

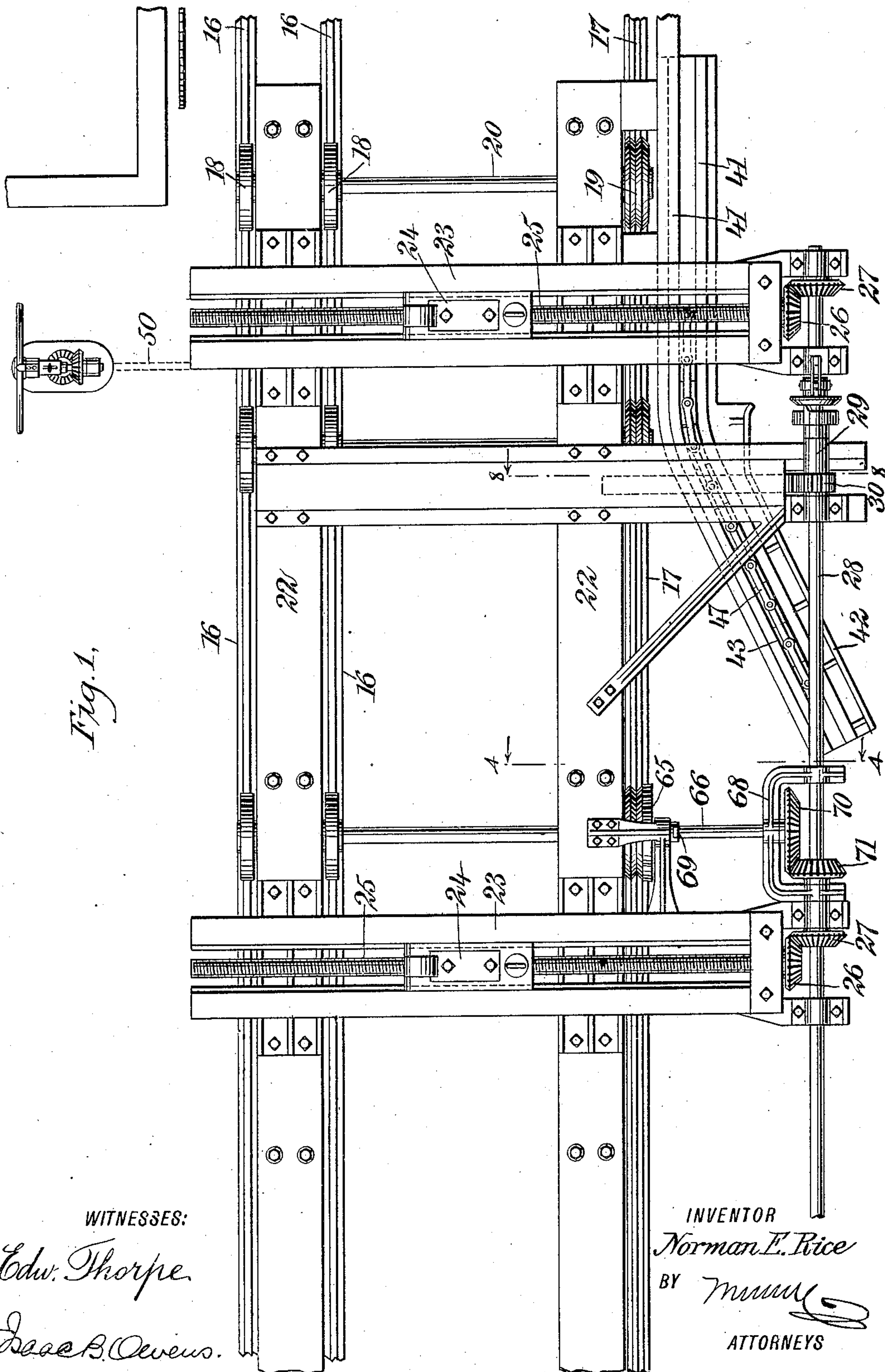
No. 877,662.

PATENTED JAN. 28, 1908.

N. E. RICE.  
SAWMILL SET WORKS.

APPLICATION FILED FEB. 10, 1905.

4 SHEETS—SHEET 1.



WITNESSES:

*Edw. Thorpe*

*Isaac B. Owens*

INVENTOR

*Norman E. Rice*

BY

*Wm. M. Rice*

ATTORNEYS

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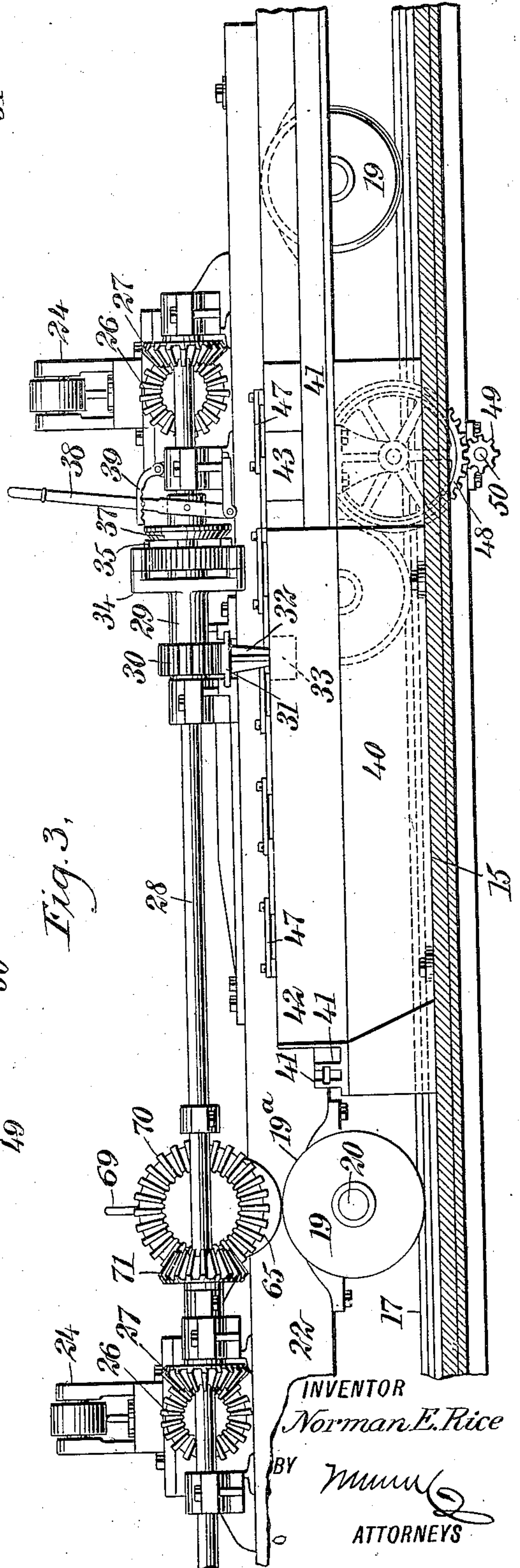
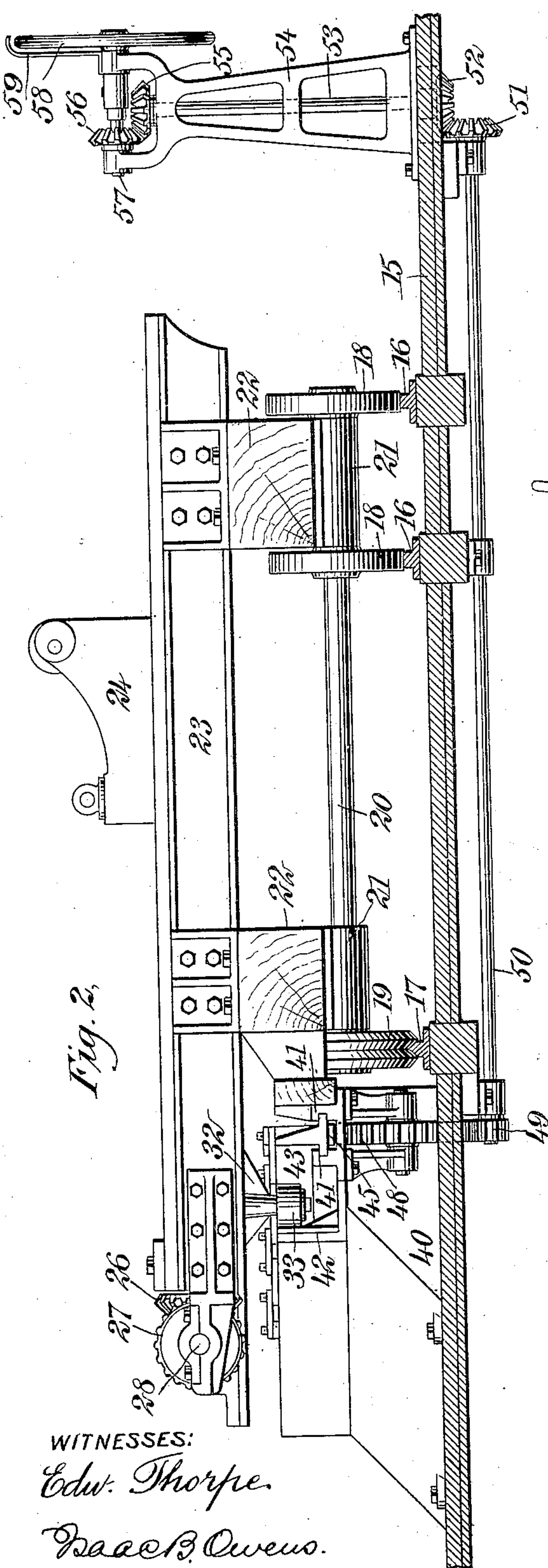
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WITNESSES:

