

S. P. PICKETT & L. D. SANDERS.
PUMP OPERATING MECHANISM.
APPLICATION FILED MAR. 28, 1908.

903,312.

Patented Nov. 10, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

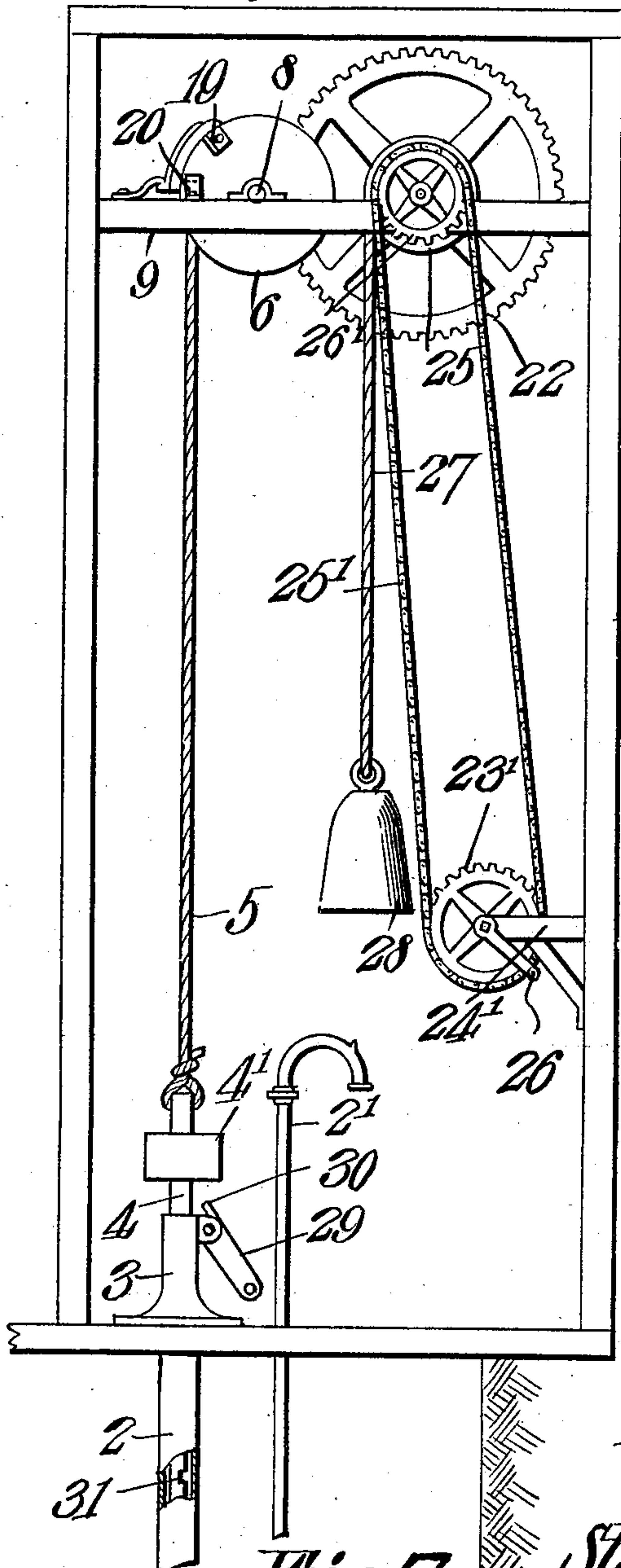


Fig. 2.

