

[54] MOTOR DRIVEN CENTRIFUGAL PUMP	3,256,828	6/1966	Rule.....	417/424
[75] Inventor: Robert E. Bunch, LaVerne, Calif.	2,669,188	2/1954	McIntyre	415/214
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[73] Assignee: Zenith Manufacturing Inc., El Monte, Calif.	3,264,999	8/1966	Tutthill	417/424
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[22] Filed: Dec. 9, 1971	2,144,411	1/1939	Mace	415/206
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[58] Field of Search.....	417/424; 415/214, 415/201, 200

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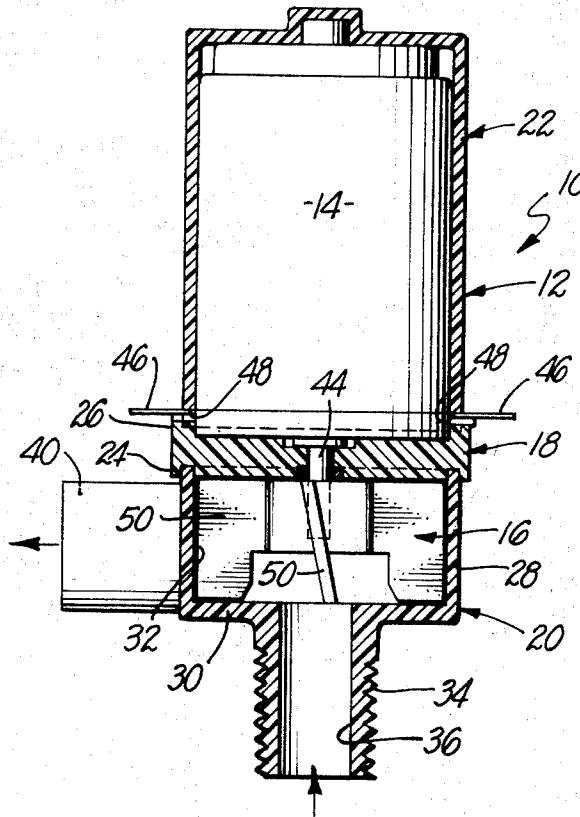
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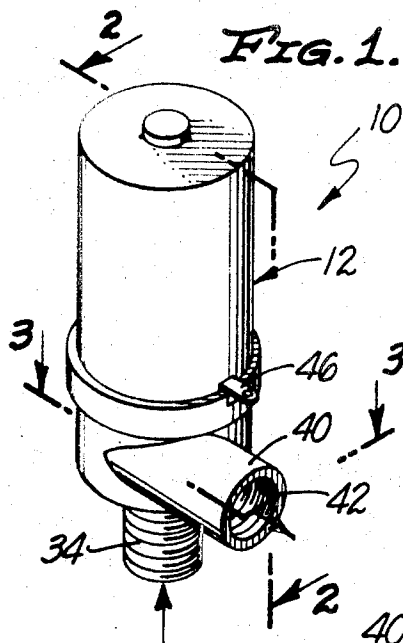
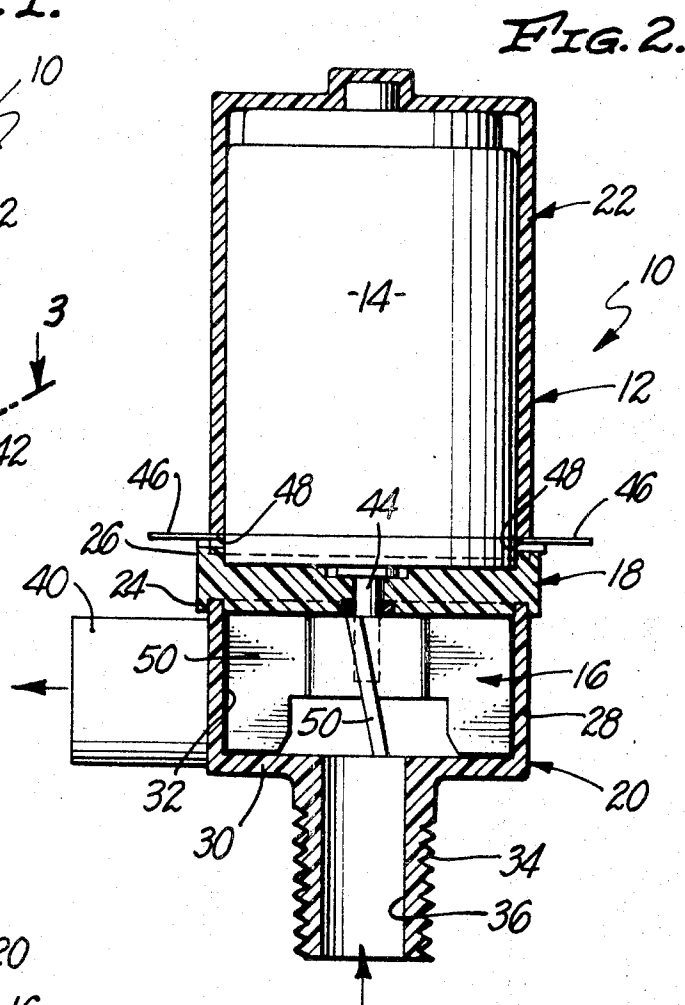
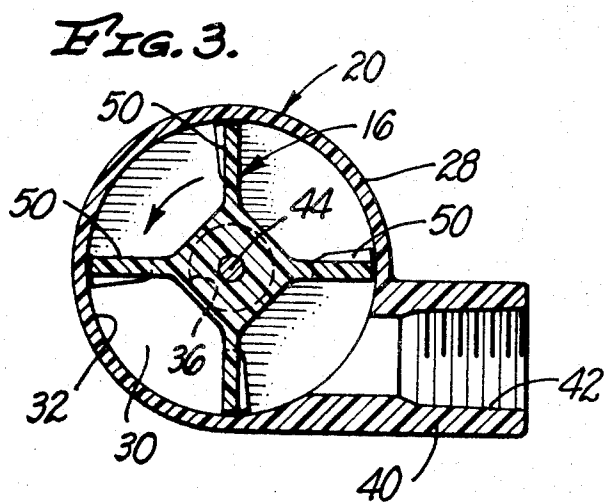
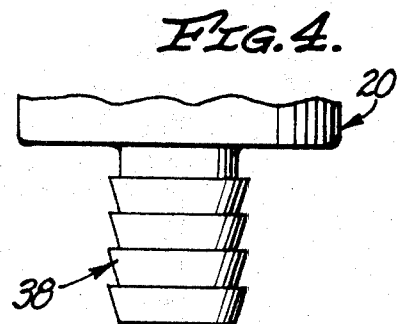
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[57] ABSTRACT

