

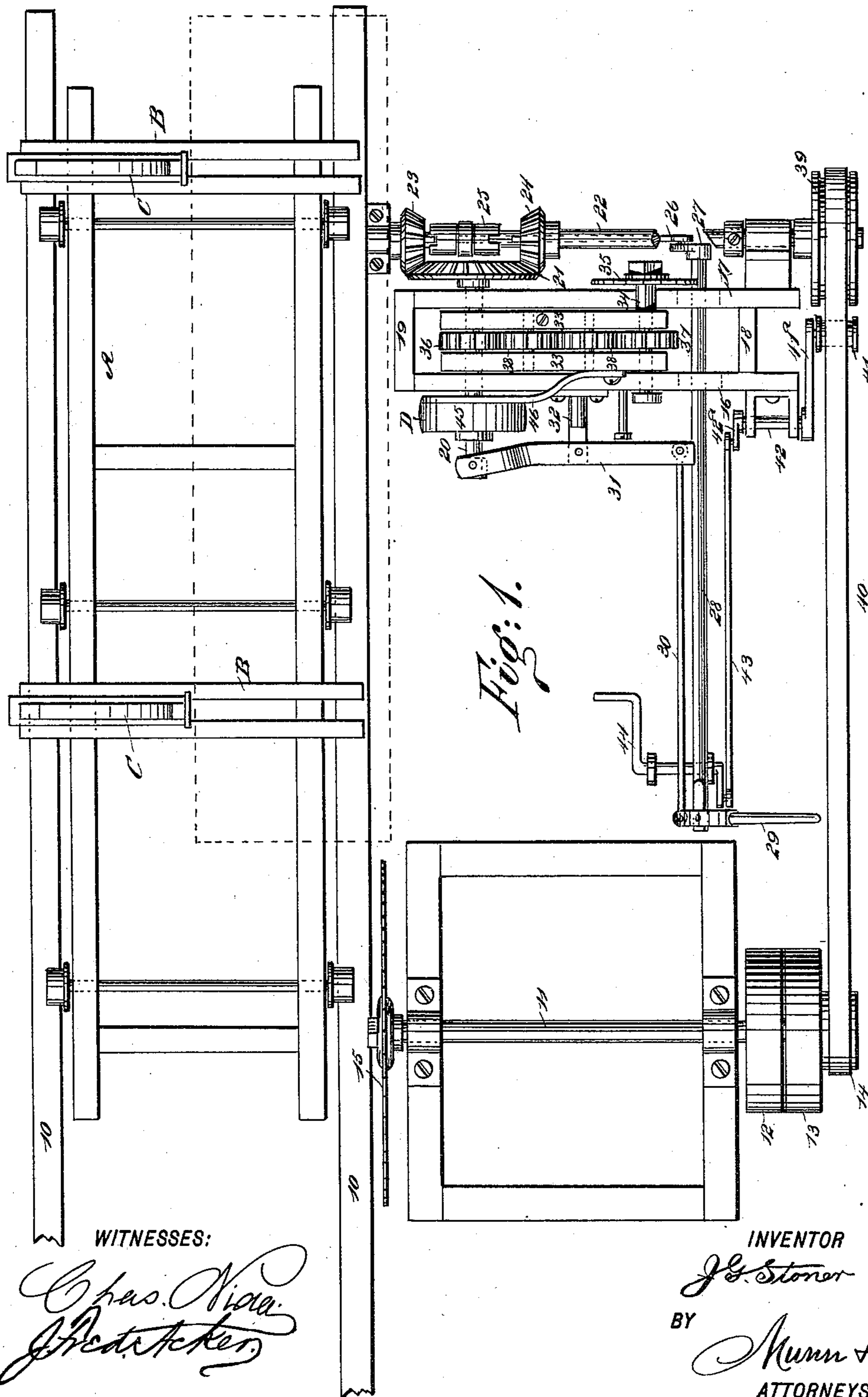
(No Model.)

4 Sheets—Sheet 1.

J. G. STONER.
LOG TURNING MACHINE.

No. 543,757.

Patented July 30, 1895.



