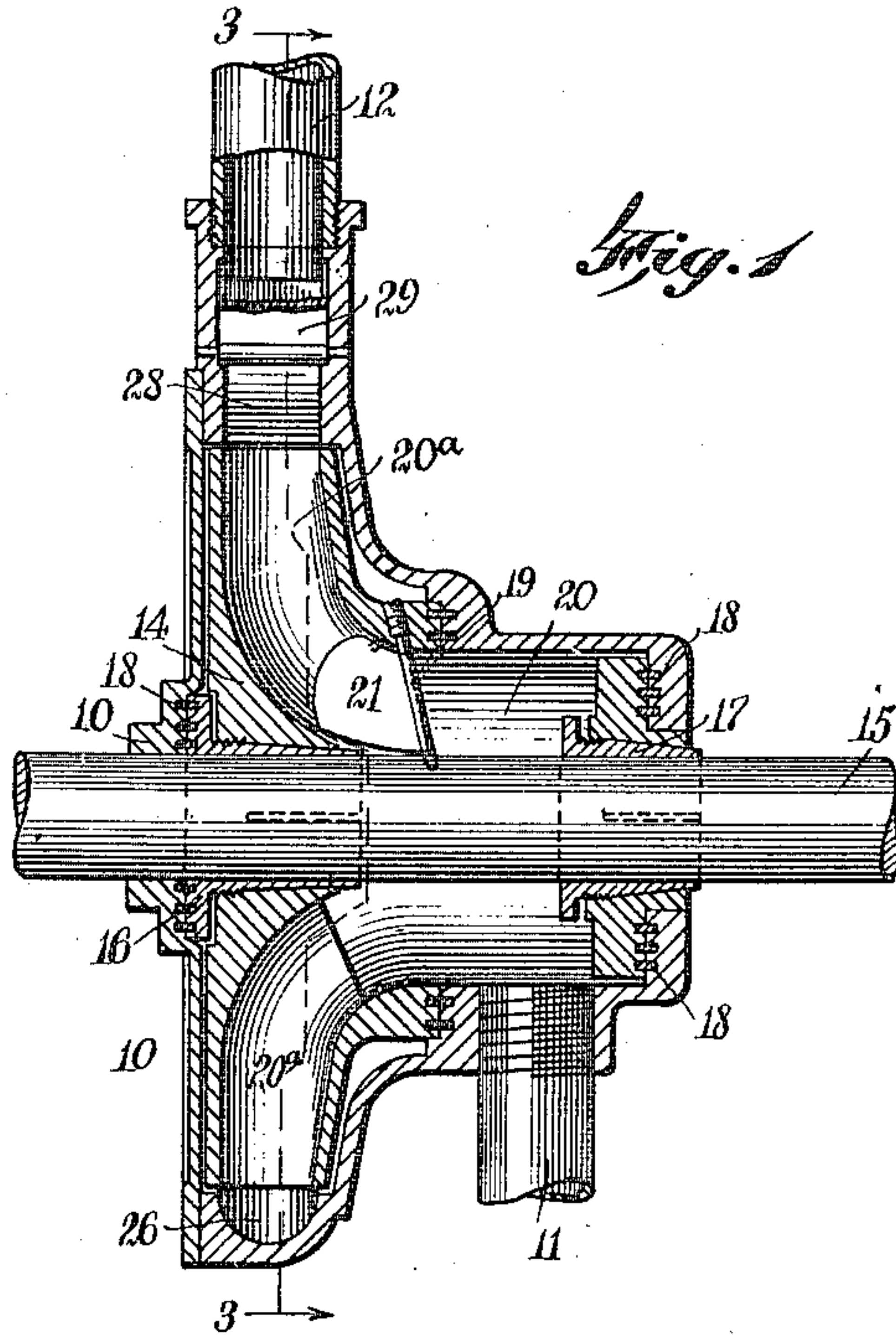


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