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E. B. TAIT

ROTARY PUMP

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Fig. 1.

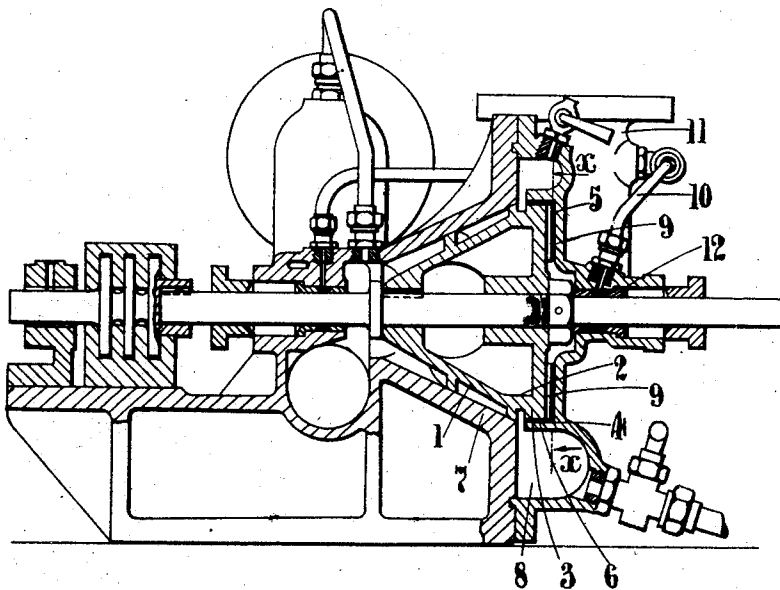
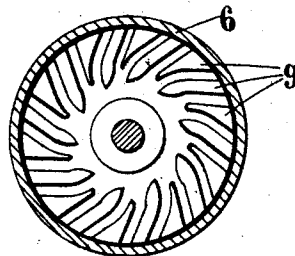


Fig. 2.



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ROTARY PUMP.

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This invention relates to rotary pumps of the screw or worm type, and it has for its object to obtain increased efficiency, firstly by preventing the fluid from leaking between the end of the screw or worm and the adjacent cover of the pump chamber where-
by the increased pressure on the back of said screw or worm and the increased thrust of the screw or worm arising from said pressure is avoided, and secondly by balancing the thrust and pressure on the discharge end of the thread of the screw or worm.

I attain these ends by the construction hereinafter particularly described with reference to the accompanying drawing in which Figure 1 is a view in side elevation partly in section, and Figure 2 is a view in transverse section on line *x x* Figure 1.

In both views similar parts are marked with like numerals of reference.

The body 1 of the rotor is extended rearwards into the discharging chamber 2 and on said extension is formed or fixed a disc 3 the area of the face of which opposite to the discharging end of the rotor is approximately equal to the area of the exposed part of the thread of the worm at said discharging end of the rotor so that the pressure of the water being discharged acting on the face of said disc is sufficient to balance said water pressure on said part of the thread of the rotor. The disc 3 works in a recess 4 formed by a flange 6 in the cover 5 of the discharge end of the pump, said flange which forms the circumferential wall of said recess extends to within such a distance of the back end of the pump chamber 7 as will provide a communication between the end of said chamber and the discharge chamber 8.

On the back end of the disc 3 forming the back end of the body 1 of the rotor are a series of vanes 9 which are shaped and arranged to throw any fluid in the recess 4 outwards, i. e. radially whereby it operates to prevent the fluid in the fine clearance space between the periphery of the disc 3 and the circumferential wall 6 of the recess 4 from passing to the back of said disc.

A supply of fluid to the recess 4 may be provided by a pipe 10 leading from the discharge pipe 11 which as shown in the accompanying drawing may also be conveniently used for cooling the rear bearing 12.

What I claim is:—

1. In a rotary pump of the screw or worm

type, the combination with a cone-shaped chamber having a suction inlet at one end and a discharge outlet at the other end and a rotor comprising a cone-shaped worm adapted to rotate in said chamber, a balancing disc at the discharging end of the worm which operates to balance the thrust of the rotor substantially as set forth.

2. In a rotary pump of the screw or worm type, the combination with a cone-shaped chamber having a suction inlet at one end and a discharge outlet at the other end and a rotor comprising a cone-shaped worm adapted to rotate in said chamber, of a balancing disc at the back or discharging end of the worm which operates to balance the thrust of the rotor, and of means for preventing the fluid at the discharging end of the worm destroying the action of said balancing disc substantially as and for the purpose set forth.

3. The combination in a rotary pump of a cone-shaped chamber having a suction inlet at one end and a discharge outlet at the other end, a cone-shaped worm rotating in said chamber, a disc on the back or delivery end of the worm, the width of said disc being such that its exposed area facing the delivery end of the pump chamber is approximately equal to the exposed part of the thread of the worm at the delivery end thereof, a recess in the discharge chamber of the pump in which said disc rotates, and vanes on the back of said disc arranged to force the fluid in said recess outwardly for the purpose specified.

4. The combination in a rotary pump of a cone-shaped chamber having a suction inlet at one end and a discharge outlet at the other end, a cone-shaped worm rotating in said chamber, a disc on the back or delivery end of the worm, the width of said disc being such that its exposed area facing the delivery end of the pump chamber is approximately equal to the exposed part of the thread of the worm at the delivery end thereof, a recess in the discharge chamber of the pump in which said disc rotates, a passage putting said recess in communication with the discharge outlet, and vanes on the back of said disc arranged to force the fluid in said recess outwardly.

5. A rotary pump of the screw or worm type comprising a cone-shaped rotor chamber having a suction inlet at its smaller end, a discharging chamber at the other end of

said rotor chamber, a cone-shaped worm rotating in said rotor chamber, a disc on the delivery end of the screw, the width of said disc being such that its exposed area facing
5 the delivery end of the rotor chamber is approximately equal to the exposed part of the screw thread of the worm at the delivery end thereof, a circular recess in the discharging chamber in which said disc rotates, a passage between said recess and the outlet of
10 said discharging chamber and radially arranged vanes on the back of said disc.

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