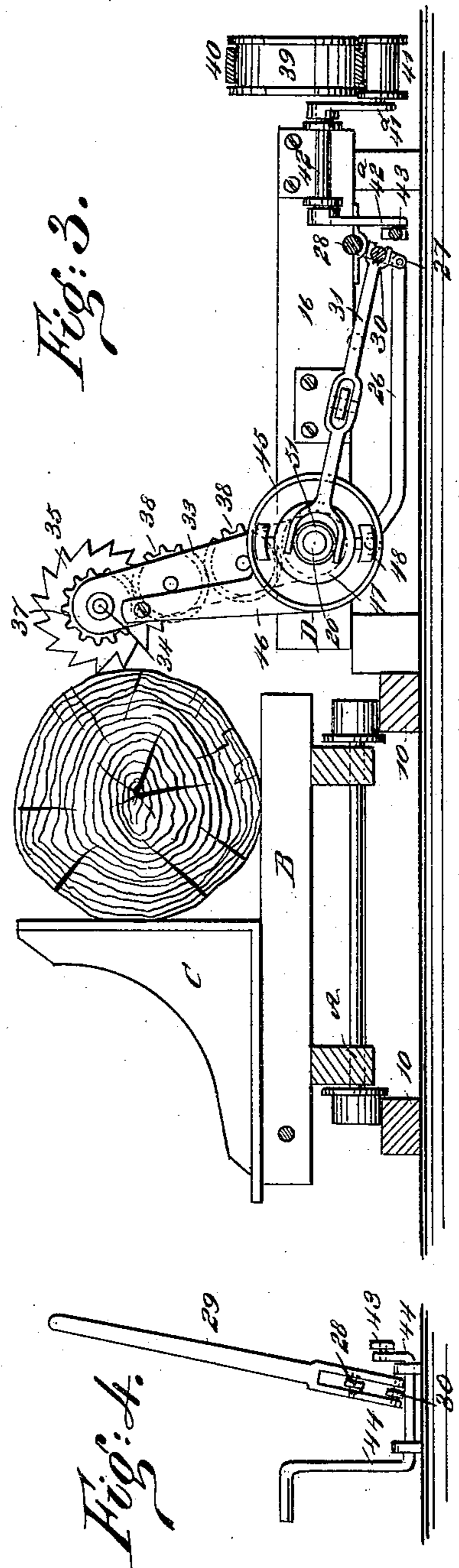
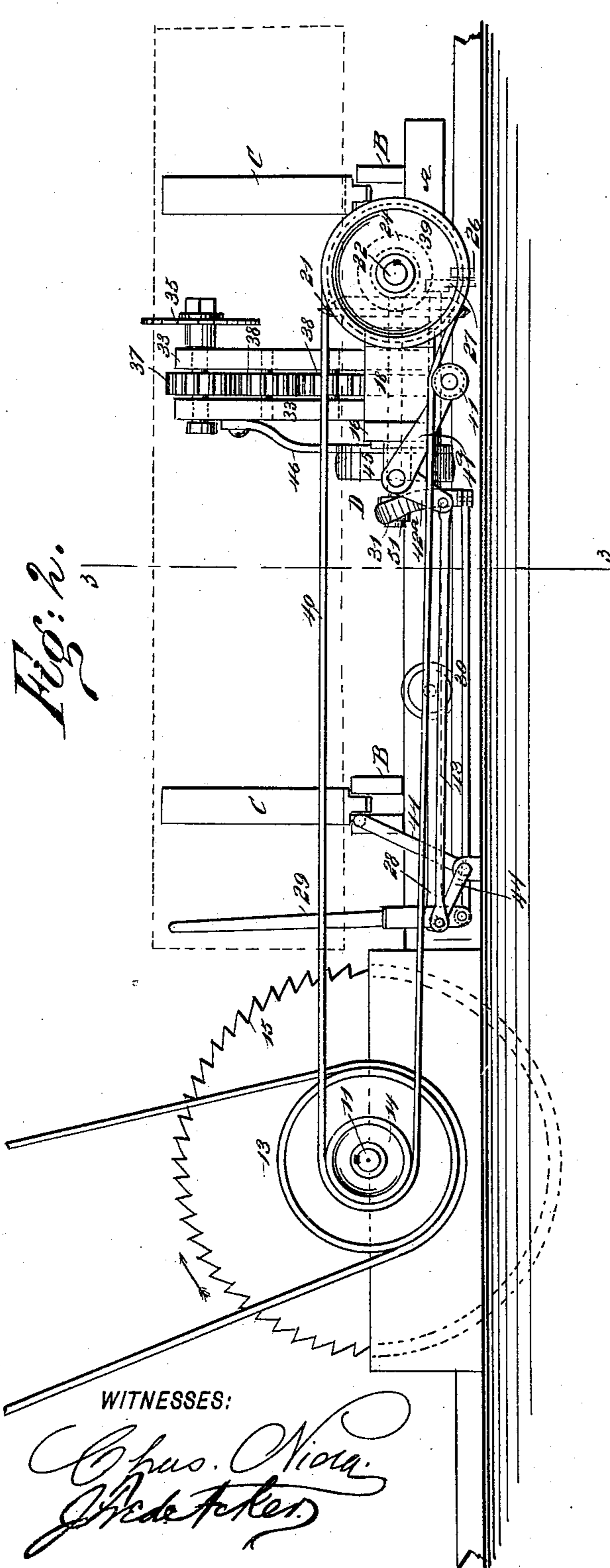
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Fig: 5.

