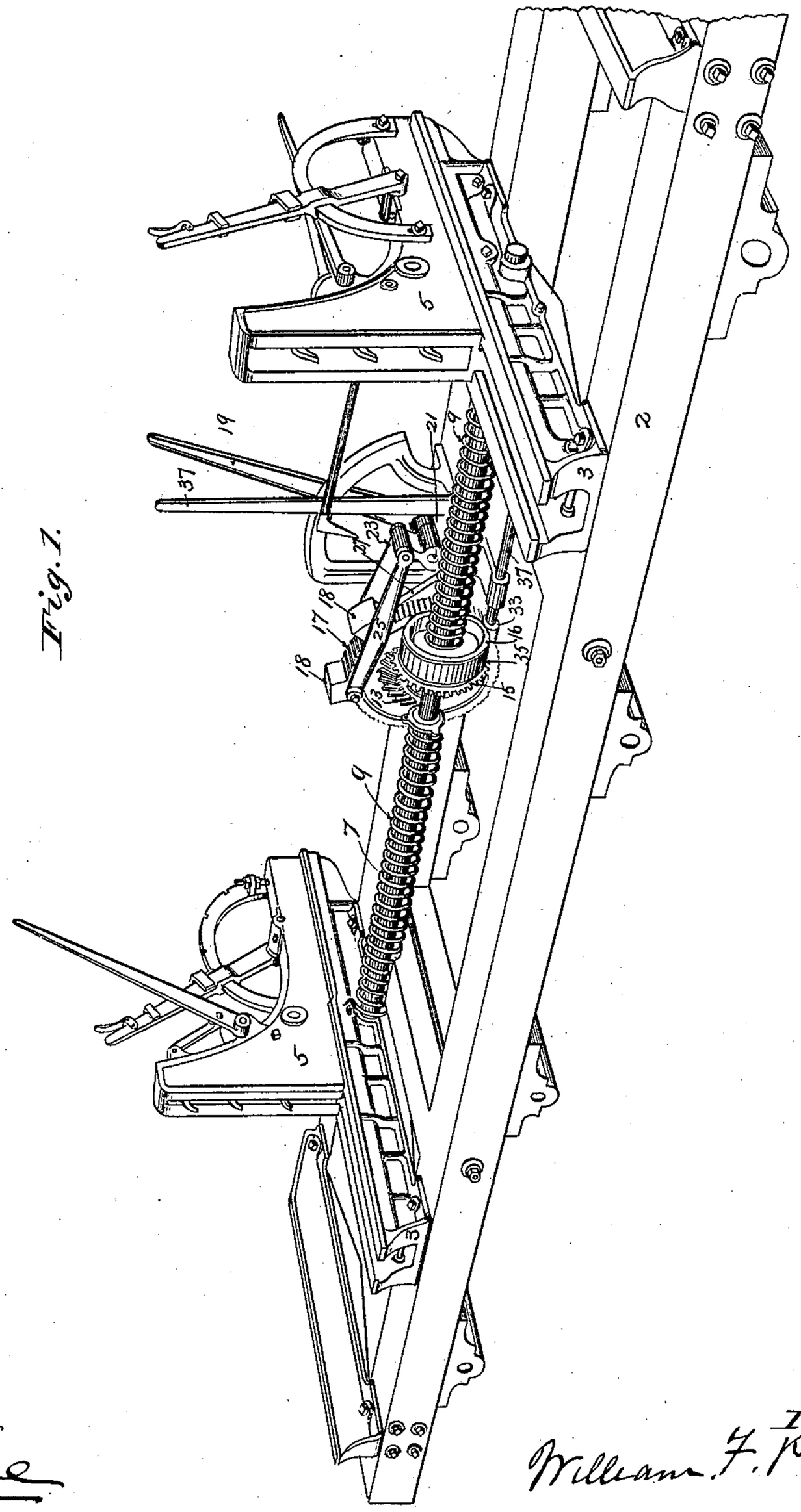
(No Model.) 3 Sheets—Sheet 1.

W. F. PARISH.

SAW MILL SET WORKS.

