Nov. 19, 1929. L. V. MYERS 1,736,721

MEANS FOR PASSING LUBRICANTS DIRECTLY THROUGH LIQUID RECEIVERS IN REFRIGERATION APPARATUS

Filed Nov. 17, 1927

Fig. 3.

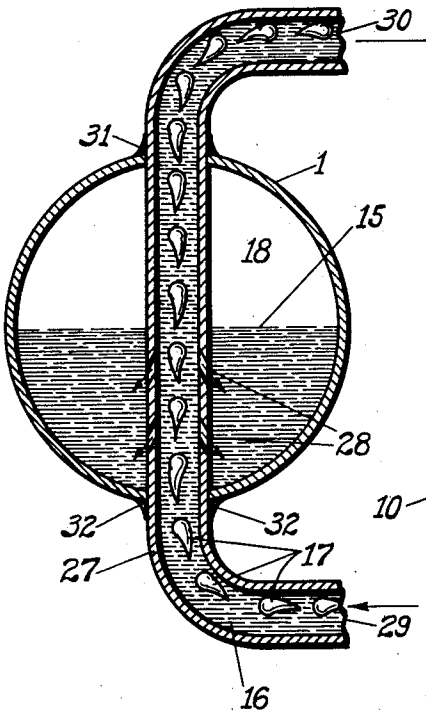


Fig. 1.

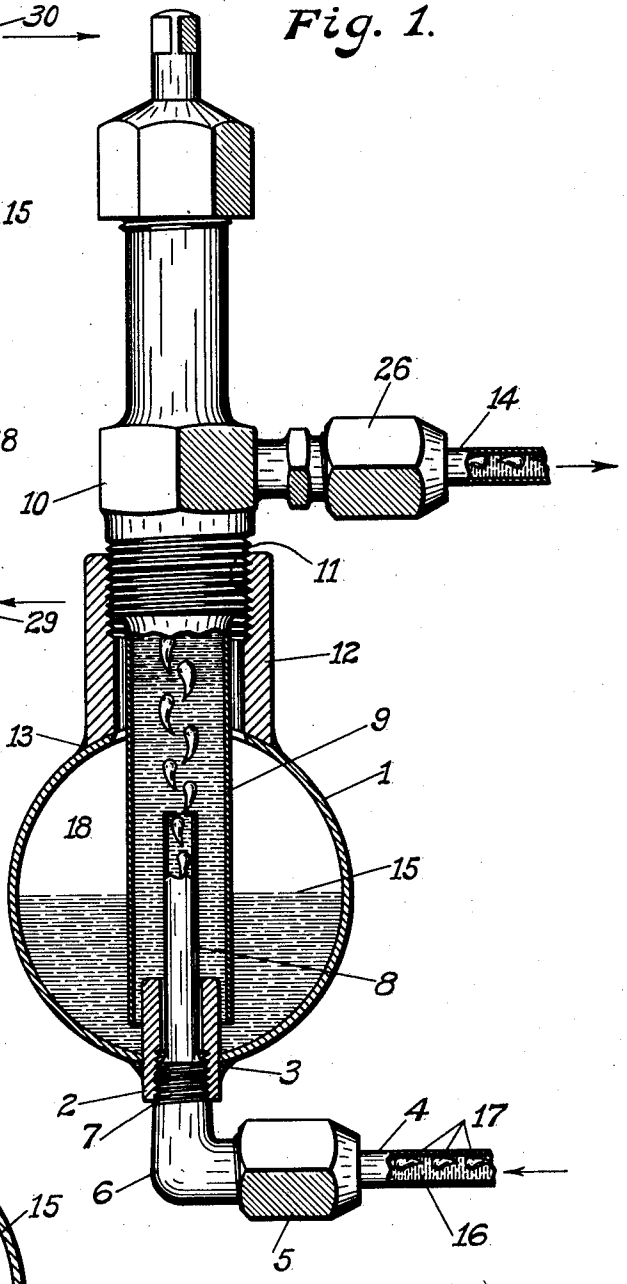
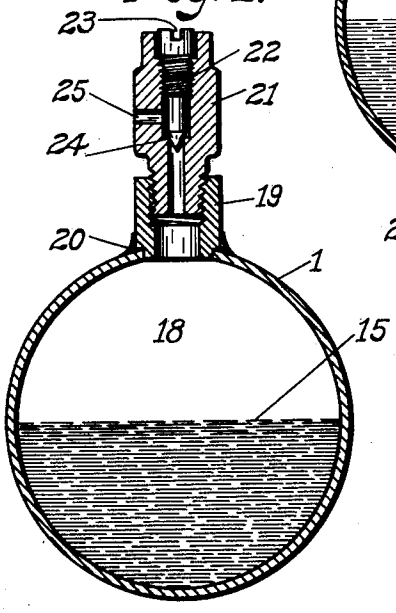


Fig. 2.



Lee V. Myers

INVENTOR

BY Walter A. Knight.

ATTORNEY

Patented Nov. 19, 1929 1,736,721

UNITED STATES PATENT OFFICE

LEE V. MYERS, OF FORT WAYNE, INDIANA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE WAYNE HOME EQUIPMENT COMPANY, OF FORT WAYNE, INDIANA, A CORPORATION OF MARYLAND

MEANS FOR PASSING LUBRICANTS DIRECTLY THROUGH LIQUID RECEIVERS IN REFRIGERATION APPARATUS

Application filed November 17, 1927. Serial No. 233,939.

My invention relates to refrigeration systems and particularly to those in which a sufficient quantity of lubricant is mixed with refrigerant when the system is charged and sealed, to effectually lubricate all moving parts where friction would cause wear.