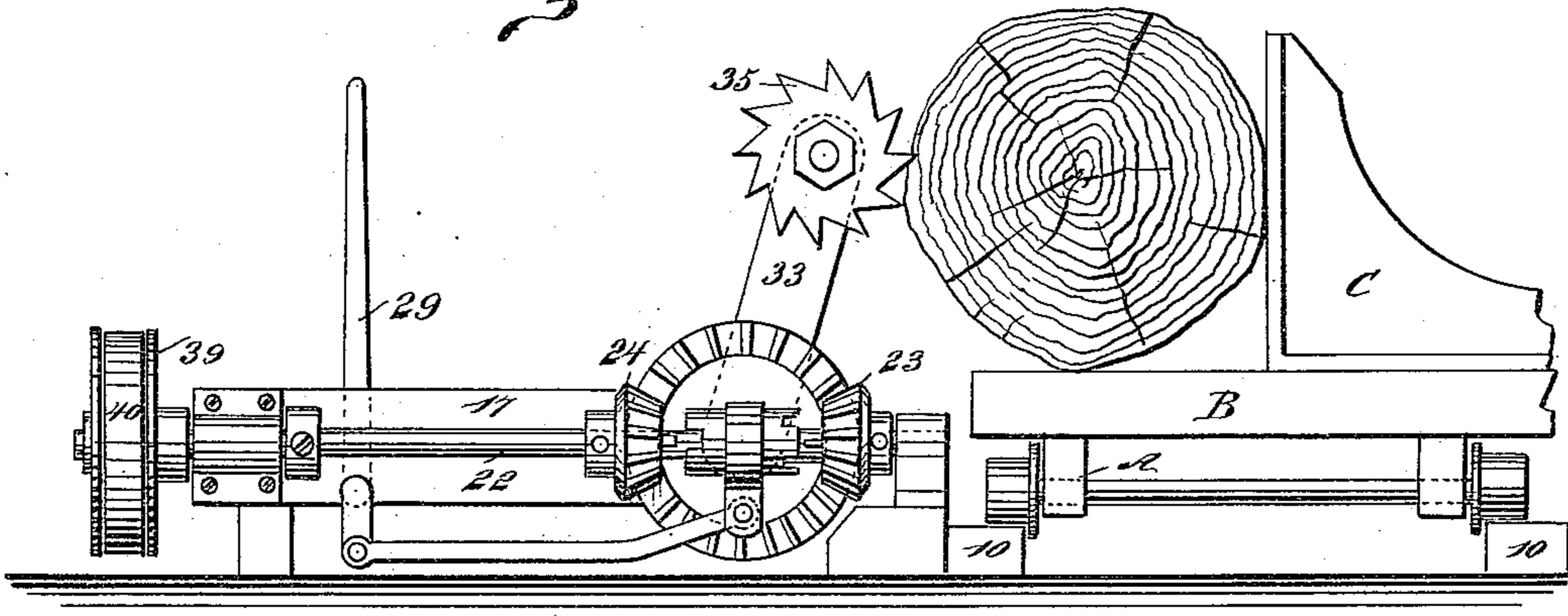


Fig: 6.

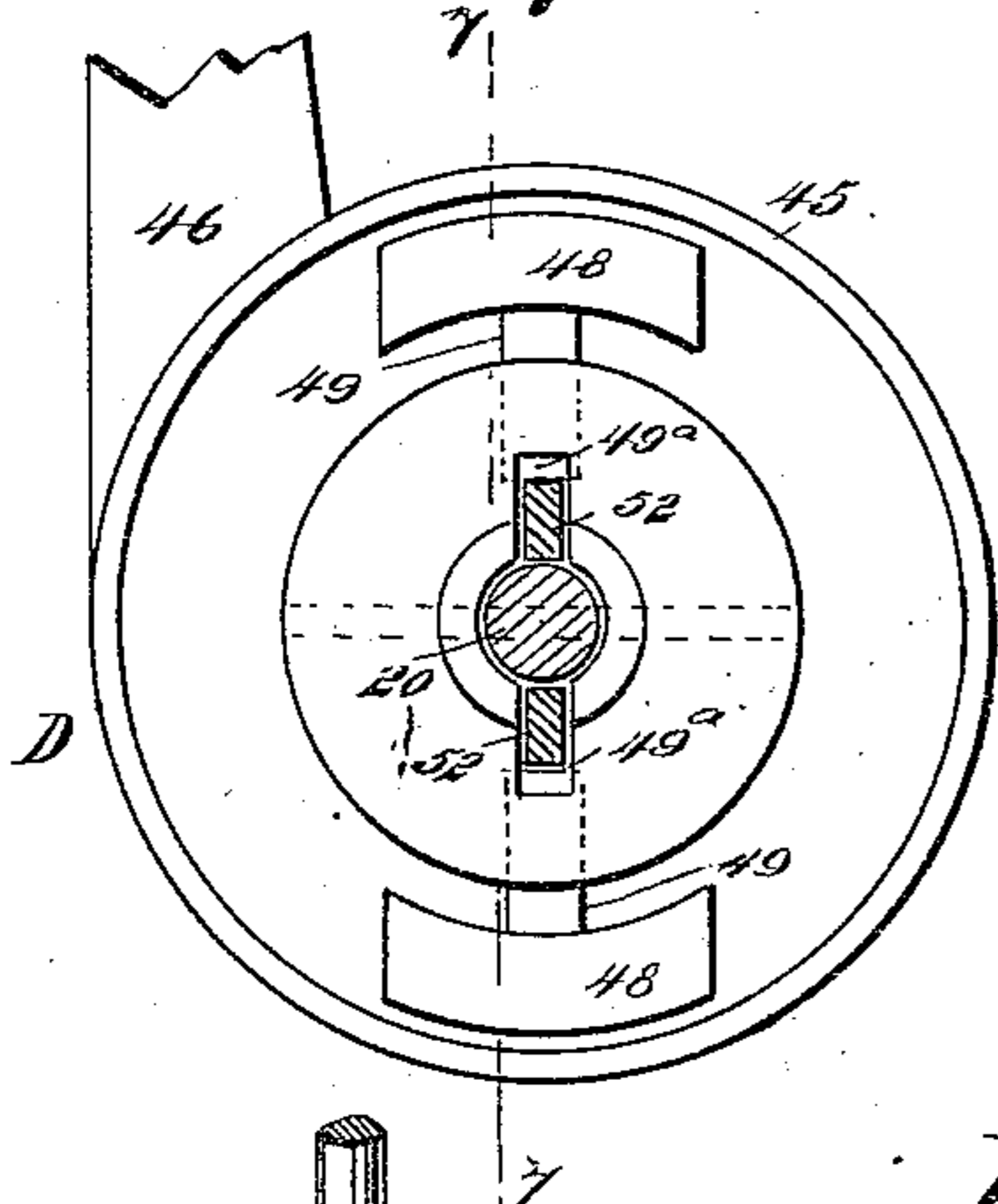


Fig: 7.