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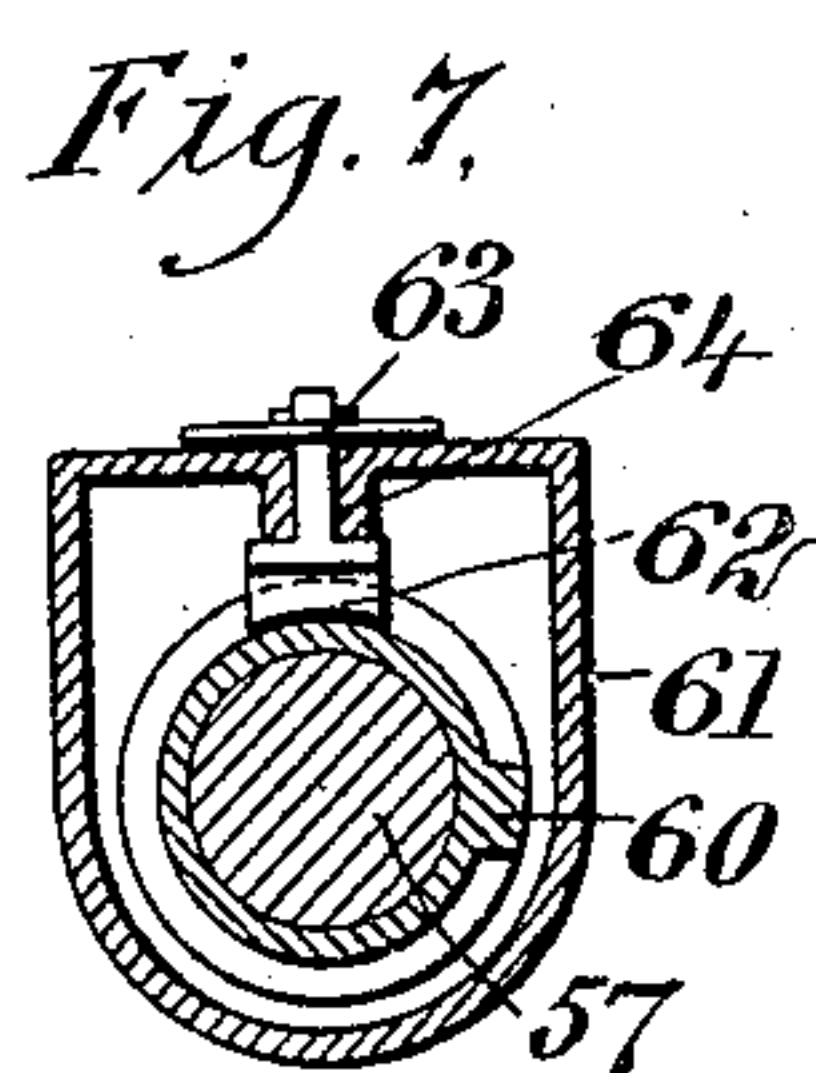
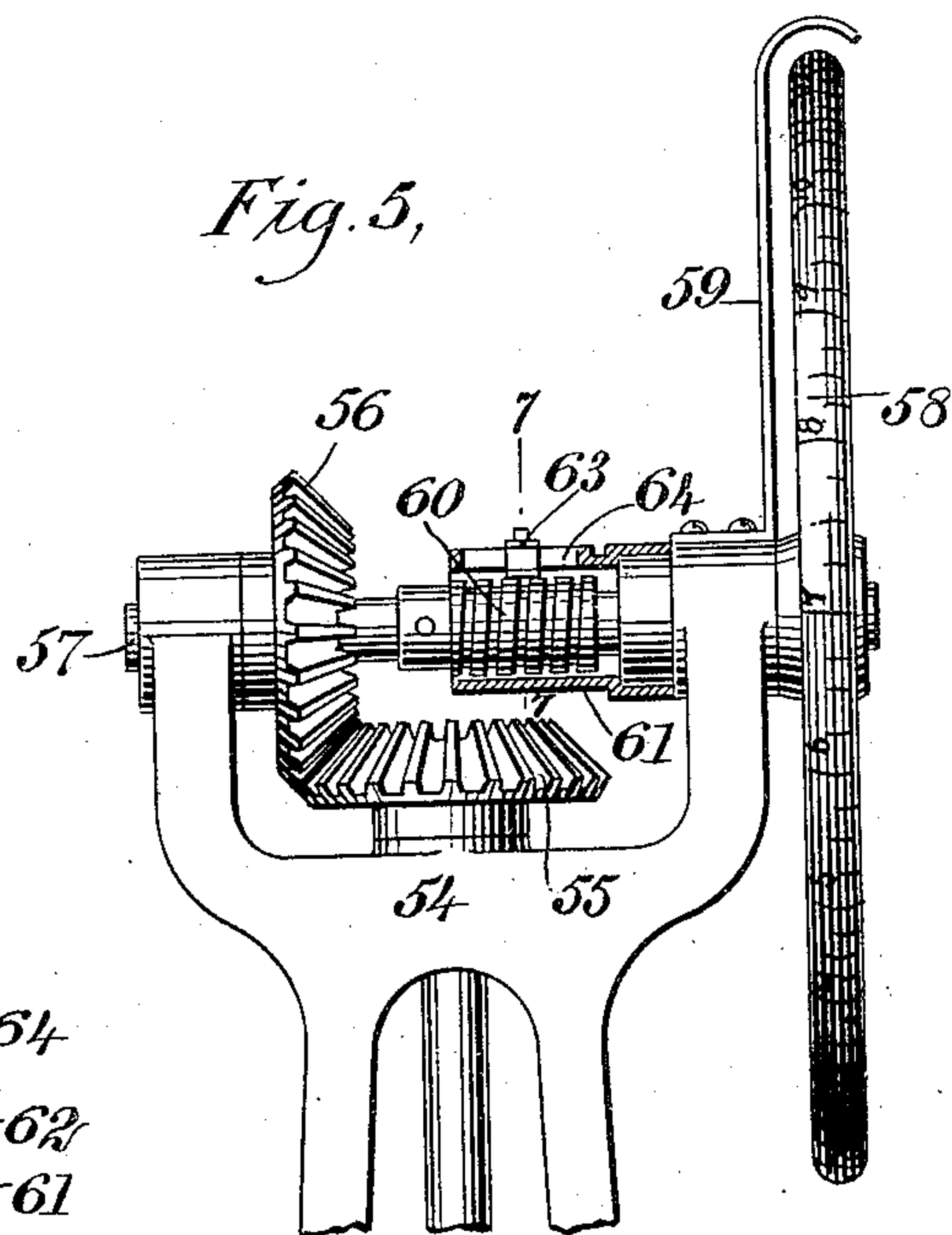
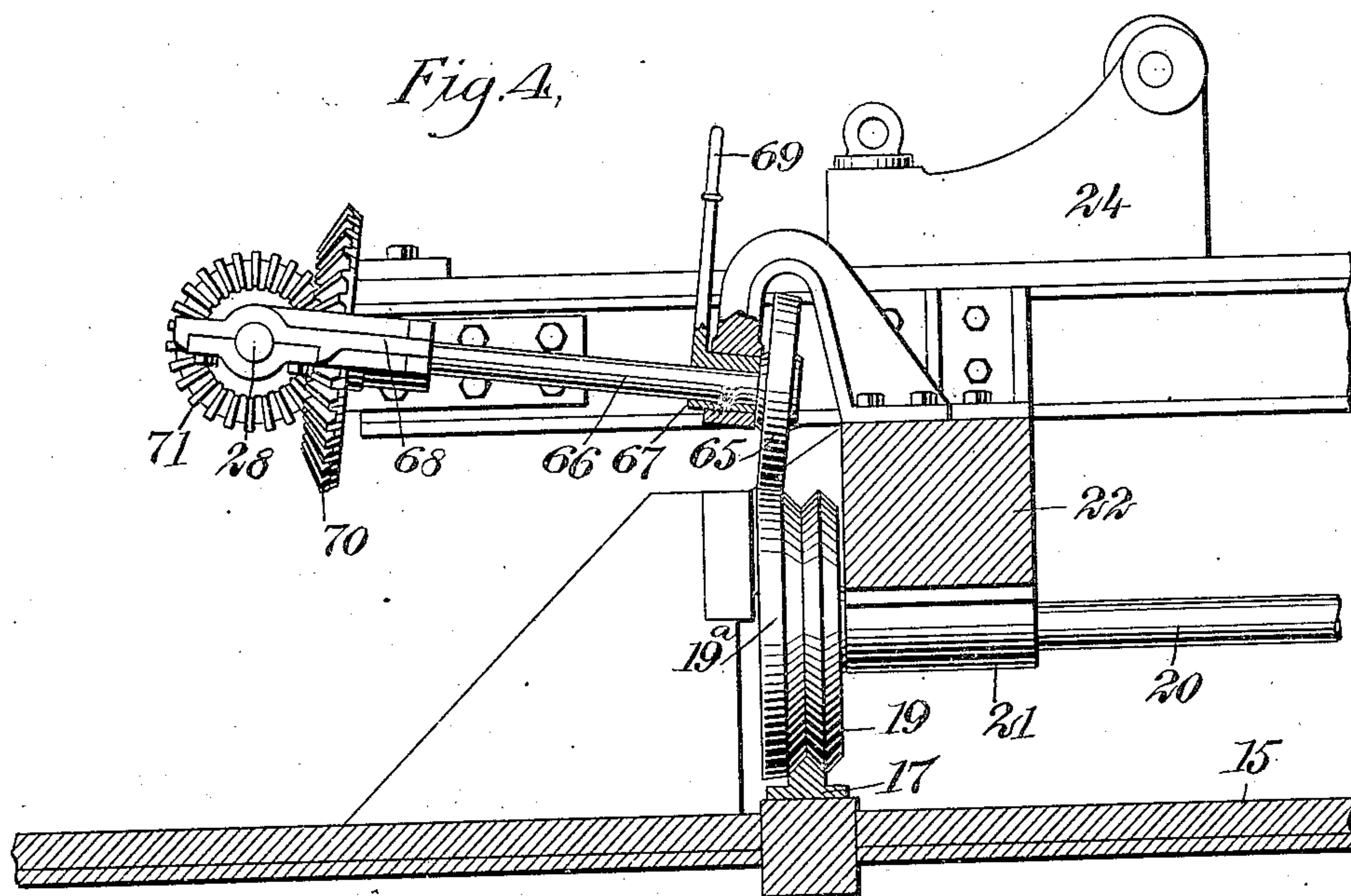


