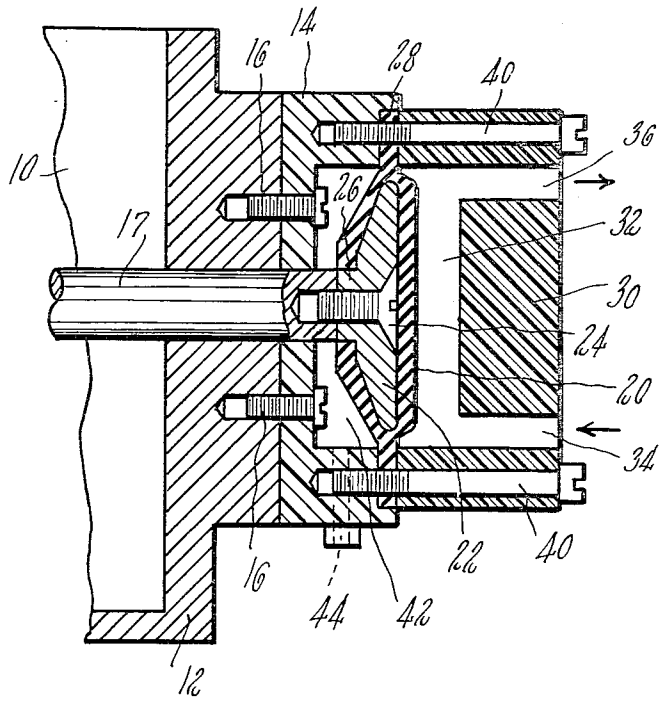
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PUMP HEAD MOUNTING

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PUMP HEAD MOUNTING

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1 Claim. (Cl. 103—150)

This invention relates to pumps designed to feed corrosive liquids, and more particularly to pumping units for supplying a stream of liquid at a constant predetermined rate, as for example the chlorination of water flowing in a municipal water main. For easy maintenance, such pump units may comprise a small electric motor, a reciprocable rod and operative connections between the motor and rod including a train of reduction gearing. This mechanism is mounted in a closed housing through a wall of which the reciprocable rod projects. To avoid lubrication difficulties the housing is preferably filled with oil. The electric motor is preferably of the shaded-pole type which will operate satisfactorily when completely immersed in oil. For reasons of strength and economy it is desirable that the main housing be of cast metal. It is essential that the pump itself which is mounted on the outside of the housing and is operated by the reciprocable rod be so constructed as to prevent any of the pumped liquid reaching the main housing by leakage or otherwise.

The pump housing, which is attached to the main housing, and the pump parts are made of noncorrodible material or materials which will be resistant to the liquid to be pumped. For most corrosive liquids such materials as rubber, synthetic resins and stainless steel may be satisfactorily employed.

The pump is preferably of the diaphragm type with the customary check valves. The diaphragm and check valves are preferably enclosed in a housing of transparent plastic to permit inspection thereof while the pump is operating. Since transparent synthetic resins are thermoplastic and soften at temperatures of about 140° F., and since shaded-pole electric motors have high running temperatures, the transparent housing members are separated from the main housing by a member having heat insulating properties. As hereinafter described, this heat insulating member serves not only to protect the transparent pump housing from the heat of the main housing in which the motor is mounted but also protects the main housing which is metal from any possible access by the corrosive liquid which is pumped through the pump housing.

For a more complete understanding of the invention reference may be had to the following description thereof and to the drawing which shows a sectional view of the pump housing and a portion of the main housing, together with the pump itself.

The main housing 10 is of a cast aluminum alloy or other suitable material and has a circular boss 12 on one side wall to which the pump housing is secured. The pump housing comprises a circular, corrosion-resistant base member 14 in the form of a shallow cup secured by stainless steel screws 16 to the boss 12. A reciprocable rod 17 extends slidably through the boss 12 and a hole in the center of the member 14 to vibrate a diaphragm 20

which is mounted on or engaged by the end of the rod. The diaphragm is made of a suitable rubber compound molded over a reinforcing metal disc 22 in the center of which is threaded a machine screw 24. The diameter of the disc is nearly equal to the interior diameter of the cup 14. The rubber diaphragm completely covers the disc 22 except for an exposed face of a central boss 26 which abuts the outer end face of the rod 17. The end of the rod is drilled and tapped to receive the screw 24 by which the diaphragm is detachably secured to the rod. The margin 28 of the diaphragm extends radially from the rim of the disk 22 and is securely gripped between the annular end face of the base member 14 and the rim of a cylindrical block 30 of transparent plastic material which with the member 14 forms the pump housing. This block has a central recess at its inner end forming a pump chamber 32 of which the diaphragm is a vibrating wall. The interior diameter of the block 30 at its recessed end is equal to that of the member 14. Inlet and outlet passages 34 and 36 through the block 30 connect the pump chamber with suitable tubes in which are mounted check valves, the tubes and check valves not being shown on the drawing. Screws 40 of stainless steel or other suitable corrosion-resistant material pass through the margins of the block 30 and diaphragm 28 and into the base member 14 to secure these parts together. The screws 40, or the holes for them do not extend through the base member 14. Therefore it is impossible for any leakage that will follow along the screws 40 to reach, and corrode, the circular boss 12. The rim of the member 14 is preferably but not necessarily recessed to be fitted by the margin 28 of the diaphragm. The diaphragm forms with the member 14 a chamber 42 from the bottom of which a vent 44 extends to the outside.

The base member 14 is preferably of a thermosetting synthetic resin of the phenol-formaldehyde type which is impervious to corrosive liquids, is to a considerable degree heat resistant, and is an effective heat insulator. Ordinarily the chamber 42 will be free of the liquid which is being pumped by vibration of the diaphragm, but if any such liquid should get into this chamber either by seepage around the screws 40 or by rupture of the diaphragm, it will drain out through the vent 44. The base member 14 thus completely protects the metal housing 10 from corrosive liquid and also protects the transparent housing member 30 from the heat generated by the electric motor (not shown) enclosed in the main housing 10.

I claim:

In combination with a metal housing having a reciprocable pump rod projecting through a wall thereof, a pump housing comprising a cylindrical cup-shaped base member of corrosion-resistant and heat resistant material secured against said wall with said rod projecting therethrough, a rigid disc having a diameter nearly equal to the interior diameter of said base member mounted on the projecting end of said rod, a rubber diaphragm enveloping said disc and having a margin extending radially from the rim of the disc, a housing block of transparent plastic material having a centrally recessed end with an interior diameter equal to that of said base member, and means pressing said block against said base member to grip said margin of the diaphragm close to the edge of the disc and to form with the base member a pump chamber.

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