No. 352,838. Patented Nov. 16, 1886.

Fig. 1.



Witnesses
R. C. Dane
R. H. Samford

Inventor.
William F. Parish

(No Model.) 3 Sheets—Sheet 2.

W. F. PARISH.

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Fig. 2.

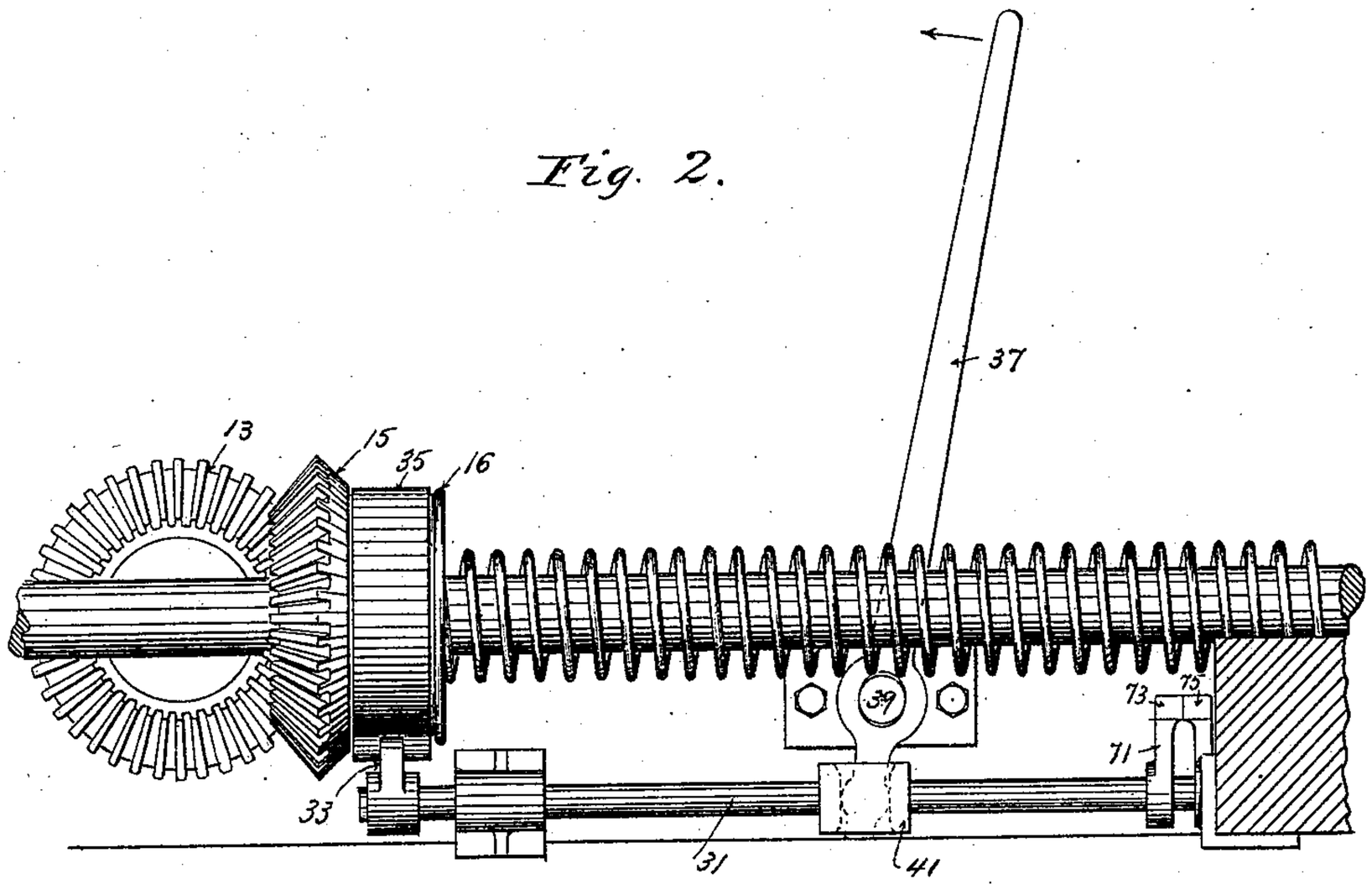
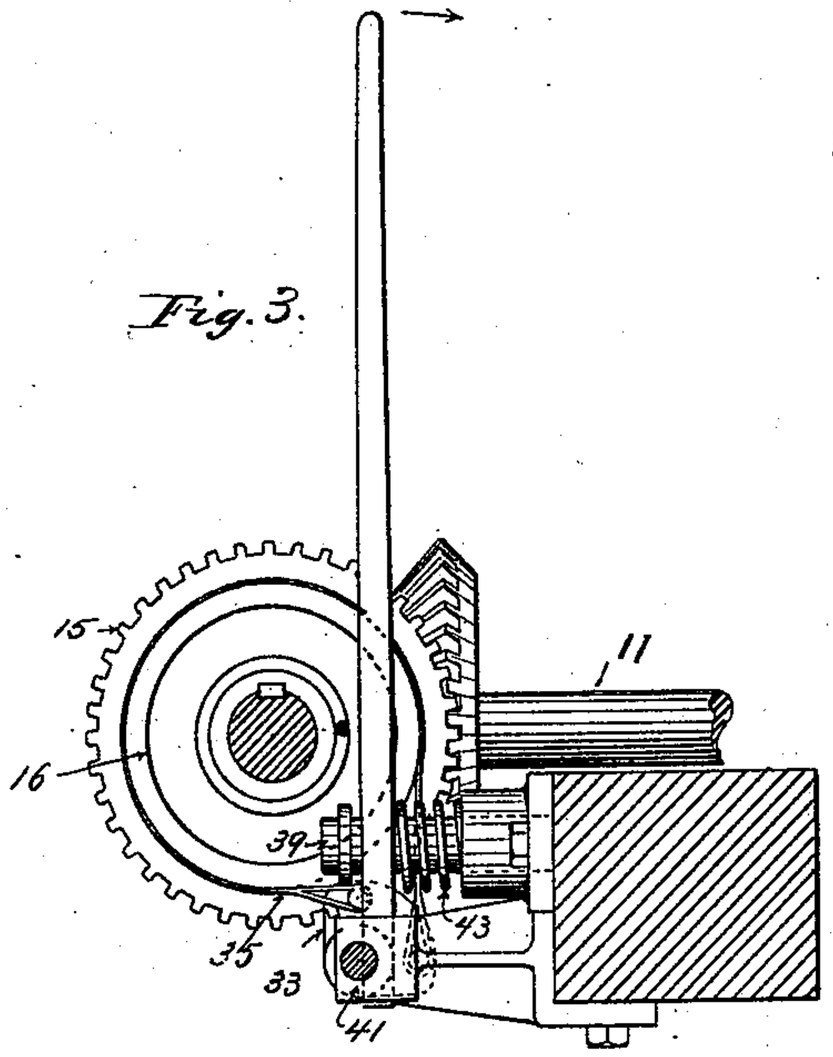