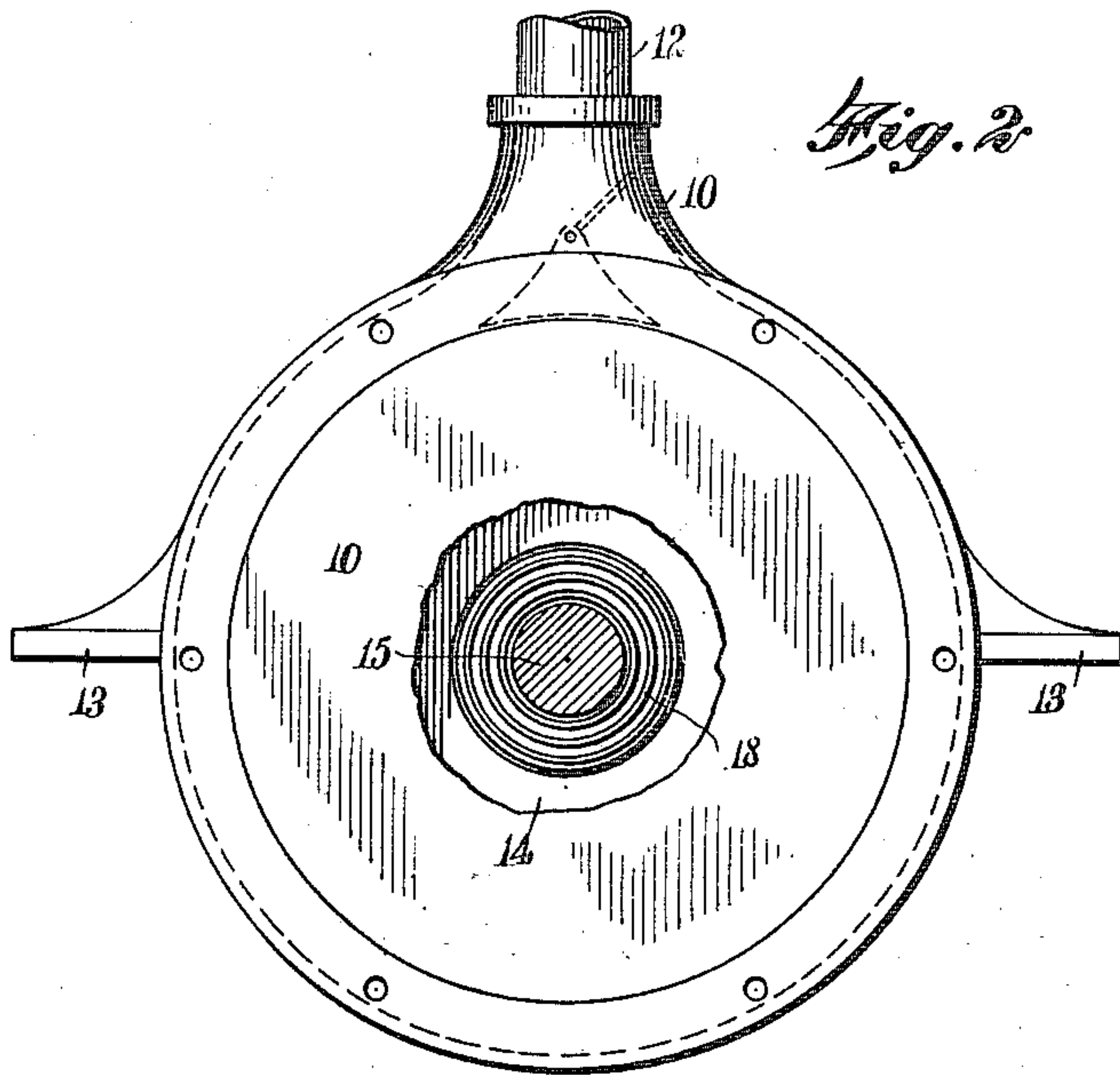
J. L. HEALD.  
CENTRIFUGAL PUMP.  
APPLICATION FILED APR. 12, 1910.

Patented Jan. 31, 1911.

