Jan. 16, 1934. N. M. SMALL 1,944,115

REFRIGERANT CONTROL FOR ICE MACHINES

Filed May 24, 1930

Fig. 1.

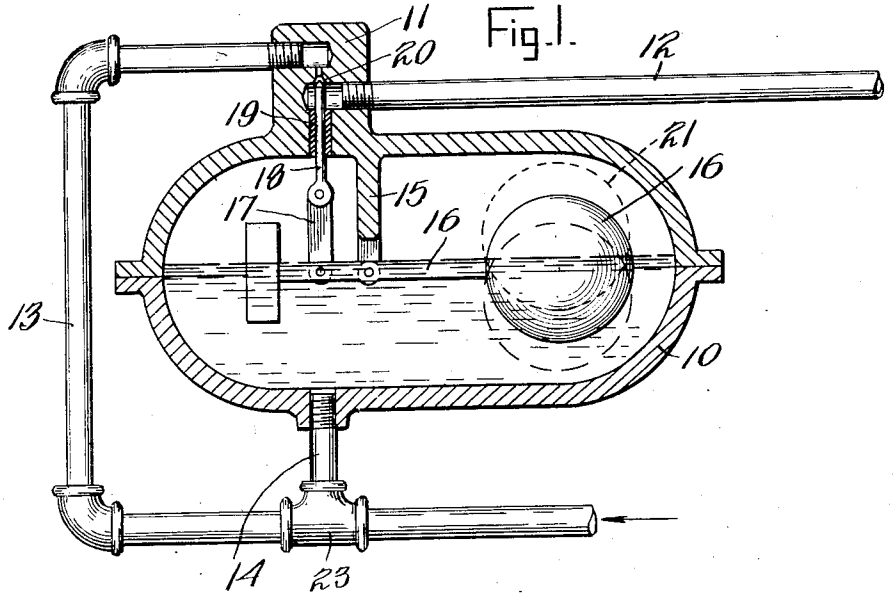


Fig. 2.

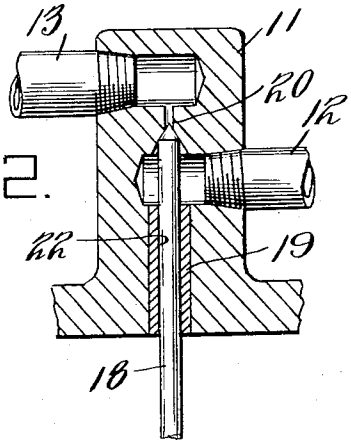
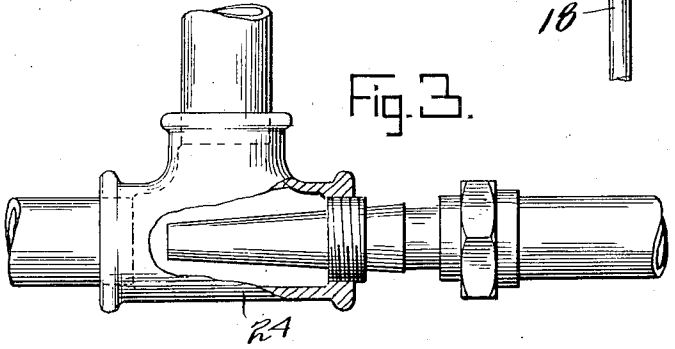


Fig. 3.



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REFRIGERANT CONTROL FOR ICE MACHINES

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2 Claims. (Cl. 137—103)

This invention relates to improvements for controlling the flow of refrigerant from the high pressure side to the low pressure side in a refrigerating system.

An object of the invention is to provide means for controlling the flow of liquid refrigerant to the evaporator coils so that gas from the high pressure side may be prevented from passing into the evaporator coils.

A still further object is to provide float control means for regulating the flow of liquid refrigerant to the evaporator coils in a refrigerating system which float control will operate to permit only liquid refrigerant to pass from the high pressure side to the evaporator coils.

Referring to the accompanying drawing, which is made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a vertical section showing the details of my device,

Figure 2 is an enlarged view in section of a portion of the device showing the valve itself, and

Figure 3 is a modified detail of the device.

In the drawing numeral 10 indicates a casing forming a chamber for liquid refrigerant, said casing having an upper enlarged portion 11 which is bored to receive a high pressure line 13 from the high pressure side and a low pressure line 12 to the low pressure side. A branch pipe 14 passes from the high pressure line 13 and enters the lower portion of the chamber 10. Within the chamber 10 is a fulcrum 15 to which is pivoted an arm having a float 16 on its outer end, and at its other end having a link 17 pivoted thereto, the other end of the link being pivotally attached to a rod 18, the upper end of which controls a valve 20 placed in a bore connecting the high pressure line 13 with the low pressure line 12. The rod 18 preferably is slidably mounted in a sleeve 19.

From the foregoing construction it will be seen that when the chamber 10 is filled or nearly filled with liquid the valve 20 will be opened to permit liquid refrigerant to pass to the evaporator coils. If the liquid falls in the chamber 10 the float will drop and close the valve 20. The float therefore provides means for closing the valve in case there is no liquid refrigerant to pass to the evaporators. The device therefore insures that the expansion valve will be opened only when there is a supply of liquid refrigerant which may be passed to the evaporator coils. This is as it should be. The gas which may have failed to be condensed in the condenser and which therefore may have passed to the receiver as a gas is prevented from passing to the evaporator.

It will be seen that the main stream of liquid does not pass through the float chamber 10 as is the case in many designs now. This is one of the advantages of my invention as the float is not subject to the agitation and bobbing found when the main flow of liquid passes through the float chamber.

It is desirable in certain cases to make the float control very quick acting and where this feature is desired, I substitute for the T 23, the ejector 24 so that the flow of liquid through the ejector will rapidly empty the float chamber of liquid.

It will be obvious to those skilled in the art that various changes may be made in my device without departing from the spirit of the invention and therefore I do not limit myself to what is shown in the drawing and described in the specification, but only as indicated by the appended claims.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. The combination with the liquid supply line to an evaporator of a float chamber, a valve controlling flow of liquid refrigerant through the supply line, a float mounted in said chamber and connected to said valve, said float operating to open it upon a rise of liquid in the chamber whereby only liquid refrigerant is delivered through the liquid supply line, a suction line from the bottom of said chamber extending into said liquid supply line whereby passage of liquid through the supply line will create a suction in the bottom of the said chamber, substantially as set forth.

2. In combination a liquid supply line, a valve controlling flow of liquid through the supply line, a float chamber, a float mounted in said chamber and connected to said valve, said float operating to open it upon a rise of liquid in the chamber whereby only liquid is delivered through the liquid supply line, a suction line from the bottom of said chamber extending into said liquid supply line whereby passage of liquid through the supply line will create a suction in the bottom of the said chamber, substantially as set forth.

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