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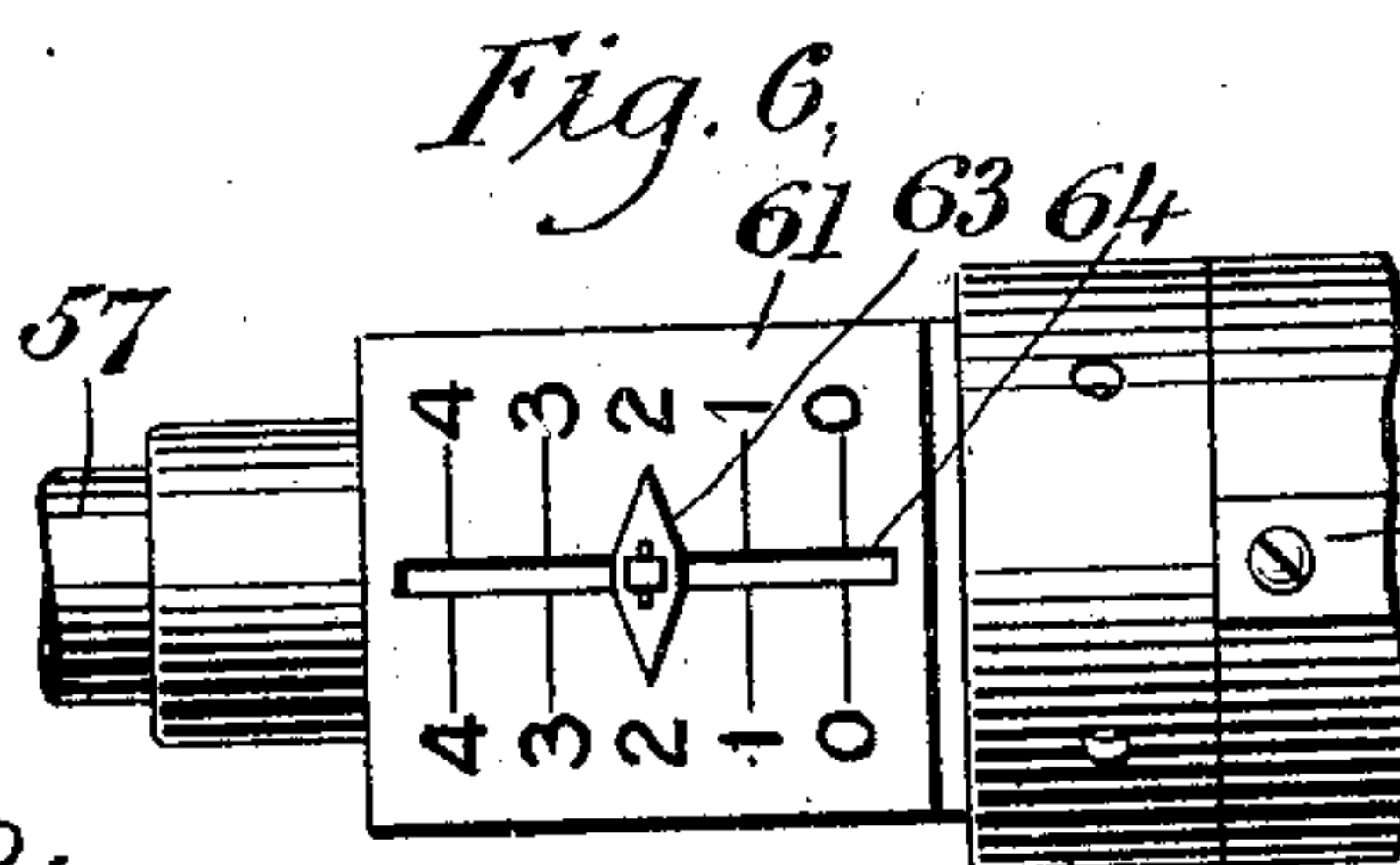
4 SHEETS—SHEET 3.



