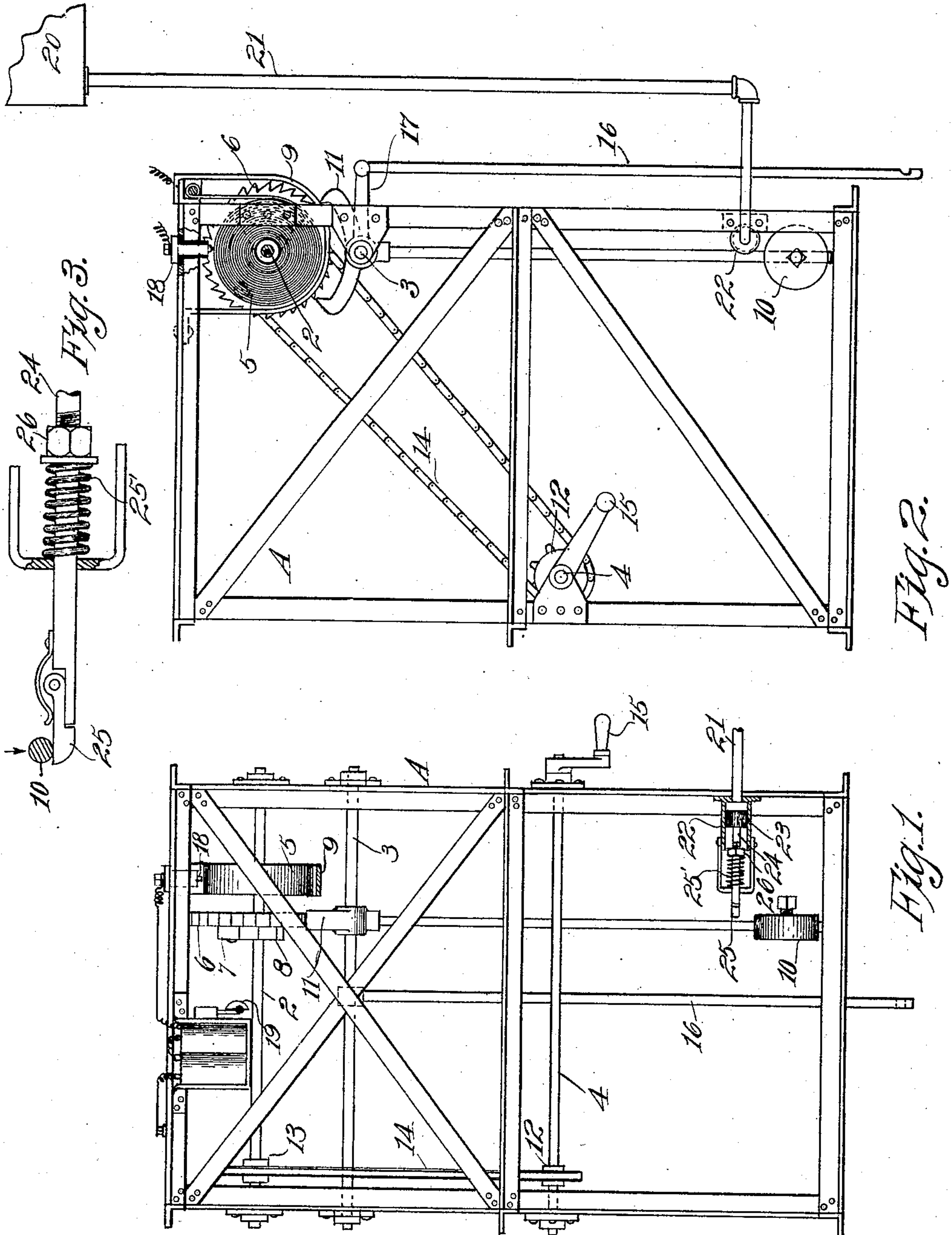


No. 861,291.

PATENTED JULY 30, 1907.

C. A. KUEHN.  
PENDULUM POWER PUMP.  
APPLICATION FILED MAR. 30, 1906.



Witnesses:  
E. Chaynard.  
J. J. Moore

Inventor:  
Carl A. Kuehn  
By Geo. H. Strong atty



# UNITED STATES PATENT OFFICE.

CARL A. KUEHN, OF SALT LAKE CITY, UTAH.

## PENDULUM-POWER PUMP.

No. 861,291.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed March 30, 1906. Serial No. 308,853.

*To all whom it may concern:*

Be it known that I, CARL A. KUEHN, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented new and useful Improvements in Pendulum-Power Pumps, of which the following is a specification.

My invention relates to pumping apparatus and especially to an apparatus in which the power to operate the pump is derived from a pendulum spring-motor.

10 The object of my invention is to provide a simple practical means for economically operating deep-well and other pumps in a country where there may be very little wind or a limited amount of fuel for power purposes.

