No. 814,362.

PATENTED MAR. 6, 1906.

C. H. DILL.

MOTOR.

APPLICATION FILED JUNE 20, 1904.

Fig 1

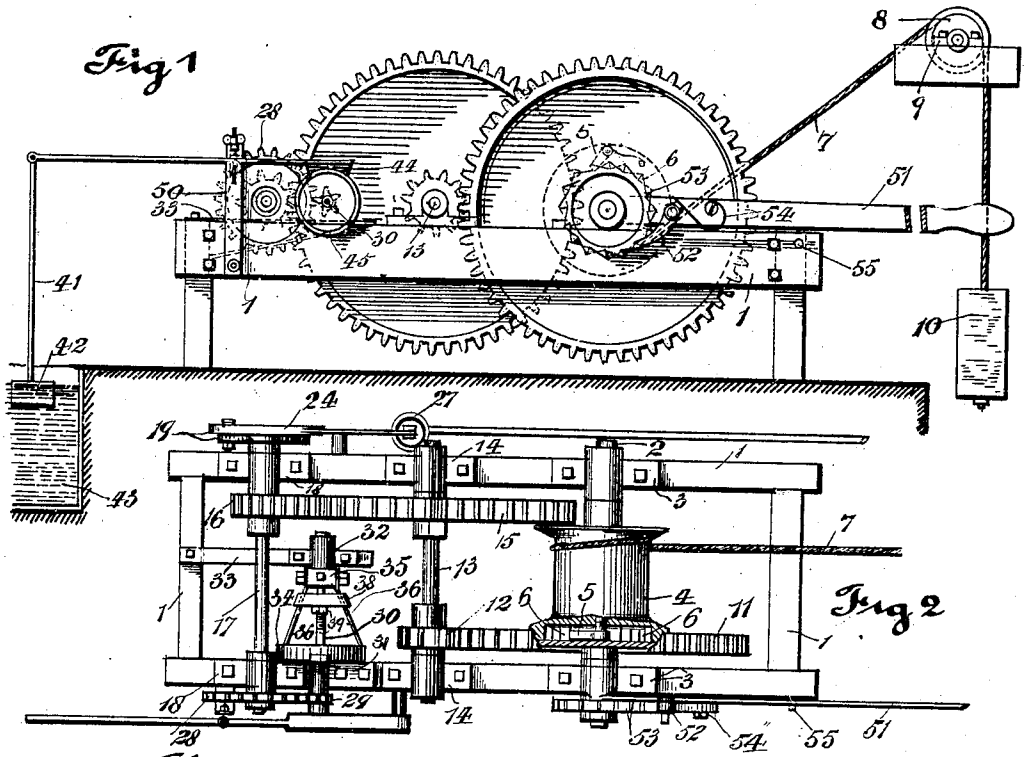

Fig 2

Fig 3

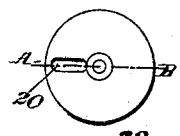

Fig 4

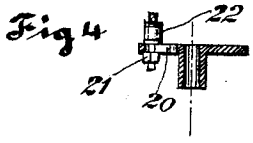

Fig 5

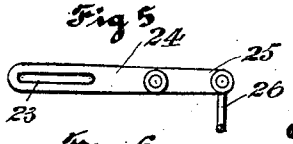

Fig 6

Fig 7

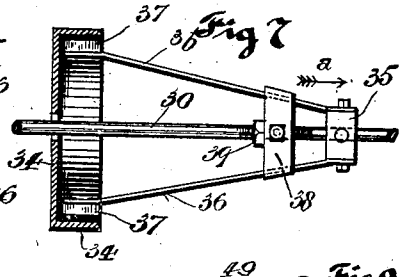

Fig 8

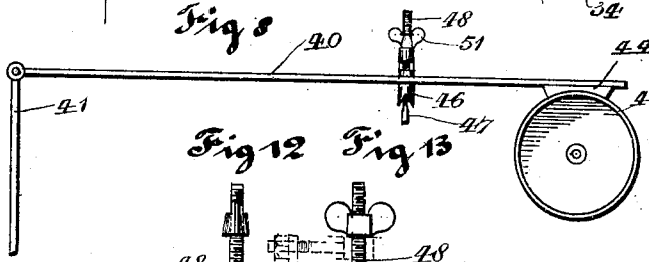

Fig 9

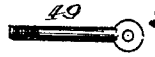

Fig 10

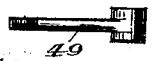

Fig 11

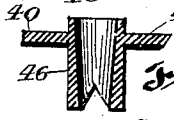

Fig 12

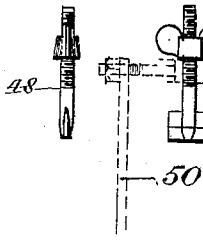

Fig 13

Inventor

Witnesses

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Thompson & Bell

Attorney

UNITED STATES PATENT OFFICE.

