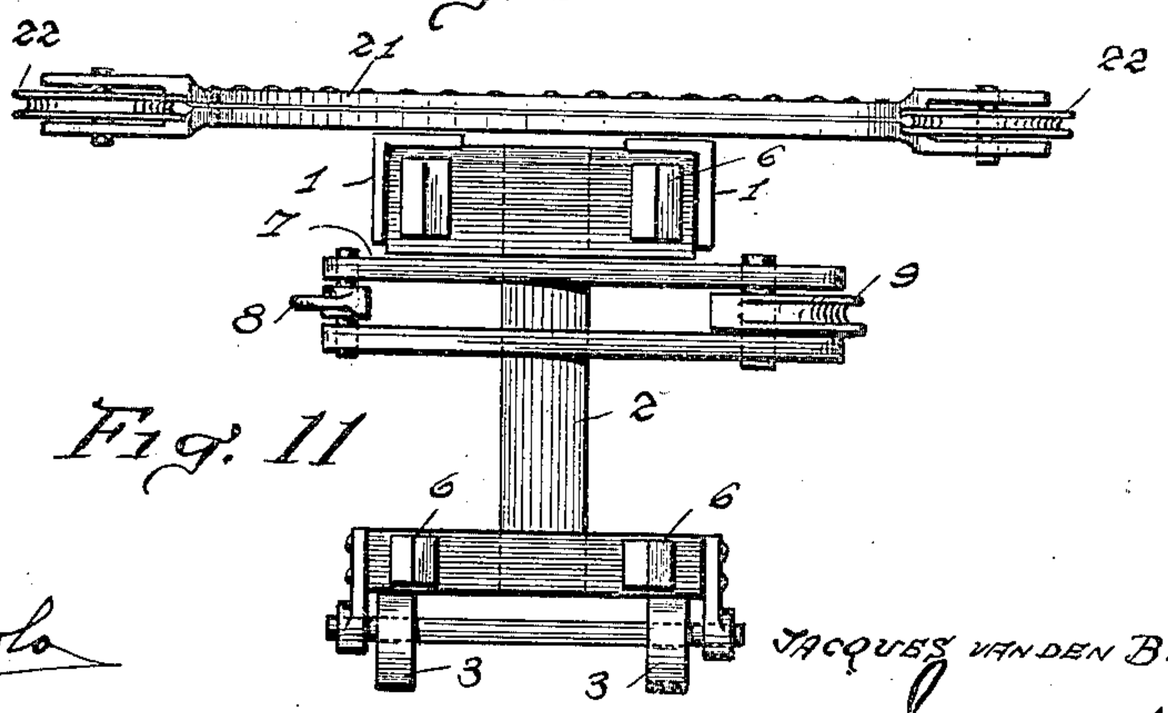


Fig. 11

Witnesses:

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UNITED STATES PATENT OFFICE.

JACQUES M. VAN DEN BERGHE, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO FRANCOIS DÉLAS, OF MONTREAL, CANADA.

TREE-SAWING MACHINE.

1,136,852. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed June 5, 1914. Serial No. 843,286.

To all whom it may concern:

Be it known that I, JACQUES M. VAN DEN BERGHE, a subject of the King of Belgium, residing at No. 615 Mount Royal avenue east, Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Tree-Sawing Machines; and I do hereby declare that the following is 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.

The main objects of the invention are to provide a flexible hand operated tree sawing or felling machine which shall be simple, efficient, durable, easily operated, quickly set in position and removed and which shall have means for tightening the saw, means for feeding the saw forward and simple means for quickly throwing such feeding means out of operation, all of which objects are accomplished by the construction, combination and arrangement of parts to be hereinafter fully set forth and claimed.

In the drawings: Figure 1 is a view in side elevation of the machine; Fig. 2 is a top plan view; Fig. 3 is a fragmentary top plan view of the saw; Fig. 4 is a back view of the same; Fig. 5 is a detail side view of the saw driving and tightening means; Fig. 6 is a top plan view of the same; Fig. 7 is a sectional view taken on line 7—7 of Fig. 1 looking in the direction of the arrows; Fig. 8 is a detail side view of the saw driving sprocket; Fig. 9 is a top plan view of the same; Fig. 10 is a back view of the machine; Fig. 11 is a front view of the same; Fig. 12 is a detail of the spring pressed pawl for operating the saw feeding means; and Fig. 13 is a detail side view of the fork carrying the pawls for operating the saw feed.

