No. 873,644. PATENTED DEC. 10, 1907.

P. J. WICKBLOM.

CENTRIFUGAL PUMP.

APPLICATION FILED MAY 31, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

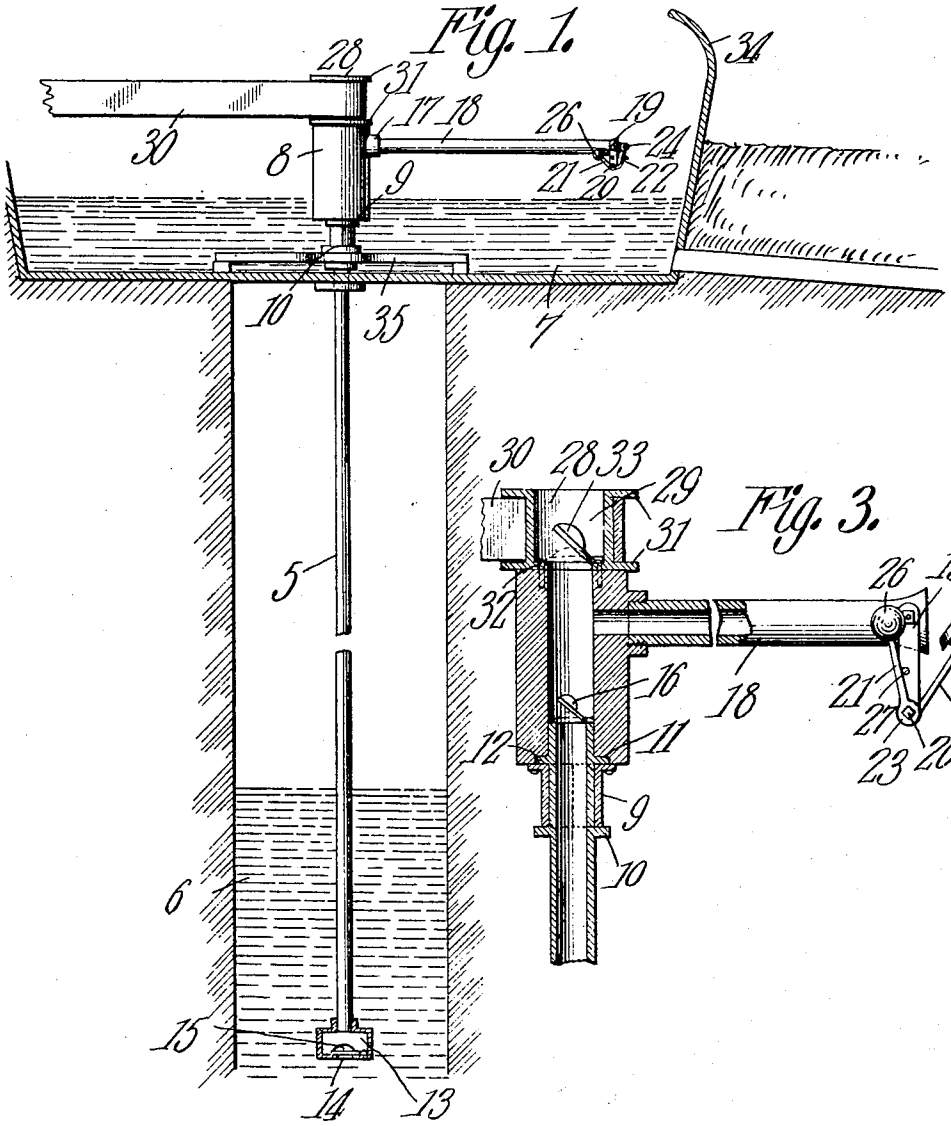


Fig. 3.

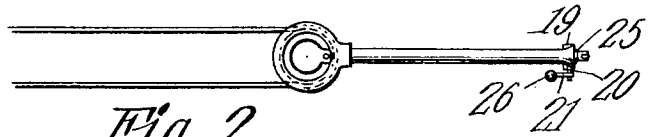


Fig. 2.