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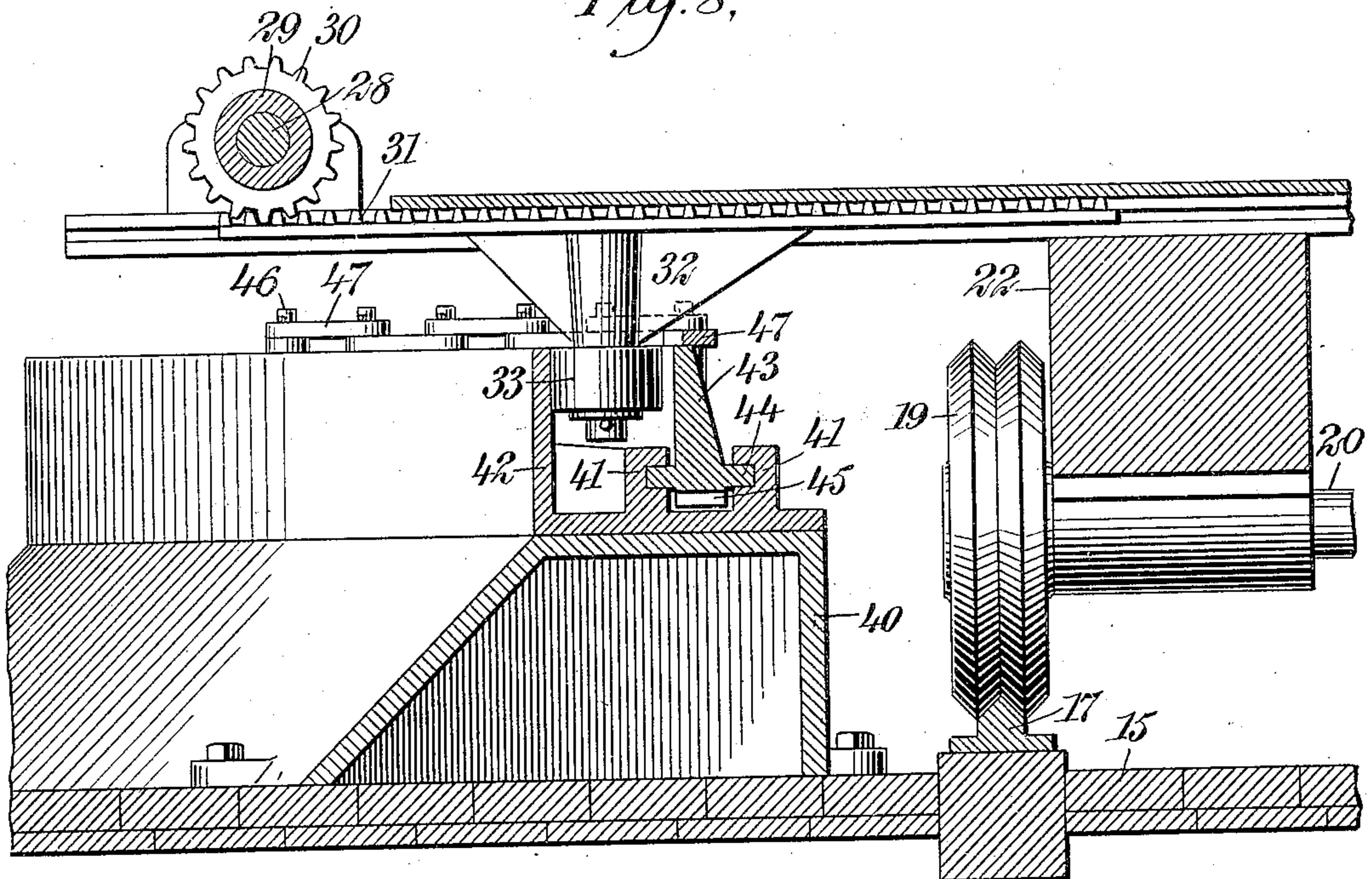
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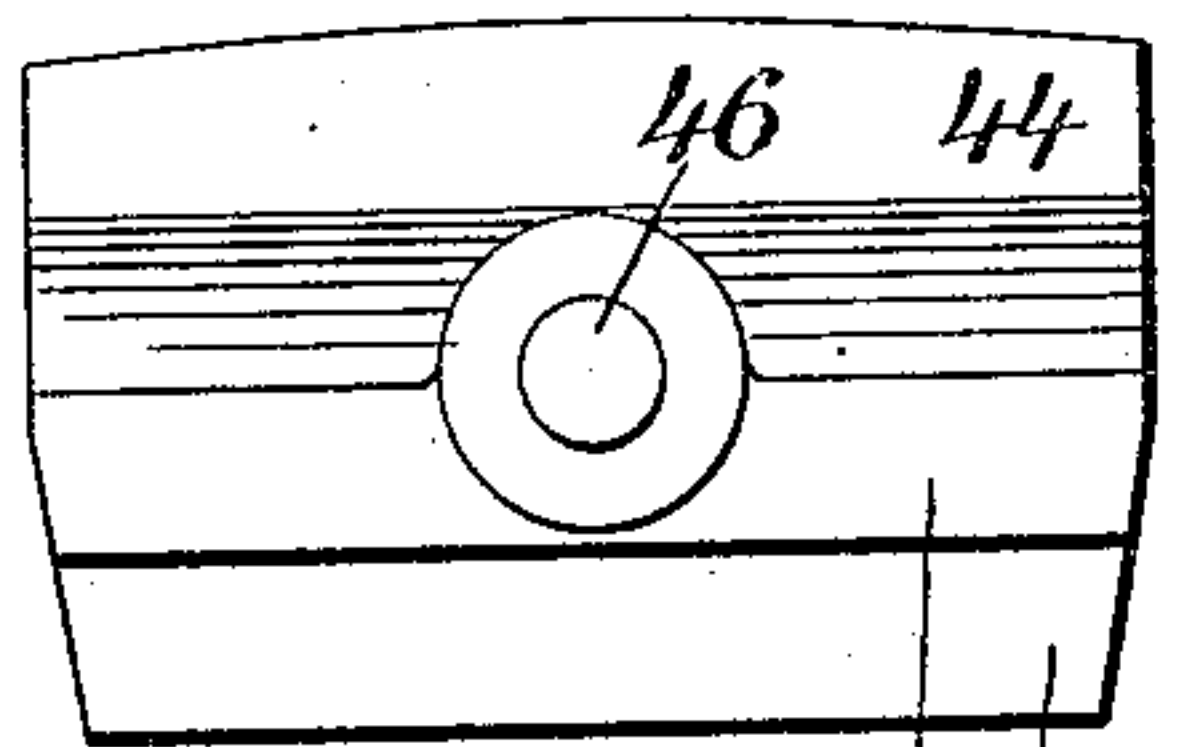
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4 SHEETS—SHEET 4.

