H. D. SCHROEDER.

PUMP.

APPLICATION FILED DEC. 29, 1915.

1,211,767. Patented Jan. 9, 1917.

Fig. 1.

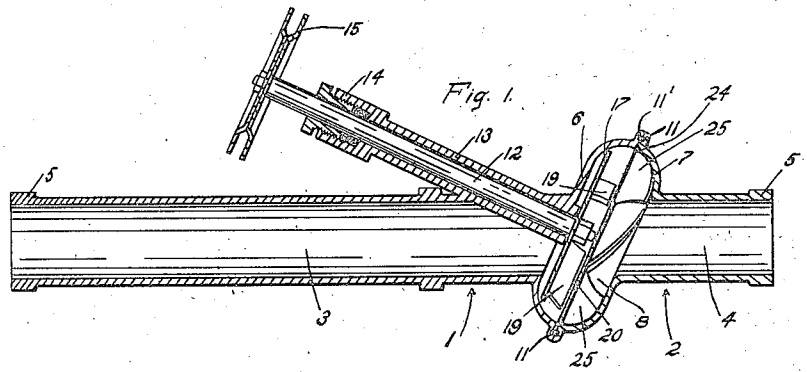


Fig. 2.

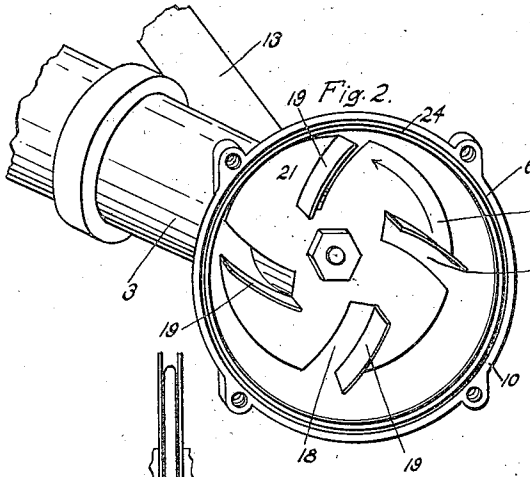


Fig. 3.

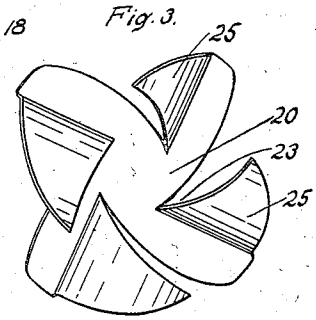


Fig. 4.

Inventor:
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UNITED STATES PATENT OFFICE.

HERMAN D. SCHROEDER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO FRANK G. WAGNER, OF LOS ANGELES, CALIFORNIA.

PUMP.

1,211,767. Specification of Letters Patent. Patented Jan. 9, 1917.

Application filed December 29, 1915. Serial No. 69,156.

To all whom it may concern:

Be it known that I, HERMAN D. SCHROEDER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Pump, of which the following is a specification.

This invention relates to pumps for circulating water, for example, in the water cooling system of an automobile engine.

The main object of the invention is to provide a pump for this purpose which will be effective in operation and simple and cheap in construction.

Another object of the invention is to provide a pump of the rotary type and having a central discharge, so as to adapt it for insertion as part of a pipe line, and in which the end bearing pressure is reduced to a minimum.

The accompanying drawings illustrate an embodiment of my invention, and referring thereto:

Figure 1 is a longitudinal section of the pump. Fig. 2 is a perspective view of the runner and the inclosing casing member therefor. Fig. 3 is a perspective view of the stator for deflecting the flow from the runner into the outlet. Fig. 4 is a plan view of the pump.

The device comprises two casing members 1 and 2, provided respectively with inlet and outlet pipes 3 and 4, each formed at its outer end with collar or other means 5 to receive a suitable nipple or other means for attachment or insertion of the pump in a pipe line. The respective members 1 and 2 are further provided with casing portions 6 and 7, formed as bowls extending obliquely to the axis of the two pipe portions 3 and 4, said bowls fitting face to face to form a pump chamber 8 and being secured together by screws 9, extending through flanges 10 on the rims of said bowls. Packing indicated at 11, is provided in grooves 11′ formed in the rims of the bowls. A shaft 12 is mounted in bearing 13 on casing member 1, and extends through a stuffing box 14, and is provided at its outer end with a pulley 15 to receive the usual driving belt. Said shaft carries a runner or rotor 17, formed of a flat plate or disk, having slots 18 and provided with blades 19, extending at right angles to said plate, at the forward edges of the respective slots, said blades being curved obliquely backward with reference to the direction of rotation of the runner, so as to tend to force the water outwardly by impulsion as well as by centrifugal action. The flat portions or faces of the runner plate, indicated at 21, in advance of each blade 19 act to confine the water between such face and the opposite face of the stator, to enable the blades to act more effectively in forcing the water outward.