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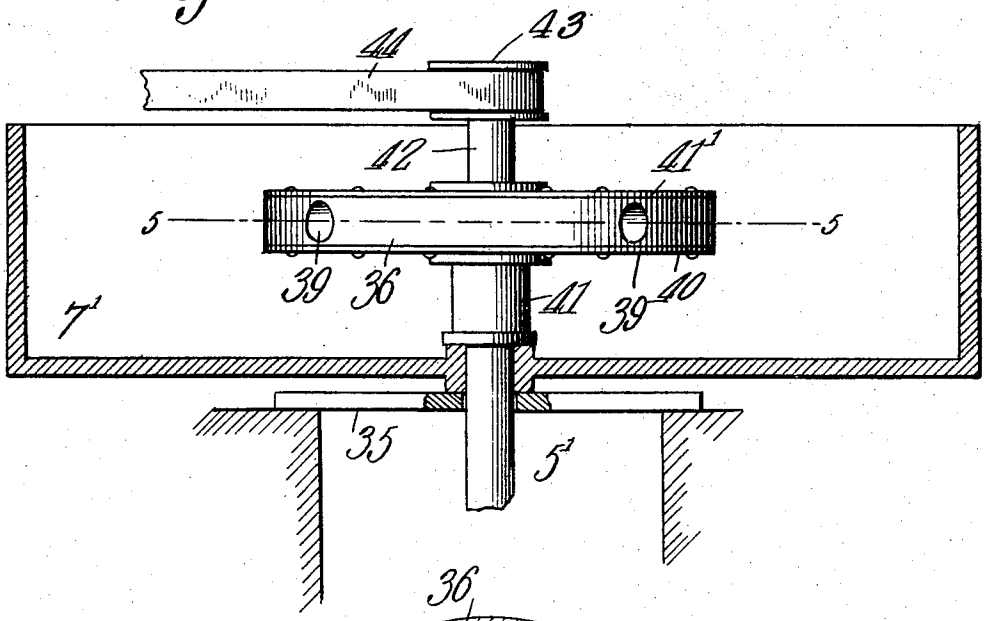
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2 SHEETS—SHEET 2.

Fig. 4.



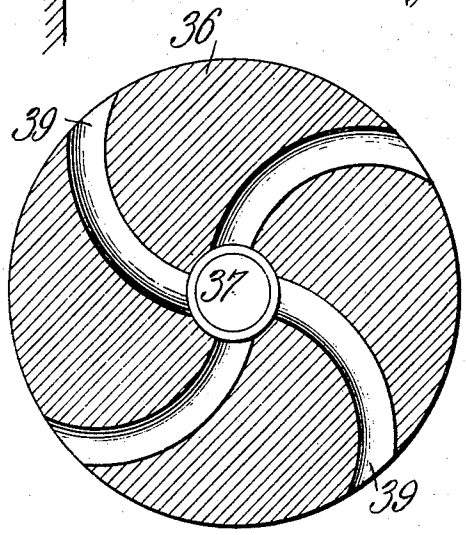


Fig. 5.

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CENTRIFUGAL PUMP.

No. 873,644. Specification of Letters Patent. Patented Dec. 10, 1907.

Application filed May 31, 1907. Serial No. 376,558.

To all whom it may concern:

Be it known that I, PETER J. WICKBLOM, a citizen of the United States, residing at Bishop Hill, in the county of Henry and State of Illinois, have invented a new and useful Centrifugal Pump, of which the following is a specification.

This invention relates to centrifugal pumps of that general class especially designed for irrigating or flooding rice fields and other lands.

The object of the invention is to provide a comparatively simple and thoroughly efficient pump in which the water is elevated from a well or other source of supply and discharged into a suitable receiving tank without the employment of pistons, actuating rods and similar operating devices.

A further object of the invention is to provide a pump including a rotary casing having a tubular member secured thereto and communicating with the inlet pipe thereby to discharge the water into the receiving tank when the casing is rotated.