CHARLES H. DILL, OF DANVILLE, INDIANA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-THIRD TO ENOCH C. DILL, OF ARKANSAS CITY, KANSAS, AND ONE-THIRD TO WILLIAM H. HARAH, OF SHAWNEE, OKLAHOMA TERRITORY.

MOTOR.

No. 814,362. Specification of Letters Patent. Patented March 6, 1906.

Application filed June 20, 1904. Serial No. 213,352.

To all whom it may concern:

Be it known that I, CHARLES H. DILL, a citizen of the United States, residing at Danville, in the county of Hendricks and State of Indiana, have invented certain new and useful Improvements in Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in mechanical motors provided with a gravity-weight and is particularly adapted for pumping water from wells into resevoirs or tanks.

The object of this invention is to construct a motor that will be regular in its movement and under control at all times during its operation; also, to provide means whereby when the tank or reservoir is filled the motor will be stopped by a suitable brake means. I attain these objects by means of the mechanism described, and illustrated in the accompanying drawings, in which similar characters of reference designate like parts throughout the several views.

Figure 1 is a side elevational view of my invention of a motor. Fig. 2 is a plan view of the same. Fig. 3 is a detail view of the crank-disk of the pump-lever. Fig. 4 is a sectional view of the same, taken through the line A B. (See Fig. 3.) Fig. 5 is a detail side view of the pump-lever. Fig. 6 is a plan view of the same. Fig. 7 is an enlarged detail sectional view of the governing means. Fig. 8 is an enlarged detail view of the automatic stop. Figs. 9 and 10 are enlarged detail views of the eyebolt for supporting the fulcrum of the automatic stop-lever. Fig. 11 is a sectional view of the fulcrum portion of the automatic stop-lever. Fig. 12 is a view of the fulcrum-bolt of said stop-lever, showing an end view of the knife-edge of the fulcrum; and Fig. 13 is a side view of the same, showing the means of supporting said bolt in dotted lines.

The frame 1, on which the motor mechanism is mounted, may be of wood or metal and is firmly secured and anchored to the ground.

The main motor or drum shaft 2 is mounted in the bearings 3, secured on the top of the sides of the frame 1. On the said shaft 2 is mounted the drum 4, and the said drum is free to turn on the shaft in one direction, but is locked with said shaft to turn therewith in the opposite direction by means of the spring-pawl 5, (see Figs. 1 and 2,) pivotally mounted on the outer side of the flange of the drum 4 and arranged to engage the ratchet-wheel 6, keyed on said shaft 2. (Shown in dotted line, Fig. 1.)

The weight-rope 7 is secured to and surrounds the drum 4 and passes over the guide-pulley 8, which latter is journaled in suitable bearings 9, and said rope has its opposite end connected to the gravity-weight 10, by means of which latter the motor is operated by gravity. A gear-wheel 11 is also loosely mounted on the shaft 2 and secured to the drum 4 to turn therewith. The gear-wheel 11 meshes with the pinion 12, which latter is keyed on the intermediate shaft 13. The shaft 13 is journaled in the bearings 14, secured on the top of the frame 1. A gear-wheel 15 is also keyed on the shaft 13 to engage with the pinion 16, keyed on the crank-shaft 17, and the latter is journaled in the bearings 18, also secured on the main frame 1.

A crank-disk 19 is keyed on one end of the shaft 17, (the pump end,) and the said disk is provided with a radially-extending slot 20, in which is adjustably secured the crank-pin 21 for the purpose of regulating the length of the stroke of the pump-lever. On the crank-pin 21 is mounted to turn thereon the friction-roller 22, and the said roller is adapted to work in the slot 23 of the pump-lever 24, by means of which the friction of the crank mechanism is materially reduced.

Another feature of importance is the manner of arranging the crank roller and disk relatively to the pump-rocking lever. It will be particularly observed that the direction of rotation of the crank-disk is such that when the pump-plunger is descending the crank is situated at that portion of the end of the slot of the pump-rocker lever nearest its oscillating center thereof and that when said plunger is ascending the crank is situated at the outer end of said slot or most remote from the fulcrum or oscillating center of said lever. Thus the greater power is applied to said plunger when ascending to lift the water from the well, and the lesser power is applied when the plunger descends, thus conserving the additional power for the upward or lifting stroke where most needed.

A fixed drum 34 is secured to the frame 1

in position thereon to be concentric with the axis of the governor-shaft 30. On the governor-shaft 30 is adjustably secured the governor-block 35, to which are secured spring weight-arms 36 of the governor, and on the free ends of said arms are secured the centrifugal friction-weights 37, which when the velocity of the shaft 30 exceeds a given speed extend outwardly by reason of their centrifugal force acting on the spring-arms 36, which causes them to contact with the interior of the fixed drum 34, thereby reducing the speed or rotation of the motor.

