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PUMP FOR REFRIGERANTS AND THE LIKE

Filed May 14, 1926

Fig. 1.

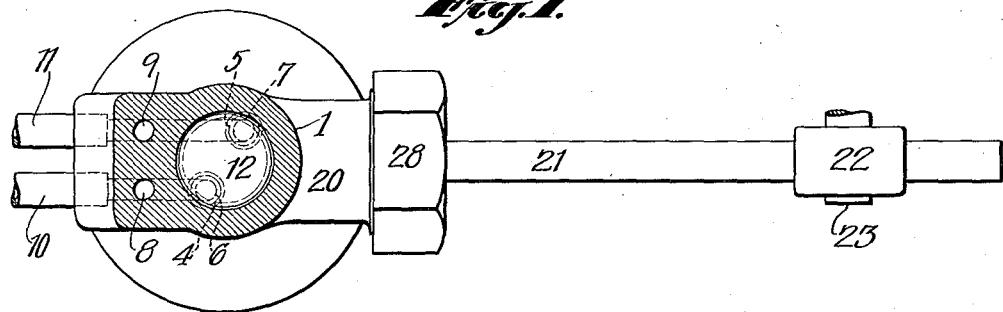
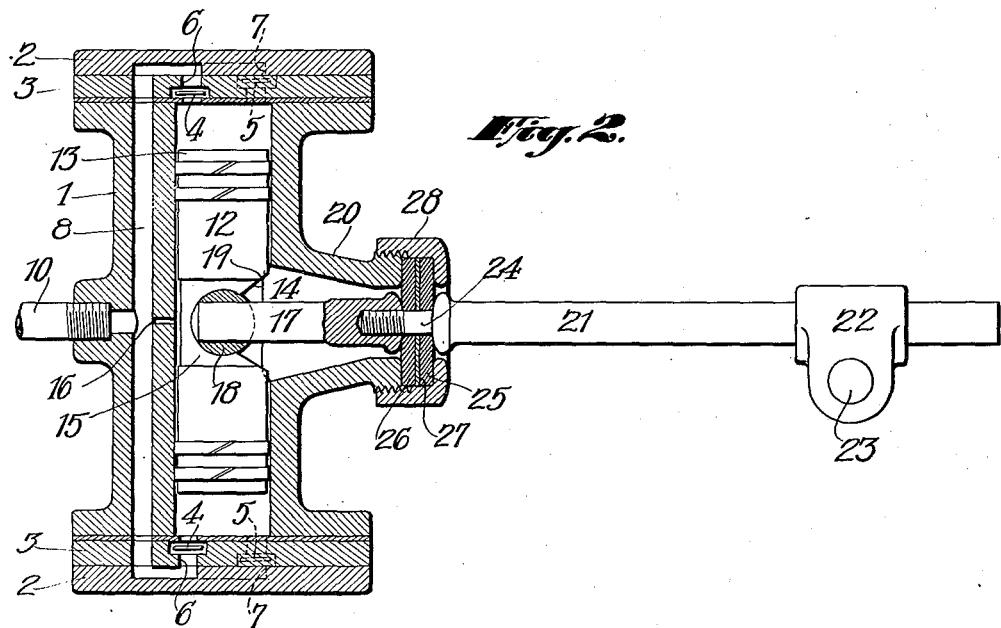


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PUMP FOR REFRIGERANTS AND THE LIKE.

Application filed May 14, 1926. Serial No. 109,074.

The present invention provides improvements in pumps for sulphur dioxide, ammonia or other refrigerating or volatile fluid which are simple and compact and well secured against leakage.

The accompanying drawings illustrate an embodiment of the invention.

Fig. 1 is a plan with the cylinder in section; Fig. 2 is a longitudinal section.

10 The cylinder 1 has heads 2 at opposite ends with interposed plates 3 carrying valves indicated diagrammatically at 4 and 5 for admission and egress of the fluid respectively, leading through ports 6 and 7 and passages 15 8 and 9 to suction and compression tubes 10 and 11. A piston 12 is provided, with heads 13 at opposite ends, working in the portions of the cylinder which are beyond an opening 14 provided in the side of the latter. The piston 20 is provided with an annular groove 15 around its middle portion which registers with a small duct 16 communicating with the vacuum or suction passage 8; so that any small quantity of the refrigerant leaking past 25 the piston heads will be withdrawn through the duct.

The piston is actuated by an oscillating arm 17 passing through the opening in the side of the cylinder and having its free end 30 in a rocker 18 set in a transverse opening through the middle of the piston. The end of the arm slides in the rocker as the arm is oscillated, thus providing a compact rocking and sliding connection. The side of the piston 35 is cut away to provide a flared opening 19 for the end of the arm to move in.

The arm 17 constitutes the inner end of a lever and is carried in a flared chamber 20 formed by a lateral extension of the cylinder 40 (or it may be separately formed and attached to the cylinder). The outer arm 21 of the lever carries a sliding block 22 having a lug through which passes a crank pin 23 by which the lever is rocked.

45 The lever has a tight pivotal connection with the end of the chamber 20. For this purpose it carries a flexible fluid-tight plate, the outer portion of which is attached to the end of the chamber. The end of the arm 21 50 carries a reduced stem 24 which screws into the end of the arm 17 and clamps tightly be-

tween them a pair of plates 25 and 26 of rubber or similar flexible fluid-tight material, preferably reinforced by an intermediate plate 27 of flexible metal. The inner portion 55 of the metal plate may be cut out, leaving the metal only between the outer portions of the outer plates. The outer edges of this composite plate or diaphragm are clamped tightly against the end of the chamber 20 by a cap 60 or flanged ring 28 screwed on. There is sufficient clearance around the parts of the lever where it passes through the end wall of the chamber to permit of the slight movement required. And the diaphragm will stand the 65 slight distortion involved for a long time without losing its efficiency. The diaphragm also co-operates with the sliding block 22 and the rocker 18 in permitting longitudinal play of the lever so that the apparatus will work 70 easily without binding or friction at any point.

Various modifications may be made without departing from the invention as defined in the following claims.

75 What I claim is:

1. A pump for refrigerants and the like including a piston, a cylinder, a lever for actuating the piston, a chamber carrying the inner portion of the lever and open at its 80 inner end to the cylinder to permit free movement of said lever, the lever passing through the outer end of the chamber and carrying a flexible fluid-tight plate the outer portion of which is attached to the end of the chamber, said plate alone constituting a rocking 85 support for the lever.

2. A pump for refrigerants and the like including a piston, a cylinder, a lever for actuating the piston, a chamber carrying the 90 inner portion of the lever and open at its inner end to the cylinder to permit free movement of said lever, the lever passing through the outer end of the chamber and carrying a pair of rubber plates with an intermediate 95 metal reinforcing ring, the outer portions of said plates being attached to the end of the chamber, said plate alone constituting a rocking support for the lever.

In witness whereof, I have hereunto signed 100 my name.

THOMAS E. MURRAY.