Considerable difficulty has been experienced in small units, such as those adapted for household use, by the accumulation of a large amount of lubricant in the liquid refrigerant receiver, and because such quantity of lubricant remains in the receiver, an insufficient amount being carried over to the compressor and other working parts to keep them properly lubricated.

The principal object of my invention is to provide means for keeping the lubricant in the system circulating therethrough, that is, as fast as it comes over from the outlet side of the compressor to the liquid receiver, to pass it directly through said receiver instead of allowing it to accumulate and remain therein.

The particular embodiment of my invention selected for illustration in Figures 1 and 2 constitutes means for keeping the oil passing through the liquid receiver from the outlet side of the compressor to the expansion or cooling unit in an apparatus for domestic and other uses.

Figure 1 is a cross section through the liquid receiver axially of the means for passing lubricant directly through the liquid receiver, a portion only of said means being broken away and in section;

Fig. 2 is another cross section through said liquid receiver axially of a relief valve, said valve being shown in axial section also, and

Fig. 3 is an alternative form of my device shown axially thereof on a cross section through the liquid receiver.

Referring now to Figs. 1 and 2 of the drawings, 1 is the liquid receiver of a refrigerating apparatus with a suitable pipe nipple 2 extending therethrough from the bottom and welded at 3 thereto. A tube 4, leading from the outlet side of the compressor (not shown), after passing through the condenser (not shown) is united by union 5 to an elbow 6, threaded at 7 into said nipple 2, and carries an upstanding stud tube 8 terminating at any convenient height within the liquid receiver and within and preferably axially of a stud tube 9, which is the prolongation of a depending portion of the valve body 10 below its thread 11, which co-acts with the threaded portion of the boss 12 welded at 13 to the upper side of the liquid receiver 1, directly opposite the nipple 2.

When the refrigeration apparatus is ready for use the valve in the body 10 is opened allowing free passage of liquid from within the tube 9 upwardly and out through union 26 and tube 14 to the expansion or cooling unit (not shown).

A body of liquid refrigerant normally stands in the liquid receiver 1, the level thereof being indicated by the line 15. This level may vary both from the quantity of refrigerant with which the apparatus is initially charged and from fluctuation in operation but the receiver is generally about half full. As the liquid refrigerant 16, sulphur dioxide, with drops of lubricant 17 come over from the compressor through the condenser they pass through the tubes 4, 6 and 8; the oil drops, which are lighter than the liquid refrigerant, continuing their upward course directly through the body of liquid refrigerant in tube 9 and outwardly through the tube 14 to an expansion or cooling unit, along with a portion of the liquid refrigerant.

In the alternative form of the invention shown in Fig. 3 a tube 27 passes vertically through the liquid receiver and has, below the normal liquid level in the receiver, any desired number of slots 28 preferably inclined downwardly in an outward direction. The drops of lubricant 17 carried along in the liquid refrigerant 16 enter the pipe 27 at 29, pass upwardly through said pipe and outwardly at its outlet end 30 while the liquid refrigerant is free to flow into the liquid receiver 1 through any of the slots 28 without interrupting the flow of the lubricant directly through the liquid receiver 1 and tube 27. It will be understood that the tube 27 is welded or otherwise sealed to the liquid receiver 1 at 31 above and 32 below.

While the air in the whole system is ex-

hausted before charging the same with liquid refrigerant and lubricant, owing to either careless handling or defects of material and the like, leaks sometimes occur and may cause air to pocket in the space 18 of the liquid receiver. Therefore, at any convenient point on the upper surface of the liquid receiver a relief valve is provided as shown in Fig. 2. A boss 19 pierces the top wall of the liquid receiver and is welded at 20 thereto. A relief valve consisting of a body portion 21 with needle valve 22 threaded to said body, slotted at 23 and adapted to seat at 24, is normally kept closed but may be raised upon occasion to withdraw air through the outlet 25.

Although a preferred and an alternative form of my invention have been shown and described, it will be understood that a mechanic working within the scope of what is claimed, may make changes without departing from the spirit of the invention.

I claim as my invention and desire to secure by Letters Patent of the United States:—

1. In a refrigeration system through which lubricant is circulated mixed with refrigerant, a liquid receiver and means connected with said liquid receiver for passing said lubricant directly through said receiver while permitting part of the liquid refrigerant to be deposited therein.

2. In a refrigeration system through which lubricant is circulated with refrigerant, a liquid receiver, an outlet tube from said liquid receiver extending downwardly from above and terminating therein below the normal level of liquid therein and an inlet tube extending upwardly into said liquid receiver from below, said second tube terminating within said first tube.

3. In a refrigeration system through which lubricant is circulated mixed with refrigerant, a liquid receiver, a tubular member sealed to the top of said receiver and surrounding a hole therethrough, an outlet tube removably secured to and extending through said tubular member and with its lower end terminating below the normal level of liquid in said receiver, a second tubular membef sealed to the bottom of said receiver opposite said first named tubular member and passing through a hole in the bottom of said receiver, and an inlet pipe removably secured to said second tubular member and extending upwardly into and terminating within said outlet tube.

4. In a refrigeration system through which lubricant is circulated mixed with refrigerant, a liquid receiver, a boss welded to the top of said receiver and surrounding a hole through the wall of said receiver, an outlet tube threaded to said boss extending therethrough and with its lower end terminating below the normal level of liquid in said receiver, a tubular member welded to the bottom side of said receiver opposite said boss and passing through a second hole through the wall of said receiver, and an inlet pipe threaded to said tubular member extending therethrough and extending upwardly into and terminating within said outlet tube.

In testimony whereof I have hereunto set my hand.

LEE V. MYERS.