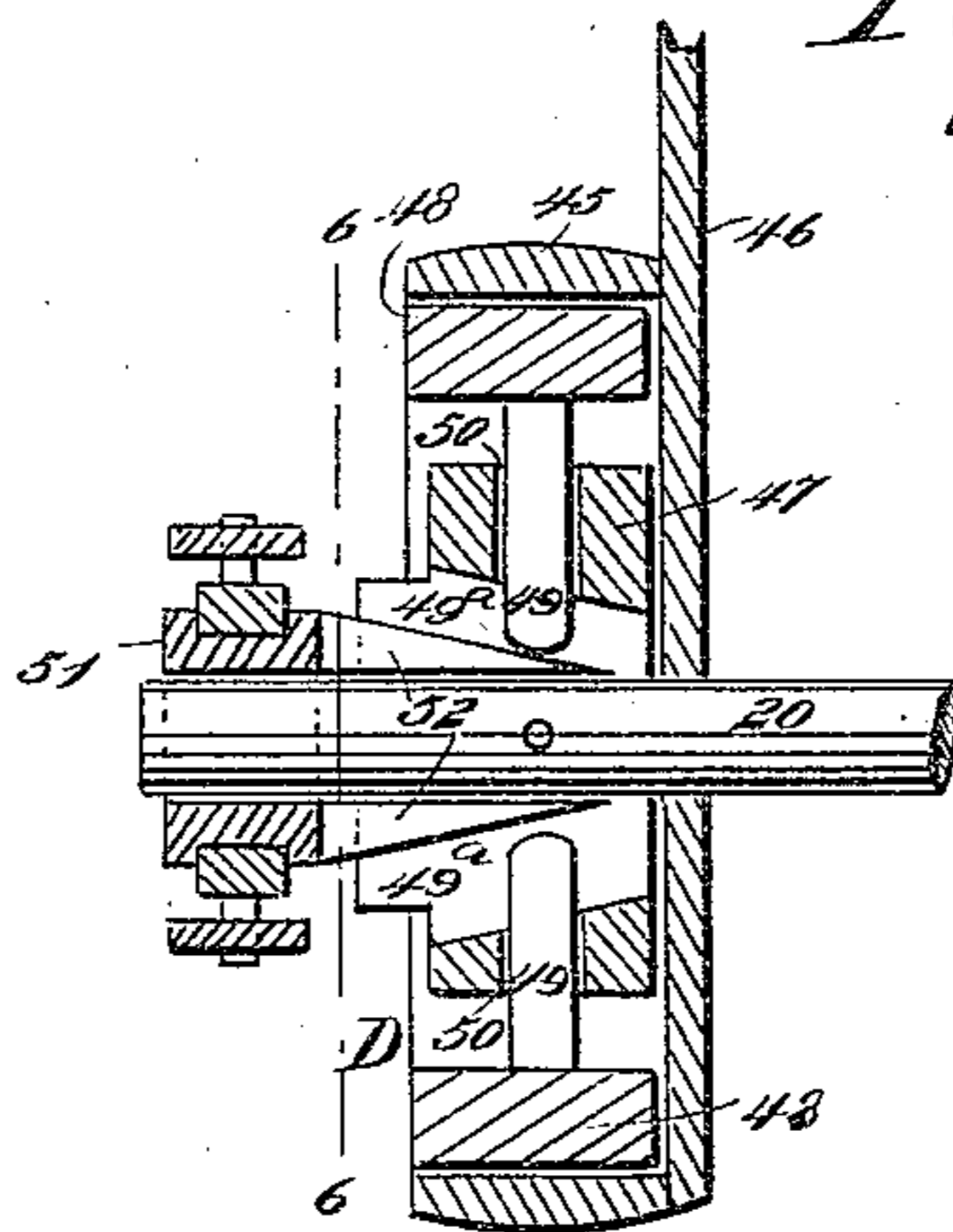
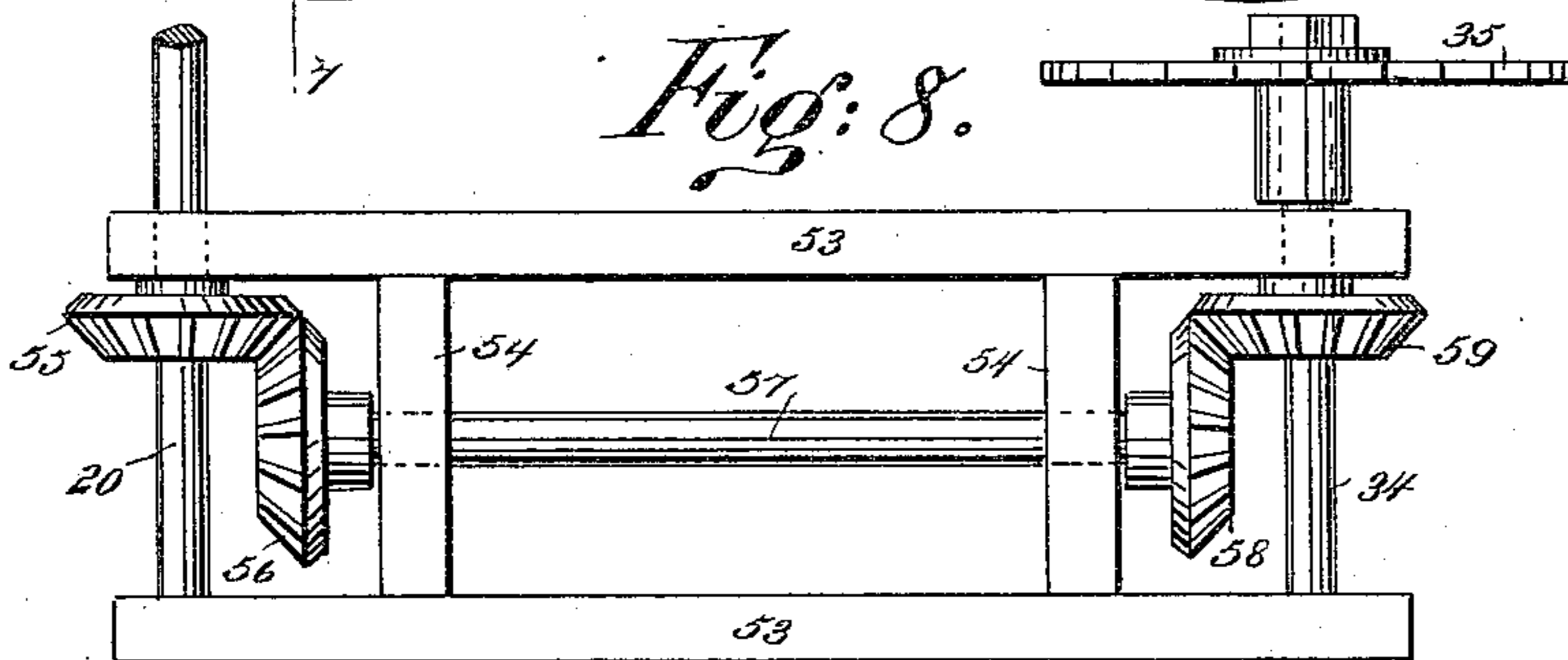


