

(No Model.)

2 Sheets—Sheet 1.

W. H. INGLISH.
SAWMILL.

No. 557,391.

Patented Mar. 31, 1896.

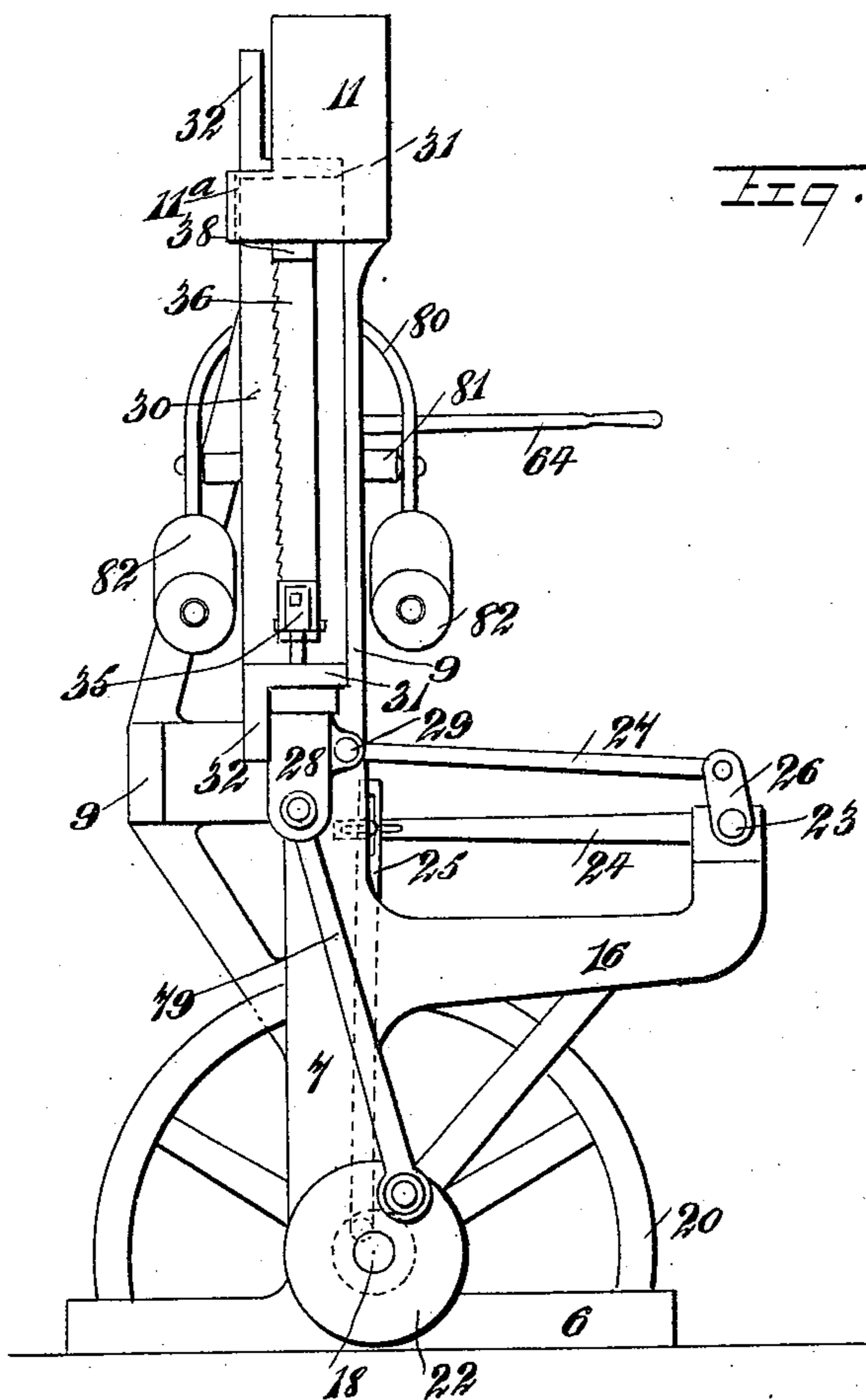


Fig. 1.