A motor driven centrifugal pump characterized by a unique housing, motor and impeller which provide the pump with a simple low-cost construction, compact size, quiet operation and other features that adapt the pump for use in a trailer, camper or the like for pumping water from a storage tank to a tap or other outlet.

4 Claims, 4 Drawing Figures





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MOTOR DRIVEN CENTRIFUGAL PUMP

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to pumps and more particularly to a novel centrifugal pump.

2. Discussion of the Prior Art

As will appear from the ensuing description, the centrifugal pump of the invention is capable of a wide variety of uses. The pump is intended primarily for use as a water pump in recreational vehicles such as campers, trailers, and the like, however, and will be described in connection with this particular use.

Campers, trailers and other recreational vehicles are equipped with one or more taps and, in some cases, other water outlets which receive water from a storage tank on the vehicle. Water is transported from the tank to the outlets by hand operated or motor driven pumps. The motor driven pumps are obviously superior to hand operated pumps. The existing motor driven pumps for this purpose, however, have certain deficiencies which this invention overcomes. Foremost among these are costly construction, large size, and noisy operation.

SUMMARY OF THE INVENTION

The improved pump of this invention is a centrifugal pump having a housing containing a motor and centrifugal impeller. The housing may be conveniently injection molded from plastic and has a unique three-part construction. This housing has a central circular wall member with axially projecting annular flanges about its edges and two generally cup-shaped end portions. One end portion is sealed to one side of the wall member in overlapping telescoping relation to its adjacent flange and forms with the wall member a pump chamber containing the centrifugal impeller. Extending axially from the end portion is an inlet nipple which is externally threaded or otherwise adapted for connection to the water tank. An outlet nipple extends tangentially from the end portion for connection to a water pipe leading to the trailer or camper water outlets. The opposite end portion of the housing is sealed to the other side of the wall member in overlapping telescoping relation to its adjacent flange and contains the pump motor.

Projecting laterally from the end of the pump motor adjacent the wall member are a pair of electrical terminals. These terminals extend externally of the pump housing through slots in the end portion of the housing containing the motor.

