Feb. 12, 1929. 1,702,056

T. E. MURRAY

PUMP FOR REFRIGERANTS

Filed May 14, 1926

Fig. 1.

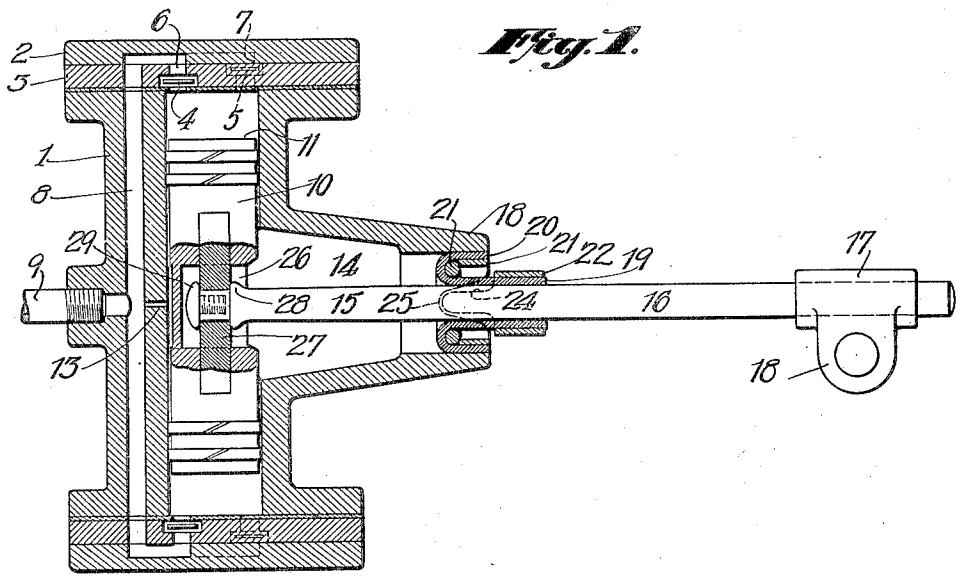


Fig. 2.

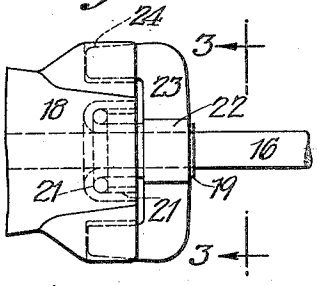
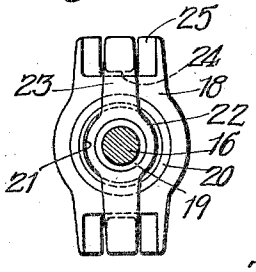


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PUMP FOR REFRIGERANTS.

Application filed May 14, 1926. Serial No. 109,075.

The invention aims to provide a pump particularly adapted for compressing the vapor of refrigerating fluids, which pump is made fluid-tight by very simple expedients and which can be made very small and compact in proportion to its capacity.

Fig. 1 is a longitudinal vertical section through the pump cylinder;

Fig. 2 is a plan of the pivot joint;

Fig. 3 is a section on the line 3—3 of Fig. 2.

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; the port 6 leads through a passage 8 to a suction pipe 9, and the port 7 leads through parallel passages to compression and egress pipes.

A piston 10 is provided with heads 11 at opposite ends working in the portions of the cylinder which are beyond a central opening in the right-hand side of the latter. The piston is provided with an annular groove 12 around its middle portion which registers with a small duct 13 communicating with the vacuum or suction passage 8, so that any small qauntity of the refrigerant leaking past the piston heads will be withdrawn through the duct.

The cylinder has a lateral extension at one side forming a chamber 14 in which is located the arm 15 of an oscillating lever whose outer arm 16 carries a sliding block 17 with a lug 18 on one side having an opening for a crank pin which is rotated on a small radius by the usual motor.

Constructions similar to that thus far described are shown in other co-pending applications which I have filed, particularly, No. 108,490, dated May 12, 1926.

The present application relates to a novel pivotal support and packing for the lever and a novel connection of the same to the piston.

In the small end 18 of the flared casing of the chamber 14, through which the lever passes, the latter is surrounded by a tube 19 of rubber or similar flexible fluid-tight material, the inner end 20 of which is bent backward over a clamping wire ring 21 which presses the tube against the lever and provides a rocking joint for the latter. This connection permits lateral play so as to avoid binding. The end 20 of the tube may be further clamped against the casing 18 by a ring 21 forced into the same. The outer end 19 of the tube is clamped firmly on the lever by a ring 22 forced over the tube. The ring 22 has arms 23 at opposite sides, the ends 24 of which extend forward and have a rocking bearing in grooves 25 at the sides of the casing 18. Thus the tube is clamped tightly at one end to the casing and at the other end to the lever so as to prevent the escape of any vapor from the cylinder.

The piston has a recess 26 in one side through which the arm 15 extends. A strip 27 of rubber or similar material has its ends set in slots in the upper and lower parts of the piston and its central portion clamped between a shoulder 28 and a head 29 on the arm 15. The rubber is stiff enough to transmit the vertical movements of the arm to the piston. At the same time it is flexible enough to permit the necessary relative transverse movement of the end of the arm as it swings from the center to the upper or lower position.

The entire construcion is very economical leaves the greatest freedom of movement to the lever and at the same time is fluid-tight.

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

What I claim is:

1. A pump for refrigerants and the like including a piston, a cylinder having a hollow lateral extension, a lever for actuating the piston passing through said extension and having arms abutting against the outer end of the extension with a rocking engagement and a flexible fluid-tight device connecting the outer portion of the lever with said extension so as to hold said arms in the position of engagement.

2. A pump for refrigerants and the like including a piston, a cylinder having a hollow lateral extension, a lever for actuating the piston passing through said extension and havings arms abutting against the outer end of the extension with a rocking engagement and a tube of flexible material having an end 19 surrounding the outer portion of the lever and a portion 20 folded back and engaging the inside of the extension, said tube holding the arms in the position of engagement.

3. A pump for refrigerants and the like including a piston, a cylinder, a lever for

actuating the piston and a member of flexible material for transmitting the movement of the end of the lever to the piston, said transmitting members consisting of a strip 27 of rubber engaged by the end of the lever and having both of its ends engaged by the piston.

4. A pump for refrigerants and the like including a piston, a cylinder having a hollow lateral extension, a lever for actuating the piston, a member having a ring 22 on the lever and having laterally and forwardly extending rocking arms which engage the outer end of the extension, and a flexible fluid-tight tube having one end clamped between the ring 22 and the lever and the other end engaging the hollow extension and holding said arms in the position of engagement.

In witness whereof, I have hereunto signed my name.

THOMAS E. MURRAY.