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1,547,066

W. NUSS

COMPRESSOR FOR REFRIGERATING APPARATUS

Filed June 25, 1924

Fig. 1.

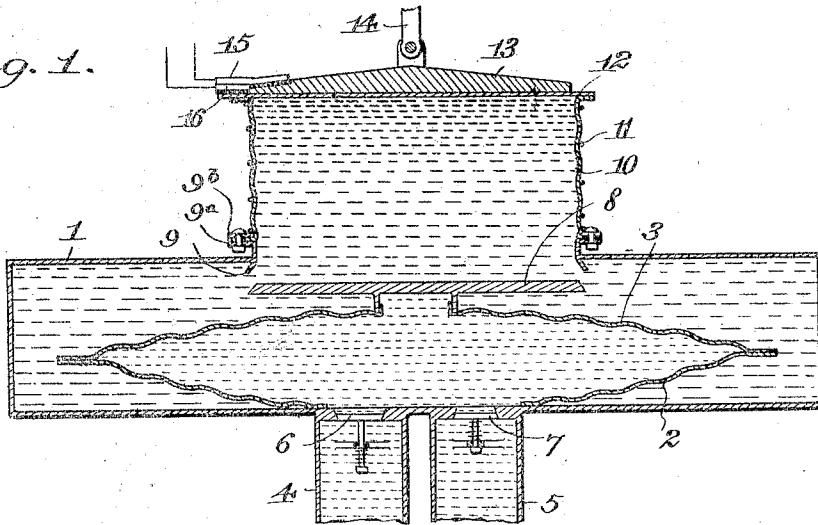
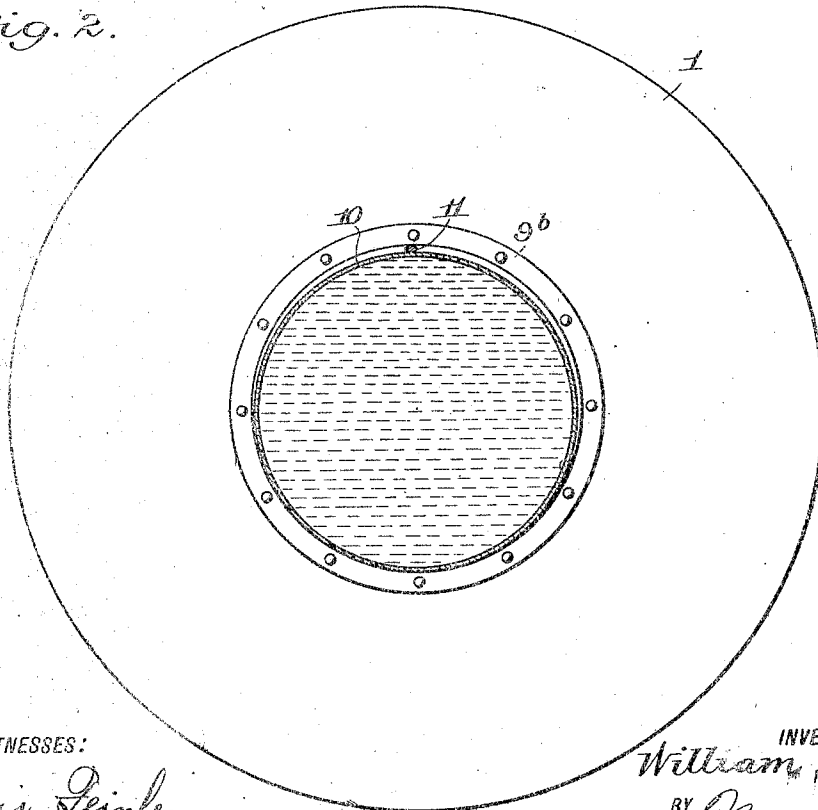


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM NUSS, OF HOBOKEN, NEW JERSEY.

COMPRESSOR FOR REFRIGERATING APPARATUS.

Application filed June 25, 1924. Serial No. 722,310.

To all whom it may concern:

Be it known that I, WILLIAM NUSS, a citizen of Germany, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Compressor for Refrigerating Apparatus, of which the following is a full, clear, and exact description.

This invention relates to an improvement in compressors for refrigerating apparatus and is an improvement on the apparatus shown in United States Patent No. 1,489,143 issued to the applicant on April 1, 1924.

An object of the invention is to provide means whereby the flow of a certain fluid in a refrigerating apparatus is stopped whenever a reduction of pressure beyond a definite amount occurs or when there is a leak in the fluid system.

The invention is illustrated in the drawings, of which—

Figure 1 is a vertical sectional view through the apparatus; and

Figure 2 is a horizontal section through the collapsible-walled chamber.