Fig. 7.

Fig. 3.



Witnesses
A. C. Paul
R. H. Sanford

Inventor
William F. Parish

(No Model.) 3 Sheets—Sheet 3.

W. F. PARISH.

SAW MILL SET WORKS.

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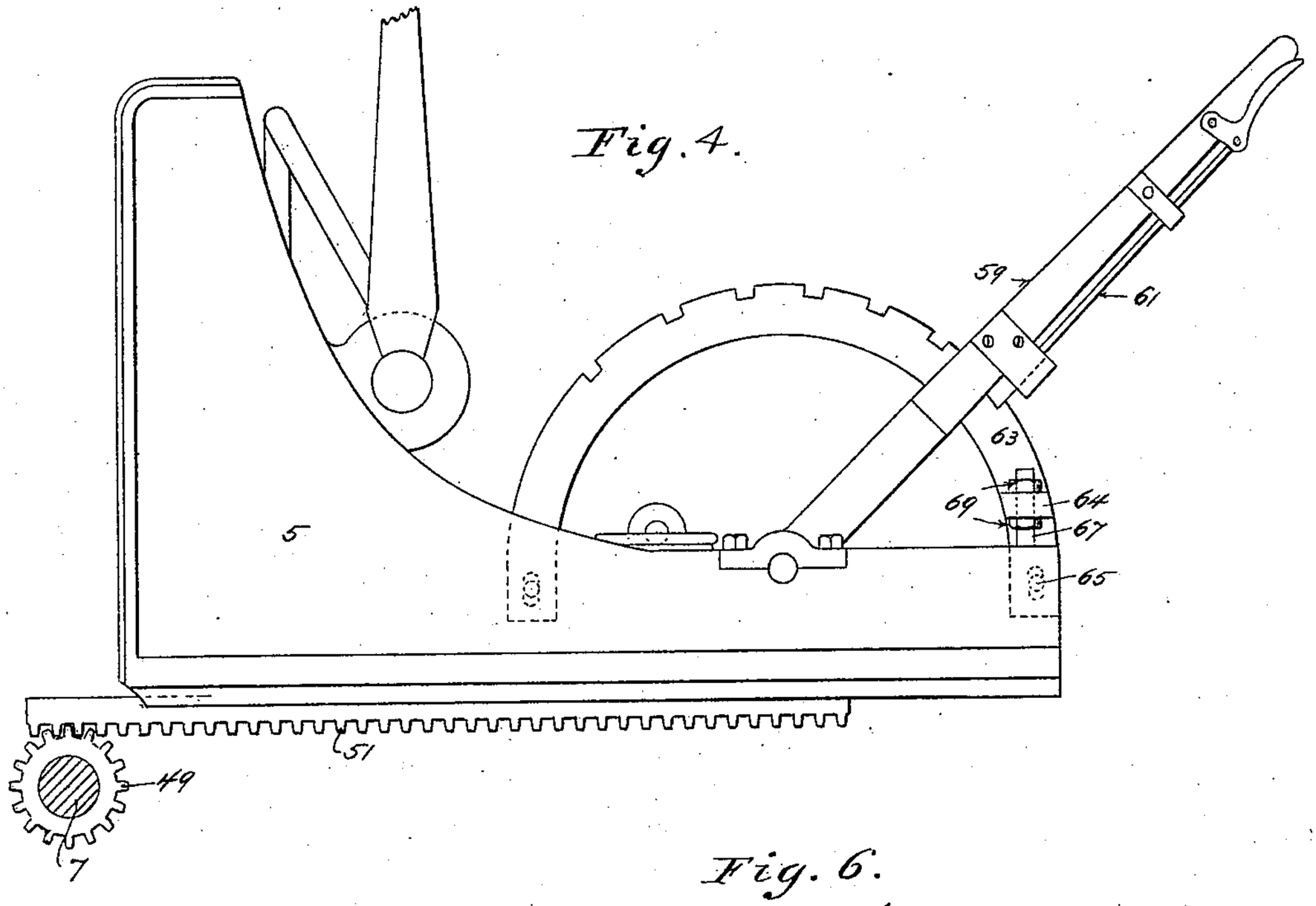

Fig. 4.

