D. CABRAL.

APPARATUS FOR PUMPING WATER FROM WELLS.

APPLICATION FILED DEC. 20, 1913.

1,164,989. Patented Dec. 21, 1915.

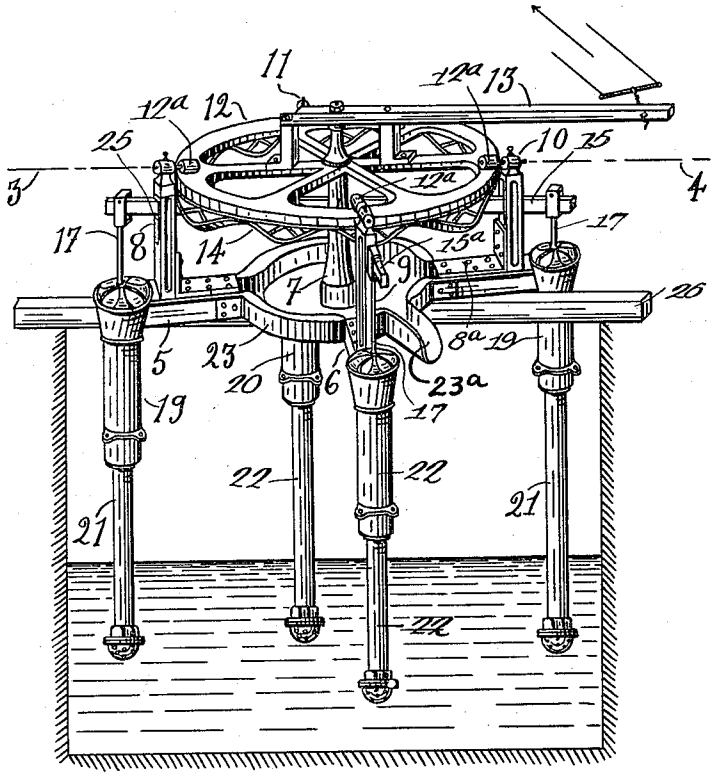


Fig 1.

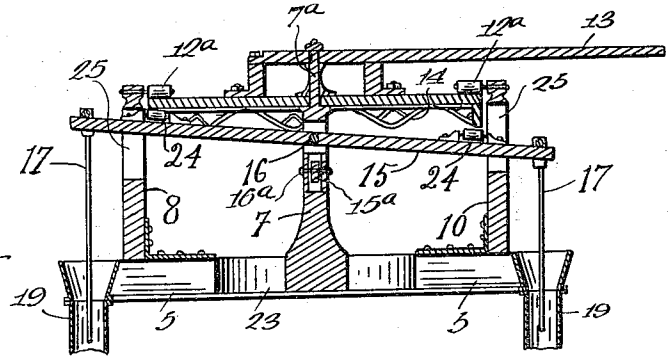


Fig 2.

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APPARATUS FOR PUMPING WATER FROM WELLS.

1,164,989. Specification of Letters Patent. Patented Dec. 21, 1915.

Application filed December 20, 1913. Serial No. 807,924.

To all whom it may concern:

Be it known that I, DANIEL CABRAL, a citizen of the Mexican Republic, residing at Guadalajara, State of Jalisco, Mexico, have invented a new and useful Apparatus for Pumping Water from Wells.

This invention has reference to means for pumping water from wells, and its object is to produce a compact structure operable by any suitable source of power and particularly by draft animals, which structure is of compact and unitary form permitting its application to a well without the necessity of building any particular structure for its accommodation.

In accordance with the present invention there is provided a series of pumps carried by channel arms radiating from and discharging into a central bowl or receptacle, and rising from the center of the bowl is a post carrying a wheel rotatable on a vertical axis and to which the draft animals may be attached. The wheel is surrounded by a series of other posts or uprights carried by the channel arms and each serving as a guide for the respective end of a rock lever having connection to the pistons or plungers of the pumps. The posts or uprights surrounding the wheel carry rollers overriding the wheel so as to maintain it in the horizontal position and receive the thrust imparted to the wheel by the pump levers. Furthermore, the wheel is provided on its under surface with a circular undulatory or cam member for imparting rocking movements to the pump levers, which latter are provided with rollers to reduce the friction between the cam surfaces and the levers. The cam surface is so constructed as to impart numerous movements to the pump piston for each revolution of the wheel, and the undulatory cam surfaces are so timed with relation to the pump levers that when the crown portion of a cam is in engagement with one end of a pump lever the valley between two adjacent cams is then in engagement with the opposite end of the lever.

In the accompanying drawing which illustrates the mechanism: Figure 1, is a perspective view embodying my invention, and Fig. 2, is a vertical cross-section of same mechanism, taken on the line 3—4, of Fig. 1.

The same characters are employed to designate same parts in both figures.