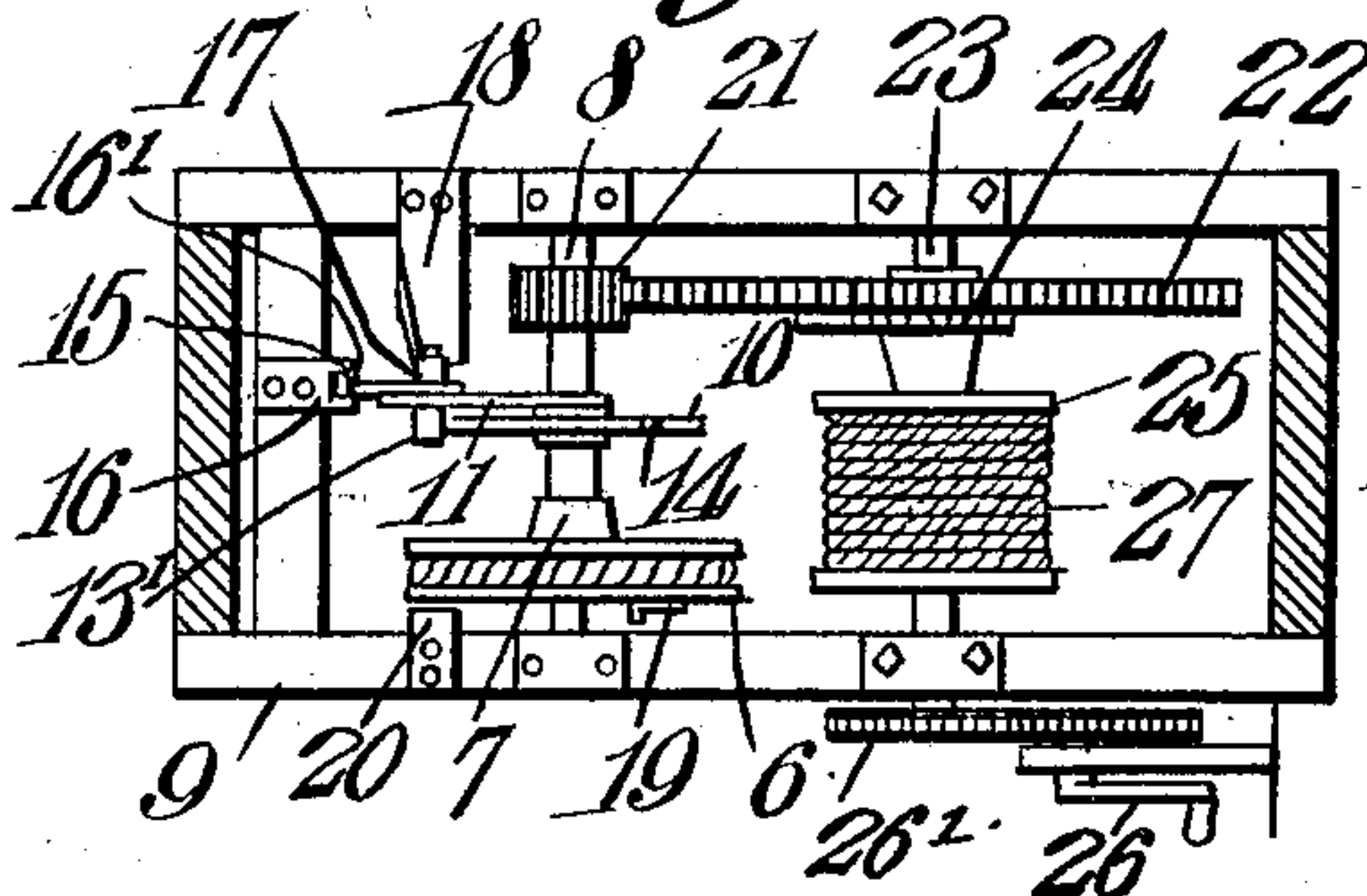


Fig. 3.

