

907,869.

J. G. PFADT.
CENTRIFUGAL PUMP.
APPLICATION FILED JAN. 23, 1908.

Patented Dec. 29, 1908.

Fig. 3.

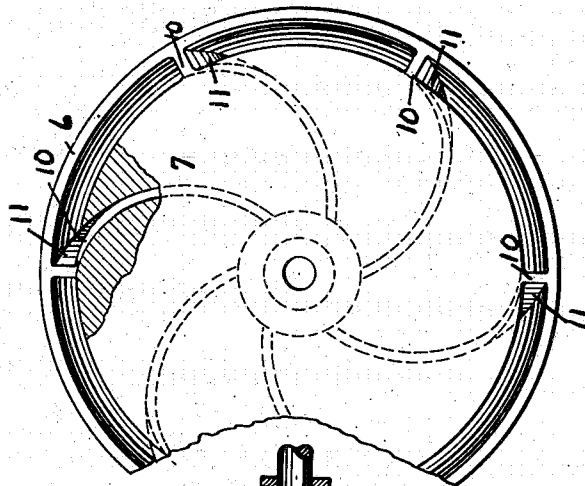


Fig. 2.

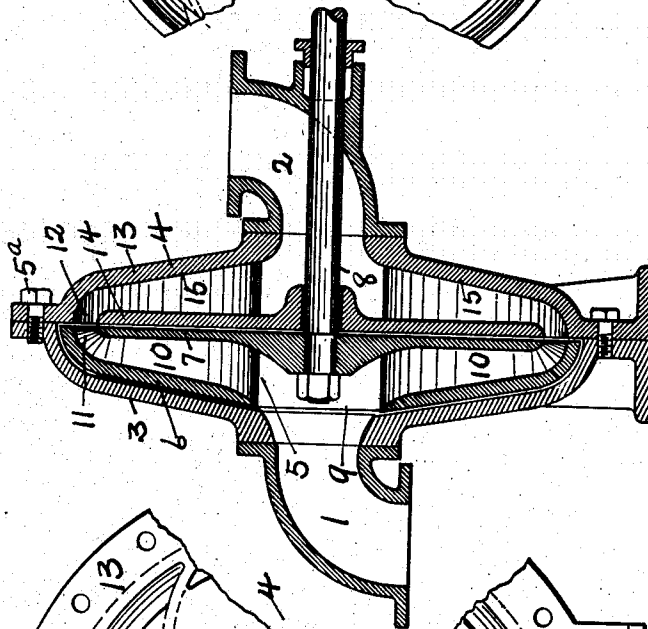
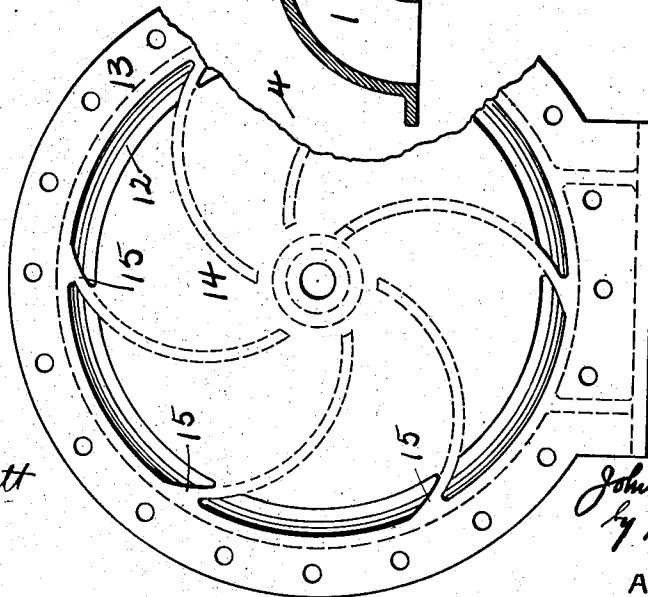


Fig. 1.



WITNESSES
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CENTRIFUGAL PUMP.

No. 907,869.

Specification of Letters Patent.

Patented Dec. 29, 1908.

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To all whom it may concern:

Be it known that I, JOHN G. PFADT, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Centrifugal Pumps, of which the following is a specification.

This invention relates to centrifugal pumps, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

More particularly this invention relates to that type of centrifugal pumps in which the liquid is impelled outwardly and laterally, and then conveyed to a discharge opening near the center of the pump, so that the pumps may be arranged in multiple if desired.

