No. 820.439. PATENTED MAY 15, 1906.

F. RAY.

CENTRIFUGAL, TURBINE, AND SIMILAR PUMP.

APPLICATION FILED MAY 6, 1905.

Fig. 1.

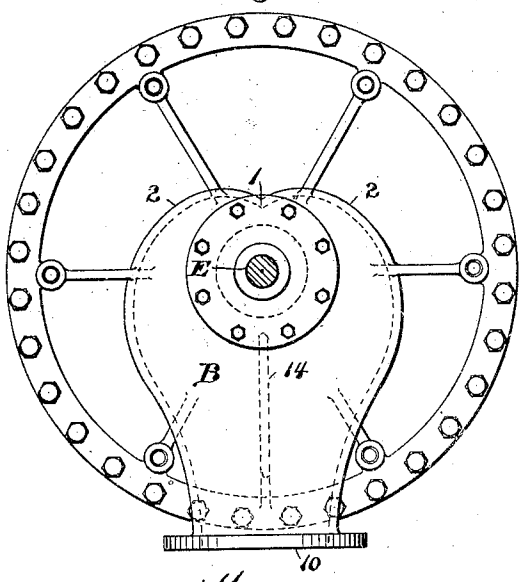


Fig. 2.

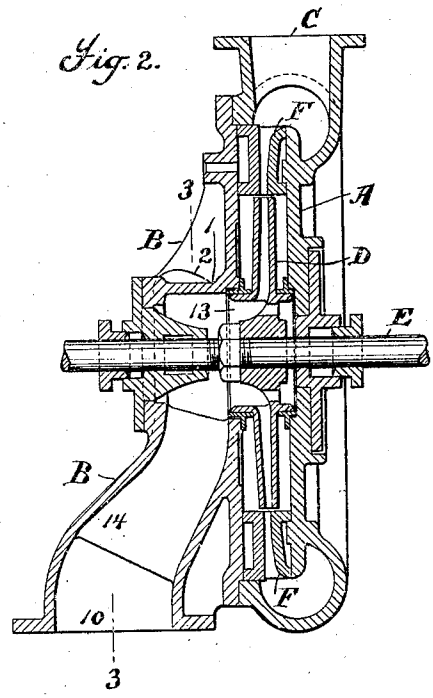


Fig. 3.

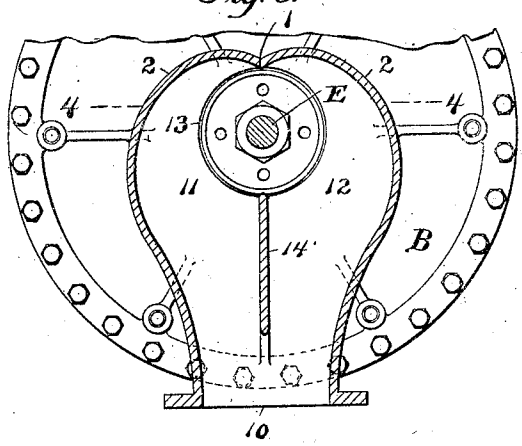
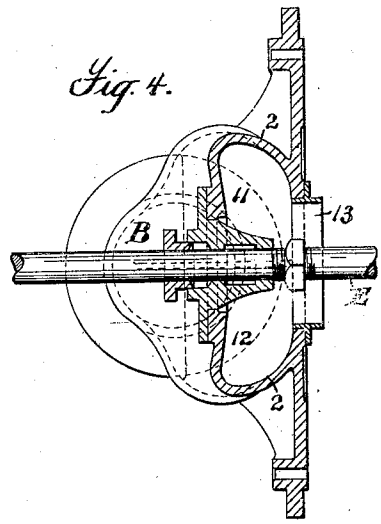


Fig. 4.



Witnesses
Philip V. Tildon
P. Galiani.

Inventor
Frederick Ray
By his Attorneys
Philbrick Bowen Rice & Maundy

UNITED STATES PATENT OFFICE.

FREDERICK RAY, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO HENRY R. WORTHINGTON, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CENTRIFUGAL, TURBINE, AND SIMILAR PUMP.

No. 820,439. Specification of Letters Patent. Patented May 15, 1906.

Application filed May 6, 1905. Serial No. 259,250.

To all whom it may concern:

Be it known that I, FREDERICK RAY, a citizen of the United States, residing at East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Centrifugal, Turbine, and Similar Pumps, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to secure a more even suction-flow of liquid to the impeller of a centrifugal or turbine pump and, further, to avoid suction-spaces in which air may collect and interfere with the pump-suction.

I secure the result desired by a double volute suction-passage, the volutes being formed on opposite sides of and transversely to the suction-opening of the impeller and preferably with the volutes meeting centrally of and above the suction-opening.

In the accompanying drawings, forming a part of this specification, the invention is shown as applied in its preferred form in connection with a single-impeller turbine-pump of a well-known construction, and this construction will now be described in detail and the features forming the invention then particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the suction end of the pump. Fig. 2 is a central section longitudinally of the pump-shaft. Fig. 3 is a vertical section on the line 3 of Fig. 2. Fig. 4 is a horizontal section on the line 4 of Fig. 3.

Referring to said drawings, A is the pump-casing; B, the suction-head; C, the delivery; D, the impeller carried by the shaft E, and F the diffusing-ring. It will be understood, however, that the invention is applicable to pumps of other construction than that shown.

Referring now to the features forming the invention, the suction-head B has a suction-passage 10 entering the suction-head from below and expanding on each side into two volute-passages 11 12, which volutes meet on the line 1 above the impeller-suction 13. These volutes 11 12 are preferably formed with their inner walls 2 curved inwardly toward the impeller-suction, which act to direct the liquid to the impeller-suction 13 and aid materially in securing an even flow of liquid to the impeller. It will be understood, however, that the volutes may be used without this feature of curved guiding-surfaces on the inner walls of the volutes. As shown, a stay-web 14 is used in the suction-passage; but this is not essential to the invention and may be omitted. It is found in practice that this volute suction secures a very even and properly-distributed flow of liquid to the impeller and that the collection of air above the impeller-suction is thus avoided in pumps in which the suction is taken from below, as shown. The invention is also applicable, however, to pumps in which the suction is taken from above or horizontally.

What I claim is—

1. In a centrifugal, turbine or similar pump, the combination with the impeller and its suction-opening, of a suction-passage formed in two volutes on opposite sides of and transverse to the impeller suction-opening.

2. In a centrifugal, turbine or similar pump, the combination with the impeller and its suction-opening, of a suction-passage formed in two volutes on opposite sides of and transverse to the impeller suction-opening, the inner walls of said volutes being formed with surfaces curving from the outer walls of the volutes to the impeller-suction.

3. A centrifugal, turbine or similar pump having the suction-head B provided with the suction-volutes 11, 12 on opposite sides of and meeting above the impeller suction-opening.

4. A centrifugal, turbine or similar pump having the suction-head B provided with the suction-volutes 11, 12 having the curved guiding-surfaces 2 on their inner walls said volutes being formed on opposite sides of and meeting above the impeller suction-opening.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FREDERICK RAY.

Witnesses:
C. J. SAWYER,
J. A. GRAVES.