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A. P. RUTH  
CENTRIFUGAL PUMP  
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2,403,556

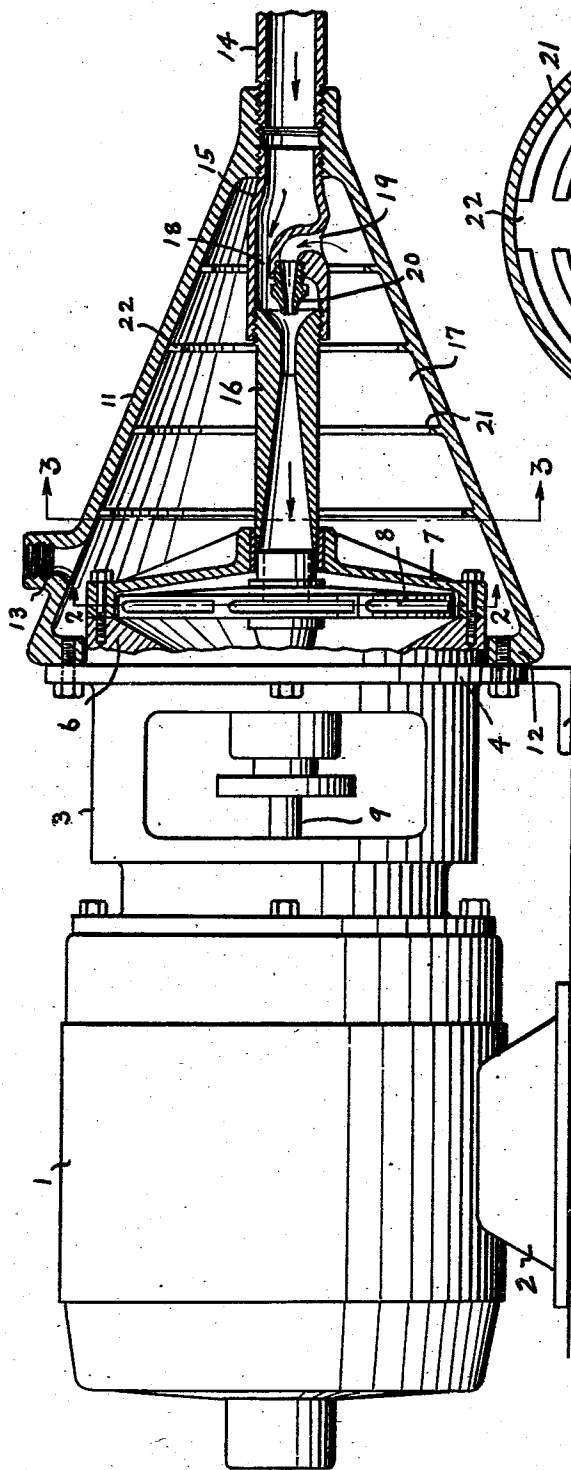


Fig. 1.

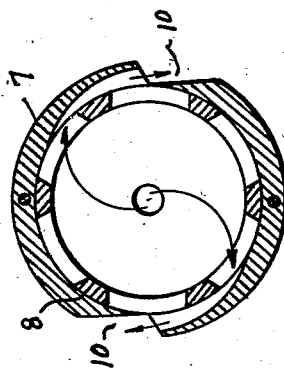


Fig. 2.

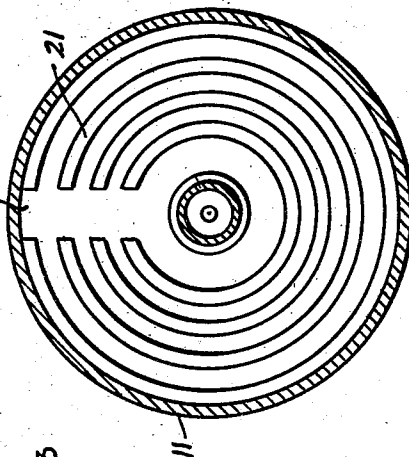


Fig. 3.

INVENTOR.  
*Arthur P. Ruth.*  
BY  
*E. J. Hardway,*  
ATTORNEY.

## UNITED STATES PATENT OFFICE

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## CENTRIFUGAL PUMP

Arthur P. Ruth, Houston, Tex.

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6 Claims. (Cl. 103-5)

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This invention relates to a centrifugal pump.

The invention herein shown constitutes a continuation, in part, of my copending application for Combination pressure tank and pump, filed February 26, 1945, under Serial No. 579,853. The general subject matter of said pending application includes a centrifugal pump located in a surrounding housing with a suction inlet passageway leading into the pump through the housing from the source of liquid, with a nozzle leading from within the housing and discharging into the passageway, said housing having a discharge outlet at the top thereof. Said above described subject matter is not claimed herein except in combination with baffles around the inner wall of the housing and provided with gates for the passage of gas, or air, to facilitate the exit of said gas, or air, from the housing.

An object of the invention is to provide a pump of the character described specially designed for pumping either liquid or a non-liquid fluid such as air or gas.

Another object of the invention is to provide a pump of the centrifugal type with a surrounding housing, preferably cone shaped for maintaining the pump constantly submerged in liquid and having a suction inlet passageway leading into the pump through the housing from the source of liquid, or other fluid being pumped and having a nozzle leading from within the housing and discharging into said passageway, said housing having a discharge outlet at the top thereof.

It is a further object of the invention to provide a pump assembly of the character described having a plurality of baffle rings spaced apart and extending around the inside wall of the housing, said rings being interrupted at the top of the housing to provide gates for the passage of air, or gas, collected by the baffle rings, out to the discharge outlet of the housing.

Other objects and advantages will be apparent from the following specification which is illustrated by the accompanying drawing, wherein—

Figure 1 is a side view of the complete assembly shown partly in section.

