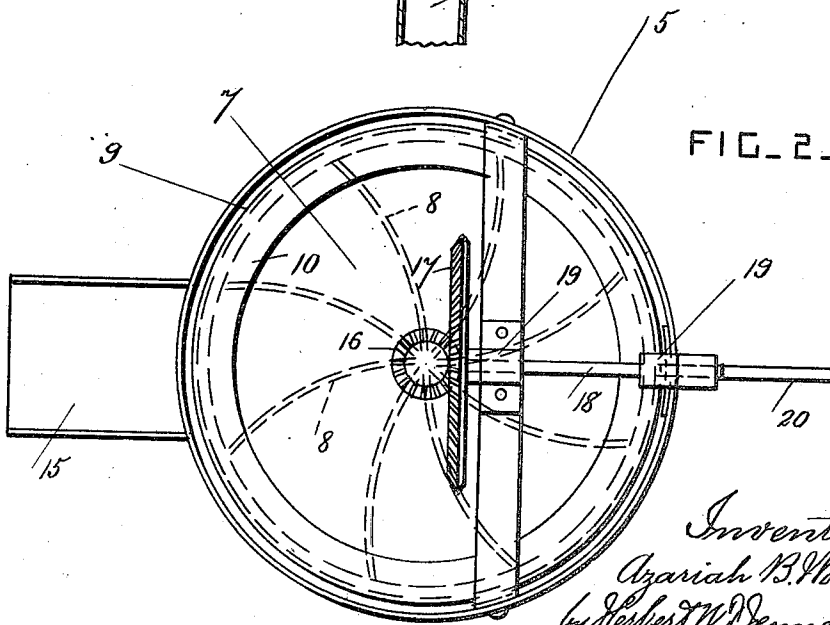
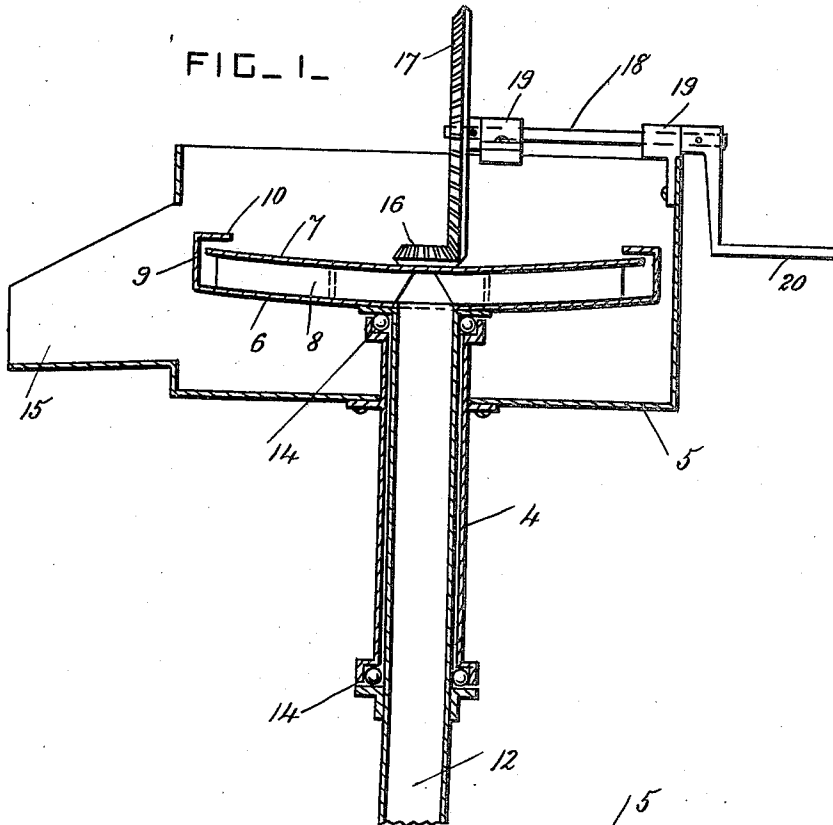


1,431,350.

Patented Oct. 10, 1922.



Inventor.
Azariah B. Woody
by Herbert W. Jenner,
Attorney.

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UNITED STATES PATENT OFFICE.