The form of the invention shown in the drawings is a preferred form, although it is understood that modifications in the construction and arrangement of the parts and in the character of the materials used may be adopted without departing from the spirit of the invention as set forth in the appended claims.

In its general aspect the invention comprises a chamber containing liquid, within which a flexible refrigerant-containing chamber is disposed. The walls of this refrigerant chamber are adapted to be collapsed to cause a circulation of the refrigerant, said collapsing being due to the variation in pressure of a liquid surrounding the refrigerant chamber within the first-mentioned chamber or container. In order to cause a variation in pressure in the main chamber, means is provided in the nature of a reciprocating plunger adapted to be associated with a collapsible-walled auxiliary chamber connected to the main chamber, which auxiliary chamber upon expansion and contraction will cause a variation in the pressure of the liquid contained in the main chamber. In order to provide that the main chamber will be cut off from the auxiliary chamber whenever the pressure is reduced below a given minimum, or whenever a leak occurs in the auxiliary chamber,

I provide a valve associated with the refrigerant chamber which is normally open but which when the reduction in pressure occurs is forced, by reason of the difference in pressure between the refrigerant and the liquid sections of the refrigerant chamber, to seat itself and close off the auxiliary chamber from the main chamber.

As shown in the drawings, the preferred form of the invention comprises a container or receptacle 1, preferably of rigid material. Within this container or main chamber there is disposed a flexible-walled refrigerant chamber formed by the connection of two flexible-walled members 2 and 3. This refrigerant chamber is connected by pipes 4 and 5 which act as inlet and outlet pipes to the refrigerant chamber. Valves 6 and 7 are disposed in these pipes to draw the flow of fluid therethrough. On the upper side of the refrigerant chamber a valve 8 is disposed in any suitable manner. This valve is adapted to be seated on a seat 9 formed in the opening on the upper surface of the container or main chamber 1. The valve seat is mounted on a sleeve disposed in the opening of the main chamber and provided with a flange 9^a adapted to abut a flange 9^b between which the ends of the collapsible fabric forming the wall of the auxiliary chamber is gripped. This fabric is surrounded, preferably, by spiral spring material such as 11 and is also connected at its upper end to a plate 12 to close it. The plate 12 is adapted to be engaged by a plunger plate 13 operated by a lever 14 from any suitable source of power (not shown). The plate 13 is provided with a switch contact 15; and the plate 12, with a switch contact 16, which are adapted to be engaged when the plates are drawn together.

With a given quantity of liquid in the main and auxiliary chambers, the reciprocation of the plunger 13 will collapse the wall 10, causing the liquid therein to be forced into the main chamber and vary the pressure. The expansion of the auxiliary chamber will cause the pressure within the main chamber to be reduced. This increase and reduction in the main chamber will be exerted on the flexible walls 2 and 3 of the refrigerant chamber so that the liquid therein will be caused to flow out, causing a circulation of the refrigerant.

Whenever the pressure in the auxiliary chamber or in the main chamber goes below

a certain value, the pressure of the refrigerant in the refrigerant chamber will cause the valve 8 to be moved against its seat 9, thus cutting off connection between the auxiliary and the main chambers. This same action, it is clear, will take place whenever the fabric or collapsible material of the wall of the auxiliary chamber springs a leak. Because of this construction and operation there is an automatic checking of the flow of fluid whenever such a condition as that described occurs.

What I claim is:—

1. A refrigerating compressor device, which comprises a main chamber, an auxiliary chamber, a refrigerant container within the main chamber, said main and auxiliary chambers containing liquid, means for varying the pressure of said liquid to alter the capacity of the refrigerant chamber, and means whereby the connection between the main and the auxiliary chambers is cut off automatically upon a definite reduction of pressure in the liquid therein.
2. A refrigerating compressor apparatus,

which comprises a rigid-walled main chamber, a collapsible-walled auxiliary chamber connected thereto, means for expanding and contracting said auxiliary chamber, said main and auxiliary chambers containing liquid, and means for automatically closing the connection between the main and auxiliary chambers when the pressure of the liquid therewithin falls below a given value.

3. A refrigerating compressor apparatus, which comprises a rigid-walled main chamber, a collapsible-walled auxiliary chamber connected thereto, a flexible-walled refrigerant chamber within the main chamber, inlet and outlet pipes connected to said refrigerant chamber, said main and auxiliary chamber containing a liquid the pressure of which is varied, means for varying said pressure, said refrigerant chamber containing refrigerating fluid, and means carried by the refrigerant chamber adapted to close the connection between the main and auxiliary chambers when the pressure of the liquid therewithin falls below a certain value.

WILLIAM NUSS.