Referring to the drawings in detail, 1 designates two horizontal, parallel, angle irons, spaced a short distance apart, and supported by a post 2 mounted on wheels 3 and V legs 4, braced by suitable brace beams 5. To the front ends of angle irons 1 and post 2, there are secured pointed gripping members 6. Across the front ends of the angle irons, underneath thereof, a transverse block 7 is fixedly secured. A hook is secured in one end of block 7 and an eccentric lever 9 is mounted in the other end. A chain 10 has one end secured to the eccentric lever. By throwing the eccentric lever to its forward position and passing the chain around the tree to be sawed, and placing the proper link over hook 8, and then forcing the lever to its backward position, the gripping members 6 are forced into the tree so as to firmly secure the front of the machine thereto. At the center of angle irons 1 a transverse block 9, provided with an integral pin 10, is secured on top thereof. Pin 10 projects through the central slot of the stem 11 of the saw frame, which is slotted for its full length. The back end of stem 11 is turned up, at right angles. An L plate 12 has its back end bolted to the upturned end of stem 11 and its front end spaced from stem 11 by a block 13, and bolted thereto, so as to form an open rectangular frame. Within the frame thus formed, a yoke 14, provided with a screw stem 15 projecting through the back of the frame, is provided, and carries a short vertical shaft 16. A horizontally grooved four toothed sprocket 17 is keyed on shaft 16, between the sides of the yoke, and the plate 12 is provided with a slot corresponding to the slot in stem 11. The ends of shafts 16 are mounted in the slots, so as to permit sliding movement thereof. On the projecting end of stem 15 of yoke 14 two adjusting nuts 18 are threaded. By threading or unthreading these nuts, the yoke 14 and sprocket 17 may be adjusted away from or toward the operator, as desired. To each side of block 13 a laterally projecting horizontal arm 19 is secured, and provided in its outer end with a revoluble pulley 20. Stem 11 is provided, on its front end, with two integrally arched arms 21, which form a semielliptical open head, the whole forming the saw frame proper.

In the front end of each arm a pulley 22 is revolubly mounted. The saw 23, of sprocket chain construction, is placed around pulleys 20 and 22 and sprocket 17, as shown in dotted lines in Fig. 2. By adjusting yoke 14, as previously described, the tautness of the saw may be regulated, as required. A rectangular frame 24 is placed around the inner end of the sprocket frame, and is provided on its under face with an integral T head 25 carrying lateral rollers 26 operative along the under face of the angle irons 1, for bracing purposes.

An L member 27 is mounted around the lower portion of shaft 16, and a bevel gear

28 is keyed on the lower end of the shaft, below the said L member.

A horizontal longitudinally grooved shaft 29 is rotatably mounted through the vertical end 27ª of member 27. A bevel gear 30 is mounted on shaft 29, by a tongue mounting, so as to be rotatable therewith and longitudinally movable thereof, and is in mesh with gear 28. The front end of shaft 29 is supported by a block 31 secured to the angle irons 1, near the front thereof. On the outer end of shaft 29 a gear 32 is keyed, in mesh with the large gear 33 keyed on a shaft 34 rotatably mounted in uprights 35. Shaft 34 is rotated by a suitable crank 36, by hand. The rotation of shaft 34 rotates gear 33 which drives gear 32 at a high speed. Gear 32, through shaft 29, gears 30 and 28 and shaft 16, acts to revolve sprocket 17, so as to drive the saw 23 at high speed.