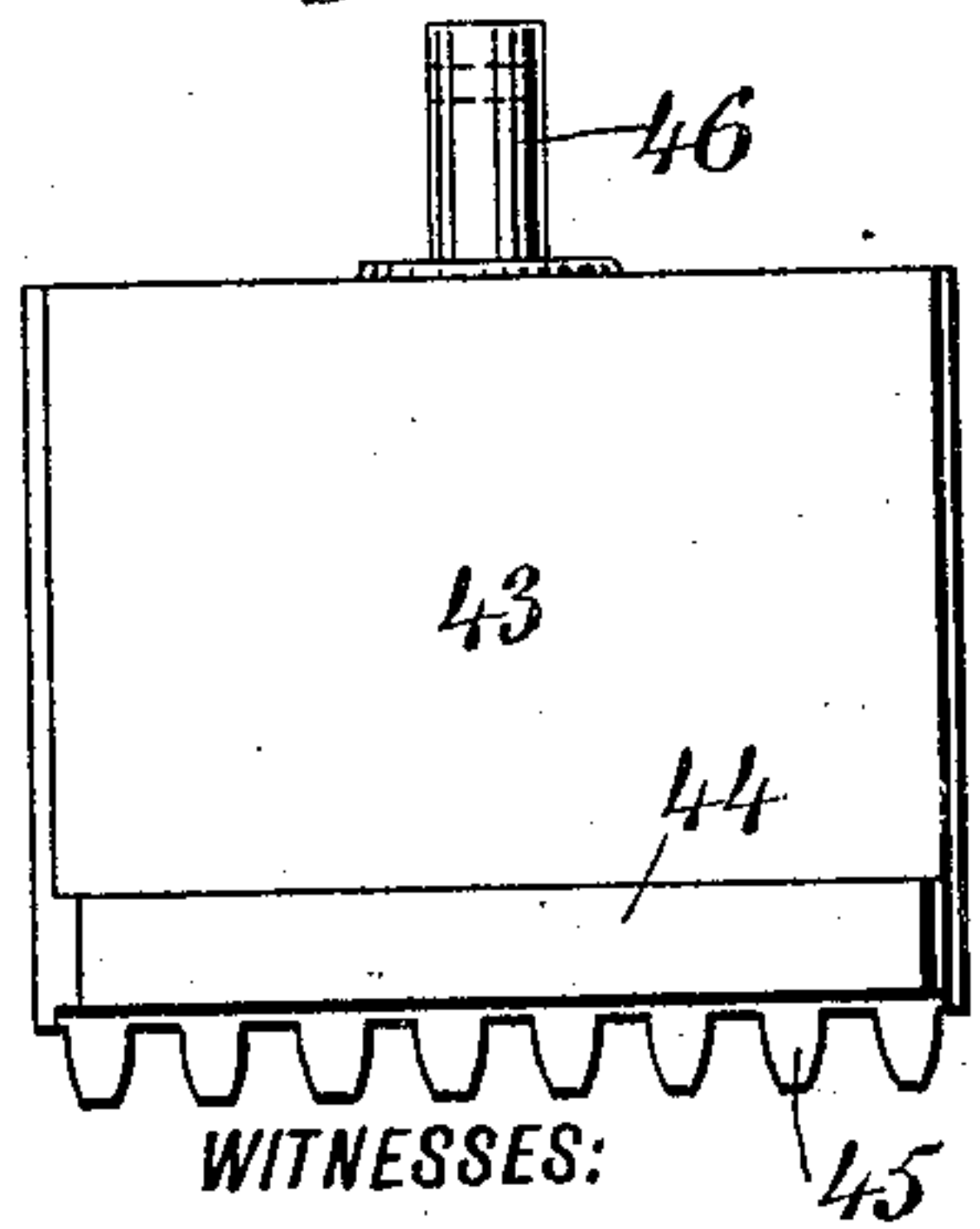
*Fig. 8.*



*Fig. 9.*



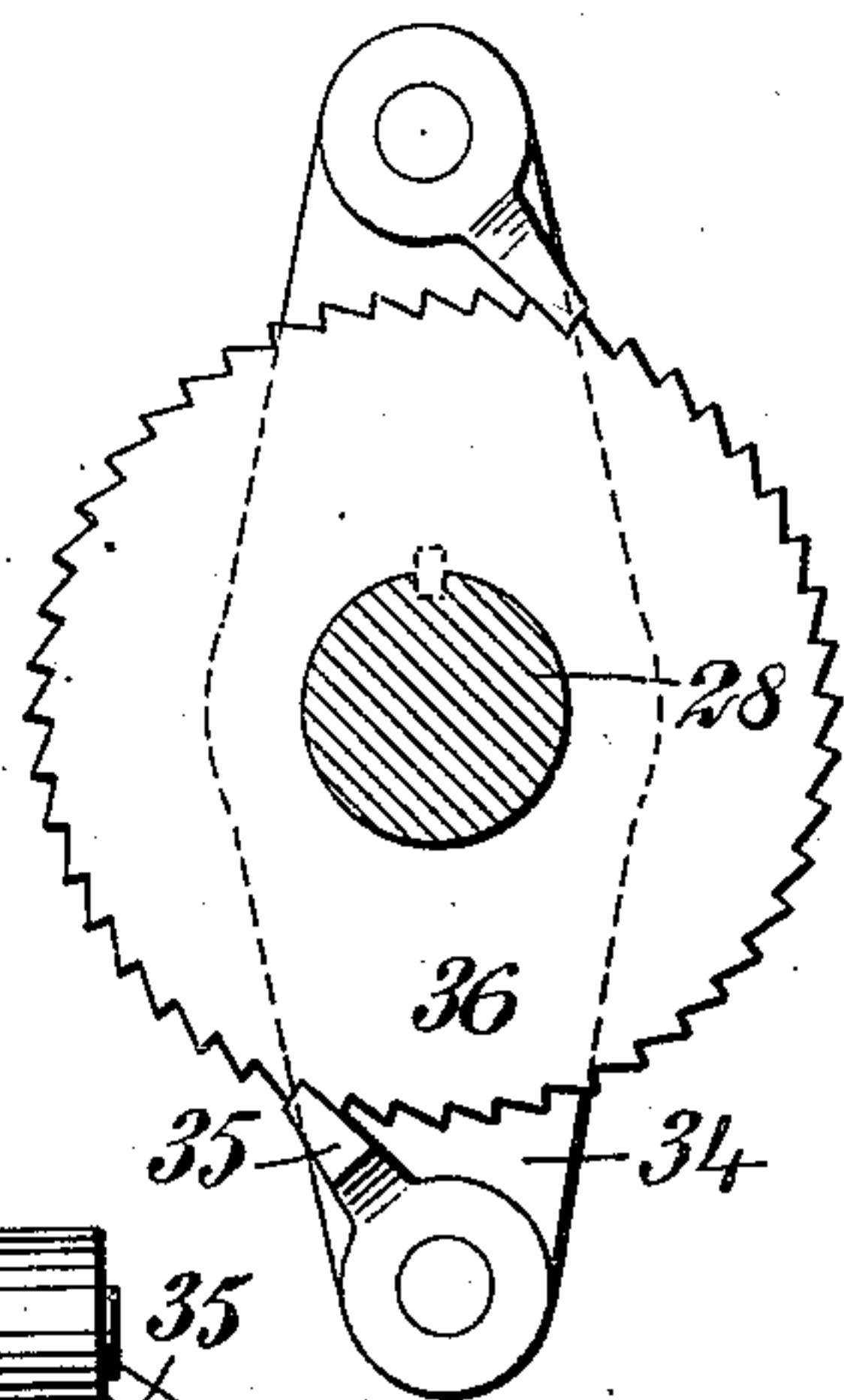
*Fig. 10.*



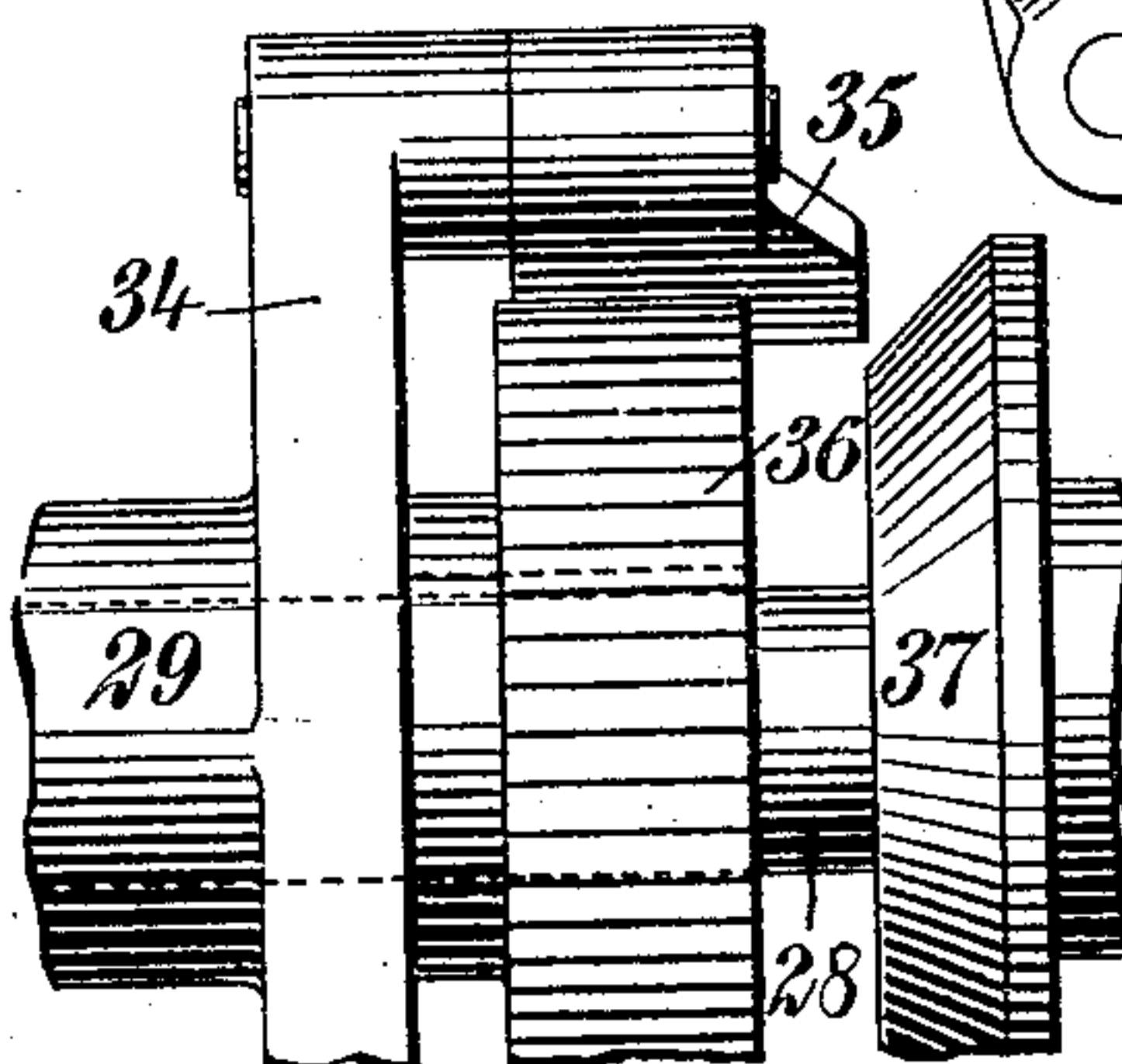
*Edward Thorpe*

*Robert B. Owens*

*Fig. 11.*



*Fig. 12.*



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# UNITED STATES PATENT OFFICE.

