Dec. 3, 1935. R. G. OSBORN 2,023,284

REFRIGERATING APPARATUS

Original Filed Jan. 31, 1927 2 Sheets-Sheet 1

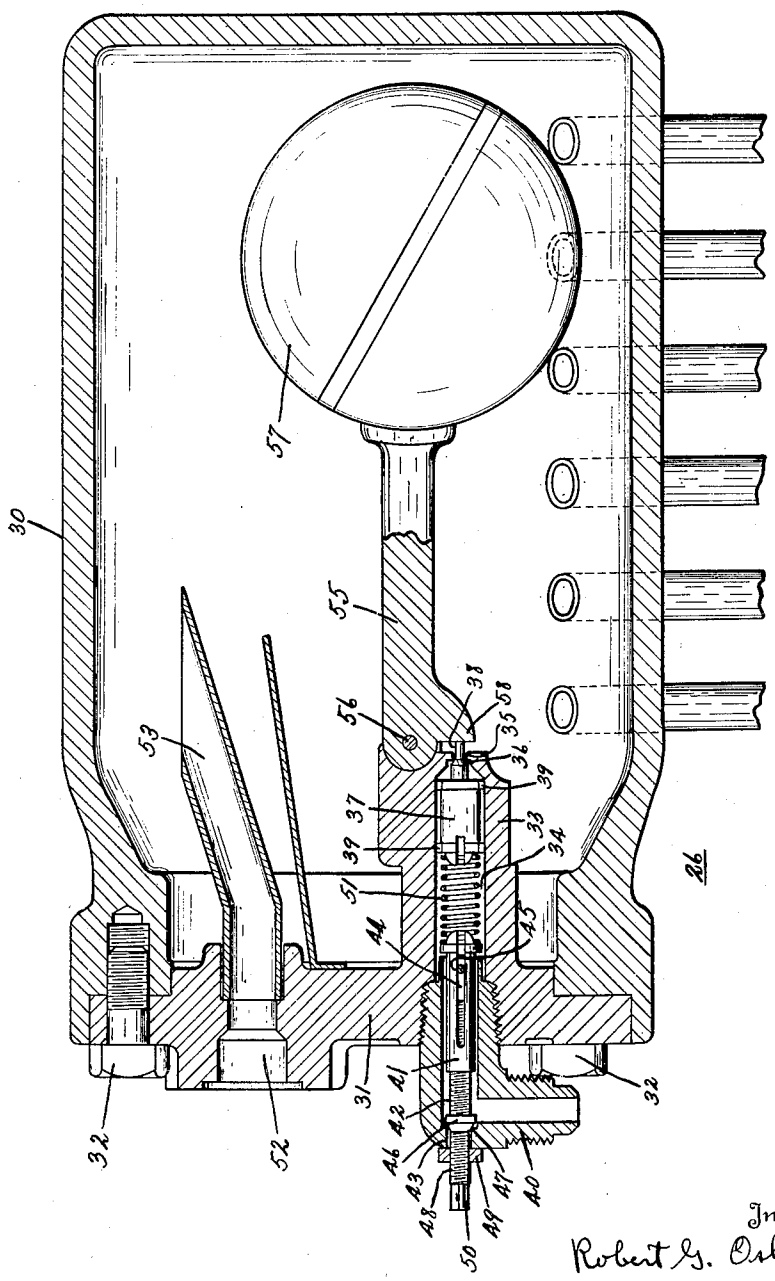


Fig. 1.

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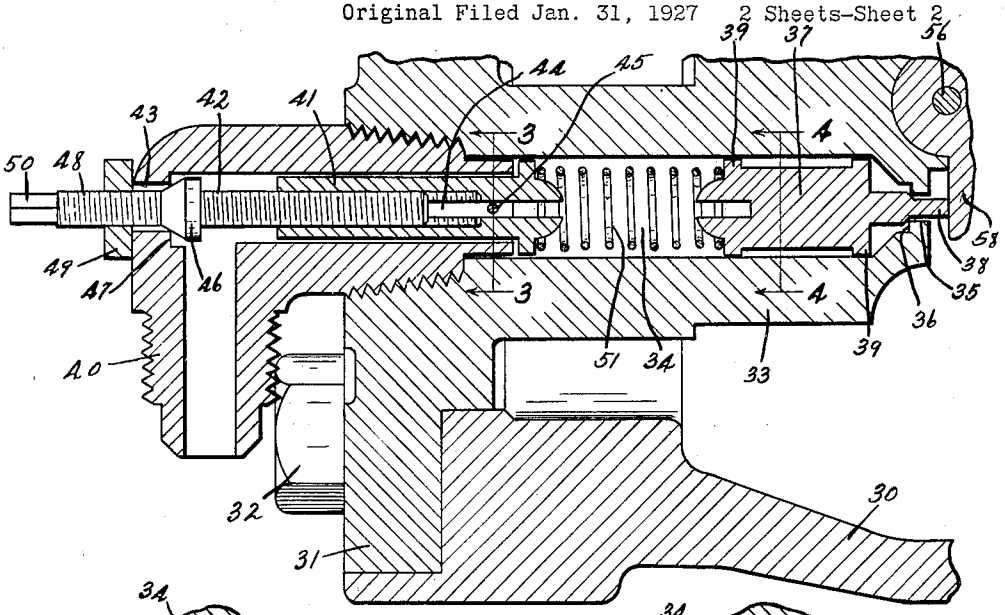


Fig. 2.