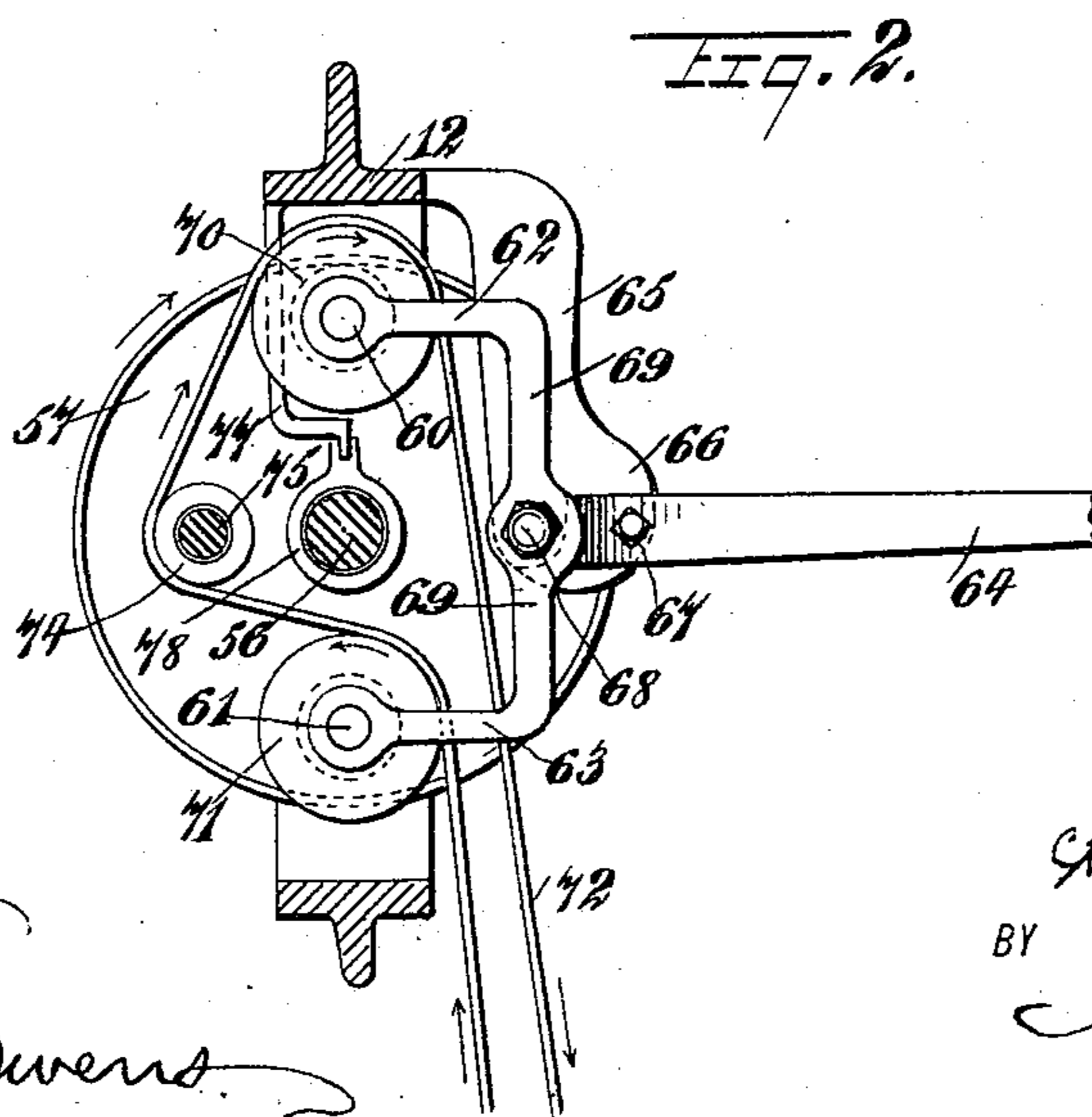


Fig. 2.