NORMAN EARL RICE, OF ZENIA, CALIFORNIA.

## SAWMILL SET-WORKS.

No. 877,662.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed February 10, 1905. Serial No. 245,045.

*To all whom it may concern:*

Be it known that I, NORMAN EARL RICE, a citizen of the United States, and a resident of Zenia, in the county of Trinity and State of California, have invented a new and Improved Sawmill Set-Works, of which the following is a full, clear, and exact description.

The principal object of my invention is to provide improved means for enabling the sawyer or person controlling the movement of the carriage in a saw mill also to control the set works in such a way that the sawyer may, without the assistance of another person, set the knees so that the mill will make a cut of any desired thickness. To this end I employ a peculiar adjustable mechanism for advancing the knees any desired extent, which is combined with an operating device and indicator located in such a position that it may be readily actuated by the sawyer without interfering with his other duties.

The invention involves various other features of major or minor importance, and all will be set forth hereinafter and pointed out in the claims.

Reference is to be had to the accompanying drawings which illustrate as an example the preferred embodiment of my invention, in which drawings like characters of reference indicate like parts in the several views, and in which

Figure 1 is a plan view showing part of the saw mill carriage, and illustrating two head blocks with means for adjusting and controlling the same; Fig. 2 is an end elevation of the devices shown in Fig. 1; Fig. 3 is a side elevation of the same; Fig. 4 is a sectional elevation on the line 4—4 of Fig. 1; Fig. 5 is an enlarged detail view of the operating wheel and indicator; Fig. 6 is a plan view of the same; Fig. 7 is a detail section on the line 7—7 of Fig. 5; Fig. 8 is a sectional elevation on the line 8—8 of Fig. 1; Fig. 9 is a plan view of one of the sections of the members of the sectional setting rack; Fig. 10 is a side view of said member; Fig. 11 is an elevational view showing the ratchet and pawl, and the yoke for operating the set shaft; Fig. 12 is a fragmentary side elevation of these parts, also showing the beveled disk or collar for throwing the ratchets out of action.

As shown best in Figs. 2, 3, 4 and 8, the bed 15 on which the mill is erected carries tracks 16 and 17 on which run the wheels 18 and 19 of the carriage. The track 17 is preferably V-shaped, as shown, and the wheels

19 running on this track have correspondingly formed treads to hold the carriage in position. Said wheels 18 and 19 are mounted on axles 20 which run in boxes 21 attached to the sills 22 of the carriage. The sills 22 support the transverse guides 23 in which the knees 24 are mounted to slide, all of which is usual, as will be understood from the prior art. Mounted on the carriage and one for each guide 23, is a rotating screw 25. These screws have bevel gears 26 attached thereto and are in mesh with corresponding gears 27 attached to the set shaft 28. The set shaft 28 is mounted to turn on the carriage and extends longitudinally thereof. The screws 25 have threaded engagement with their respective knees so that upon rotating the screws the knees will be advanced or retracted, as desired.

Mounted loosely on the shaft 28 is a sleeve 29 which carries a spur gear 30 in mesh with a rack 31. This rack slides transversely of the shaft 28, and is suitably mounted in a part of the carriage. Projecting from the under side of the rack 31 is a bracket 32 carrying a roller 33 (see Fig. 8). Through the medium of this roller 33, as will hereinafter fully appear, the rack 31 is caused to slide in its bearing, and in this manner rotating movement is imparted to the sleeve 29. The sleeve 29 carries a yoke 34, and this yoke is provided with pawls 35 which coact with a ratchet wheel 36 keyed to the shaft 28. When, therefore, the sleeve 29 is turned in one direction it rotates the shaft 28, through the medium of the parts 34, 35 and 36, but when the sleeve is turned in the opposite direction the pawls run idly over the face of the ratchet. The pawls 35 may be rendered inactive and the sleeve 29 and its connections thrown out of action whenever desired by means of the tapering disk or collar 37 which is loosely mounted on the shaft 28 adjacent to the ratchet 36 and connected to a hand lever 38. 39 indicates a latch bar for holding the hand lever in the desired position. By throwing the tapering disk 37 into engagement with the pawls 35 said pawls are moved outward and disconnected from the ratchet so that the rotation of the sleeve 29 does not affect the shaft 28, and conversely so that the shaft may be turned at will without interfering with the mobility or immobility of the sleeve.

Mounted on a suitable support 40, itself sustained on the bed 15, is a track formed of



two opposing guide members 41. Said guide members 41 parallel each other, and as shown best in Fig. 1 extend parallel with the track 17 for a certain part of the length of the guide members, and then the guide members turn and extend diagonally away from the line of said track 17 and consequently away from the line of movement of the saw mill carriage. Extending parallel with the diagonal portions of the guide members 41, and at one side thereof, is a wall or flange 42. The track formed by the guide members 41 serves to carry the setting rack which is formed of a number of sections 43, best shown in Figs. 9 and 10. Said sections 43 are in the form of blocks having flanges 44 running in the guides 41, and having rack teeth 45 formed on their under surfaces. Pins 46 project from the upper sides of the blocks 43, and said pins are connected by links 47 which join the several blocks into a chain-like structure, the blocks fitting snugly together so that their lower surfaces form a continuous rack. The blocks project above the guides 41 alongside of the flange or wall 42, and they form a flange or wall lying opposite the wall or flange 42. It will be observed that this setting rack or wall formed of the blocks 43 may be adjusted in the track provided by the guides 41, so that the left hand end of the setting rack (referring to Fig. 1) may be made to occupy any desired position along the inclined or diagonal part of the track 41.

The before described roller 33 coacts with the flange 42 and the setting rack 43, as shown in Fig. 8, the roller running between these parts, and on the re-setting movement of the carriage said roller engages the setting rack which serves to move the roller and to push the rack 31 outward, and on the return or cutting movement the roller engages the flange or wall 42 which thereby returns the roller and rack 41 to their former position.

The setting rack or flange is adjusted as shown best in Fig. 2 by means of a spur gear 48 meshed with the teeth 45 and suitably mounted under the track 41. Said spur gear 48 is driven from a pinion 49 located below the bed 15 and attached to a shaft 50 which extends transversely under the carriage to a point adjacent to the sawyer's station. At this point the shaft 50 terminates. A bevel gear 51 is secured to this end of the shaft, and this gear is in mesh with a corresponding gear 52 attached to a vertical shaft 53 which rises from the bed and is supported on a suitable pedestal 54. The upper end of the shaft 53 is connected by gears 55 and 56 with a shaft 57 mounted horizontally in the upper extremity of said pedestal. This shaft has a hand wheel 58 attached thereto by means of which the shaft may be turned imparting rotary movement to the shaft 53, and from said shaft to the shaft 50 and gear 48 so as

to move the setting rack to any desired position on its guiding track.