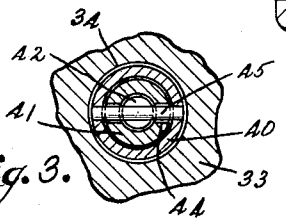


Fig. 3.

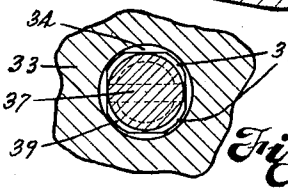


Fig. 4.

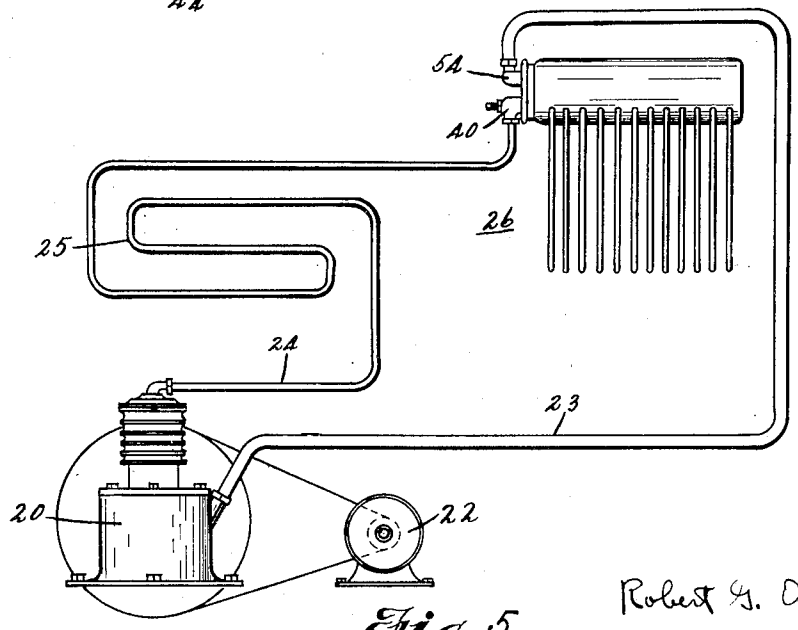


Fig. 5.

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Patented Dec. 3, 1935 2,023,284

UNITED STATES PATENT OFFICE

2,023,284

REFRIGERATING APPARATUS

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Application January 31, 1927, Serial No. 164,750
Renewed May 24, 1930

4 Claims. (Cl. 137—104)

The present invention relates to refrigerating apparatus and more particularly to the control of the flow of refrigerant into an evaporator.

One of the objects of the present invention is to provide means including a valve for controlling the passage of fluid into a vessel, such as an evaporator, said valve being removable from the vessel without disassembling the evaporator.

Another object of the present invention is to provide a float operated valve for a refrigerant evaporator, the valve being provided with adjusting means which may be manipulated from the exterior without removing or disconnecting the refrigerant duct from said evaporator.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of embodiment of the present invention is clearly shown.

In the drawings:

Fig. 1 is a fragmentary cross sectional view in a vertical plane of an evaporator with the present invention applied thereto;

Fig. 2 is a fragmentary cross sectional view in a vertical plane of a portion of the evaporator showing the present invention on an enlarged scale;

Fig. 3 is a view taken on the line 3—3 of Fig. 2;

Fig. 4 is a view taken on the line 4—4 of Fig. 2; and

Fig. 5 is a view showing the evaporator connected with a refrigerating system.

Referring to the drawings, particularly to Fig. 5, 20 designates a compressor driven by an electric motor 22. The gas to be compressed enters through pipe 23 and is expelled through a pipe 24. The compressed refrigerant passes through a condenser 25 in which it is cooled in any suitable manner, and from which condensed refrigerant passes into the evaporator 26. The gaseous contents of the evaporator is drawn into the compressor 20 through pipe 23.