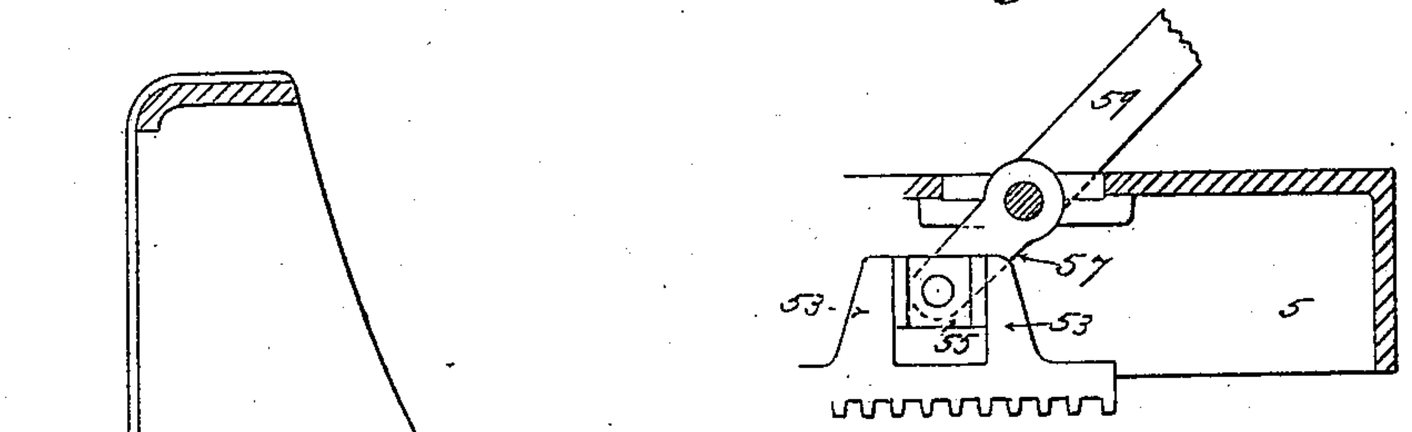

Fig. 5.

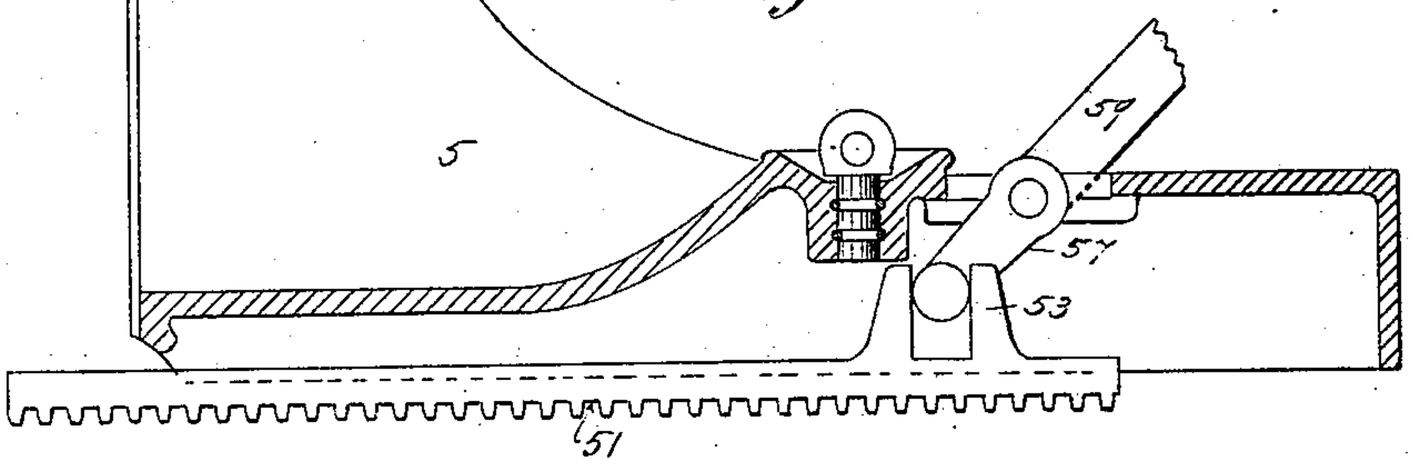

Fig. 6.

Witnesses
A. C. Paul
R. H. Sanford

Inventor
William F. Parish

UNITED STATES PATENT OFFICE.

WILLIAM F. PARISH, OF MINNEAPOLIS, MINNESOTA.

SAW-MILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 352,238, dated November 16, 1886.

Application filed May 24, 1886. Serial No. 203,066. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. PARISH, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Saw-Mill Set-Works, of which the following is a specification.

This invention relates to improvements in means for operating the knees of saw-mill head-blocks for the purpose of feeding forward the logs to the saw.