AZARIAH B. WOODY, OF MOUNTAINVIEW, WYOMING.

CENTRIFUGAL PUMP.

Application filed June 24, 1921. Serial No. 480,194.

To all whom it may concern:

Be it known that I, AZARIAH B. WOODY, a citizen of the United States, residing at Mountainview, in the county of Uinta and State of Wyoming, have invented certain new and useful Improvements in Centrifugal Pumps, of which the following is a specification.

This invention relates to centrifugal pumps provided with horizontally arranged impellers; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed whereby the liquid is pumped and whereby the pump is kept constantly primed and ready for action.

In the drawings, Figure 1 is a vertical section through a centrifugal pump constructed according to this invention. Fig. 2 is a plan view of the same.

A stationary tubular support 4 is provided, and the casing or chamber 5 for the impeller is secured to its upper end. The impeller is provided with a lower disk 6, and an upper disk 7 of smaller diameter than the lower disk. The upper disk is preferably concave or dished on its upper surface, and the lower disk may also be concave if desired, but this is not essential. Impelling arms 8 are secured between the two disks, and are of any approved shape or curvature.

The lower disk 6 has a rim 9 which projects vertically past the upper disk, and which has an inwardly projecting circumferential flange 10 at its top, which overlaps the edge of the upper disk, and forms an annular discharge opening with it. The lower disk has a tubular shaft 12 secured to it, and communicating with the space between the two disks. This shaft 12 is journaled in the tubular support, and preferably upon ball bearings 14 or other suitable anti-friction bearings.

The shaft 12 forms the inlet pipe of the pump, and it is extended in the well or cistern, from which water or other liquid is to be obtained, to any suitable depth, and is provided with a foot valve and a strainer, not shown, of any approved construction.

The casing 5 is open at the top, and it has a delivery spout 15 on one side. The impeller is revolved rapidly by any suitable driving devices. A beveled toothed pinion 16 is secured to the upper disk 7, and gears into a beveled toothed wheel 17. The wheel 17 is secured on a shaft 18 journaled in

bearings 19 supported by the casing 5, and is revolved by a crank-handle 20.

In order to prime the pump, liquid is poured onto the upper disk 7 until the hollow shaft and the rim 9 are filled with liquid up to the level of the flange 10. The impeller is then revolved, and it raises the liquid and discharges it over the edge of the flange 10 into the casing 5 by centrifugal force. The liquid is retained by the rim 9 on top of the upper disk when the pump is not in action, and the pump is always primed and ready for action in consequence.

The casing 5 is open at its top, so that water can be poured into the shallow pan formed by the concave top of the plate 7. This is desirable in a hand pump which is only used at intervals, as the water in the upper part of the pump evaporates. The concavity of this plate 7 causes the water to force out all air from under the flange 10, and a considerable body of water is retained on the plate 7 where it can be seen before commencing to turn the crank 20. When the impeller is revolved, the flange 10 retains the water on the plate 7 and seals the annular passage around it, until a speed is attained which is sufficient to cause the water to rise freely in the suction pipe 12 which is connected directly to the underside of the lower disk. This construction enables the pump to be started and operated with facility and certainty, and is particularly desirable in a hand operated pump, in which the impeller is revolved at a slower speed than in a pump driven by a steam engine.

What I claim is:

1. In a centrifugal pump, an impeller formed of two disks having impelling arms between them, the upper disk being concavo-convex and having its concave side uppermost, and the lower disk having an inlet pipe secured directly to it at its center and a rim at its periphery which projects upwardly past the upper disk and is provided at its top with an inwardly projecting flange which projects over the edge of the upper disk and forms with it an annular delivery passage.

2. In a centrifugal pump, the combination, with an impeller formed of two disks having impelling arms between them, the upper disk being concavo-convex and having its concave side uppermost, and the lower disk having an inlet pipe secured directly to it

at its center and a rim at its periphery which projects upwardly past the upper disk and is provided at its top with an inwardly projecting flange which projects
5 over the edge of the upper disk and forms with it an annular delivery passage; of an impeller casing having a discharge opening at one side, and a tubular support secured to the bottom of the casing and provided with upper and lower bearings in which 10 the said inlet pipe is journaled.

In testimony whereof I have affixed my signature.

AZARIAH B. WOODY.