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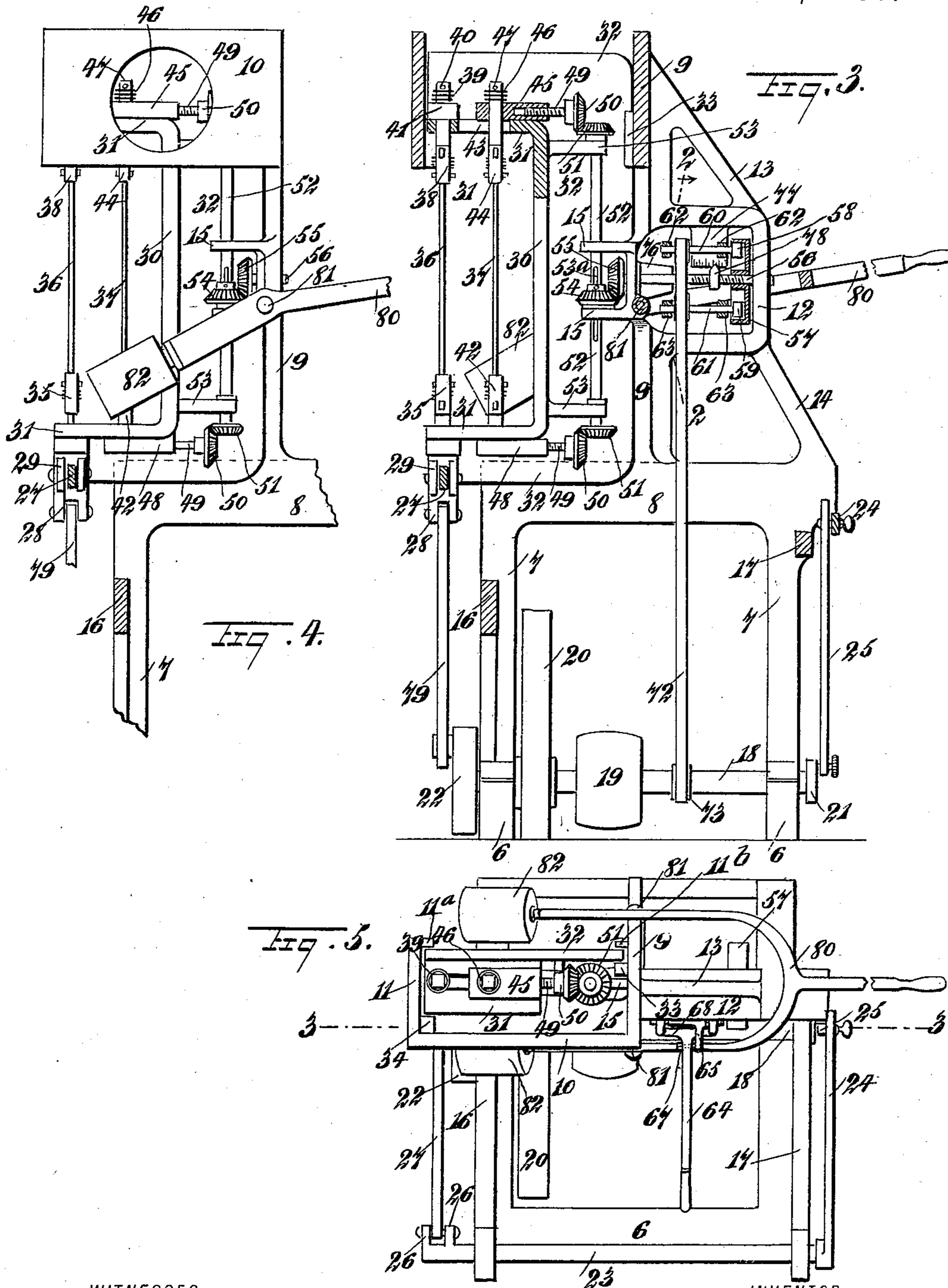
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UNITED STATES PATENT OFFICE.

WILLIAM H. INGLISH, OF EAST TAWAS, MICHIGAN.

SAWMILL.

SPECIFICATION forming part of Letters Patent No. 557,391, dated March 31, 1896.

Application filed December 18, 1895. Serial No. 572,550. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. INGLISH, of East Tawas, in the county of Iosco and State of Michigan, have invented a new and Improved Sawmill, of which the following is a full, clear, and exact description.