A stator 20 is mounted in the casing member 2, opposite the rotor, and is formed as a flat plate, seated at its peripheral edge in rabbets 24 in the rims of the bowls 6 and 7, so as to be clamped between members 6 and 7; said plate being provided with V-shaped openings 23 and with blades 25 extending from the rear edges of said openings toward the wall of the casing member 2, said blades having their outer edges curved to fit the curved wall of the casing member 2, and being curved so that their faces toward the rotor or runner are concave. Said blades 25 extend obliquely forward with regard to the direction of rotation of the runner, so as to be directed reversely to the blades of the runner. The flat central portion of the stator forms an inner end bearing for the shaft 12.

The two sections above described are assembled by means of screws 9, so that their pipe portions 3 and 4 are in alinement, and are then secured in position in the circulating system of an automobile, replacing, for example, a thermosiphon section in such a system, the device being connected by the usual nipples, indicated at 28 in Fig. 4, in such manner that the shaft 12 is parallel with the shaft which is to drive it. The obliquity of shaft 12 to the pipe portions 3 and 4, is of advantage in facilitating such adjustment of the shaft, and it is also of advantage in enabling the pump to be made with its inlet and outlet portions forming substantially a straight pipe section. The runner is driven by belt connection 27, see Fig. 4, from a shaft of the engine, in the direction indicated by the arrow in Fig. 2, and forces the water outwardly by centrifugal action and also by impelling action due to the curvature of the blades, and the water so driven outward passes through the openings 23 in the stator and is deflected by the blades 25, so as to be forced to the substantially central outlet pipe portion 4, in such manner that the momentum of the water due to its whirling

motion as it leaves the runner, is largely utilized in producing motion or pressure in the direction of outflow. As the action of the runners is largely centrifugal, the end pressure on the shaft bearing is minimized.

What I claim is:

1. A pump comprising two members, provided respectively with inlet and outlet pipe portions extending in alinement, and with casing portions secured together and forming a pump chamber extending obliquely to the axis of said pipe portions, a shaft rotatably mounted on one of said members and having its axis directed obliquely to the axis of said pipe portions, and provided with driving means, a runner mounted within said pump chamber, on said shaft, and provided with blades for producing centrifugal action on liquid within said pump chamber, and a stator mounted within said pump chamber and provided with blades for deflecting the liquid from the runner to the outlet pipe portion.

2. A pump comprising two members provided respectively with inlet and outlet pipe portions and with casing portions forming a pump chamber, a shaft mounted on one of said pipe portions and extending obliquely thereto, a runner carried by said shaft and provided with openings for passage of liquid and with blades for centrifugal and impelling action on such liquid, and a stator mounted within the pump chamber and with openings for passage of liquid and with blades for deflecting the liquid toward the outlet pipe portion.

3. A pump comprising two members, provided respectively with casing portions secured together to form a pump chamber, an inlet pipe portion connected with one of said casing portions and extending obliquely thereto, a shaft journaled on said pipe portion and extending obliquely thereto, a runner carried by said shaft and extending within the casing portion adjacent thereto and provided with openings for passage of liquid and with blades in advance of said openings and directed backwardly and outwardly with reference to the direction of rotation of said shaft, for combined centrifugal and impelling action, an outlet pipe portion on the other casing member and a stator mounted within said other casing portion and provided with openings for passage of liquid and with blades directed reversely to the blades of the runner.

4. A pump comprising two members provided respectively with inlet and outlet pipe portions and with casing members connected respectively to said pipe portions and secured together to form a pump chamber, a shaft rotatably mounted on the inlet pipe portion and extending obliquely thereto and provided with driving means, a runner carried by said shaft and extending within the adjacent casing member, and formed as a flat plate having openings for passage of liquid and having blades extending obliquely rearward with reference to the direction of rotation of the shaft, for centrifugal and impelling action, and a stator formed as a flat plate having its peripheral portion clamped between said casing portions and provided with openings for passage of liquid and with blades directed reversely to the blades of the stator to deflect the liquid to the outlet pipe portion, said runner having flat portions in advance of the blades for confining the liquid between the said flat portions and the stator.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 23rd day of December, 1915.

HERMAN D. SCHROEDER.