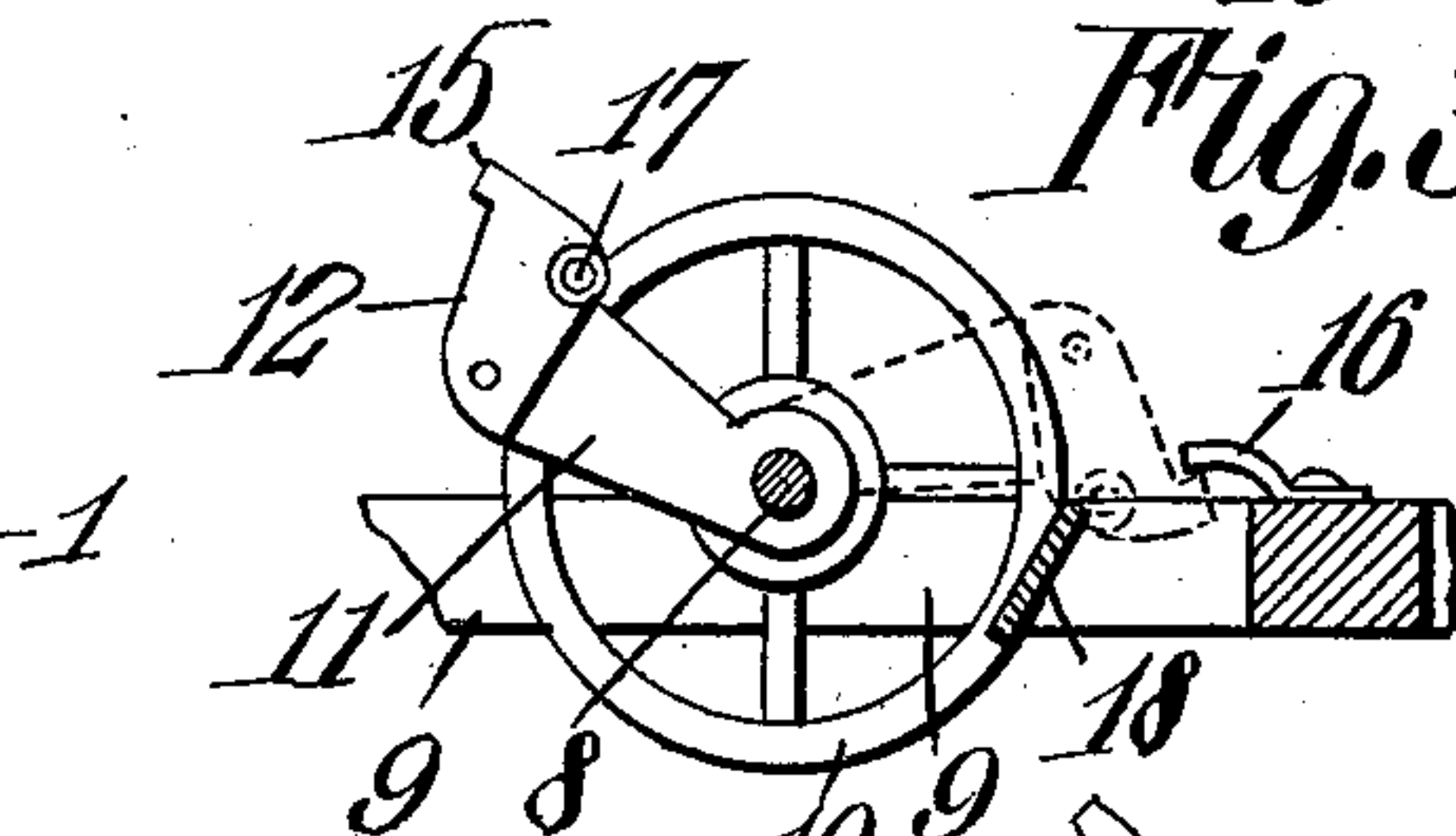


Fig. 4.