Referring to the drawings there is shown a centralized bowl or receptacle 23 provided at a convenient point with an outlet particularly shown in the drawings as in the form of a spout 23^a, but it will be understood that this is only indicative of any suitable outlet. Radiating from the bowl 23 are channel arms 5 and 6, respectively, the arms 5 being diametrically opposite each other and the arms 6 being diametrically opposite each other and arranged at right angles to the arms 5, so that the arms 5 and 6 are disposed about the bowl in approximately ninety degree relation. The outer ends of the arms 5 and 6 carry pumps 19 and 20, respectively, each provided with a suction pump 21, 22, respectively. It will be understood that the pumps and suction pipes are of sufficient length to reach below the water level in the well to which the improved pump structure is applied. Rising from the arms 5 and 6 are uprights 8, 9, 10, and 11, and rising from the center of the bowl or receptacle 23 is a post 7 which may be carried to a greater height than the uprights 8 to 11. Said uprights are made fast to respective arms 5 and 6 by angle plates 8^a in part constituting covers for the channels 5 and 6. The stem 7 has an axial continuation 7^a of smaller diameter constituting a pivot for a wheel 12 of a diameter to be encircled close to its periphery by the uprights 8 to 11. Each upright carries a roller 12^a in overriding relation to and in contact with the marginal portion of the wheel, so that the wheel is held to the approximately horizontal position against lifting forces and the pivot 7^a is relieved from side or bending strains.

Fast to the marginal portion of the under face of the wheel is an undulatory or cam ring 14 formed with a circular series of alternate summits or valleys representing a relatively large number of separate cams.

Traversing the post 7 below the wheel 12 are two rock levers 15 and 15^a carried by pivots 16 and 16^a respectively. These levers are made with arms of equal length and one is disposed above the other where passing through the post 7. The outer ends of each lever 15 and 15^a carry pump rods 17 extending into the pumps 19 and 20 and while the pistons or plungers of these pumps are not shown it may be assumed that the pump rods are secured to such pistons or plungers as is

customary. Each lever 15 and 15ª adjacent to the cam ring 14 carries rollers 24 thereby greatly reducing any friction which might otherwise occur when the cams engage the respective levers.

Fast to the wheel 12 on top of the latter is a sweep 13 and being thus located is entirely out of the way of any of the pumping structures. To this sweep one or more draft animals may be attached or the sweep may be taken as representative of any means of applying power to the wheel to rotate it.

If it be assumed that the wheel 12 is being rotated by any suitable means, it remains in a substantially horizontal plane by reason of the engagement of the rollers 12ª with the upper surface of this wheel. The cam ring 14 being in engagement with the rollers 24 of the levers 15 and 15ª causes an oscillation of these levers since, as will be understood, the cams are so disposed or timed in action that when the crown of one cam is in engagement with the roller 24 of a pump lever the diametrically opposite end of said lever is then in a valley between two adjacent cams of the cam ring. The arrangement permits the employment of a circular series of cams of such length and number that in each revolution of the wheel each pump piston is reciprocated a relatively large number of times and the pumping progresses with a commensurate speed. All tendency to move the levers 15 and 15ª sidewise by the cams of the cam ring 14 is prevented by passing these levers through elongated slots 25 in and arranged lengthwise of the uprights 8 to 11, these slots being of sufficient length to permit the rocking of the levers 15 and 15ª.

The whole structure is very readily supported at the mouth of the well or other container of water by beams 26 underriding the bowl or receptacle 23.

The whole structure is of extremely simple form requiring but few parts and is readily applied to or removed from a well or cistern and constitutes an efficient structure for the purpose which may be set up or taken down with a minimum of labor and may be readily transported from place to place.

The invention in its practical embodiment is not of necessity confined to any exact conformity with the showing of the drawings, but such changes and modifications may be made as are within the scope of the appended claims.

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

1. A pump structure comprising a bowl or receptacle with radial channel arms projecting therefrom, a pump at the outer end of each arm, an upright on each arm adjacent to the pump, a post rising from the center of the receptacle, rock levers carried by the post and in turn at their outer ends carrying pump rods adapted to the pumps, the uprights being longitudinally slotted and the pump levers extending through and guided by the slots, a horizontally disposed wheel mounted on the post and rotatable on an axis longitudinal of the post, the margin of the wheel being adjacent to the uprights, a roller carried by each upright in overriding engaging relation to the upper surface of the wheel adjacent to its edge, a cam ring carried by the under surface of the wheel in position to engage the pump levers adjacent to the uprights, and said pump levers there being provided with rollers in the path of the cams, and means for imparting rotary movements to the wheel.

2. A pump structure comprising a centralized bowl or receptacle, channel arms radiating therefrom, pumps carried by the channel arms, a cam wheel carried by and mounted above the receptacle, uprights carried by the radial arms and provided with rollers engaging the upper face of the cam wheel, and pump levers extending through and guided by the uprights and in turn engaged by the cam wheel.

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

DANIEL CABRAL.

ROBERT R. CERKBUOR,
IMOS HENZE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."