15 The invention consists of the parts and the construction and the combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a front view of the improved apparatus. 20 Fig. 2 is a side view of same; and Fig. 3 is a detail view of the automatic stop-latch.

A represents a framework of suitable construction. This framework is preferably made of angle iron properly braced and anchored, and for practical purposes 25 may be about  $4\frac{1}{2}$  feet square by  $7\frac{1}{2}$  feet in height.

Suitably journaled in the frame are three shafts 2—3—4. The upper shaft 2 is the main shaft and has one end of the main spring 5 secured to it. The other end of the main spring is fixed to the frame. A ratchet 30 wheel 6 which is loose on shaft 2 but has its rotative movement on the shaft limited to one direction by the pawl 7 carried by the ratchet engaging its corresponding fixed ratchet 8 on the shaft. The spring may be housed in a casing as 9.

35 The shaft 3 carries a pendulum 10 and an escapement member 11, which latter is adapted to co-act with the ratchet 6 in the usual manner of clock movements.

Shafts 2 and 4 have respective sprockets 12—13 around which a chain 14 passes. By turning a crank 40 15, or by otherwise suitably rotating shaft 4, the spring 5 may be wound up to conserve the necessary energy to be expended on the oscillation of the pendulum 10.

In the present instance I have shown means for applying the energy in operating the sucker rod 16 of a 45 pump; said rod being pivoted to an arm 17 which is rigid with shaft 3. In operation the spring is wound up by means of the crank 15 and the connection with shaft 2, the pendulum set in motion and the reciprocation of the rod 16 will continue as long as sufficient 50 power remains in the spring.

In order to indicate when the power has run down, I provide a suitable signal which is operated through the medium of the spring itself, or by other suitable connections with the machine. This signal mechanism is

preferably electrically operated, and accordingly the 55 spring is placed in an electrical circuit with an insulated conducting post 18 arranged in the path of the spring, as the latter is expanded radially; the post 18 being connected with one terminal of the circuit and the spring with the other. This circuit is interrupted 60 at all times except when the spring is run down and has expanded until it comes in contact with the insulated post 18. As soon as the contact is made between these two parts they operate after the fashion of a push-button to close the circuit and ring the bell 19, which indi- 65 cates to the farmer that his power is run down and needs re-winding.

In order to still further conserve the power of the apparatus and to avoid possible waste of power by continuing to pump when there was no need to do so, or 70 when there was no room in which to store more water, I may provide the following means, which will automatically cause a cessation in the operation of the pendulum at the proper time. This check mechanism is preferably operated by fluid pressure, and accordingly 75 I have shown the following means connected with the tank 20 into which the pump is adapted to deliver.

A pipe 21 connects the bottom of the tank with a cylinder 22 having a piston 23 suitably supported with respect to the plane of movement of the pendulum 10. 80 The outer end of the piston-rod 24 has a spring actuated latch member 25 which is adapted to be projected by fluid pressure on the piston 23 into the path of movement of the pendulum 10. This latch member is spring-supported to allow the pendulum to swing free 85 in one direction to pass the end of the piston-rod but to catch and support the pendulum when the latter swings back in the opposite direction.

As the tank fills with water the pressure on the inner end of piston 23 increases. A spring 25' normally acts 90 in opposition to this pressure to maintain the latch in retracted position and out of interference with the oscillation of the pendulum.

The tension on the spring 25' may be regulated by suitable means as the collar 26. The tension of the 95 spring is adjusted relative to the contents of the tank, so that when a pre-determined quantity of water has been delivered into the tank, the pressure on the piston 23 will have reached a point sufficient to overcome the stiffness of the spring 25', and the latch will be moved 100 up to intercept the pendulum and shut off the power. This fluid pressure stop mechanism is so positioned with respect to the arc of movement of the pendulum that when the latter is intercepted by the latch, the pendulum will be arrested in an elevated or inclined position, 105 so that when the latch is withdrawn the pendulum will be automatically set in motion again. The withdrawal of the latch will take place whenever the level of the

water in the tank has been reduced to cause a corresponding reduction in pressure on piston 23 to allow spring 25' to act.

Having thus described my invention, what I claim  
5 and desire to secure by Letters Patent, is—

In a power pendulum apparatus, the combination of a suitably supported ratchet-wheel, a main-spring connected with said ratchet-wheel, a rockable-escapement-member engaging said ratchet-wheel, a pendulum to operate said  
10 escapement-member, a sucker-rod, connections between the escapement-member and the sucker-rod to reciprocate the

latter, and means operated by the fluid-pressure to interrupt the operations of the pendulum, said means including a cylinder connected to the fluid pressure supply, a piston operable in the cylinder, and a spring-pressed stop member  
15 connected to the piston and adapted to be projected across the range of action of the pendulum, to arrest the latter.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CARL A. KUEHN.

Witnesses:

FRED. E. ARNOLD,  
JAMES M. CAMPBELL.