

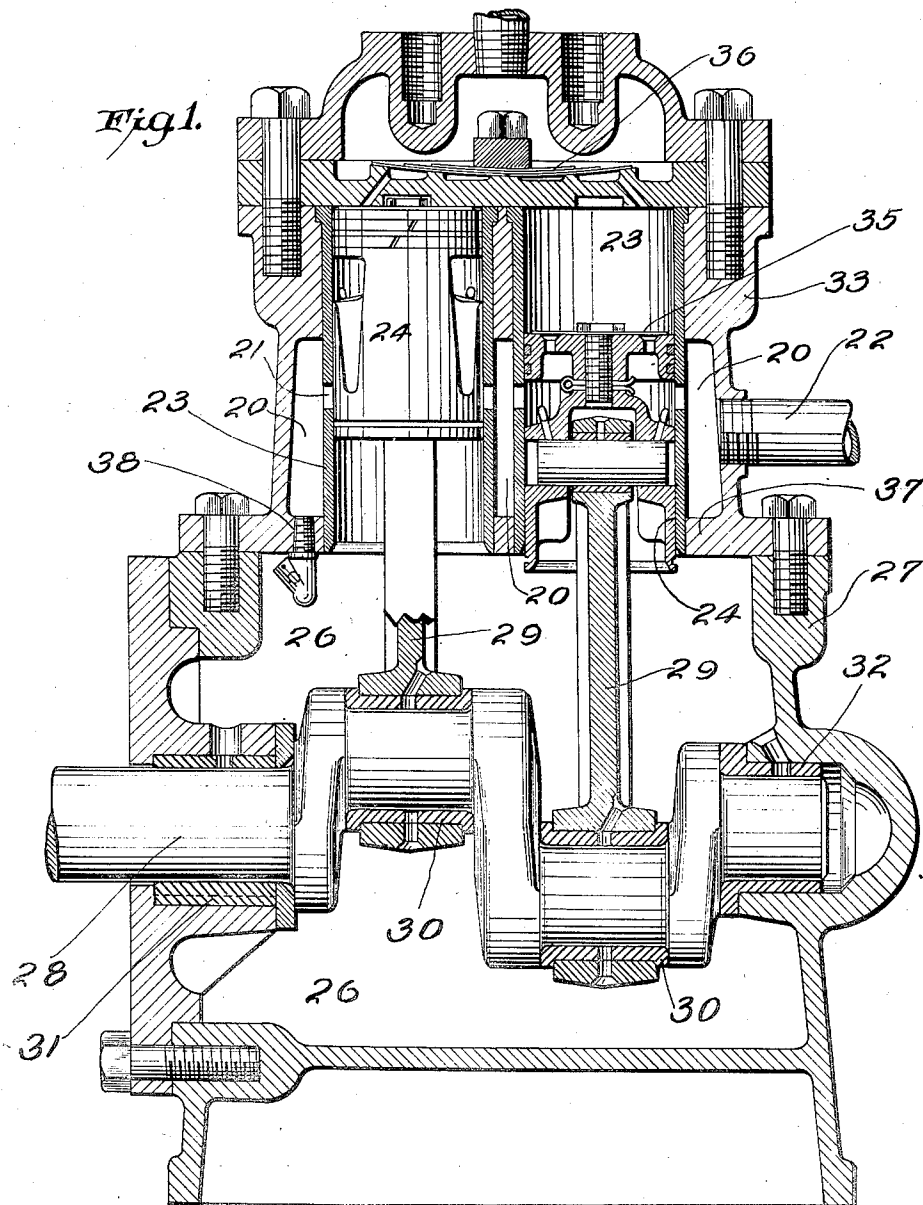
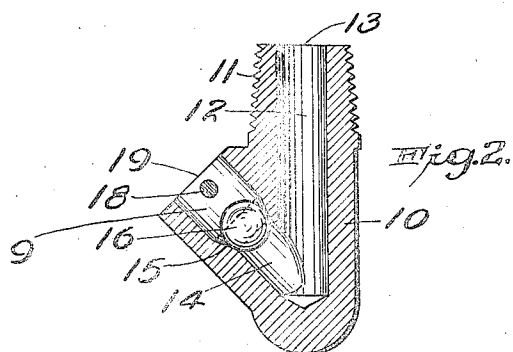
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CHECK VALVE FOR COMPRESSORS AND THE LIKE

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CHECK VALVE FOR COMPRESSORS AND THE LIKE

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My invention relates to flow of fluids and more particularly to compressors and still more particularly my invention relates to compressors for use in the art of mechanical refrigeration, particularly in systems wherein a certain amount of lubricant is circulated along with the refrigerant.

