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ROTARY COMPRESSOR

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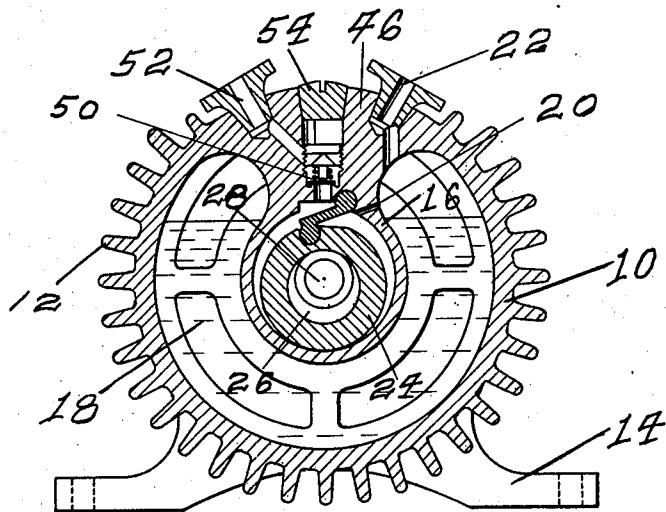


FIG. 1

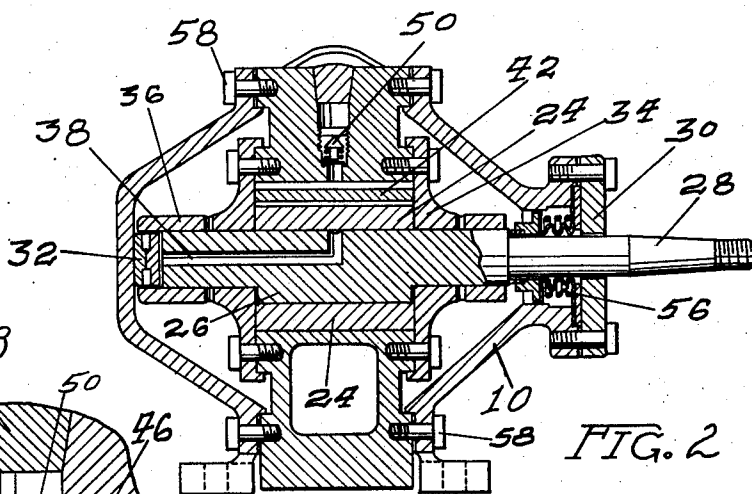


FIG. 2

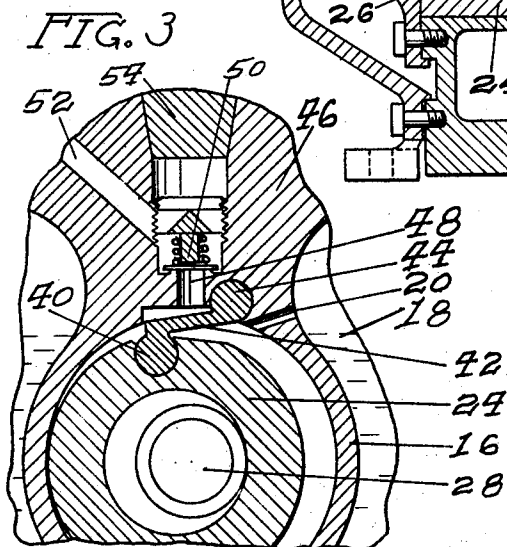


FIG. 3

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ROTARY COMPRESSOR

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1 Claim. (Cl. 230—147)

This invention relates to an improved rotary compressor or a pump for various fluids, and has for one of its principal objects the provision of such a pump which shall be simple and economical to manufacture, composed of a minimum of parts, easy of operation and not likely to get out of order.

One of the important objects of this invention is the provision of a rotary compressor which shall be so constructed that it will not be subject to excessive heating during operation, one of the main elements being the inclosing of the working parts in a bath of oil which eliminates any excess heat.

Another object of the invention is the provision in a fluid pump of a rotatable eccentric and wherein a single valve construction is employed together with an oscillating vane which, when associated with the eccentric, provides the compression and expansion strokes.

A still further important object of the invention resides in the provision of simple and regular passages for the flow of oil or other liquid through the pump, which passages are so designed as to produce a structure capable of delivering desired quantities of fluid at desired pressures over a very considerable range.