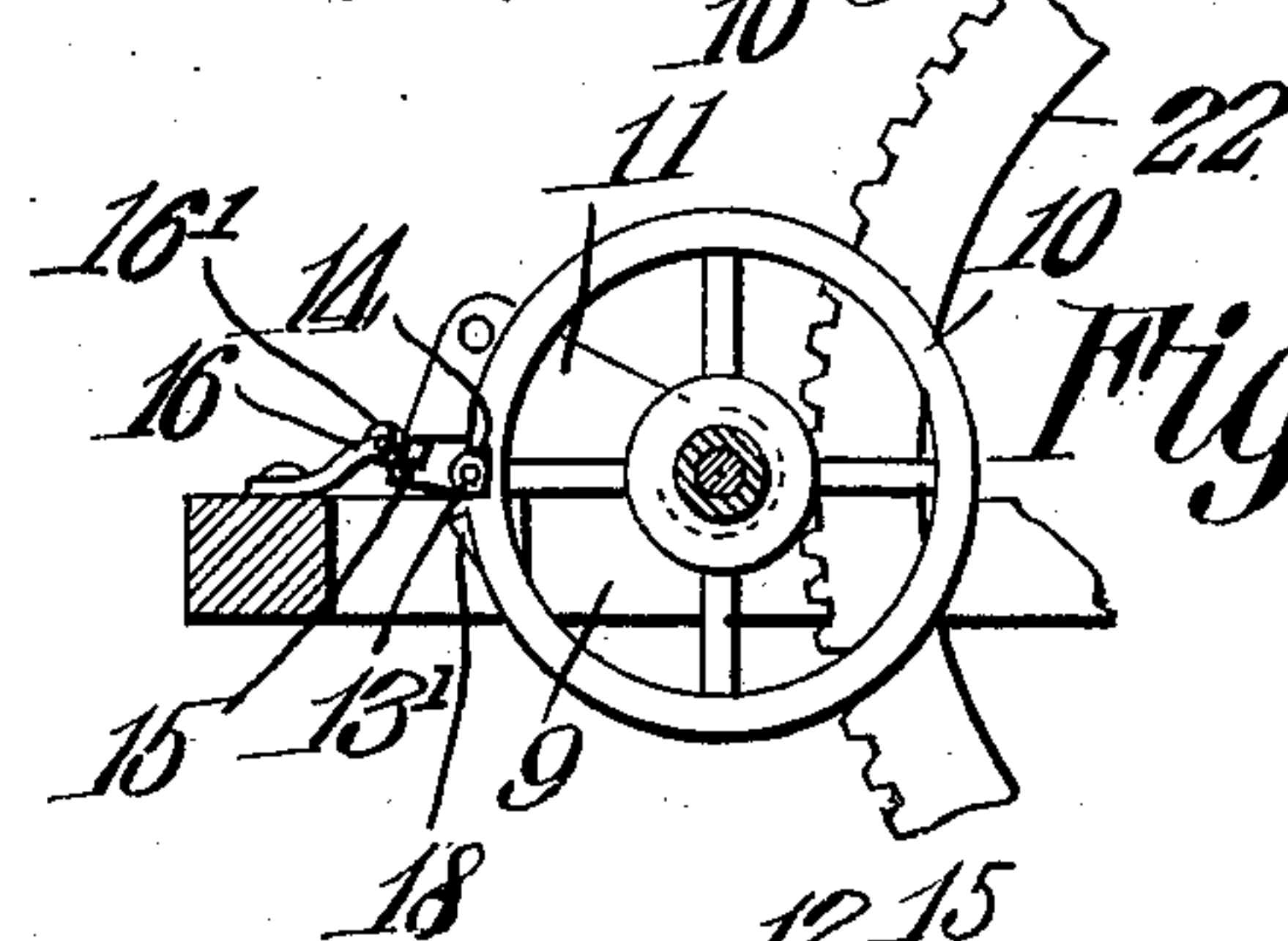


Fig. 5.

