June 26, 1928. 1,675,079

G. J. ZISCH

INTEGRAL HOUSING FOR ROTARY PUMPS AND ASSOCIATED PARTS

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Fig. 1.

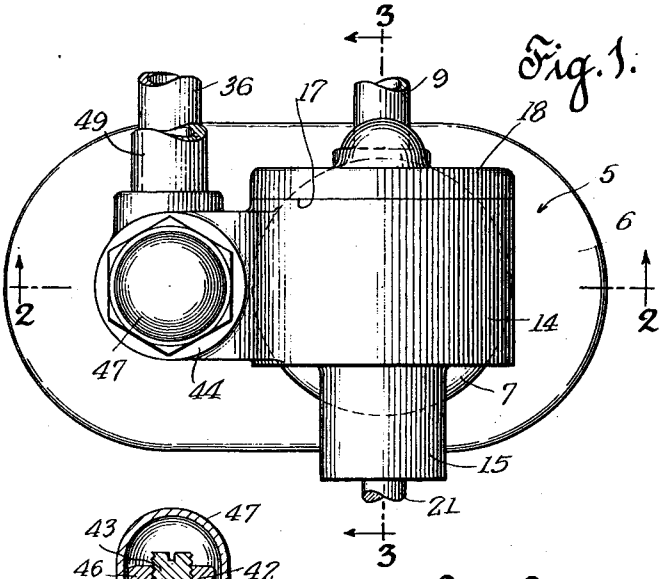


Fig. 2.

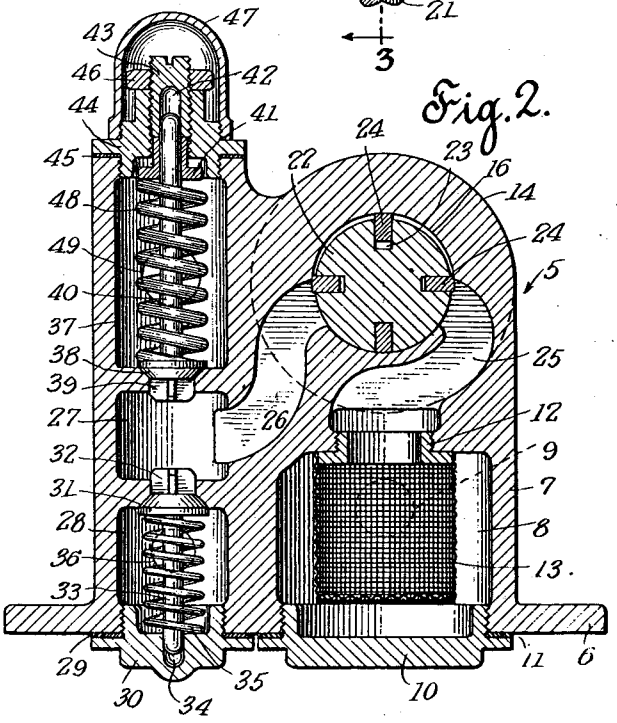
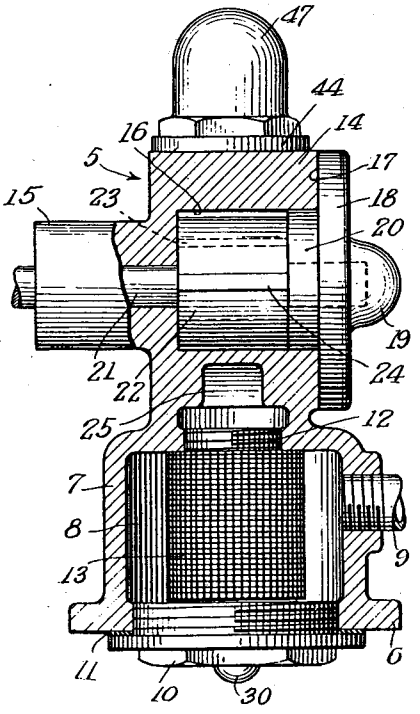


Fig. 3.



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INTEGRAL HOUSING FOR ROTARY PUMPS AND ASSOCIATED PARTS.

Application filed March 23, 1927. Serial No. 177,497.

This invention relates to pump housings and particularly to casings for enclosing rotary pumps or impellers and their associated parts.

Mechanisms of this type, especially as used with oil burners, are generally combined with valves and strainers and it has been the practice to provide each element of this combination with an individual casing, the whole being connected by brackets, pipes and fittings to constitute a complete assembly.

Obviously, this is a costly method containing an excessive number of parts and needlessly occupying considerable valuable space.

In addition, if the mechanism failed to function properly, it required overhauling, involving labor as well as a waste of time, to locate the fault.

It is therefore the main objects of this invention to overcome the foregoing disadvantages and provide a unitary housing for the several parts which include a rotary pump, a strainer and high and low pressure valves, all contained in a single unit.

The above purposes are attained by the novel design and construction of an integral housing, hereinafter described and illustrated in the accompanying drawing, forming an important part of this disclosure, and in which:—

Figure 1 is a top plan view of a housing made in accordance with this invention.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a sectional view taken on line 3—3 of Figure 1 at a right angle to Figure 2.