Another object is the provision of a rotary pump which is especially adapted for use in refrigeration systems and which shall be self-lubricating while at the same time not interfering in any way with the proper and desired compression of the gaseous refrigerant.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawing and following specification.

The invention, in a preferred form, is illustrated in the drawing and hereinafter more fully described.

In the drawing:

Figure 1 is a vertical view, partly in section, of the improved rotary compressor of this invention.

Figure 2 is a sectional view taken at right angles to the showing of Figure 1.

Figure 3 is an enlarged detail view illustrating particularly the flap or vane which cooperates with the rotor and also the one-way valve associated therewith.

As shown in the drawing:

The reference numeral 10 indicates generally the outer casing of the improved rotary compressor of this invention, the same having heat

dissipating fins or the like 12 and being supported on a base 14.

Inside the casing 10 and spaced therefrom is a compressor cylinder 16 and in the space between the cylinder 16 and the casing 10 is a body of lubricant 18 as indicated by the lines in Figures 1 and 3.

The lubricant is maintained at a level approximately that shown which is below that of an opening 20, which opening is in the chamber 16 and is for the admission of incoming fluid to be compressed, as, for example, a refrigerant. The refrigerant enters the casing 10 by means of an inlet port or the like 22.

Positioned inside the cylinder 16 is a rotor 24, the rotor being eccentrically mounted in the cylinder 16 and operated by means of a cam element 26 on a driving shaft 28.

The shaft is positioned in suitable end bearings 30 and 32 either affixed to or mounted in the outer casing 10 as best shown in Figure 2.

The shaft is also surrounded by further supports and bearing elements 34 and 36 respectively, which elements have openings therein for the free passage of oil to the shaft, and a passage 38 is also provided in the shaft itself whereby lubricant entering around the end of the bearing elements 32 and 36 is conveyed to the bearing surfaces between the shaft and cam 28—26 and the rotor 24.

The rotor 24 is slightly flattened at its upper face and has a rounded recess formed therein for the reception of the corresponding end or portion 40 of a vane 42. The vane has another extension 44 similar to the portion 40 which is fitted into a corresponding recess in an extension 46 of the cylinder 16.

It will be seen that as the rotor is operated in a clockwise direction in the cylinder 16 by means of the rotation of the shaft 28, as viewed in Figures 1 and 3, a suction will be created on the side of the inlet port or ports 20, thereby causing the refrigerant or other fluid to be brought into the space between the outer face of the rotor 24 and the inner face of the cylinder 16, and upon further clockwise rotation of the shaft and rotor to the position shown in Figure 3, the refrigerant or other fluid will be compressed and forced up past the vane 42 into a passage 48 and thence past a one-way valve 50 out through the opening or port 52.

A plug 54 is provided for the proper installation of the valve 50 which is spring-operated as shown, and a suitable oil seal 56 is provided at that end of the shaft 28 adjacent the right-hand

end of the casing 10. The whole device is retained in desired assembled position by means of a series of bolts 58 at strategic points whereby the apparatus can be readily dismantled for purposes of inspection, repairs and replacement if such operations become necessary.

It will be seen that herein is provided a compressor which is particularly adapted for refrigeration work in that it maintains a large reserve supply of lubricant which will not interfere in any way with the action of the compressor, and furthermore, the heat which is necessarily engendered in the operation of such a device is quickly dissipated while at the same time a simple yet positive compressive action results with a minimum expenditure of energy.

I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

I claim as my invention:

25 A compressor, including a cylindrical housing,

a rotor eccentrically mounted in the housing, a shaft and cam for operating the rotor, said cam positioned inside the rotor and a vane between the outer face of the rotor and the inner face of the housing, said vane comprising a flat plate, oppositely offset rounded extensions at the edges of the plate, said extensions mounted in correspondingly rounded grooves in the rotor and housing, and a flat surface on the rotor adjacent the area of contact of the vane therewith, and a correspondingly flattened area in the inner face of the housing, the housing having an inlet port adjacent one side of the vane groove and an outlet port at the other side thereof, a spring-operated one-way valve in the outlet port, a bath of lubricant surrounding the housing to a level just below the level of the inlet port, an outer container for said bath, air cooling fins on the container, bearing elements removably mounted in the outer ends of the housing, said bearing elements having passages therein for lubricant, and additional passages in the shaft for the penetration of lubricant to the shaft and rotor bearings.

JOHN CALLING. 25