The invention relates to certain improvements in sawmills of that class wherein a sash carrying strained blades is made to reciprocate in guides; and the object of the invention is, first, to provide superior means for imparting the necessary movement to the sash, and, second, improved mechanism for shifting the saw-blades.

The invention will be fully described hereinafter and finally embodied in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the invention. Fig. 2 is a sectional view on the line 2 2 of Fig. 3. Fig. 3 is a vertical transverse section of the invention, taken on the line 3 3 of Fig. 5. Fig. 4 is a fragmentary elevation, and Fig. 5 is a plan view.

The frame of the machine comprises a suitable base structure 6, which is approximately U-shaped in form, as best shown in Fig. 5, and from each side of which rises a vertically-extending frame comprising two legs 7 connected at their upper extremities by a horizontal member 8, from the central portion of which a standard 9 rises. The upper extremity of the standard 9 is extended horizontally to form a transversely-extending arm 10, the outer end of which is bent to form an auxiliary arm or member 11, extended parallel with the edgewise disposition of the standard 9, and having an inwardly and transversely extending lug 11^a.

Formed integral with the standard 9 and at approximately midway the height thereof is a rectangular box or yoke 12, connected at its upper portion with the upper extremity of the standard 9 by a brace 13, and having at its lower portion a brace 14 which connects with the right-hand extremity of the horizontal member 8 of the frame. These parts, together with the two parallel and horizontally-extending lugs 15 projecting from the middle of the standard 9 and oppositely from

the box or yoke 12, and the arms 16 and 17 to be hereinafter described, comprise the framework or stationary parts of the invention.

Mounted at the base of the standard 7 is a drive-shaft 18, carrying a drive-pulley 19, a balance-wheel 20 and two crank-disks 21 and 22, the crank-disks being mounted on the ends of the shaft 18. The aforesaid arms 16 and 17 project out rearwardly from the legs 7, the arms being secured one to each standard, and these arms have mounted therein the rock-shaft 23, to the right-hand-end extremity of which an arm 24 is fixed, and the arm 24 extends forwardly to a point over the shaft 18 and has its free end adjustably connected with a vertically-extending pitman 25, which is connected to and derives motion from the crank-disk 21. By these means the revolutions of the drive-shaft 18 are imparted to the rock-shaft 23 in the form of an oscillatory movement. The left-hand end of the shaft 23 carries two upwardly-extending and rigid arms 26, with which the pitman 27 is pivotally connected.

The pitman 27 extends forwardly and is pivotally connected to the downwardly-extending shank 28 of the sash through the medium of a knuckle-joint 29. The sash is approximately U-shaped in form and comprises a vertical plate-like member 30, the edgewise disposition of which is longitudinal with the front and rear of the machine, and it has its upper ends integral with plate-like members 31, having an edgewise disposition similar to that of the member 30. The members 30 and 31 have connected to their forward edges a U-shaped side member 32, said side member being extended transversely with or at right angles to the front and rear of the machine, and this side member 32 has its right-hand edge in engagement with the left-hand side of the standard 9, while the upper left-hand edge of the said side plate 32 just clears forward of the member 11 of the arm 10, the upper member 31 having its edge close to the inner side of the said member 11.

Located at the rear of the side member 32 and carried on the upper portion of the standard 9 is a guide-rib 33 adapted to have the member 32 bear against it and to prevent the sash from moving rearward. A second guide-rib 34 is carried at the bend between the arm

10 and the member 11, and is engaged by the rear extremity of the upper member 31 of the sash, so as to assist the rib 33 in preventing the rearward movement of the sash, while forward displacement is prevented by the lug 11^a and rib 11^b. (See Fig. 5.)

Carried at the upper side of the lower member 31 of the sash are two buckles 35 and 42, to which the saw-blades 36 and 37 are connected. The saw-blade 36 is farthest to the left, and is connected at its upper end to a buckle 38, the upper extremity or shank of which is freely movable through an opening in the upper member 31 of the sash. An expansive spiral spring 39 embraces the said extremity of the shank and is held in place by a pin 40, the spring bearing at its lower end upon a block 41, the purpose of this construction being to keep the saw at a uniform and proper tension.