A further object is to provide a valve for controlling the discharge of water from the tubular member, said valve being movable to open position by centrifugal force when the casing is rotated.

A still further object of the invention is to generally improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a side elevation partly in section of a centrifugal pump constructed in accordance with my invention. Fig. 2 is a top plan view of a portion of the same. Fig. 3 is a longitudinal sectional view partly in side elevation of the casing and tubular member. Fig. 4 is a side elevation partly in section of a modified form of pump. Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 4.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved pump forming the subject matter of the present invention includes a fluid conducting pipe 5, one end of which is extended to the bottom of a well or other source of liquid supply 6, while the opposite end thereof extends through the bottom of a receiving tank or vessel 7.

Mounted for rotation on the upper end of the pipe 5 is a casing 8 having its lower end provided with a depending sleeve or collar 9 which engages an annular flange or rib 10 extending laterally from the exterior walls of the pipe 5, thereby to form a bearing for the casing. The interior walls of the casing 8 are formed with an annular groove 11 for the reception of a packing ring 12 which serves to form an air and water tight joint between the casing and pipe.

The lower end of the pipe 5 is provided with a casing or chamber 13 having an opening 14 formed therein and normally closed by a flap valve 15 which serves to control the flow of water from the well 6 through the pipe to the casing.

The upper end of the pipe 5 extends a short distance within the casing 8 and secured to the free end of said pipe is a flap valve 16 for the purpose hereinafter referred to.

Extending laterally from the exterior walls of the casing 8 is a nipple 17 the exterior walls of which are inclined for engagement with a tubular member 18, the latter being preferably extended at right angles to the casing 8 and having its rear end open so as to form a source of communication between the pipe and tube. Secured to the outer or free end of the tubular member 18 is a depending bracket or yoke 19 which forms a support for a transverse pin or shaft 20. One end of the shaft 20 is extended laterally beyond the bracket 19 to form a bearing for the intermediate portion of a valve supporting member. The valve supporting member consists of a pair of diverging arms 21 and 22 having an eye 23 formed at the juncture thereof for the reception of the shaft or pin, whereby the valve supporting member is free to oscillate on said shaft. Pivotally mounted at 24 on the arm 22 is a valve 25 which normally closes the adjacent end of the tubular member 18 so as to control the discharge of liquid through the tubular member 18 into the receiving tank 7. The free end of the arm 21 is provided with a terminal weight 26 which serves to normally close the valve 25, the tilting or oscillating movement of the arm 21 being limited by the stop pin or closure 27 extending laterally from the bracket 19, as shown.

Bolted, riveted, or otherwise rigidly secured to the upper or free end of the casing 8 is a sleeve 28 provided with an interior chamber 29 adapted to receive a quantity of water or other fluid for priming the pump. Engaging the exterior walls of the sleeve 28 is a belt 30 which may be extended to an engine or other suitable source of power so that by operating the belt the casing 8 together with the tubular member may be rotated on the pipe 5. It will thus be seen that the sleeve 8 forms a chamber for the reception of the priming liquid and also constitutes a wheel or pulley for rotating the casing.

The exterior walls of the sleeve 28 are formed with laterally extending flanges 31 which serve to guide the belt 30 and prevent accidental displacement of the same, while the interior walls of the sleeve are formed with a flange 32 which constitutes a seat for a flap valve 33.

In operating the pump the flap valve 33 is elevated and a small quantity of water introduced in the chamber 29 from whence it flows through the valve 33 into the interior of the casing 8, the valve 16 having been previously closed. The belt is then operated to rotate the casing 8 which causes the tubular member 18 to revolve within the tank 7. As the tubular member or arm 18 revolves the valve 25 will be thrown outwardly by centrifugal force to open position thus permitting the priming fluid in the casing 8 to flow outwardly through the tubular member 18 into the tank 7. As the fluid is discharged from the tubular member 8 the valve 16 will be moved to open position thus creating a suction in the lower portion of the pipe 5 which automatically opens the flap valve 15 and causes the water to ascend in the pipe 5 to the casing 8 from whence it is discharged through the tubular member 18 into the receiving tank 7. When the tubular member 18 ceases to rotate the weight 26 will automatically return the valve 25 to closed position and thus cut off the flow of water to the tank 7.

