No. 718,557.

PATENTED JAN. 13, 1903.

W. WENZEL.

CENTRIFUGAL PUMP.

APPLICATION FILED JUNE 17, 1902.

NO MODEL.

Fig. 1.

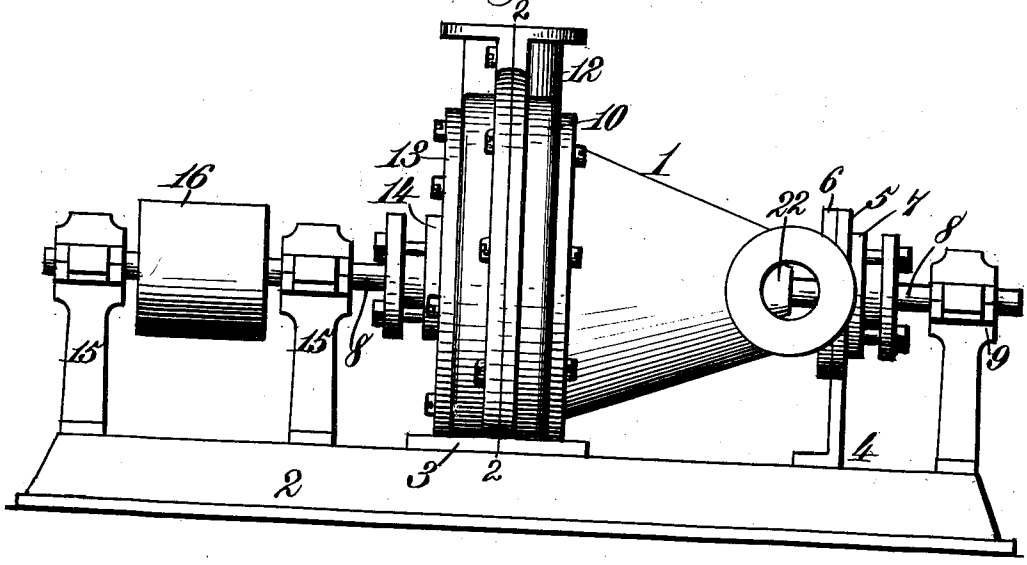


Fig. 2.

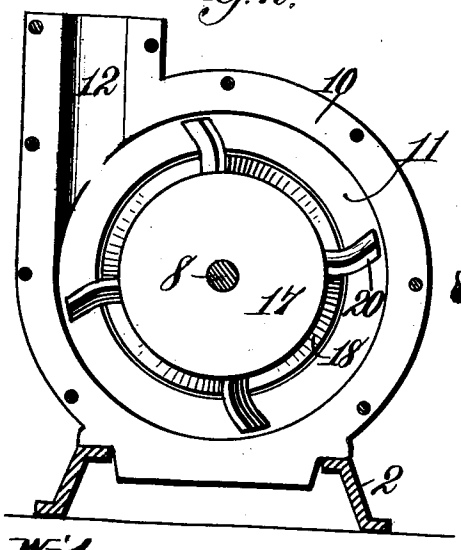
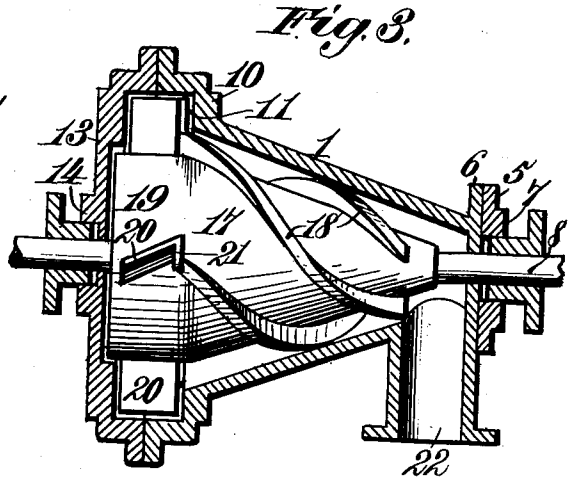


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM WENZEL, OF APPLETON, WISCONSIN.

CENTRIFUGAL PUMP.

SPECIFICATION forming part of Letters Patent No. 718,557, dated January 13, 1903.

Application filed June 17, 1902. Serial No. 112,098. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WENZEL, a citizen of the United States, residing at Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Centrifugal Pumps, of which the following is a specification.

My invention relates to certain new and useful improvements in centrifugal pumps; and it has for its broad object to provide a novel construction of piston in the form of a combined conveyer and ejector, whereby the water or other liquid will be rapidly drawn into and forcibly ejected from the pump-casing.

A further object of the invention is to provide means for offsetting the end thrust of the piston.

With these objects in view the invention resides in the features of construction and the combination and arrangement of parts hereinafter described, and particularly pointed out in the claims.

I have illustrated the invention in the accompanying drawings, in which—

Figure 1 is a side elevation of the pump. Fig. 2 is a cross-section on the line 2 2 of Fig. 1; and Fig. 3 is a longitudinal sectional view, the piston and parts connected thereto being shown in elevation.