The distance apart of the governor-weights 37 and the clearance between their outer sides and the interior or contacting surface of the fixed drum 34 consequently regulates the speed of the governor-shaft 30, and this distance is regulated by means of the wedge or adjusting-block 38, which latter is loosely mounted on the governor-shaft 30 and is adapted to be moved longitudinally and adjusted in position thereon by means of the adjusting-nut 39, screwed on said shaft 30.

The ends of the adjusting-block 38 are notched to receive the arms 36, and thus when the said block 38 is moved in the direction of the arrow *a* the wedging outer ends of the block 38 are forced against the inner sides of the arms 36 to cause them to extend outwardly to cause the centrifugal friction-weights 37 to move into closer proximity to the contacting surface of the drum 34, thereby causing the said centrifugal friction-weights 37 to be influenced more by their centrifugal force and less by the resiliency of centripetal force of the spring-arms 36, and thus the speed of the said governor-shaft 30, and consequently the motor, is readily adjusted.

The motor is automatically stopped by a brake mechanism operated by the float in the tank, which I will now proceed to describe. A brake-lever 40 has one of its ends connected to a float-arm 41, on the bottom end of which is secured the float 42, which latter is so situated in the tank or reservoir 43 to float therein, and thus when the water has reached a certain level it operates the float 42 to elevate it and through its arms 41 operates the brake-lever 40 to apply the brake 44 to the brake-pulley 45, which latter is keyed on the governor-shaft 30. The brake-lever 40 is provided with a fulcrum-socket 46, which is notched to bear on the knife-edge fulcrum 47, formed on the end of the fulcrum-adjusting bolt 48. The fulcrum-bolt 48 is supported by the eyebolt 49, which latter is secured on the end of the supporting-bar 50, secured on the frame 1. The position of the knife-edge fulcrum 47 is adjusted upwardly or downwardly by means of the thumb-screw 51, by which means the knife-edge 47 may be either raised or lowered to raise or lower the float 42 to cause the brake-block 44 to contact with the brake-pulley 45 to stop the motor at the different levels of the tank or reservoir 43, as the case may require. The weight-rope 7 is wound upon its drum by means of the winding-lever 57, which latter is of a length necessary to provide sufficient leverage to turn said drum 4 against the resistance of the weight 10. The lever 51 is pivoted on the round boss of the bearing 3, and on the said lever is pivoted the pawl 52, which is adapted to engage the teeth of the ratchet 53. A pawl-spring 54 retains said pawl 52 in yielding contact with said ratchet 53. A stop-pin 55 projects from the side of the frame 1 to support the winding-lever 51 and prevent its dropping to and upon the ground when the pawl is disengaged from its ratchet-wheel 53.

Having thus fully described this my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

1. In a mechanical motor, the combination with a train of gears, of a controlling means, comprising a fixed drum having a projecting flange or rim, a revoluble shaft, a pair of spring-arms situated on opposite sides of said shaft having their free ends projecting within the rim of said fixed drum, centrifugal friction-weights on the free ends of said spring-arms, and means for adjusting said spring-arms.

2. In a mechanical motor, the combination with a train of gears, of a controlling means, comprising a fixed drum having a projecting flange or rim, a revoluble shaft, a pair of spring-arms situated on opposite sides of said shaft having their free ends projecting within the rim of said fixed drum, centrifugal friction-weights on the free ends of said spring-arms, an adjusting-block situated on said shaft, and means whereby said block may be adjusted and secured in any position between the fixed ends of said arms and the fixed drum whereby said spring-arms are adjusted.

3. In a mechanical motor, the combination with a train of gears, of a governor-shaft connected to said gearing and driven thereby at a higher rate of speed, a fixed drum situated concentrically with said governor-shaft, a governor-block fixed on said governor-shaft, spring-arms secured on said governor-block and extending therefrom in a direction longitudinally with said shaft toward said fixed drum, centrifugal friction-weights secured to the free ends of said spring-arms and arranged to contact with the inner surface of said drum as described, and means for adjusting said spring-arms.

4. In a mechanical motor, the combination with a train of gears, of a governor-shaft connected to said gearing and driven thereby at a higher rate of speed, a fixed drum situated concentrically with said governor-shaft, a

governor-block fixed on said governor-shaft, spring-arms secured on said governor-block and extending therefrom in a direction longitudinally with said shaft toward said fixed drum, centrifugal friction-weights secured to the free ends of said spring-arms and arranged to contact with the inner surface of said drum as described, and a wedge or adjusting-block situated between said weight-gearing spring-arms adjustably mounted on said shaft.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. DILL.

Witnesses:
CAREY W. GASTON,
OTIS E. GULLEY.