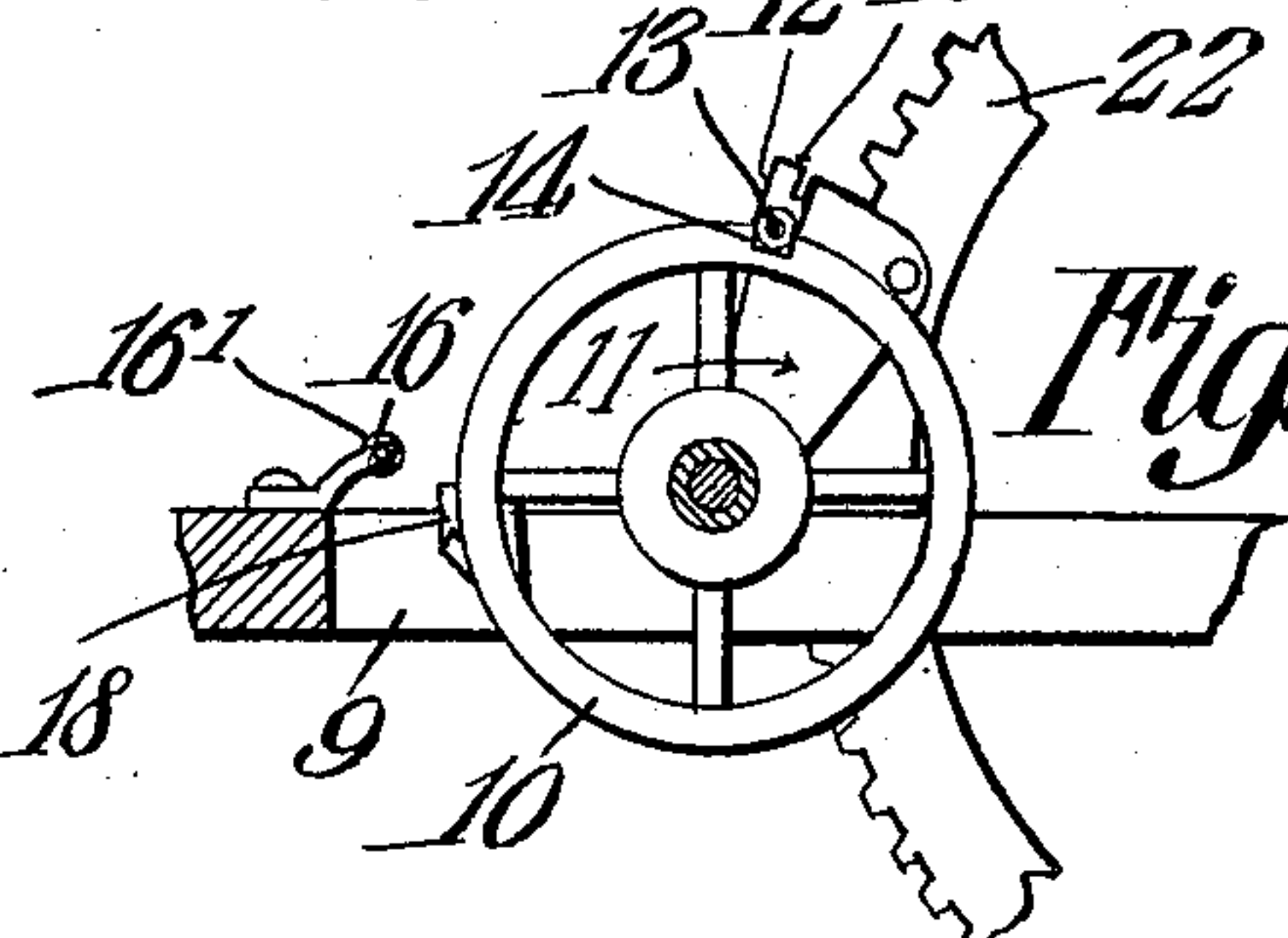
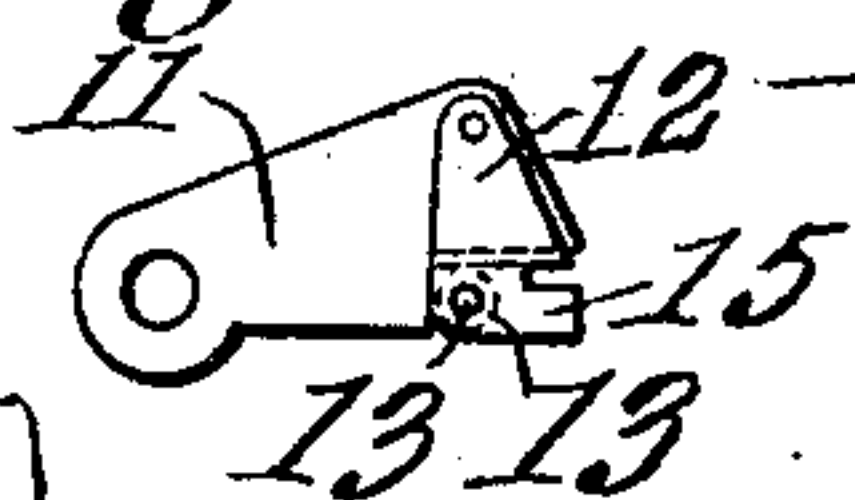


Fig. 7.



