

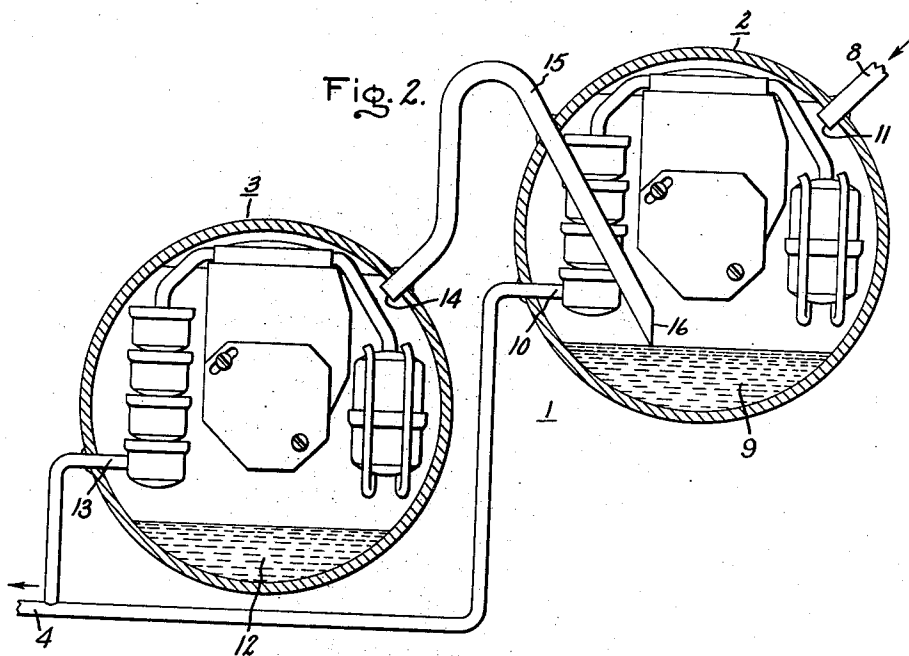
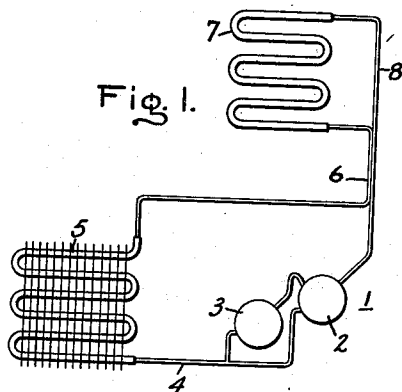
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PARALLEL COMPRESSOR ARRANGEMENT IN REFRIGERATING SYSTEM

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PARALLEL COMPRESSOR ARRANGEMENT
IN REFRIGERATING SYSTEMLowell M. Kurtz, Erie, Pa., assignor to General
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2 Claims. (Cl. 62-117.7)

1 My invention relates to refrigerating apparatus and pertains more particularly to the regulation of oil levels in compressors connected in parallel in a refrigerating system.

Ordinarily, when two refrigerator compressors are operated in parallel, they are placed at a common height. One connection between the compressors equalizes the vapor pressures therein; and another connection between the compressor sumps equalizes the levels of the oil therein. The need for the compressors to be at the same height, however, precludes the use of this arrangement in any system wherein it might be desirable for the compressors to be placed at different heights.

Therefore, a primary object of my invention is to provide means effective for maintaining satisfactory oil levels in the sumps of compressors operated in parallel, regardless of whether the compressors are disposed at the same or different heights.

Another object of my invention is to provide with two compressors operating in parallel a single means effective for both equalizing the pressures therein and maintaining satisfactory oil levels in the sumps of the compressors.

Further objects and advantages of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this invention.

In carrying out the objects of my invention I provide a pair of compressors connected to a common exhaust line, and with one also connected to the suction line of the refrigerating system. I provide further a transfer tube, one end of which extends into and to a normal oil level in the compressor connected to the suction line and the other end of which is connected to the other compressor above the normal oil level therein.

For a better understanding of my invention reference may be had to the accompanying drawing in which Fig. 1 is a schematic showing of a refrigerating system including two compressors operated in parallel; and Fig. 2 is an enlarged detailed sectional view illustrating an embodiment of my invention.