Formed in each of the members 31 of the sash is a transverse slot 43, and movable in the slot 43 in the lower member 31 is the shank of the buckle 42, while the upper end of the saw 37 is connected to a buckle 44, the shank of which is movable through the slot 43 in the upper member 31. The shank of the buckle 44 passes through a transversely-movable block 45 and projects above the same, so as to receive an expansive spring 46, held on the shank by means of a pin 47, the purpose and operation of said spring 46 and its adjunctive parts being similar to that of the spring 39. The shank of the buckle 42 is connected with a block 48 sliding transversely below the lower member 31 and similar to the block 45.

Each of the blocks 45 and 48 has a threaded shaft 49 operating in internally-threaded recesses in the blocks, and said shaft carries a beveled gear 50, with which the gears 51 mesh, said gears being carried at the upper and lower ends of a shaft 52, which has bearings in brackets 53 rigid with the sash.

The before-described arms 15 are formed with enlarged openings, in which the shaft 52 is loosely arranged, and the shaft 52 is provided with a longitudinal slot 53^a adjacent to the lower arm 15, through which slot a pin passes, the pin being carried on and rigid with a beveled gear 54, which, owing to this construction, is movable longitudinally on the shaft 52, but is forced to revolve with the same.

The beveled gear 54 meshes with a similar gear 55 fixed on a shaft 56, said shaft having bearings in the standard 9 and in the outer portion of the box or yoke 12. The shaft 56 carries within the box or yoke 12 a hollow friction-disk 57, with the inner periphery of which the friction-wheels 58 and 59 are adapted to engage. The friction-wheels 58 and 59 are respectively carried on spindles 60 and 61, which are in turn revolvably mounted in the arms 62 and 63 of the lever 64.

The lever 64 carries at its inner end a transverse bar 68, which is fulcrumed on a bracket

65, the bracket projecting rearwardly and downwardly from the upper portion of the box or yoke 12 and having a segmental enlargement 66 (see Fig. 2) at its lower end, with which a set-screw 67 carried on the lever 64 is adapted to bind, whereby said lever 64 may be locked at the desired adjustment. Fixed to each end of the bar 68 is a U-shaped bar 69, and these U-shaped bars 69 each comprise one of the arms 62 and 63 before described. In Fig. 3 these arms are shown in section at their extremities, the remainder of the lever 64 having been taken away in striking the section, while in Fig. 2 the lever is shown in side elevation and one of the bars 69 is illustrated. In Fig. 5 also a portion of each bar 69 is shown in plan. By these means and upon the rocking of the lever 64 on its fulcrum—that is, the bar 68—one of the shafts 60 or 61 will be moved toward the inner periphery of the friction-disk 67, while the other shaft is moved away from said periphery. By these means the friction-wheels 58 and 59 may be alternately engaged and disengaged with and from the friction-disk 57, and since I provide mechanism for driving these wheels 58 and 59 in opposite directions by these means the disk may also be driven oppositely.

Carried on the shafts 60 and 61 are the pulleys 70 and 71, and over these pulleys the drive-belt 72 passes, said belt passing downwardly over a pulley 73 carried on the drive-shaft 18. The belt 72 also passes around an idler 74, which revolves on a stub-shaft 75 projecting from a bracket 76, said shaft being best shown in Fig. 2, and said bracket being shown in Fig. 3. By these means the belt 72 is made to transmit movement in different directions to the shafts 60 and 61, and upon the operation of the lever 64 the respective shafts are moved to engage or disengage their friction-wheels with or from the disk 57, as has been hereinbefore described. Upon the revolution of the disk 57 the shaft 56 will revolve, and this revolution of the shaft 56 will be transmitted to the shaft 52, and from this shaft the movement will be transmitted to the shafts 49, and the blocks 45 and 48 be finally moved in a lateral direction, so as to adjust the saw 37 toward and from its companion saw 36, all of which is best shown in Fig. 2.