59 indicates an indicator or pointer which is attached to the pedestal 54 and projects in proximity to the periphery of the wheel 58, and by suitably numbering the periphery of the wheel as shown in Fig. 5, the exact extent to which the wheel is turned may always be noted. The shaft 57 carries a screw 60 around which a box 61 is arranged. The screw turns with the shaft and the box is secured in the pedestal. A section 62 of a nut (see Fig. 7) engages the screw 60, and said nut section 62 has a pointer 63 attached thereto. This pointer runs in a slot 64 in the box 61, and as shown best in Fig. 6 the box is provided with graduations, with which the pointer 63 coacts. The parts are so proportioned that the graduations in the box 61 read in connection with the pointer 63 will indicate the exact width of the cut to which the carriage is adjusted. The sawyer, therefore, after the cut has been made and when he desires to change the thickness of the cut, should operate the wheel 58, noting the position of the wheel and the position of the pointer 63 so as to secure the correct adjustment. This operation of the hand wheel 58 causes the setting rack to be shifted along the guide track 41 to a position which corresponds to the extent to which the hand wheel has been moved. The further outward the setting rack is moved in the diagonal portion of the guide members 41, the longer will the roller 33 be engaged with the setting rack upon the receding movement of the carriage, and consequently the greater will be the movement imparted to the sliding rack 31. This movement imparted to the rack 31 causes the sleeve 29 to be rotated, and from said sleeve rotary movement is imparted to the set shaft 28 causing the screws 25 to be operated and advancing the knees proportionate to the action of the sawyer by the operation of the hand wheel 58. Upon the return movement of the carriage, the roller 33 strikes the flange or wall 42 and the rack 31 is returned to its first position. This return movement does not, however, affect the set shaft owing to the ratchet 36 and pawls 35 which allow free idle movement of the sleeve 29 upon the return movement of the carriage. Upon the next receding movement of the carriage, the above described operation will be repeated and the knees advanced to the same extent as before, provided no change is made by the sawyer in the position of the wheel 58. The sawyer may, however, readily and at will increase or diminish the thickness of the cut by the forward or backward movement of the hand wheel.

As shown best in Fig. 4, one of the carriage wheels 19 may be provided with a friction surface 19<sup>a</sup>, and coacting with this is a



friction wheel 65. Said wheel is attached to a shaft 66 which is mounted at its inner end in an eccentric 67 and at its outer end in a yoke 68 which is allowed a slight rocking movement around the shaft 28. The eccentric 67 is provided with a handle 69 facilitating the operation of the eccentric, and by this means the friction wheel 65 may be engaged with or disengaged from the friction surface 19<sup>a</sup> of the wheel 19. The shaft 66 is connected with the set shaft 28 by means of bevel gears 70 and 71. These devices furnish a means for adjusting the knees either forward or backward, as desired, and to effect this the tapered or cone-shaped disk 37 should be operated to render the pawls 35 inactive, and the eccentric 67 should be operated to throw the friction wheel 65 into engagement. Then as the carriage is moved in one direction or the other rotary movement is imparted to the set shaft 28, and from the set shaft the knees operating screw and consequently the head blocks, may be operated to move the knees into any position desired. During the ordinary operation of the saw mill the eccentric 67 is so adjusted as to disengage the friction wheel 65 from the friction surface 19<sup>a</sup>.

It will be observed that this invention not only allows the sawyer quickly and easily to adjust the thickness of the cut but it dispenses with at least one man, who according to the practice now commonly followed is employed to operate the set works, and who works under instructions from the sawyer. The device is entirely automatic except for the adjustment of the hand wheel 58, and as long as the thickness of the cut is not to be changed no movement on the part of the sawyer is required.

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

1. The combination of a saw mill carriage and a knee adjustable thereon, of means on the carriage for adjusting the knee, a guide mounted independently of the carriage and disposed diagonally to the line of movement thereof, and a setting rack carried by the guide and adjustable along the same, said setting rack serving to actuate the said means for adjusting the knee.

2. The combination with a saw mill carriage and a knee adjustable thereon, of means on the carriage for adjusting the knee, a guide having a turn therein, the guide being mounted independently of the carriage, and a setting rack comprising a number of articulated sections in slidable engagement with the guide and adapted to actuate said means for adjusting the knee.

3. The combination with a saw mill carriage and a knee adjustable thereon, of means on the carriage for adjusting the knee, a guide having a turn therein, the guide

being mounted independently of the carriage, a setting rack comprising a number of articulated sections in slidable engagement with the guide and adapted to actuate the said means for adjusting the knee, and a gear for actuating the said setting rack, the sections of such setting rack having teeth thereon engaged by the teeth of the gear.

4. The combination with a saw mill carriage and a knee adjustable thereon, of a part in connection with the knee to move the same, a guide mounted independently of the carriage and having a turn therein, and a setting rack composed of a number of articulated sections in slidable engagement with the guide, said setting rack being adapted to be engaged by said part having connection with the knee, for the purpose specified.

5. The combination with a saw mill carriage and a knee adjustable thereon, of a part in connection with the knee to move the same, a guide mounted independently of the carriage and having a turn therein, and a setting rack composed of a number of articulated sections in sliding engagement with the guide, said setting rack being adapted to be engaged by said part having connection with the knee, for the purpose specified, the sections of said setting rack having gear teeth thereon, and an operating gear meshed with the teeth to permit the adjustment of the said setting rack.

6. The combination with a saw mill carriage and a knee adjustable thereon, of a part having connection with the knee to move the same, a guide having a turn therein, and a setting rack mounted to slide in the guide and composed of a number of blocks or sections with links articulating them to each other, said setting rack being adapted to be engaged by the said part in connection with the knee, for the purpose specified.

7. The combination with a saw mill carriage and a knee adjustable thereon, of a part having connection with the knee to actuate the same, a guide mounted independently of the carriage and having a turn therein, a setting rack slidable in the guide and composed of a number of sections with links pivotally connecting them, the links being located at the upper sides of the sections, and the lower sides of the sections being provided with teeth, said setting rack being arranged to be engaged by said part in connection with the knee, for the purpose specified, and an operating gear meshed with the teeth of the said sections to permit adjustment thereof.

8. The combination with a saw mill carriage and a knee adjustable thereon, of a part having connection with the knee to move the same, a wall mounted independently of the carriage and extending diagonally to the line of movement thereof, a guide



extending parallel with the wall, and a setting rack adjustable in the guide, said part connected with the knee being arranged to turn between the setting rack and wall, for  
5 the purpose specified.

9. The combination with a saw mill carriage and a knee adjustable thereon, of a wall mounted independently of the carriage and extending diagonally to the line of movement thereof, a guide having a bend therein,  
10 a part of the guide running parallel to the wall, and a setting rack composed of a

number of articulated sections adjustable along the guide, the said part in connection with the knee being arranged to run between  
15 the setting rack and flange, for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NORMAN EARL RICE.

Witnesses:

VICTOR HOPE,  
E. M. DURNFORD.