Fig: 8.



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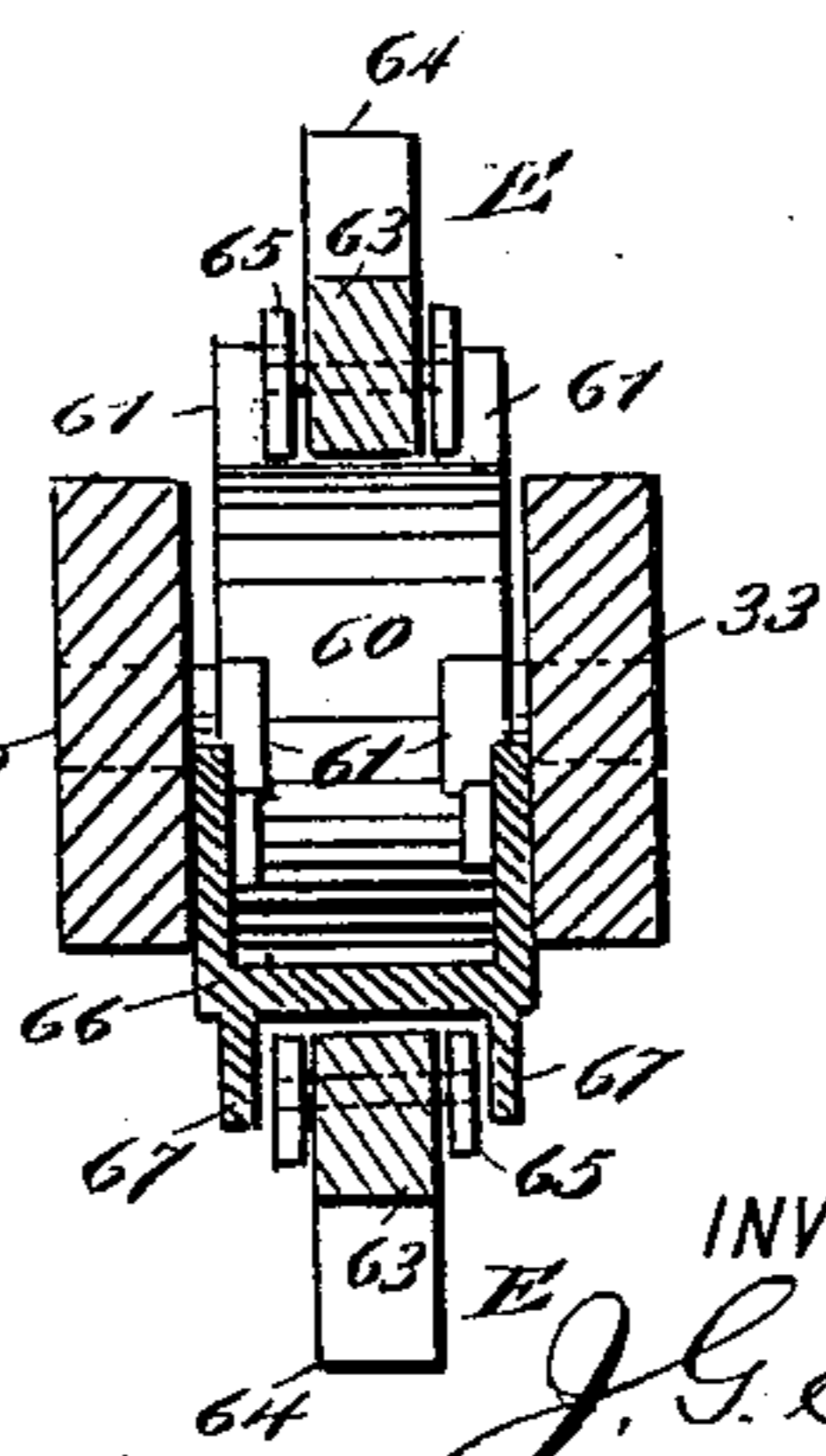
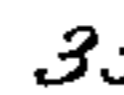
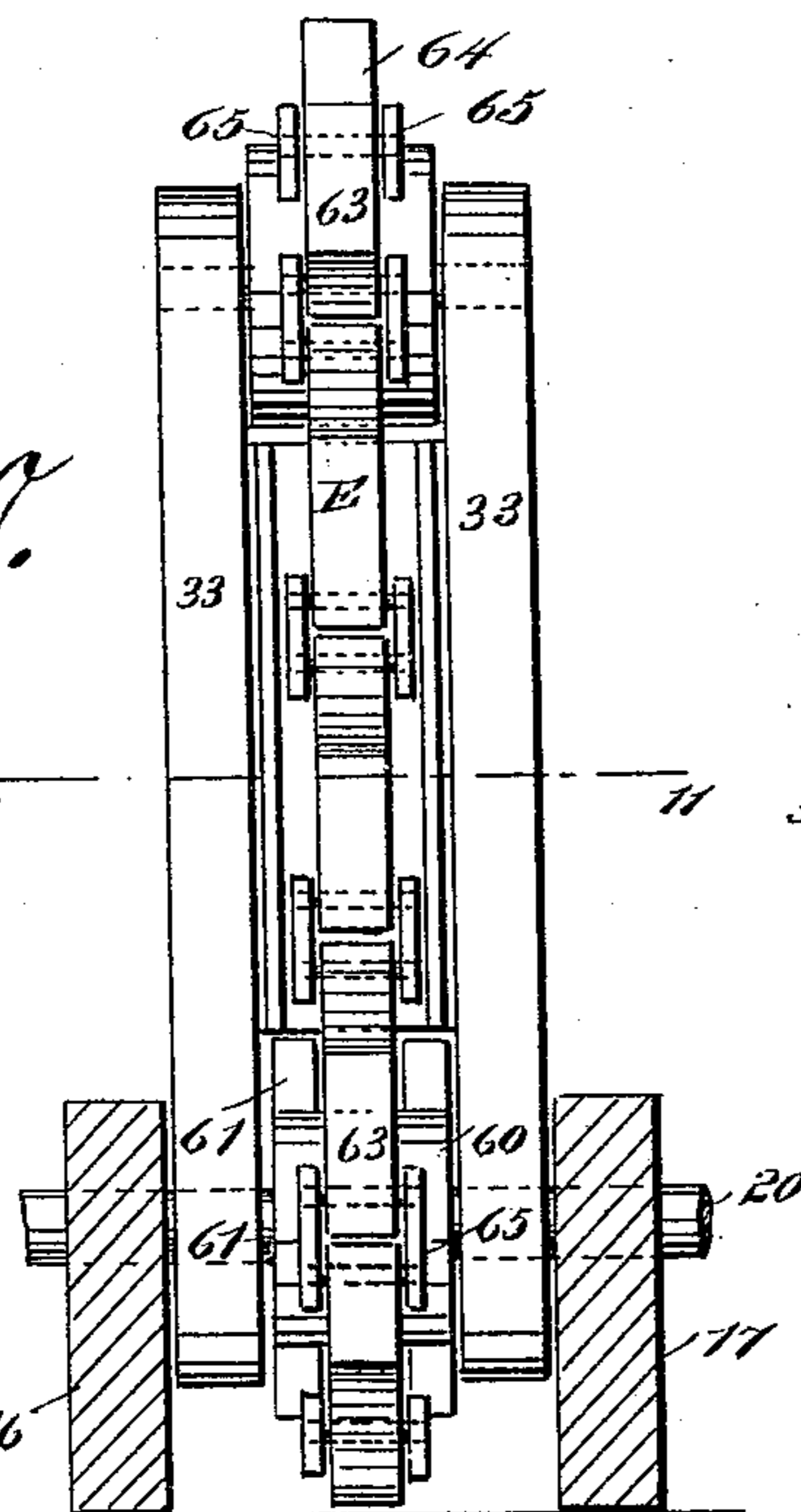
4 Sheets—Sheet 4.