Witnesses

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2 SHEETS—SHEET 2.

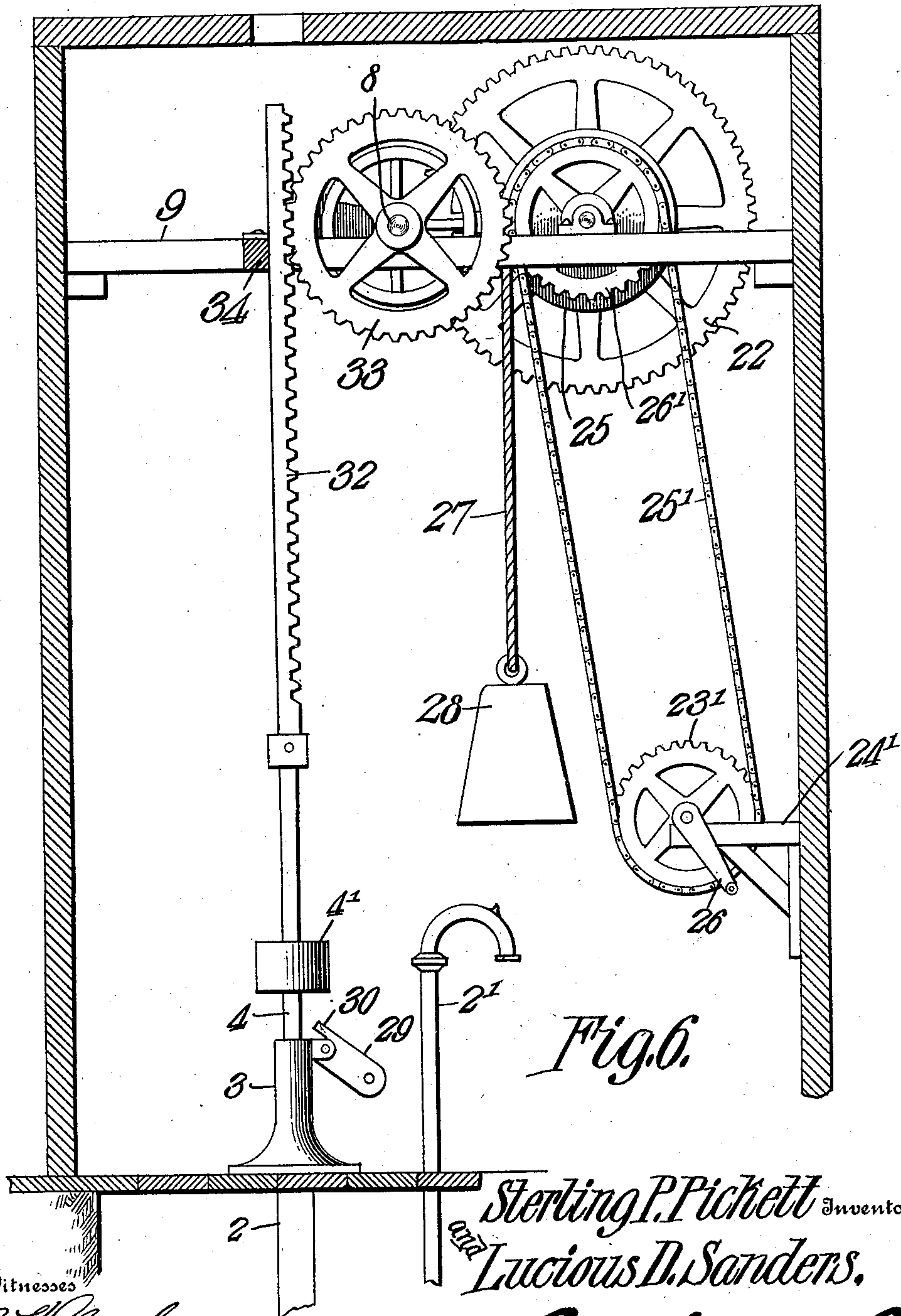


Fig. 6.