The upper or free edge of the tank 7 is preferably curved inwardly, as indicated at 34 so as to prevent the liquid discharged from the tubular member 18 from splashing over the upper edge of said tank.

It will of course be understood that the water in the receiving tank 17 may be conducted through a suitable pipe or irrigating ditch to the source of consumption and that as many tubular members or arms may be formed on the casing or head, as found desirable.

The collar 10 bears against a transverse brace 35 spaced from the bottom of the receiving tank 7 which latter is formed with a suitable bearing for the reception of the pipe 5 and serves to sustain the weight of the casing and its associated parts.

In Figs. 4 and 5 of the drawings there is illustrated a modified form of the invention in which the rotary head or casing is formed of a flat cylindrical disk 36 having a hollow hub or chamber 37 which communicates with the interior of the pipe 5′ and upon which it is mounted for rotation. The casing or head 36 is formed with a plurality of radiating liquid discharge passages 39 which communicate with the chamber 37 and open through the periphery of the casing so as to permit the discharge of water through the head into the receiving tank 7′. The casing or head 36 is preferably formed in three sections the lower section 40 being provided with a tubular sleeve or collar 41 which engages the adjacent end of the pipe 5′ while the upper section 41′ of said head is provided with a vertically disposed shaft 42 on which is mounted a wheel or pulley 43 for connection with the belt 44. The outer and intermediate sections comprising the head 36 may be bolted or otherwise detachably secured together and the pulley 43 may be provided with an interior chamber similar in construction to the chamber 29 in Fig. 1 of the drawings so as to permit the introduction of a quantity of water for priming the pump.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. A centrifugal pump including a pipe having one end thereof communicating with a source of liquid supply, a casing mounted for rotation on the opposite end of the pipe, a tubular member communicating with the casing, brackets depending from the free end of the tubular member, and a weighted valve pivotally mounted in the brackets and adapted to normally close the adjacent end of the tubular member, said valve being movable to open position when the casing is rotated, and a stop pin for limiting the opening movement of the valve.

2. A centrifugal pump including a pipe having one end thereof communicating with a source of liquid supply and provided with a valve, a casing mounted for rotation on the opposite end of the pipe, a pulley secured to the casing and having a chamber formed therein for the reception of a priming fluid, a valve disposed in the bottom of the chamber, an auxiliary valve secured to the upper end of the pipe, a tubular member interposed between the valves and communicating with the interior of the casing between the adjacent valves, means for rotating the casing, brackets depending from the free end of the tubular member, a gravity actuated valve pivotally mounted between said brackets and adapted to normally close the adjacent end thereof, said valve being movable to

open position when the casing is rotated, and means for limiting the opening movement of said valve.

3. A centrifugal pump including a pipe having one end thereof communicating with a source of liquid supply and its opposite end provided with an annular bearing flange, a casing mounted for rotation on the pipe, a collar secured to the lower end of the casing and bearing against said flange, a valve normally closing the upper end of the pipe, a pulley secured to the end of the casing and having a chamber formed therein for the reception of a priming fluid, a valve disposed in the bottom of the chamber, guide flanges extending laterally from the pulley for engagement with a driving belt, a tubular member communicating with the interior of the casing between the adjacent valves, a receiving tank surrounding the casing, a bracket depending from the free end of the tubular member and a weighted arm pivotally mounted on the bracket and provided with a valve for normally closing the free end of the tubular member, said valve being movable to open position when the casing is rotated, and a pin extending laterally from the bracket and adapted to engage the weighted arm for limiting the opening movement of said valve.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

PETER J. WICKBLOM.

Witnesses:

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J. E. TROLINE.