No. 543,757.

Patented July 30, 1895.



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UNITED STATES PATENT OFFICE.

JACOB G. STONER, OF WAYNESBOROUGH, PENNSYLVANIA.

LOG-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,757, dated July 30, 1895.

Application filed November 15, 1894. Serial No. 528,943. (No model.)

To all whom it may concern:

Be it known that I, JACOB G. STONER, of Waynesborough, in the county of Franklin and State of Pennsylvania, have invented a new and Improved Log-Turning Machine, of which the following is a full, clear, and exact description.

My invention relates to a log-turning machine; and it has for its object to provide a machine of this character which will be simple, durable, and economic in construction, and which will be portable and may be applied conveniently and expeditiously to any mill using a circular saw.

A further object of the invention is to provide a means whereby, through the medium of the shifting-levers, the turning device will be automatically brought to an engagement with the log and will so act thereon as to turn it no matter whether the log be resting upon a flat or upon a cylindrical surface, and whereby, further, the mechanism for operating the turning device will be brought into action simultaneously with the carrying of said device to an engagement with the log, and, further, whereby through the medium of their levers, under thorough control of the operator, the shifting device may be restored to its inactive position as quickly and as conveniently as it was carried to working position.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a plan view of the log-turning mechanism applied to a sawmill. Fig. 2 is a side elevation thereof. Fig. 3 is a transverse section taken practically on the line 3 3 of Fig. 2. Fig. 4 is a detail view of the shifting-lever. Fig. 5 is an end view of the machine. Fig. 6 is a section taken practically on the line 6 6 of Fig. 7, illustrating the construction of a friction-clutch employed in elevating and lowering the turning mechanism, the shaft upon which the clutch is mounted, together with the expanding-arms thereof, being in section. Fig. 7 is a section through the clutch

mechanism, showing the shaft in side elevation, the section being taken substantially on the line 7 7 of Fig. 6. Fig. 8 is a view representing a modification in the driving mechanism for the log-turning device. Fig. 9 is a transverse section through the machine, illustrating a modified form of turning device. Fig. 10 is a section taken substantially on the line 10 10 of Fig. 9, and Fig. 11 is a section taken practically on the line 11 11 of Fig. 10.