The invention consists, generally, in a set-works for saw-mills, having a ratchet mechanism mounted on a counter-shaft and gearing with the set-shaft, reacting-springs on the set-shaft, and means for connecting or disconnecting the counter-shaft and set-shaft, so that as the knees are moved forward by operating the ratchet mechanism the springs are wound up, and when the shafts are disconnected the reaction of the springs retracts the knees.

The invention further consists in the unclutching and brake mechanism on the set-shaft.

The invention further consists in the means for moving the knees independently on the head-blocks.

The invention further consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a perspective view of a saw-carriage having my invention applied thereto. Fig. 2 is a sectional side elevation showing in detail the brake mechanism. Fig. 3 is a cross-section of the set-shaft and an end elevation of the brake mechanism. Figs. 4, 5, and 6 are details of the sliding knees.

In the drawings, 2 represents a portion of a saw-mill carriage, which may be of any suitable construction. Upon this carriage are the head-blocks 3, which may be arranged in the usual manner. Suitable knees, 5, are mounted and move back and forth on the head-blocks. A set-shaft, 7, is mounted in suitable bearings on the carriage and extends lengthwise thereof. The set-shaft is provided with suitable gears, 49, that mesh with a rack on a slide to which the knee is connected, preferably by means hereinafter described. A coiled spring, 9, is mounted on the set-shaft, and has one end secured to the shaft and the other end secured to the head-block or other part of the carriage. I prefer to employ two or more of these springs, one or more on each side of the mechanism for operating the shaft. A counter-shaft, 11, is mounted in suitable bearings on the saw-mill carriage, and is provided with a bevel or miter gear, 13, that meshes with a similar gear, 15, on the set-shaft 7. The shaft 11 is also provided with a ratchet-wheel, 17. This wheel may be formed integrally with the bevel-gear 13, or it may be independently secured to the counter-shaft. The ratchet-wheel 17 is operated by suitable pawls or dogs, 18, that engage therewith, and are moved by a lever, 19, upon a shaft, 21, having arms 23, to which the dogs are connected by arms 25 27. With this ratchet mechanism a movement of the lever 19 in either direction advances one pawl and recedes the other, and thereby the ratchet-wheel and counter-shaft are always moved in the same direction.

I do not confine myself to the use of the described ratchet mechanism, as any suitable form of ratchet mechanism by which the counter-shaft may be continuously rotated may be employed with good results, nor do I claim in this application the construction of the ratchet device herein shown and described, as the same forms the subject of a separate application for Letters Patent.

The gear 15 is splined to the set-shaft and rotates therewith, but is free to move longitudinally thereon. I prefer to secure the end of one of the spiral springs 9 to this gear-wheel, so that by the expansive force of the spring the gear 15 is normally held in engagement with the gear 13 on the counter-shaft.

I provide suitable mechanism by which the gear 15 may be thrown out of engagement with the gear 13. The mechanism that I prefer to employ for this purpose is shown in detail in Figs. 2 and 3. In this preferred construction the gear 15 is provided with a drum, 16, that may be formed integrally therewith. A shaft, 31, is mounted in bearings on the carriage below the shaft 7. Upon this shaft, preferably in the plane of the drum 16, is secured a block or plate, 33, which may be of substantially quadrant shape, as shown in Fig. 3. A strap, 35, passes around the drum 16, and has its

ends secured to the plate 33. The drum 16 has a suitable flange or other means to keep the strap from slipping off. A lever, 37, is pivoted upon a stud, 39, and engages the shaft 31. By moving the upper end of this lever in the direction indicated by the arrow in Fig. 2, the shaft 31 is moved longitudinally in its bearings, and thereby the gear 15 is moved out of mesh with the gear 13 on the counter-shaft.

I prefer to connect the lever 37 with the shaft 31 by the following described means: The shaft 31 has an enlarged portion or boss, 41, forged thereon. The lower end of the lever 37 extends through an opening in this boss. The lever has a limited movement lengthwise on its pivot against the tension of a spring, 43. (See Fig. 3.) By moving the upper end of the lever in the direction indicated by the arrow in Fig. 3 the shaft 31 is rocked in its bearing, and thereby the strap is tightened around the sleeve 16, forming a friction-brake thereon.