To readily indicate to the operator the relative position of the saws 36 and 37, I provide an indicating device, which is best illustrated in Figs. 2 and 3, and which consists of a graduated plate 77, with the lower edge of which the forked point of the indicating-ring 78 has slidable connection. The ring 78 is internally threaded and engages with threads on the shaft 56, so that upon the revolution of this shaft the indicator 78 will be moved along the plate 77, and the parts may be easily adjusted, so that the movements of the indicator 78 will show the movements of the saw 37.

The shaft 23 and the arms 24 and 27, together with the mechanism for operating the

same, are for imparting to the sash a vibratory movement, such being necessary to the sawing operation, as is well understood, while the vertically-reciprocating movement also necessary to the sawing operation is imparted through the medium of a pitman 79 connected to the lower extremity of the shank 28 and having its lower end pivoted on the crank-disk 22 of the shaft 18. These parts for driving the sash may be timed to operate with the necessary relation to each other. In machines of this class it is necessary to regulate the vibratory movement of the sash in relation to the rapidity of the feed, and to so juxtapose the parts that the saws will move away from the timber on the upstroke of the saws. This is effected by means of the adjustable connection between the arm 24 and pitman 25, by which the degree of oscillation characteristic of the shaft 23 may be regulated.

It will be understood that the loose connection between the shaft 52 and the brackets or arms 15 permit the sash to have the above-described movements; and it will also be understood that the concentric relation of the gear 54 with the gear 55 will also permit this movement of the shaft 52 on the brackets and will not destroy the connection which the gears must have with each other.

The invention is adapted for use with a carriage and mechanism of any suitable form. In order to properly guide the material projecting out from the carriage-blocks, (such parts being of the usual construction and not shown in the drawings,) I provide the forked lever 80, which is fulcrumed on a bar 81, (best illustrated in Figs. 1 and 3,) and which carries at the end of each arm a roller 82. These rollers may be moved with the lever 80 to assume a horizontal position or a downwardly-inclined position, such inclined position being shown in Figs. 1, 3, 4, and 5.

In sawing round logs it will be desirable to incline the rollers, as shown in the above-specified figures. When, however, work having flat sides is being operated on, the rollers 82 should be moved to a horizontal position, so as to better engage the projected portions of the work.

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

1. In a sawmill, the combination with a frame, of a sash, means for operating the sash, a saw-blade carried by the sash, a forked lever fulcrumed on the frame and embracing the same, and a roller carried by each arm of

the lever, said rollers being adapted to guide the work, substantially as described.

2. In a sawmill, the combination with a frame of a sash, saw-blades carried by the sash, means for adjusting the blades, a threaded shaft geared with said means and for imparting operating movement thereto, means for driving the threaded shaft, a threaded ring cooperating with the threads of the threaded shaft and having an indicating-point, and a graduated plate along which the said indicating-point is movable, substantially as described.

3. In a sawmill, the combination with a frame, of a sash, the sash consisting of a U-shaped side member with a transverse edge-wise disposition and edge members projecting at right angles from the inner edges of the side member, blades carried by the edge members one blade being movable, a shaft connected with each end of the movable blade and rotatably mounted on the side member, a second shaft extending at right angles to the first shafts and geared therewith, the second shaft being also mounted in the side member, and means for driving the second shaft, substantially as described.

4. In a sawmill, the combination with an upright frame, of a sash, means for driving the sash, blades strained on the sash, a forked lever fulcrumed on the frame and having its arms embracing the sash, and rollers carried by the arms of the fork on the lever, substantially as described.

5. In a sawmill, the combination with a frame having a vertical standard formed with a horizontally-extending arm at its upper portion and a box at approximately its middle, of a sash partly confined by the arm, means for operating the sash, an adjustable blade on the sash, a shaft carried by the sash and geared with the blade to adjust the same, a shaft journaled in the frame and extending through the box, a friction-disk fixed to the shaft, a bracket projecting downwardly from the box, a lever fulcrumed in the bracket, two friction-disks carried by the lever, the lever being capable of movement to alternately engage its friction-disks with the first friction-disk, and means for oppositely driving the friction-disks on the lever, substantially as described.

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Witnesses:

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WILLIAM URQUHART.