In carrying out the invention the log-carriage A may be of any approved or of the usual construction, being held to travel upon suitable tracks 10, and the said carriage is provided with the usual head-blocks B and knees C adjustable therein. The saw-mandrel 11 is mounted in suitable bearings and is provided with a fast and loose pulley, designated, respectively, as 12 and 13, and an additional and smaller pulley 14, adapted for driving purposes. The saw 15 is a circular one and is placed in a proper position to enter the log when the latter is placed upon the carriage.

The log-turning mechanism proper is mainly located in a frame, (shown best in Fig. 1,) comprising side beams 16 and 17 and end beams 18 and 19. A shaft 20 is journaled in this frame, carrying at what may be termed its "outer end" a beveled gear 21, and a shaft 22 is journaled in suitable bearings parallel with the outer beams 17 of the said frame, and the shaft has loosely mounted upon it two beveled pinions 23 and 24, meshing with the beveled gear 21, one at each side, and a double clutch 25 is feathered upon the line-shaft 22, being capable of engagement with a clutch-face upon either of the pinions 23 and 24.

The double clutch is manipulated by a link 26, which is connected with it, as shown in Fig. 5, and also connected with a crank-arm 27, mounted upon a rock-shaft 28, sustained in suitable bearings, which shaft at its inner end is pivotally connected with the lower forked end of a hand-lever 29. The lower extremity of the fork-section of the lever 29 has pivoted to it one end of a rod 30, which in its turn at its opposite end is in swivel connection with a shifting-lever 31, mounted upon a suitable stud or standard 32, carried by one of the said side beams of the aforesaid frame.

An auxiliary frame is located practically

within the main frame of the attachment, and the said auxiliary frame may be said to consist of two parallel side bars 33, pivoted at or near one end upon the driven shaft 20.

5 At the opposite or front end of this auxiliary frame a short shaft or mandrel 34 is journaled in the beams or bars 33, extending beyond the outermost side beams 17 of the main frame, as shown in Fig. 1, and upon
10 this shaft or mandrel 34 the log-turning device proper is located, consisting of a spur-wheel 35. (Shown in side elevation in Figs. 3 and 5.)

The shaft 34 is driven from the driven
15 shaft 20, usually through the medium of a small gear 36, secured upon the shaft 20, and a similar gear 37, secured upon the shaft 34, both of these gears being between the bars 33 and an intermediate series of gears 38,
20 connecting the uppermost gears 36 and 37.

Upon the front end of the line-shaft 22 a pulley 39 is secured, whereby said shaft is driven by a belt 40, passed over the pulley 39 and the smaller pulley 14 on the saw-mandrel
25 11. This belt may be tightened whenever necessary through the medium of a tightening-pulley 41, adapted to engage with the lower strand of the belt, the said pulley being mounted to turn upon the crank-arm 41^a, at-
30 tached to a short shaft 42, journaled in suitable bearings on the inner side of the main frame, as shown in Fig. 1, and the shaft 42 at its inner end is provided with a shorter crank-arm 42^a, which, through the medium of
35 a rod 43, is pivotally connected with a crank foot-lever 44, journaled in any approved manner convenient to the hand-lever 29, whereby the operator in manipulating the hand-lever may likewise bring into action the foot-lever.

40 Through the medium of the two gears 23 and 24 the shaft 20 may be turned either to the right or to the left, and in order that the auxiliary frame comprising the beams 33 may be raised and lowered by the action of this
45 shaft 20 a clutch D is employed, operated by the shifting-lever 31. This clutch is shown in detail in Figs. 6 and 7, and comprises a circular casing 45, held to turn freely around the shaft 20 at its inner end, the said casing
50 being connected with the free end of the auxiliary frame, as shown in Fig. 1, through the medium of an arm 46.

Within the circular casing a disk 47 is se-
55 cured to the shaft 20 by means of pins or otherwise, and a series of shoes 48 is made to engage with the inner surface of the casing or drum 45, each shoe being provided with a stem or spindle 49, held to slide in radial openings produced in the disk 47, the lower
60 ends of the spindles or shanks, which are rounded off, being made to enter slots 49^a, extending through the disk or from side to side. The upper or outer walls of the slots are inclined, and the said slots extend into
65 the openings through which the shaft 20 passes.

A ring 51 is held to slide upon the inner

end of the said shaft 20, and this ring is pro-
vided with a series of expanding-arms 52, cor-
responding in number to the number of slots 70
49^a in the disk 47. The expanding-arms slide upon the shaft 20, but their outer edges are inclined. Therefore the arms are substan-
tially wedge-shaped, and when the ring 51 is
forced in direction of the disk the expanding- 75
arms will have wedge-like action on the shanks of the shoes 48 and will force said shoes outward to frictional engagement with the casing or drum 45, whereas when the ring 51 is carried away from the disk the brake- 80
shoes are carried out of engagement with the casing and the said shoes turn free of the casing. The ring 51, carrying the expanding arms, is operated through the medium of the
shifting-lever 31, heretofore referred to, the 85
said lever being directly connected with said ring.

In Fig. 8 I have illustrated a slight modifi-
cation in the manner of driving the turning
wheel or spur 35, and this form of driving 90
mechanism is preferably used when the aux-
iliary frame or that carrying the spur must be of great length. In this event the frame consists of two side pieces 53, connected by
cross-bars 54. The shaft 20 is provided with 95
a beveled gear 55, which meshes with a like gear 56, secured upon a shaft 57, journaled longitudinally in the frame, the said shaft at its opposite end being provided with a second
beveled gear 58, and this gear is made to mesh 100
with a corresponding gear 59 on the spur-shaft 34.