Referring to the drawing, I have shown in Fig. 1 a refrigerating system including a refrigerating unit generally designated 1 and comprising a first compressor 2 and a second compressor 3, commonly connected by an exhaust line 4 to a condenser 5. A capillary tube 6 con-

2 nects the condenser with an evaporator 7; and a suction line 8 connects the evaporator with the first compressor 2. This system is charged with an amount of oil sufficient for supplying both compressors.

As better seen in Fig. 2, the first compressor 2 includes an oil sump 9 in its bottom portion, an outlet passage 10 and an inlet passage 11 disposed above the sump. The second compressor 3 includes an oil sump 12 in its bottom portion, an outlet passage 13 and an inlet passage 14 disposed above the oil sump thereof. The outlet passages of both compressors are commonly and suitably connected to the exhaust line 4; and, the inlet passage of the first compressor is connected to the suction line 8. Provided between the two compressors is a transfer tube 15, one end of which is connected to the inlet 14 of the second compressor 3 and the other end of which extends into the first compressor 2 and to the normal oil level in the sump 9 thereof. The extending end of the tube is cut obliquely, as at 16, to provide a maximum opening at the normal oil level.

In operation the first compressor 2 initially receives, from the suction line 8 and through the inlet passage 11, all of the oil and vaporized refrigerant from the system. The transfer tube 15 provides for equalization of vapor pressures between the first and second compressors in order that both compressors may operate to deliver the refrigerant through the exhaust line 4 and to the condenser 5. The oil, however, collects in the sump 9 of the first compressor 2 until it reaches its normal level. Oil in excess of the normal level in the sump 9 is swept up through the transfer tube 15 by the vaporous refrigerant being drawn into the second compressor 3 and is thereby transferred to the second compressor, wherein it collects in the sump 12 thereof. Thus, satisfactory oil levels are maintained in the sumps of both the first and second compressors.

If for any reason the first compressor 2 is shut down the second compressor 3 is effective for transferring through the tube 15 all oil in excess of the normal level in the sump 9 of the first compressor. If the second compressor 3 is shut down, the oil will collect in the sump 9 of the first compressor 2 and exceed the normal level therein. However, the first few restarting strokes of the second compressor 3 will be effective for drawing over through the tube 15 and into the sump 12 thereof a satisfactory amount of the oil.

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It will be seen that with my invention it is possible by the utilization of a single transfer tube both to equalize pressures between two compressors connected in parallel and to maintain satisfactory oil levels in the sumps of the compressors, regardless of whether the compressors are disposed at different heights, as shown in Fig. 2, or at the same height. Also, my invention is readily and easily adaptable to any parallel compressor arrangement including more than two compressors.

While I have shown and described a specific embodiment of my invention, I do not desire my invention to be limited to the particular construction shown and described and I intend in the appended claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a refrigerating system including an exhaust line and a suction line, the combination of a pair of compressors, each of said compressors having an oil sump, said compressors being commonly connected to said exhaust line, only one of said compressors being connected to said suction line and receiving initially all of the oil and vaporized refrigerant from said suction line and a single tube connecting said pair of compressors, one end of said tube extending into said one compressor and to the normal oil level in the sump thereof, the other end of said tube being connected to the other compressor above the sump thereof, said tube being effective for both equalizing vapor pressures in said compressors and transferring oil exceeding the normal level in the sump of said one compressor

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to said other compressor for collection in the sump thereof.

2. In a refrigerating system including an exhaust line and a suction line, the combination of a first and a second compressor disposed at different heights, each of said compressors including an oil sump, each of said compressors including an outlet passage and an inlet passage located above its corresponding sump, the outlet passages of said compressors being commonly connected to said exhaust line, the inlet passage of said first compressor only being connected to said suction line whereby said first compressor receives initially all of the oil and vaporized refrigerant from said suction line, a single transfer tube, one end of said tube being connected to the inlet passage of said second compressor, the other end of said tube extending into said first compressor and to the normal oil level in the sump thereof, said transfer tube being effective both for equalizing vapor pressures in said compressors and for transferring oil exceeding the normal level in the sump of said first compressor to said second compressor for maintaining a satisfactory oil level in the sump thereof.

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