Referring more particularly to Figs. 1 and 2, the evaporator 26 comprises a header 30 having an end cover 31 attached thereto by bolts 32. The end cover 31 is provided with an inwardly extending hollow boss 33 providing an inlet duct 34, the end of which is provided with a relatively small opening 35 and a valve seat 36. A valve 37 cooperates with the valve seat 36 and has a stem 38 extending through the opening 35. The valve 37 has ears 39 formed thereon (see Fig. 4) which rests against the side walls of the duct 34 to hold the valve 37 in alignment with valve seat 36. The duct 34 of the boss 33 extends through the opposite end of the end cover 31 and is enlarged and has screw-threaded walls to receive a coupling 40 which forms a continuation of the inlet duct and is connected to the pipe 24.

An adjusting nut 41 is threaded upon an adjusting stem 42 located in the elbow coupling 40. Adjusting stem 42 extends to the exterior of coupling 40 through an opening 43 provided therein. Adjusting nut 41 is slotted at 44 to receive a pin 45 which is secured to the coupling 40 and prevents turning of the nut 41. An enlargement 46 formed on the adjusting stem 42 is adapted to rest against a seat 47 provided in the coupling 40 to seal the opening 43. Threaded portion 48 of the stem 42 extends through the valve opening 43 in coupling 40 to receive a nut 49 which may be tightened against the wall of coupling 40 to seat enlargement 46 on its seat 47 thereby, sealing the opening 43 in coupling 40. The end of stem 42 beyond threaded portion 48 is squared as at 50 to receive a key for turning the stem 42 to adjust the nut 41. A spring 51 is interposed between valve 37 and adjusting nut 41 and normally tends to maintain the valve 37 upon its seat 36. The cover 31 is provided with an opening 52 which receives an inwardly extending pipe 53 connected in any suitable manner to a coupling 54.

A valve controlling device such as a float lever 55 is pivoted at 56 to the boss 33 and carries a float 57. Lever 55 has a downwardly projecting arm 58 which is adapted to engage the stem 38 of valve 37 to move the valve away from the seat 36 whereby, refrigerant will pass through opening 35 into the header. After the level of liquid refrigerant within the header 30 rises to a certain height, the arm 58 of lever 55 will move out of engagement with the stem 38, permitting the valve 37 to be returned to its seat 36 by the spring 51.

It will be apparent from the foregoing description that certain advantages are present in the present invention. The height of the liquid level within header can be controlled from the exterior of header without disconnecting any of the refrigerant ducts from evaporator. This feature is present because the spring pressure applied by spring 51 to the valve 36 may be adjusted while the system is in operation.

The parts within the duct 34 and the coupling 40 comprising the valve and valve adjusting

means may be removed readily without disassembling the evaporator. After the condenser pipe **25** is disconnected from the coupling **40**, the latter is unscrewed from the header cover **31**. The parts **45**, **41**, **42** and **49** are removed while assembled with the coupling **40**. Then the spring **51** and valve plunger **37** may be removed. In this way replacements and repairs may be easily effected.

The control for refrigerating apparatus herein disclosed may be used with any refrigerant container of a refrigerating apparatus, whether said container is an evaporator or some other type of refrigerant reservoir.

While the form of mechanism herein shown and described constitutes a preferred embodiment of one form of invention, it is to be understood that other forms might be adopted and various changes and alterations made in the shape, size and proportion of the elements therein without departing from the spirit and scope of the invention.

What is claimed is as follows:

1. A control for a closed refrigerating system comprising in combination, a refrigerant container having an inlet duct, a valve, a valve controlling device located within the container, said duct including a coupling, valve adjusting means associated with the valve and carried by the coupling, said means including a portion within the coupling and an adjusting member extending thru an opening in a wall of the coupling and accessible from the exterior of the closed system, said coupling and valve adjusting means being removable from the container independently of the controlling device, said valve being removable from the exterior of the container.

2. A control for a closed refrigerating system comprising in combination a refrigerant container having an inlet duct, a valve assembly including a valve and valve adjusting means, a valve controlling device located within the container, said duct including a coupling, said valve adjusting means being associated with the valve and carried by the coupling, said means including a portion within the coupling and an adjusting member extending thru an opening in a wall of the coupling and accessible from the exterior of the closed system, said coupling and valve assembly being removable from the container independently of the controlling device.

3. A control for a closed refrigerating system comprising, in combination, a refrigerant container having an inlet duct, a valve, a valve controlling device located within the container, said duct including a coupling, valve adjusting means located within the coupling and associated with the valve, said means comprising an adjusting member extending thru an opening in the wall of the coupling, said adjusting member including means for closing the opening in said coupling, said coupling and valve adjusting means being removable from the closed system independently of the controlling device.

4. A control for a closed refrigerating system comprising, in combination, a refrigerant container having an inlet duct, a valve assembly including a valve and valve adjusting means, a valve controlling device located within the container, said duct including a coupling, said valve adjusting means being located within the coupling and associated with the valve, said valve adjusting means comprising an adjusting member extending thru an opening in the wall of the coupling, said adjusting member including means for closing the opening in said coupling, said coupling and valve assembly being removable from the container independently of the controlling device.

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