In order to feed the saw forward, as it cuts into the tree, special means are provided. A cable 37, passed over suitable pulleys 38, has one end secured to the front of L member 27 and its other end wound on a drum 39 loosely mounted on a shaft 40, which is rotatably mounted in hangers 41. Drum 39 is provided, on its inner face, with an integral member adapted to mesh with clutch member 42, keyed on shaft 40, when the drum is in its operative position. The drum is held in inoperative position by means of a fork 43 pivotally connected to an eccentric lever 44, which, when raised, as in Fig. 1, withdraws fork 43 so as to hold the clutch member of drum 39 out of mesh with clutch member 42, against the action of coil spring 45 mounted on shaft 40, between the drum and the inner hanger 41. On the outer end of shaft 40, a ratchet wheel 46 is keyed. An eccentric 47 is keyed on the outer end of shaft 34. A collar 48 is loosely mounted about eccentric 47 and is provided with an integral arm 48ª, pivotally secured, at its lower end, to the upper end of a semielliptical yoke 49 which straddles ratchet 46. In the lower end of each arm of yoke 49 a spring pressed pawl 50 and 51 respectively, is pivotally mounted. Pawl 50 has its upper end bent slightly inward and engages the teeth of ratchet 46 when being raised only, pawl 51 is the reverse of pawl 50 and engages the ratchet teeth only when being lowered. As will be evident from Fig. 10, when crank 36 is rotated, eccentric 47 will act, through collar 48 and arm 48ª, to reciprocate yoke 49 vertically, and pawls 50 and 51 will rotate ratchet 46 so as to rotate shaft 40. When in operative position, the clutch member of the drum 39 is in mesh with clutch member 42 keyed to shaft 40, so that, as the shaft is rotated the drum also is rotated. As drum 39 rotates the cable 37 is wound thereon, which forces the saw frame forward, along the angle irons 1, so as to keep the saw in proper engagement with the tree or material being sawed. By this means the saw is fed forward as the tree is cut.

To secure the saw in place, a washer 10ª is secured around pin 10, above stem 11 of the saw frame, by a cotter pin 10ᵇ passed through the pin above the washer.

The back of the machine is braced against lateral movement by two legs 52 secured to the angle irons 1, at a considerable angle thereto.

The operation is as follows:—The machine is placed so that the points of the gripping members 6 are against the tree to be cut, the saw frame being slid back out of the way by hand. Eccentric lever 9 is then thrown forward and chain 10 is passed around the tree and drawn tight and hooked over hook 8. After this lever 9 is forced back, so as to force the points of the gripping members into the tree. When the machine has been properly secured to the tree, eccentric lever 44, which is normally raised, is lowered, and spring 45 forces drum 39 along shaft 40, so as to bring its clutch member into engagement with the clutch member 42. When gear 33 is rotated, by crank 36, sprocket 17, through gear 32, shaft 29, and gears 28 and 30, is revolved so as to drive the saw 23 at a high speed; at the same time, cable 37 is wound on to drum 39 so as to pull the saw frame forward and keep the saw in engagement with the tree. The tautness of the saw is adjusted by means of nuts 18 on the screw stem 15 of yoke 14, as previously described. When the sawing is completed, lever 9 is swung forward and chain 10 is removed from the tree, and the lever is returned to its former position. When the chain has been removed from the tree, eccentric lever 44 is raised, to release drum 39, and the saw frame is slid back along the angle irons 1 to the position shown in Fig. 1. The machine may then be rolled, by means of rollers 3, to the next tree to be cut and secured in position and operated, as previously described.

It is thought that the construction, operation, and use of the invention will be clear from the preceding detailed description.

Changes may be made in the construction, arrangement, and disposition of the several parts of the invention without in any way departing from the field and scope of the same, and it is meant to include all such within this application wherein only a preferred form has been disclosed.

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

1. A chain saw frame comprising a stem having its rear end turned up and having two arched arms at its forward end, a block

secured to said frame, arms secured to said block and guide pulleys for the saw mounted in all of said arms, in combination with a longitudinally slotted L-shaped plate having its foot secured against the upturned part of the frame and its forward end fastened to said block, a yoke having a screw-threaded stem extending through the foot of said plate and the upturned part of said frame, and carrying a shaft on which is mounted a drive wheel for said saw, said shaft extending through the slot in said plate, means to guide said frame and nuts working on said screw-threaded stem and bearing against the rear face of said upturned part for adjusting the yoke and shaft longitudinally of said frame and locking them in such position of adjustment.

2. A chain saw frame comprising a slotted stem having its rear end turned up at right angles and having two arched arms at its forward end, a block secured to said frame, arms secured to said block and guide pulleys for the saw mounted in all of the arms, in combination with a longitudinally slotted L-shaped plate having its foot secured against the upturned part of the frame and its forward end fastened to said block, a yoke having a screw-threaded stem extending through the foot of said plate and the upturned part of the frame, and carrying a shaft on which is mounted a drive wheel for said saw, said shaft extending through the slot in the frame and the slot in the plate, means for driving said shaft, means working in said slotted stem to guide said frame and nuts working on said screw-threaded stem and bearing against the rear face of said upturned part for adjusting the yoke and shaft longitudinally of the frame and locking them in such position of adjustment.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JACQUES M. VAN DEN BERGHE.

Witnesses:

FRANCOIS DÉLAS,

A. BASTIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."