Referring now to the drawings, 1 indicates the pump-casing, which is suitably secured to and supported upon a base 2, as indicated at 3 4. The smaller end of the casing is closed by a cap-plate 5, bolted to an annular flange 6, and on the cap-plate 5 is arranged a stuffing-box 7, through which extends the shaft 8, which is supported at its end in the bearing 9. At the opposite end of the casing is provided an annular enlargement 10, which is shaped interiorly to form an annular chamber 11, communicating with which is an outlet 12, arranged tangentially to the chamber. This chamber is closed on the outer side by a cap-plate 13, on which is arranged a stuffing-box 14 for the shaft 8, which at this end of the pump is supported in the two bearings 15. Between these two bearings the shaft 8 is provided with a pulley 16, whereby it may be suitably rotated. 17 indicates the piston, which is provided about its periphery with a series of spiral conveyers 18. The piston 17 is conical in shape for the greater portion of its length, but that portion extending into the enlargement 10 is formed cylindrical, as indicated at 19. The conveyers 18 terminate at this cylindrical portion 19, and at the end of each conveyer and projecting outward radially from said cylindrical portion and beyond the edge of the conveyer is a blade 20, projecting forwardly from the sides of which are flanges 21. As shown, the walls of the chamber 11 are parallel and the blades 20 project into this chamber, their side and end edges being in close proximity to but not touching the walls of said chamber. In all pumps, engines, or similar machines employing spiral conveyers on the piston provision must be made to offset the end thrust of the shaft, as is well known, and this is usually accomplished by means of fixed collars secured to the shaft and engaging stationary bearings of the shaft. Such devices, however, necessarily produce a great deal of friction in the operation of the machine, and consequently reduce its effective working power. According to my invention I offset this end thrust to a large extent by setting the blades 20 at an angle or pitch opposite to that of the conveyers 18, as clearly shown by Fig. 2, so that as the piston is revolved the tendency of the conveyers 18 to force the shaft in one direction will be offset by the tendency of the blades 20 to force the shaft in the opposite direction.

In order to facilitate the outward throw or discharge of the water by centrifugal force from the blades 20, said blades are curved rearwardly, as also shown by Fig. 2.

At the smaller end of the casing is located an inlet or supply pipe 22, through which water or other liquid may enter or be drawn into the pump-casing 1. From this inlet the liquid is forced by the conveyers 18 into the chamber 11, whence through the action of the blades 20 it is discharged by centrifugal force through the outlet 12.

Having thus fully described my invention, what I claim is—

1. In a centrifugal pump, in combination with a pump-casing provided with an annular chamber, a rotatable piston mounted in said casing and provided about its periphery with a series of spiral conveyers, and a series

of radially-disposed blades carried by said piston and projecting radially outward beyond the edges of said conveyers into said annular chamber and being in working juxtaposition to the walls thereof.

2. In a centrifugal pump, in combination with a pump-casing provided with an annular chamber, a rotatable piston mounted in said casing and provided about its periphery with a series of spiral conveyers and a series of radially-disposed blades carried by said piston and projecting radially outward beyond the edges of said conveyers, one of said blades being located at one end of each of said conveyers and being in working juxtaposition to the walls of said annular chamber.

3. In a centrifugal pump, in combination with a pump-casing provided with an enlarged annular chamber having parallel side walls, a rotatable piston mounted in said casing and provided about its periphery with a series of spiral conveyers and a series of radially-disposed blades carried by said piston and projecting outward into said annular chamber and being in working juxtaposition to the walls thereof.

4. In a centrifugal pump, in combination with a pump-casing, a rotatable piston mounted therein and provided about its periphery with a series of spiral conveyers, and a series of radially-disposed blades located at one end of said piston and having a pitch or incline opposite to that of said conveyers.

5. In a centrifugal pump, in combination with a pump-casing provided at one end with an annular chamber, a rotatable piston mounted in said casing and provided about its periphery with a series of spiral conveyers, and a series of radially-disposed blades carried by said piston and working in said annular chamber and having a pitch or incline opposite to that of said conveyers.

6. In a centrifugal pump, in combination with a pump-casing, a rotatable piston mounted therein and provided about its periphery with a series of spiral conveyers, and a series of radially-disposed blades located at one end of said piston and having a pitch or incline opposite to that of said conveyers and being curved rearwardly.

7. In a centrifugal pump, in combination with a pump-casing, a rotatable piston mounted therein and provided about its periphery with a series of spiral conveyers, and a series of radially-disposed blades located at one end of said piston and having a pitch or incline opposite to that of said conveyers, each of said blades being provided at its sides with forwardly-extending flanges.

8. In a centrifugal pump, in combination with a conical pump-casing, having at its larger end an enlargement providing an annular chamber, a conical piston mounted in said casing and having a cylindrical portion extending into said enlargement, a series of spiral conveyers provided about the periphery of said piston, each of said conveyers having at one end a blade, said blades being located around and projecting radially outward from said cylindrical portion into said annular chamber, and being in working juxtaposition to the walls thereof.

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

WILLIAM WENZEL.

Witnesses:
CORA STORCH,
JACOB M. BRAUN.