The operation is as follows: When it is de-
sired to turn the log the hand-lever is moved
outward, rocking thereby the shaft 28 and 105
throwing the clutch 25 into engagement with the inner beveled gear 23. At the same time the hand-lever is moved in direction of the main frame, thereby bringing the expanding arms into play upon the shoes of the clutch, 110
forcing said shoes against the periphery of the casing. The shaft 20 being rotated will cause the clutch to act to carry the auxiliary frame upward and in direction of the log, as
shown in Fig. 5, and the spur-wheel being 115
rotated meanwhile will engage with the log and will proceed to turn it. As soon as the spur-wheel is brought in engagement with the log the hand-lever is moved away from the main frame, disconnecting the friction- 120
clutch from the shaft 20, and when the spur enters the log it will continue to engage with the log and turn it until purposely removed therefrom. When the log has been turned a
proper distance the hand-lever is moved in 125
a contrary direction, throwing the double clutch 25 in engagement with the outer gear 24, and the hand-lever is again moved in direction of the main frame to bring the friction-clutch into action. Consequently the 130
shaft 20 will be revolved in a contrary direction, and, through the medium of the friction-clutch, the auxiliary clutch, with its spur, will be carried to a position of inactivity or to a

bearing upon the main frame. The hand-lever is finally carried to a vertical position, which will bring the double-faced clutch between the two gears 23 and 24 and out of engagement with both, and consequently the attachment is ready to be brought into action when again required.

In Figs. 9, 10, and 11 I have illustrated a modified form of the turning device—a form which will adapt itself to any size of log. Under this construction, instead of the spur-wheel 36, heretofore described as being secured upon the drive-shaft 20 within the auxiliary frame 33, a wheel 60 is substituted, containing but a few teeth 61, and these are formed in pairs upon the periphery of the wheel, as shown in Fig. 10, and upon the shaft 34 in this auxiliary frame, instead of the gear 37 a plain drum 62 is mounted, and the wheel 60 and drum 62 are made to carry a shifting-chain E. This chain consists of a series of links 63, each provided at one end with a spur 64. The links are preferably made solid, and are pivotally connected by plates 65, located at opposite sides of their opposing ends, the spur of one link being next to the plain end of the adjoining link, as shown best in Fig. 9. The abutting ends of the links are straight, except at their inner sides, where they are rounded off, in order that they may readily pass over the wheel 60 and the drum 62, and since the major portion of the abutting ends of the links are straight, as heretofore stated, when the spurs are brought in engagement with a log to turn the same the links virtually form a solid bar, since they are incapable of yielding. The links on their upward passage pass over a guide-plate 66, secured to the sides of the auxiliary frame 33, as shown in Figs. 9 and 11, and this guide-plate is provided at its sides with flanges 67, (particularly shown in Fig. 11,) and under this construction it will be observed that the chain cannot have lateral movement. In the operation of this form of the device the spurs 64 present themselves successively to the log, enter the same, and keep it revolving in proper time, since the spurs are located a predetermined distance apart, and a turning device of this description, it is obvious, will accommodate itself to a log of any size or to a log that is exceedingly irregular, as well as one that is symmetrical in cross-section.

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

1. In a log turning attachment the combination of a rotatively mounted machine shaft, means for driving the same in opposite directions, said means comprising a counter shaft and reversing gear adapted to communicate the movement thereof to the machine shaft, a frame loosely hung on said machine shaft, a rotating spur turner carried by the frame, means for driving said spur turner, and a clutch mechanism for connecting the frame to the machine shaft, whereby the frame is

swung on its pivot to bring the spur turner into and out of operative position, substantially as set forth.

2. In a log turning attachment, the combination of a rotatively mounted shaft, a frame pivotally mounted thereon, means for locking said frame to the said shaft whereby the frame is turned on its pivot, a spur turner on the frame adapted to engage the log, and means for driving said turner from said shaft, substantially as set forth.

3. In a log turning attachment, the combination of a rotatively mounted shaft, a clutch device mounted thereon, a frame loosely pivoted on the shaft and connected to the loose member of said clutch-device, a spur turner mounted on the frame and adapted when the same is swung on its pivot to engage the log to be turned and means for actuating said spur turner, substantially as set forth.

4. In a log-turning attachment for saw mills, the combination, with a pivoted frame, a rotary spur turner carried by the said frame, a driven shaft, and a driving connection between the driven shaft and the spur turner, of a gear secured upon the driven shaft, a line shaft, pinions loosely mounted upon the line shaft and engaging with the said gear on the driven shaft, a double clutch adapted for engagement with either pinion, a shifting device connected with said clutch, and a friction clutch likewise located on the driven shaft and connected with the said frame, as and for the purpose set forth.

5. In a log-turning attachment for saw mills, the combination, with a line shaft having reversing gears, a clutch controlling the same, a shaft driven from the gears of the line shaft, a pivoted frame, a rotary spur turner, and a driving connection between the driven shaft and the said spur, of a friction clutch carried by the driven shaft and connected with the said spur-carrying frame, a shifting lever, and a connection between the shifting lever, the friction clutch and the shifting clutch on the line shaft, all operated substantially as shown and described.

6. The combination, with a shaft, means for rotating the same, a pivoted frame, and a rotary log-turning device carried by the said frame, of a clutch, the same consisting of a casing or drum, loosely mounted on the shaft and connected with the said frame, a disk secured to the shaft, shoes held for engagement with the periphery of the drum or casing and provided with spindles entering openings in the disk, expanding arms having a wedge shape, adapted for engagement with the inner end of the spindles and held to slide upon the said shaft, and means, substantially as described, for operating the said expanding arms, as and for the purpose set forth.

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Witnesses:

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