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Witnesses

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UNITED STATES PATENT OFFICE.

STERLING P. PICKETT AND LUCIOUS DEE SANDERS, OF WOODLAWN, MISSOURI.

PUMP-OPERATING MECHANISM.

No. 903,312.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed March 28, 1908. Serial No. 423,925.

To all whom it may concern:

Be it known that we, STERLING P. PICKETT and LUCIOUS DEE SANDERS, citizens of the United States, residing at Woodlawn, in the county of Monroe and State of Missouri, have invented a new and useful Pump-Operating Mechanism, of which the following is a specification.

This invention relates to mechanism for operating pumps of the type used to lift water from deep wells.

The principal object of the invention is to provide an improved form of mechanism for this purpose actuated by a weight motor.

Another object of the invention is to provide an improved mechanism for releasing the pump rod so that the same is free to fall when a predetermined lift has been obtained.

With the above and other objects in view, the invention consists of certain novel details of arrangement and combinations of parts, hereinafter fully described, illustrated in the accompanying drawings and specifically set forth in the claim.

Referring to the accompanying drawings:—Figure 1 is a view in elevation representing a water lifting pump apparatus constructed in accordance with this invention. Fig. 2 is a plan view showing the mechanism for operating the pump. Fig. 3 is a detail view of a portion of the pumping mechanism, showing the means for releasing the mechanism for operating the pump. Fig. 4 is a view similar to Fig. 3 showing a modified form of the mechanisms there illustrated, the view being taken from the opposite side of Fig. 3. Fig. 5 is a similar view to Fig. 4 with the parts in another position. Fig. 6 is a modified form of the invention wherein a rack and gear is substituted for the rope and drum of Fig. 1. Fig. 7 is a detail view of the pawl and its carrying arm.

This invention comprises in its general features an apparatus for lifting water from wells, in which long tubes may be employed, adapted to extend down into the water of a deep well, and in connection with such a tube a weighted piston rod reciprocating in said tube and adapted to be automatically raised to a certain height and automatically released to drop and act as a piston rod in said well tube.

The mechanism herein referred to is so constructed and arranged as to automatically raise and drop the weighted piston rod continuously.

The apparatus to carry out this invention is constructed and arranged as follows:—

A suitable framework, such as 1, in Fig. 1, is provided which may be in the shape of a tower, located above a well. In the base of the framework 1 is mounted the upper end of a long tube 2 adapted to extend down to the water of a deep well and provided adjacent to its lower end with a suitable single acting pump connected to a discharge tube 2' by a suitable valve connection, whereby the water located in the lower end of the tube 2 is forced up through the discharge tube 2' and discharged from its upper end.

The upper end of tube 2 is secured in a suitable collar or tubular standard 3, mounted on the base of the frame 1. In order to actuate the pump to force the water from tube 2 into the discharge pipe 2, and up the same to discharge it therefrom, a plunger piston rod 4 is provided made of heavy iron, and located, and extending down in the tube 2, its upper end being connected to a rope 5 extending to the top of the framework or tower 1 and wound around a grooved pulley 6 mounted in the upper part of said frame 1 in connection with the driving mechanism presently to be described. When it is desired to get a strong force of water, a weight 4' may be mounted on the upper end of the plunger piston rod 4, as shown in Fig. 1. The mechanism for operating the plunger piston rod 4 is constructed and arranged as follows:—

The grooved wheel 6 carrying the rope 5 is provided with a sleeve 7 loosely mounted upon a shaft 8, and having its bearings in the cross bars 9 of the frame 1; and on one end of said sleeve 7 is mounted a wheel 10 adapted to turn with said grooved wheel 6 in the form shown in Fig. 3. Upon the shaft 8 adjacent to the wheel 10 is mounted in fixed position on said shaft 8 an arm 11 provided with a pawl 12 pivoted thereto, said pawl having on one side thereof near its outer end a laterally projecting pin 13 projecting over the rim of the wheel 10 and adapted to engage a notch 14 in the periphery of said wheel 10. The outer corner of said pawl 12 is provided with a projection or finger 15 adapted to engage a projection 16 on the frame 1 and on the opposite corner of said pawl 12 is a roller projection 17 adapted to engage and ride over the curved end of a projection 18 mounted on the frame 1 at right angles to the projection 16.