The pivot opening in the lever 37 may be slightly larger than the pivot, or the pivot may be curved, or other devices may be used to permit the lever to move on its pivot and impart the required movement to the shaft 31.

The operation of the device is as follows: The logs are placed on the carriage and are moved thereon by the knees to set the knees forward. The attendant grasps the lever 19 and moves it in either direction. The ratchet-wheel and counter-shaft are thereby turned, and through the gears 13 the set-shaft is rotated, moving the knees along on the head-blocks, as desired. At the same time the springs on the set-shaft are wound up. When it is desired to recede the knees, the lever 37 is moved in the direction of the arrow in Fig. 2, thereby disengaging the gear 15 from the gear 13. As soon as the gears are disengaged, the tension of the springs causes the set-shaft to rotate in the reverse direction, thereby moving back the knees to the desired position. At the same time that the attendant moves the lever 37 in the direction of the arrow in Fig. 2 he also draws it toward him or moves it in the direction of the arrow in Fig. 3. This movement rocks the shaft in its bearings and draws the brake-strap 35 tightly around the drum 16, and thus regulates the speed at which the set-shaft revolves. As soon as the knees have been receded to the desired point, the lever 37 is released, allowing the spring 43 to reverse the movement of the shaft 31 and release the brake, and allowing the spring 9 to move the gear 15 into engrgement with the gear 13 on the counter-shaft. The spring on the set-shaft that bears against the gear 15 tends to hold this gear in mesh with the gear 13. I may also provide a coiled spring on the shaft 31, that tends to slide back the shaft as soon as the lever is released. In order to positively hold these gears in engagement with each other, I prefer to provide a suitable latch in connection with the shaft 31 and prevent endwise movement thereof. The device that I prefer to use for this purpose is shown in Figs. 2 and 7. An arm, 71, is secured to the shaft 31 and moves therewith. It is provided with a stop-lug, 73, at its end. A similar lug, 75, is provided upon a stationary arm or bearing on the frame of the machine. When the shaft 31 is in its normal position, the faces of the lugs encounter each other and prevent endwise movement of the shaft, and the gear 15 is held in mesh with the gear 13. When by the operation of the lever 37 the shaft is rocked, the lug 73 is carried out of contact with the lug 75, as shown in dotted lines in Fig. 7, and the shaft 31 is free to move endwise by a further operation of the lever 37, as described.

It is often desirable to move the knees independently of each other on the head-blocks on account of the unevenness or taper in the logs. For this purpose I provide means by which either knee may be given a limited movement, while the position of the set-shaft is not changed. In Fig. 4 I have shown a device which may be used to secure this adjustment. The pinion 49 on the set-shaft meshes with a sliding rack-bar, 51, in the knee. Lugs 53 project from the rack-bar.

A lever, 59, is pivoted on the knee and has a depending arm, 57, that extends between the lugs on the rack-bar, as shown in Fig. 5, or is pivoted to a block, 55, that fits between the lugs 53, and is free to slide vertically as the rack-bar is moved back and forth. (See Fig. 6.) Suitable locking means may be provided for the lever 59. I have shown a spring-latch, 61, on the lever that engages a notched quadrant or arc, 63, that is secured to the knee. By moving the lever 59 the knee may be advanced or receded independently of the movement of the set-shaft.

I am aware that heretofore a device has been employed for moving the knees of saw-mill set-works, consisting of a bar that is moved by the set-shaft and has on its upper surface a rack that is engaged by a curved rack on a lever pivoted in the knee. There are objections to this device which I seek to overcome by the construction that I employ. For instance, the rack becomes filled with dirt and dust in the portion that is free from the teeth on the lever, and hence as the lever is turned this dirt comes between the teeth on the lever and the rack and interferes with the working thereof, while with my device the end of the lever or the sliding block prevents the dust from getting below it in the space between the lugs 53, and if any dust gets between the lugs above the block or end of the lever it will be pushed out as the lever moves upward. Moreover, my device is much stronger and less expensive than the other, and with it there is also less liability of lost motion.