2 SHEETS—SHEET 1.



*Fig. 1*



*Fig. 2*

WITNESSES:  
*J. D. Smith*  
*P. A. Hoster*

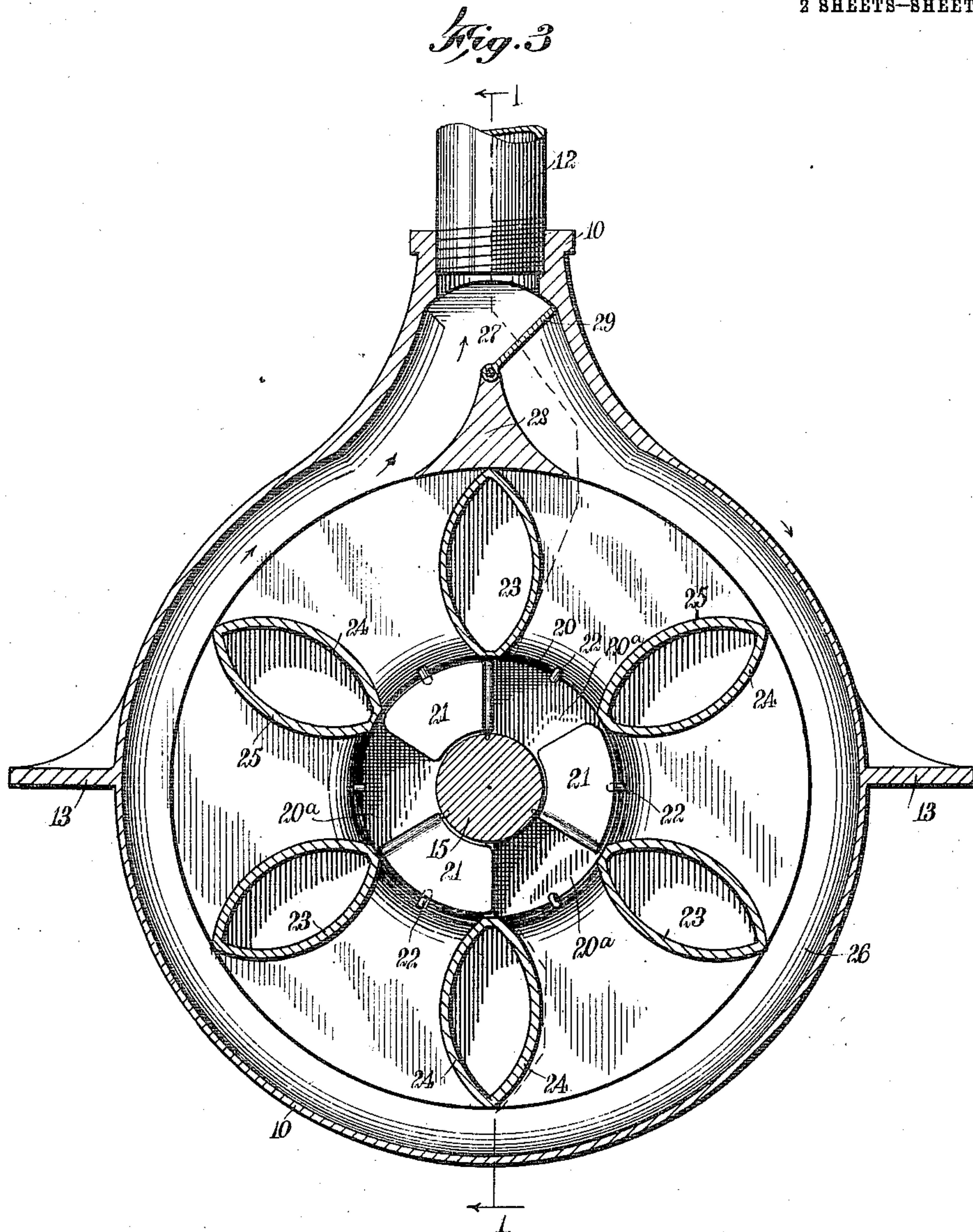
INVENTOR  
*John L. Heald*  
BY *Munn & Co.*  
ATTORNEYS

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WITNESSES:

*F. D. Smith*  
*P. A. Hester*

INVENTOR  
*John L. Heald*

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# UNITED STATES PATENT OFFICE.

JOHN L. HEALD, OF ALAMOGORDO, TERRITORY OF NEW MEXICO.

## CENTRIFUGAL PUMP.

983,137.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed April 12, 1910. Serial No. 554,914.

*To all whom it may concern:*

Be it known that I, JOHN L. HEALD, a citizen of the United States, and a resident of Alamogordo, in the county of Otero and Territory of New Mexico, have invented a new and Improved Centrifugal Pump, of which the following is a full, clear, and exact description.

The invention relates to fluid transmitting pumps of the centrifugal type, and has for an object to provide a centrifugal pump for efficiently pumping water and like liquids.

For the purpose mentioned, use is made of a casing provided with a peripheral chamber, a rotor mounted to turn in the casing, deflecting wings on the rotor, and blades or valves mounted to turn with the motor and adapted to guide the flow of water or liquid to be pumped.

As a preliminary it will be understood that my pump is adapted to operate in either of two directions, and for this reason I employ new and novel features in the construction of my device, as will be herein- after more fully described and as is illustrated in the drawings.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a sectional side view of my pump, taken on the line 1—1 in Fig. 3; Fig. 2 is a front view with parts broken away to disclose the underlying structure, and Fig. 3 is a sectional front view taken on the line 3—3 in Fig. 1.