The pump impeller may also be conveniently injection molded from plastic and has a number of radial vanes. The edges of these vanes are disposed in fluid sealing relation to the wall of the pumping chamber so that rotation of the impeller by the pump motor impels water from the chamber through the outlet. Each vane inclines forwardly in the direction of rotation toward the inlet end of the chamber in such a way as to enhance the centrifugal pumping action of the impeller.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a pump according to the invention;

FIG. 2 is an enlarged section taken on line 2—2 in FIG. 1;

FIG. 3 is an enlarged section taken on line 3—3 in FIG. 1; and

FIG. 4 illustrates a modified inlet nipple for the pump.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The illustrated centrifugal pump 10 has a housing 12 containing a motor 14 and a centrifugal impeller 16. Housing 12 has three parts 18, 20 and 22 which may be conveniently injection molded from plastic.

Housing part 18 is a circular wall member with axially projecting annular flanges 24, 26 about its edges. Housing part 20 is a generally cup-shaped end portion having a cylindrical wall 28 and an end wall 30. The open end of the end portion 20 seats against one side of the wall member 18 in overlapping telescoping relation with its flange 24. The end portion is adhesively bonded or otherwise sealed to the wall member to form with the member a circular pump chamber 32.

Extending axially from the end wall 30 is an inlet nipple 34 containing a water passage 36 opening to the pump chamber 32. Nipple 34 is externally threaded for connection to a pump mount, such as the wall of a trailer or camper water tank with the inlet passage in communication with the tank interior. FIG. 4 illustrates an alternative inlet nipple configuration 38 having circumferential ribs and grooves and adapted to be adhesively bonded to a pump mount. An outlet nipple 40 extends tangentially from the housing end portion 20 and contains an outlet passage 42 opening tangentially to the pump chamber 32.

Housing part 22 is a cup-shaped end portion which seats against the opposite side of the wall member 18 in overlapping telescoping relation to its flange 26. The end portion is adhesively bonded or otherwise secured to the wall member and contains the pump motor 14. The motor shaft 44 extends through the wall member 18 and is sealed to the member in any convenient manner. Extending laterally from the end of the motor 14 adjacent the wall member 18 are electrical terminals 46. These terminals extend externally of the housing through slots 48 in the end portion 22 for connection to an electrical power source. A variety of motors may be used in the pump. The preferred motor, however, is a 5,000 r.p.m. 12 V., 1½ amp motor of Rowe Industries, New York.

The pump impeller 16 may be conveniently molded from plastic and is rigidly attached to the motor shaft 44 within the pump chamber 32. The impeller has radial vanes 50 whose edges are disposed in fluid sealing relation to the pump chamber walls. As shown in FIGS. 2 and 3, the impeller vanes incline forwardly in the direction of impeller rotation.

When the impeller 16 is driven by the motor 14, the impeller vanes 50 centrifugally impel water from the pump chamber 32 through the outlet passage 42 to produce a centrifugal pumping action. The inclination of the vanes enhances this pumping action.

What is claimed as new in support of Letters Patent is:

1. A pump comprising:

a generally cylindrical housing having a coaxial cylindrical pump chamber in one end, an inlet nipple extending coaxially from said housing end and containing an inlet passage opening to said chamber, means on said nipple for securing said nipple and

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thereby the entire pump to a pump mount, an outlet nipple extending tangentially from said housing adjacent said end and containing an outlet passage opening tangentially to said chamber, and a motor chamber in the opposite end of said housing, 5
said housing comprising a circular wall member between and forming a common boundry wall of said chambers and having circular flanges about its edge projecting axially beyond opposite sides of the wall member, a first generally cup-shaped end portion 10 having a cylindrical wall seating against and sealed to one side of said wall member with the adjacent flange of the wall member overlapping the cylindrical wall of said end portion to form said pump chamber, said inlet nipple and outlet nipple 15 extending from said cup portion, and a second generally cup-shaped end portion having a cylindrical wall seating against and sealed to the opposite side of said wall member with the adjacent flange of said wall member overlapping the cylindrical wall 20

4

of said second end portion to form said motor chamber,
a centrifugal pump impeller rotatably mounted in said chamber to turn about the axis of the chamber, and
a motor in said motor chamber having a shaft connected to said impeller for driving said impeller in rotation.
2. A pump according to claim 1 wherein:
said motor has electrical terminals projecting laterally through aligned openings in the cylindrical wall of said second end portion and the adjacent flange of said wall member.
3. A pump according to claim 1 wherein:
said inlet nipple securing means comprise external threads.
4. A pump according to claim 1 wherein:
said inlet nipple securing means comprise external circumferential ribs.

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