I prefer to provide the arc 63 with oblong holes, through which bolts 65 pass to secure the arc to the knee. A threaded stud, 67, is tapped into the knee and passes through a

projection or lug, 64, on the arc. Nuts 69 are provided on this stud, so that by loosening the bolts 65 and adjusting these nuts the arc may be moved in either direction, and thereby a slight adjustment of the knee may be effected in either direction.

I am aware that it is old to provide a saw-mill set-works with a ratchet mechanism for moving the knees in one direction and reacting-springs for moving them in the other. In all the devices heretofore used with which I am familiar it is necessary to trip the pawls and permit the ratchet-wheel to revolve in a reverse direction while the knees are being retracted. In my device it is never necessary to trip the pawls or reverse the movement of the ratchet-wheel.

Another feature of my construction that is especially advantageous is the combined unclutching and brake mechanism by which the attendant may disengage the set-shaft from the counter-shaft and regulate the reverse movement of the set-shaft.

I claim as my invention—

1. The combination, in a saw-mill set-works, with the set-shaft and reversing-springs, of a counter-shaft, gearing between said counter-shaft and set-shaft, a ratchet mechanism on said counter-shaft, and means for disconnecting said counter-shaft and set-shaft, whereby when the shafts are disconnected the set-shaft may be reversed by the springs without reversing the ratchet-wheel.

2. The combination, in a saw-mill set-works, of the set-shaft, the reversing-springs thereon, the counter-shaft, the ratchet mechanism on said counter-shaft, gearing between said counter-shaft and set-shaft, and means for disconnecting said gearing, whereby when said gearing is disconnected the set-shaft may be reversed by the springs without reversing the counter-shaft and ratchet-wheel.

3. The combination, in a saw-mill set-works, with the set-shaft and reacting-springs, of the counter-shaft, gearing between said counter-shaft and set-shaft, means for disconnecting said gearing, and a brake mechanism adapted to regulate the reverse movement of said set-shaft, for the purpose set forth.

4. In a saw-mill set-works, the combination of the set-shaft, mechanism for moving the set-shaft in one direction, mechanism for connecting and disconnecting the set-shaft and ratchet mechanism, reacting-springs for reversing the movement of the set-shaft, and a brake mechanism engaging the set-shaft and regulating its reverse movement, for the purpose set forth.

5. In a saw-mill set-works and in combination with the set-shaft, its reacting-spring, and the counter-shaft, the sliding gear mounted on and turning with the set-shaft, and a friction-brake applied to said gear, for the purpose set forth.

6. In a saw-mill set-works, the combination, with the set-shaft and the reacting-springs thereon, of the counter-shaft having the ratchet mechanism and the gear 13, the sliding gear 15 on the set-shaft, the drum 16, secured to said gear, the sliding shaft 31, the lever 37, and the strap 35, secured to said shaft and passing around said drum, substantially as described.

7. The combination, in a saw-mill set-works, with the set-shaft having the sliding gear 15, drum 16, and the spring 9, of the sliding rock-shaft 31, the lever 37, mounted on a stud, 39, the spring 43 on said stud, and the strap 35, secured to said rock-shaft and passing around said drum 16, all substantially as described.

8. The combination, with the knee 5 and the adjusting-lever, of the curved arc 63, having slots in its ends, studs passing through said slots and securing said arc to the knee, the lug 64 on the arc, the stud 67, secured to the knee and projecting through said lug, and the nuts 69 on said stud on opposite sides of said lug, all substantially as described.

9. The combination, with the sliding knee, the head-block, and set-shaft, of the sliding rack-bar meshing with a pinion on the set-shaft and having the projecting lugs 53, the block 55, fitting between said lugs, and the lever 59, pivoted to the knee, and the sliding block 55.

In testimony whereof I have hereunto set my hand this 12th day of May, 1886.

WILLIAM F. PARISH.

In presence of—
A. C. PAUL,
R. H. SANFORD.