The invention is illustrated in the accompanying drawings as follows: Figure 1 shows a side elevation of the discharge shell. Fig. 2 a central vertical section of the pump. Fig. 3 an elevation of the impeller, the view being from the discharge side of the same.

1 marks the intake and 2 the discharge. Either of these may be connected with a companion pump. The impeller shell 3 is connected with the intake, and the discharge shell 4 is provided with passages leading from its periphery near the center. It is connected with the discharge 2 and is secured to the impeller shell by means of bolts 5^a. The impeller 5 is made up of two walls 6 and 7. Wall 7 is provided with a hub which is secured to the driving shaft 8 in any suitable manner. Wall 6 has an opening 9 which leads to the intake. The walls 6 and 7 are connected by the impeller blades 10. The impeller blades 10 extend outwardly from the opening 9 between the walls 6 and 7, the faces of the blades lying in planes parallel to the axis of the impeller. The outer ends of the blades, however, are turned or deflected so as to face laterally. The opening formed between the walls 6 and 7 is also arranged in the side of the impeller, so that the liquid as it is driven outwardly is forced laterally by the curved wall at the outer periphery of the wall 6, and also by the deflected ends of the impeller blades. The liquid thus driven and deflected is received in the passage 12 formed in the discharge shell between the walls 13 and 14. Deflector blades 15 are arranged between these walls and extend outwardly and laterally to the face of the passage which is in the side of the shell and directly oppo-

site the discharge from the impeller 5. The discharge shell and the deflector blades are stationary, or at least do not rotate with the impeller. The passage 12 terminates in the discharge opening 2.

It will be noted that the liquid discharged from the impeller will have a very rapid movement in a circumferential direction, as well as movement in a lateral direction. The stationary deflectors are preferably inclined from a true radial line, so that the momentum incident to the circumferential movement is utilized to carry the liquid toward the discharge at the center. The deflectors therefore, not only make useful the momentum in this way, but also by retarding the circumferential movement of the liquid absorb the centrifugal force incident to a rotative movement thereof, so that the liquid driven by the impeller is relieved to a very large extent of back pressure in the discharge passage.

In the preferred construction shown, the impeller blades are carried between rotating walls. In this way the friction incident to stationary walls is obviated, and the deflected or turned ends of the blades assist in the deflection of the liquid from a movement in a radial direction to a movement in the lateral direction to carry it into the discharge passage.

What I claim as new is:

1. In a centrifugal pump, the combination of an impeller shell having an intake near its axis and a discharge near its periphery; an impeller rotatively mounted in the shell, comprising outwardly extending impeller blades having their outer ends turned to face in an axial direction to drive an actuated liquid in an axial direction at the periphery; a discharge shell having a passage for receiving the deflected liquid at the periphery, and for conveying the liquid toward the axis of the pump; and a deflector stationary with relation to the impeller arranged in the discharge shell.

2. In a centrifugal pump, the combination of an impeller shell having an intake near its axis and a discharge near its periphery; an impeller rotatively mounted in said shell, and comprising an inner wall 6 and outer wall 7 open to the intake, and having a laterally deflected edge forming a discharge opening from the impeller on one side thereof; impeller blades arranged between

said walls having the outer ends turned to face in an axial direction; a discharge shell having a passage communicating with a discharge of the impeller, and extending toward the axis of the pump; and deflector blades in the discharge shell which are stationary with relation to said impeller.

3. In a centrifugal pump, the combination of an impeller shell having an intake near its axis and a discharge near its periphery; an impeller rotatively mounted in said shell, and comprising an inner wall 6 and outer wall 7 open to the intake and having a laterally deflected edge forming a discharge opening for the impeller on one side thereof; impeller blades arranged between said walls, and having their outer ends turned to face in an axial direction, to deflect the liquid in an axial direction.

4. In a centrifugal pump, the combination of an impeller shell 3; the intake 1 secured thereto; the driving shaft 8; the impeller

mounted on the shaft, and comprising the inner wall 7 secured to the shaft, the outer wall 6 having an opening 9 leading from the intake, and its outer periphery deflected to form a discharge in the side of the deflector; the deflector blades 10 arranged between the walls and having the turned ends 11 facing in an axial direction at their extremities; the discharge shell 4 formed of the walls 13 and 14 with the intervening passage 12 leading from the discharge of the impeller or the axis of the pump; and stationary deflector blades 15 inclined from a true radial line to deflect the liquid toward the center.

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

JOHN G. PFADT.

Witnesses:

H. C. LORD,
J. R. CRAIG.