Figure 2 is a cross-sectional view taken on the line 2—2 of Figure 1; and

Figure 3 is a cross-sectional view taken on the line 3—3 of Figure 1.

Referring now more particularly to the drawing wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates a motor, preferably an electric motor, which is supported on the stand 2 and to one end

of which the cage 3 is secured, said cage having an end plate 4 supported by the base flange 5.

Mounted on the end plate 4 there is a centrifugal pump 6 which embodies a pump casing 7 and an impeller. The impeller is fastened to the shaft 9 of the motor.

The pump casing 7 is provided with side outlets 10, 10 through which the liquid, or other fluid, may be discharged from the pump.

There is a pump housing 11 which is preferably of a conical shape and whose large end has the internal flange 12 therearound which is bolted to the end plate 4 around the pump so that the pump will be completely enclosed by said housing.

The housing 11 has a discharge outlet 13 near the large end thereof into which a discharge line may be connected.

As shown the apex of the conical shaped housing is internally threaded to receive the end of a suction line 14 which may be screwed therein.

Within the housing 11 and screwed into said last mentioned end of the housing in alignment to the suction line 14 there is a tubular jet body 15. A Venturi tube 16 is located within the pressure chamber 17 formed by said housing with one end of said Venturi tube connected into the intake of the pump and with the other end thereof screwed into the inner end of the jet body.

The jet body has one or more passageways 18 therethrough through which the liquid or other fluid can flow from the intake pipe 14 into the Venturi passageway through the tube 16 and the jet body has a side inlet passageway 19 through which the liquid, under pressure, may pass from the pressure chamber through the jet body and thence through the jet nozzle 20 into said Venturi passageway.

It is to be understood that the housing 11 will at all times be filled with liquid and this liquid will be, at all times, under pressure from the pump and the liquid under pressure flowing into the passageway 19 and through the nozzle 20 into the Venturi passageway through the tube 16 will create a suction therein thus drawing water from the well to which the suction line 14 is connected or drawing in liquid from another source of liquid to which said line may be connected or drawing in fluid such as air through said suction line 14.

Secured to the inside walls of the pump housing are the arcuate baffle rings 21 which are spaced apart from end to end of the housing and which are interrupted at the top of the housing, as shown in Figures 1 and 3, thus providing gates 22 for the passage of air or other similar fluid.

If water, or similar liquid, is being pumped the

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housing 11 will be continuously filled with said liquid so as to keep the pump submerged and air drawn in through the suction pipe will pass through the pump and will be entrapped by said baffle rings and will travel around said rings to the corresponding gates and will move up along the wall of the housing and be discharged out through the discharge 13 so that air will not collect and be recirculated through the pump to interfere with the operation thereof.

Likewise if air or other similar fluid is being pumped the chamber 17 will be filled with liquid and air, or gas, will be drawn in through the suction line 14 and discharged by the pump into the liquid in the chamber 17 and will be entrapped by the baffles 21 and caused to travel around the housing wall to the outlet gates 22 and thence to the discharge opening 13 so that the air or other gaseous fluid will not be recirculated through the pump.

The drawing and description are illustrative merely while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. A pump assembly comprising, a housing having a discharge outlet and enclosing a pressure chamber, a pump within the chamber, a suction line leading from without the housing and connected into the pump intake, said pump having a discharge outlet into said chamber, baffles around the inner wall of the housing and spaced apart and being interrupted at the upper part of the housing to provide gates through the baffles.

2. A pump assembly comprising, a housing enclosing a pressure chamber and having a discharge outlet at the top of the housing, a pump in said chamber having an intake opening and a discharge opening in said chamber, a suction line leading from the housing and entering the intake opening of the pump, annular baffles around the chamber walls and spaced apart and having gates at the top of the chamber to allow passage of entrapped air or gaseous fluid to said discharge outlet.

3. A pump assembly comprising, a housing having a discharge outlet and enclosing a pressure chamber, a pump within the chamber, a suction line leading from without the housing and

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connected into the pump intake, said pump having a discharge outlet into said chamber, baffles around the inner wall of the housing and spaced apart and being interrupted at the upper part of the housing to provide gates through the baffles, and a nozzle arranged to discharge liquid, under pressure, from the pressure chamber into the suction line.

4. A pump assembly comprising, a housing having a discharge outlet and enclosing a pressure chamber, a pump within the chamber, a suction line leading from without the housing and connected into the pump intake said pump having a discharge outlet into said chamber, baffles around the inner wall of the housing and spaced apart and being interrupted at the upper part of the housing to provide gates through the baffles, a Venturi tube incorporated into the suction line within said chamber and a nozzle at the outer end of said tube arranged to project liquid, under pressure, from said pressure chamber into the stream flowing through said tube.

5. A pump assembly comprising a cone-shaped housing having a discharge outlet, at the large end thereof, and enclosing a pressure chamber, a pump within the chamber, a suction line leading from without the housing and connected into the pump intake, said pump having a discharge outlet into said chamber, baffles around the inner wall of the housing and spaced apart and being interrupted at the upper part of the housing to provide gates through the baffles.

6. A pump assembly comprising a cone-shaped housing having a discharge outlet, at the large end thereof, and enclosing a pressure chamber, a pump within the chamber, a suction line leading from without the housing and connected into the pump intake, said pump having a discharge outlet into said chamber, baffles around the inner wall of the housing and spaced apart and being interrupted at the upper part of the housing to provide gates through the baffles, a Venturi tube incorporated into the suction line and located within said chamber and a nozzle at the outer end of the tube arranged to project liquid, under pressure, from the pressure chamber into the stream flowing through said tube.

ARTHUR P. RUTH.