The grooved wheel 6 is provided with a stop 19 on its outer side, which is adapted to come in contact with the projection 20 on the frame 1 in the revolution of the wheel 6, the projection 20 serving as a stop to limit the movement of the wheel 6.

Upon the shaft 8 is mounted the pinion 21 meshing with the large toothed wheel 22 mounted on the shaft 23, having its bearings in the cross bars 9 on the frame 1 and provided with a pawl and ratchet 24 to hold the wheel 22 in locked position from movement in one direction.

Upon the shaft 23 is mounted a drum 25 operated by a crank handle 26 on the shaft of a sprocket wheel 23' mounted in a bracket 24' on the frame 1, and a chain 25' connecting the wheel 23' with a sprocket wheel 26' mounted on the shaft 23, said drum having coiled thereon a rope 27 to the lower end of which is connected a weight 28.

In the operation of this apparatus, the weight 28 is elevated by winding the rope 27 on the drum 25. The pawl 12 on the arm 11 engages by means of the projection 15, the projection or stop 16 on the frame 1, and the pin 13 on the arm 11 engaging the notch 14 of the wheel 10 holds the wheels 6 and 10, pinion wheel 21, toothed wheel 22 and drum 25 in locked position, thereby holding the mechanism in locked position against the force of the weight 28 suspended on rope 27.

The operation of the pump is as follows:—
The pump mechanism being set into motion by releasing the arm 11 and the pawl 12 from the wheel 10, the plunger piston rod 4 being in elevated position with the rope 5 wound on the wheel 6, the wheel 10 connected with the wheel 6 by the sleeve 7 loosely mounted on the shaft 8 will rotate and permit the plunger piston rod 4 to drop by its weight in the tube 2, the wheel 6 being revolved by said movement until the projection 19 is brought against the stop 20, when the drop of the piston rod 4 is arrested. In the meanwhile the projection 15 will be held under the lug 16 by reason of the roller 17 riding on the periphery of the wheel 10. This acts to stop the rotation of the drum 25 so that the clock work mechanism is inactive during the time when the pump pis-

ton is moving downward and forcing the water up. When, however, the notch 14 arrives in position opposite the pin 13, the pin will drop into that notch and free the projection 15 from the stop 16. The weight 28 will then be free to descend and in so doing will actuate the sheave 26 to lift the piston-rod. This motion will continue until the roller 17 contacts with the stop 18 when the wheels 10 will again be released from the pin 13 and the piston again be allowed to fall.

It is obvious that in place of the weight 28 a spring may be substituted, this being common in clockwork devices of this character.

In the form shown in Fig. 6 in lieu of rope 5 and grooved pulley 6, a rack bar 32 meshing with a toothed wheel 33 may be used, the rod 4 being connected to the lower end of rack bar 32, and the toothed wheel mounted on the shaft 8. The rack bar 32 is movable vertically in a suitable guide 34 on a cross bar 9 of the frame.

In the form of the wheel 10 and adjacent parts, as shown in Figs. 4 and 5, the pin 13 is provided with a friction roller 13', and the stop 16 with a friction roller 16'.

What is claimed is:—

In a device of the kind described, a clock work mechanism, a shaft connected thereto, a sleeve rotatively mounted on the said shaft, a wheel fixed on the said sleeve, a piston-rod, means operatively connecting said rod and wheel, a ratchet wheel fixed on said sleeve provided with a single notch, an arm fixed on said shaft, a pawl pivoted thereto, a pin on the said pawl adapted to enter the notch of the wheel, a cam adjacent the path of the pawl contacting with a projection thereon to disengage said pin, and a stop on the frame adapted to contact with the pawl and prevent the rotation of the arm when the pawl is disengaged.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

STERLING P. PICKETT.
LUCIOUS DEE SANDERS.

Witnesses:

WILLIAM F. WOODS,
W. R. BENSON.