Referring more particularly to the figures, I employ a casing 10 having an inlet pipe 11, an outlet pipe 12, and outwardly extending lugs 13 for securing the pump to a base or bed. A rotor 14 is mounted to turn in the casing 10 and is secured to a shaft 15 by a split tapered sleeve 16 provided with a screw thread and adapted to engage the rotor 14 to securely hold the same on the shaft 15. A similar sleeve 17 is provided at the rear of the rotor 14. In order to permit the sleeves 16 and 17 to turn without causing undue friction between the casing 10 and the sleeves, a series of circular rings 18, preferably made of metal, are provided and constitute bearings for the sleeves 16 and 17. A number of pivots 19 are secured on the rotor 14 and engage the shaft 15 as will be seen by referring to Fig. 1, the said pivots being

disposed in an opening 20 in the rotor 14. Pivotally mounted on the pivots 19 are blades or valves 21, and stop-lugs 22 are provided on the rotor 14 to limit the movement of the blades 21. At equally spaced distances on the rotor 14 are a number of almond shaped deflecting wings 23 having curved sides 24 and 25, the purpose of which will be more fully stated hereinafter. A peripheral chamber 26 is provided in the casing 10 and terminates in an apex 27 to constitute the entrance to the outlet pipe 12. A support 28 is mounted intermediate the conveying ends of the chamber 26, and pivotally mounted on the support is a blade or valve 29, disposed to removably close either of the ends of the chamber 26. In view of the blades 21 disposed in the opening 20, the said opening is divided into sub-openings 20<sup>a</sup>, as will be seen by referring to Fig. 3.

In the operation of my pump, the same is connected to the shaft 15, of an engine, as shown in Fig. 1. When the shaft is turned, the rotor 14 secured to the shaft turns also, and the suction caused thereby draws water upwardly through the pipe 11 into the chamber 20. Now, when the rotor is turning in the direction indicated by the arrow in Fig. 3, the blades tend to take the position shown in Fig. 3, and owing to the centrifugal force produced by the turning of the rotor, the water is forced through the openings 20<sup>a</sup> and striking the sides 25 of the deflecting wings 23, enters the chamber 26 and is forced upwardly into the apex chamber 27 and out of the pipe 12, as will be seen by referring to Fig. 3, the blade 29 being forced over by the water to close the opposite end of the chamber 26, thereby preventing any water from flowing back into the chamber 26.

When the rotor turns in an opposite direction to the one described, owing to a reversing of the engine, the blades 21 pivot around to close the openings 20<sup>a</sup>, and openings are made where the blades were previously disposed. The water then issuing from the new openings is deflected against the sides 24 of the deflecting wings 23 and is forced out of the pipe 12 in a manner similar to the one described when the rotor was rotating in the first mentioned direction. In this manner water can be quickly pumped from the hold of a boat or the like, and an efficient and durable pump is provided.

Although I have shown a particular form



of my device for the purpose of describing the same, it will be understood that the scope of my invention is clearly defined in the appended claims.

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

1. A centrifugal pump comprising a casing, a peripheral chamber in the casing, a rotor mounted to rotate in the casing, blade valves pivotally mounted on the rotor, and deflecting wings secured on the rotor.

2. A centrifugal pump comprising a casing, a peripheral chamber in the casing, a reversible rotor mounted in the casing, and reversible means mounted in the rotor for controlling the flow of a liquid through the pump.

3 A centrifugal pump for connection with a driving shaft, comprising a casing, a chamber in the casing, a rotor secured to the shaft and adapted to rotate in the casing, blade valves pivotally disposed intermediate the shaft and the rotor, and deflecting wings on the rotor.

4. A centrifugal pump for connection with

a driving shaft, comprising a casing having an inlet pipe and an outlet pipe, a peripheral chamber in the casing and having its apex at the outlet pipe, a blade valve mounted to removably close either end of the chamber, a rotor mounted to rotate in the casing and secured to the shaft, blade valves pivotally mounted intermediate the rotor and the shaft, bearings for the rotor and engaging the casing and the shaft, and deflecting wings on the rotor.

5. A centrifugal pump for connection with a driving shaft, comprising a casing, a peripheral chamber in the casing, a reversible rotor mounted to rotate in the casing and adapted to be secured to the shaft, reversible blade valves pivotally disposed intermediate the rotor and the shaft, and bi-deflecting wings mounted on the said rotor.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN L. HEALD.

Witnesses:

R. M. JACKSON,  
EDITH E. CAMERON.