The numeral 5 generally designates a unitary cast housing having an elliptical base flange 6 from which rises, near one end thereof, an upright cylindrical member 7 having an annular recess 8, an inlet pipe 9 connected therewith and a threaded plug 10 having a flange to compress a gasket 11 against the bottom wall of the flange 6 to form a leak-tight joint.

Secured in the upper wall of the cylinder 7 is a threaded support 12 carrying a cylindrical screen 13 centrally located in the recess 8.

Integrally above the cylindrical member 7 and at a right angle thereto, is a substantially circular element 14 from one side of which extends a hub 15, the same being bored to act as a bearing.

Within the element 14 is a cylinder 16 bored slightly eccentric with respect to the bearing in the hub 15, the inner end of which is finished square with the axis of the cylinder, as is also its outer face 17.

Secured to the face 17 is a circular plate 18 having a projecting boss 19 and inreaching disc 20, fitting the bore of the cylinder, and drilled partially through from its inner surface in register with the bore in the hub 15.

Rotatably mounted in the plate 18 and hub 15 is a spindle 21 adapted to be driven by its extending end and provided with any common means to prevent leakage through the hub.

Fixed on the spindle 21 is a rotor 22 operable within the cylinder 16 and extending from the inner faced end of the hub to the finished inner surface of the plate disc 20, the rotor having a plurality of longitudinal, equally spaced slots 23 in which are loosely contained radially disposed free floating blades 24 adapted to move outwardly by centrifugal force and wipe against the interior surface of the cylinder 16 which, as stated, is eccentric with the axis of the spindle, thus constituting an impeller operable by the spindle when rotation is imparted to it.

The cylinder 16 and the chamber 8 are connected by a port 25, the port being of a lesser width than the cylinder 16 and central therewith to prevent the blades 24 from becoming displaced.

At a point opposite the port 25, the cylinder 16 is connected by a conduit 26 with a small upright cylindrical chamber 27, below which is a similar chamber 28 sealed at its bottom with a gasket 29 held by a flanged screw plug 30.

The upper wall of the chamber 28 is bored to form a seat accommodating a valve 31 having guides 32 and a downwardly extending stem 33 guided in a recess 34 in the plug 30, there being an expansion spring 35 coiled about the stem to abut the valve 31 and plug 30, normally closing the valve.

The chamber 28 is further provided with an outlet pipe 36 in its side wall as will later be seen.

Disposed above the chamber 27 and in a line therewith is a longer chamber 37, the lower wall of which is bored to present a

seat for a valve 38 having guides 39 and an upwardly extending stem 40 on which is slidable a collar 41.

The stem 40 is vertically movable in a recess 42 in an adjusting screw 43 engageable in a screw plug 44 having a flange holding a gasket 45 to seal the chamber 37, the screw 43 abutting the collar 41 and having a locknut 46 on its upper end, the plug being covered by a bonnet 47.

Coiled about the stem 40 and abutting the valve 38 and collar 41, is a spring 48, stronger than the spring 35, to normally close the valve 38, the chamber 37 being further provided with a return outlet pipe 49 extending from its side wall.

Thus, in operation, oil or other liquid, from a supply tank, enters the recess 8 through the inlet 9 and passes through the strainer 13 and the port 25.

As the blades 24 approach the port 25, they move outwardly, carrying with them the liquid through the cylinder bore 16 between the inner wall of the circular member 14 and the rotor 22 and out through the port 26 into the chamber 27.

The pressure of the liquid opens the valve 31 and the same enters the recess 28 passing out through the pipe 36 to the burner.

If the pressure in the chamber 27 becomes too great, the valve 38 opens and the excess liquid enters the recess 37, passing out through the pipe 49 back into the supply tank.

From the foregoing, it will be seen that a unitary housing has been disclosed embodying a rotary pump, a strainer, and high and low pressure valves, thus materially reducing the cost of manufacturing these devices, by eliminating unnecessary parts and saving considerable, heretofore needlessly used, space.

Although the foregoing is descriptive of the preferred embodiment of the invention, it will be apparent that minor changes may be made in its construction, without the exercise of invention or conflicting with the scope of the claims hereto appended.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An integral housing containing a rotary pump cylinder, a strainer chamber below said cylinder having an inlet and a passage in communication with the bore of said cylinder, a removable plug forming the bottom of said chamber, an outlet chamber in open communication with said cylinder, high and low pressure chambers disposed above and below said outlet chamber and alined spring actuated valves in said high and low pressure chambers controlling the passages from said outlet chamber.

2. A unitary housing containing a pump cylinder, a spindle bearing eccentric thereto, a strainer chamber having a port leading to said cylinder, high and low pressure valve chambers having seats at their inner ends, and an intermediate chamber in open communication with said cylinder, said valve and intermediate chambers being in register, all of said elements being of integral formation.

3. A unitary cast housing having a support flange, a protruding hub containing a spindle bearing, a pump cylinder slightly eccentric to the spindle bearing and in a plane parallel with said flange, a vertical strainer chamber, high and low pressure valve chambers having an intermediate chamber therebetween and containing integral valve seats arranged in a common axial plane, and conduits from the intermediate chamber and from the strainer chamber to enter the cylinder in spaced relation, all of said elements being of integral formation.

Signed at New York in the county of New York and State of New York this 23rd day of February A. D. 1927.

GEORGE J. ZISCH.