In refrigerating systems wherein the lubricant passes through the system from the compressor to the evaporator and back again to the compressor it is necessary to provide means to prevent pocketing of lubricant in parts of the compressor. My invention consists in a novel means for accomplishing this result.

My invention includes also a novel type of check valve.

My invention will be described with reference to the accompanying drawing on which: Figure 1 shows a compressor in section embodying my invention; and Figure 2 is a cross sectional view of my improved check valve constituting a part of the apparatus shown in Figure 1.

The compressor shown in Figure 1 comprises a crank case chamber 26 formed within a crank case 27. The crank shaft 28 is situated in part within crank case chamber 26 and carries connecting rods 29. At the lower end of each connecting rod is a connecting rod bearing 30. The crank shaft is supported in bearings 31 and 32 carried in the crank case. These bearings are lubricated by splashing of oil within the crank case. To the upper end of each connecting rod is connected a piston 24. The pistons are mounted to slide within cylinders 23. Cylinders 23 are fitted into cylinder housing 33. A chamber 20 is formed within cylinder housing 33 and surrounding in part cylinders 23. Cut into the side of each cylinder 23 is a series of intake ports 21. These ports are situated above the bottom of chamber 20 so that the lower part of chamber 20 would constitute a collecting receptacle for liquid except for means provided to prevent accumulation of liquid therein more fully hereinafter described.

Conduit 22 is the compressor suction line which, when the compressor is used in a re-

frigerating system, is connected to an evaporator. In operation, shaft 28 is rotated and pistons 24 are reciprocated alternately up and down in known manner to cover and uncover inlet ports 21. Valves 35 and 36 are the compressor inlet and outlet valves respectively. The vaporous refrigerant sucked in through conduit 22 carries with it lubricant which in part settles in chamber 20.

In the lower wall 37 of cylinder housing 33 is a communication or passageway 38 which connects chamber 20 with crank case chamber 26. This communication 38 is tapped to receive a member 10 which constitutes a check valve. Check valve 10 has an upper threaded end 11 adapted to be screwed into communication 38. Check valve 10 is in the form of a V and contains a passageway through the same comprising angularly disposed passageways 12 and 14. Passageway 12 extends downwardly from the upper opening 13 which is adapted to communicate with chamber 20 and ends internally of the structure forming the check valve at a distance from the bottom where it communicates with passageway 14 which, as will be seen from the drawing, extends upwardly from the bottom of passageway 12 at an angle of about 45° to a chamber 9 which is an enlarged outer end portion of passageway 14 and which has an opening 19 adapted to communicate with crank case chamber 26. Between chamber 9 and passageway 14 is a contracted portion forming a valve seat 15 upon which rests, due to gravity, a ball 16. Ball 16 is of greater diameter than passageway 14 and forms the movable valve member of the check valve which by seating against seat 15 closes passageway 14 and thus cuts off communication between chamber 20 and crank case chamber 26. Check valve 10 is drilled to accommodate a retaining pin 18 situated near opening 19, the purpose of which is to prevent the loss of ball 16 from chamber 9.

As liquid collects in chamber 20 it forms a head acting against ball 16. The column of liquid in chamber 20 exerts pressure tending to lift the ball 16 from its seat 15 and when the head is sufficient to lift the ball 16 lubricant in passageway 14 immediately be-

low ball 16 will flow past ball 16, into chamber 9 and thence into the crank case chamber 26. The lubricant is thus returned from chamber 20 to the crank case chamber and pocketing of lubricant is prevented. It will be noted that the lowermost portion of valve seat 15 is substantially horizontal and constitutes a substantially horizontal groove in which ball 16 may roll as it lifts away from seat 15. It is thus not necessary for the column of liquid in chamber 20 and passageway 12 to lift the entire weight of the ball 16 in order to uncover valve seat 15 since the greater portion of weight of the ball 16 may be said to rest upon the lower side of valve seat 15 and the ball rolls away from its closing position instead of being lifted bodily. Thus the passage of lubricant from chamber 20 to the crank case chamber 26 is solely dependent upon gravity and is not dependent upon a temporary difference of pressure in chambers 20 and 26. It takes but a small force to move ball 16.

The check valve is of such construction that oil cannot flow through it from crank case chamber 26 to chamber 20 as a tendency toward such passage forces ball 16 against seat 15 thereby sealing the communication between the two chambers through the check valve.

While I have described one form of my invention it is to be understood that other forms are possible within the spirit and scope of the invention.

Having thus described my invention, what I claim is:

A check valve comprising a casing comprising a V-shaped passageway, a seat in one branch and a ball adapted to fit against said seat and roll substantially horizontally on said seat when the other branch is arranged vertically, said first mentioned branch having an outlet opening above said ball and said second mentioned branch having an inlet opening above said outlet opening.

In testimony whereof I hereunto affix my signature.

FRANK DESNOYERS PELTIER.