April 2, 1940. A. F. HOESEL 2,195,925

FLOW RESTRICTOR FOR REFRIGERANT FEED VALVES

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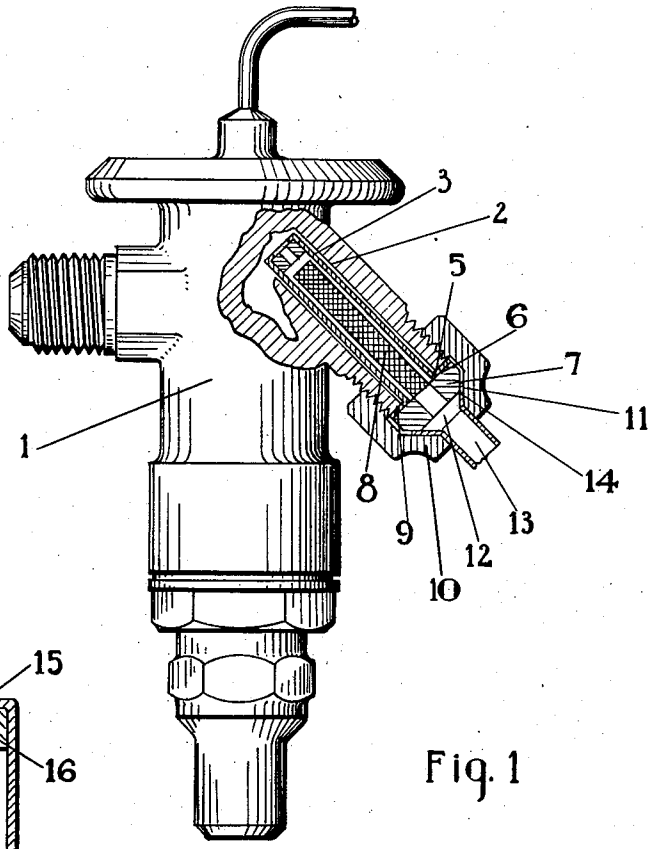


Fig. 1

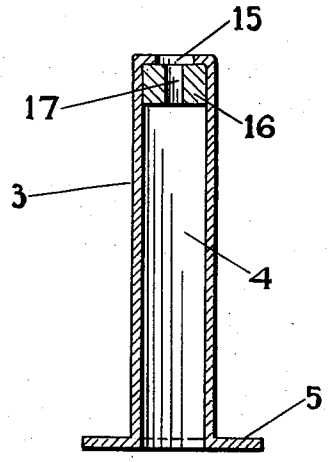


Fig. 2

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FLOW RESTRICTOR FOR REFRIGERANT FEED VALVES

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2 Claims. (Cl. 210—164)

The present invention relates to a specific means for limiting the amount of refrigerant fluid which may be passed through a refrigerant feed valve having a valve passage with a greater potential flow capacity than that desired for the particular application.

In general, the invention is particularly applicable to refrigerant feed valves of the thermostatically controlled type, where the amount of refrigerant, fed to the cooling unit, is in direct relation to the amount of superheat contained in the refrigerant vapor leaving the cooling unit.

The operation of these valves is generally responsive to the temperature of a temperature feeler bulb clamped to the suction line of the cooling unit. Due to the thermal mass of the temperature feeler bulb and suction line, it frequently happens that a valve, of this type, will tend to over-feed and under-feed whenever the flow capacity, through the valve, is much greater than the vaporizing capacity of the cooling unit to which the valve is connected.

An object of the present invention is to provide a specific means for limiting the refrigerant feed, through such feed valves, in a comparatively inexpensive manner and without the addition of extraneous devices.

Since thermostatically controlled expansion valves are so widely used in the refrigerating art, it is therefore presumed unnecessary to explain the operation thereof by including all of the details in the drawing, which merely shows the essentials of the present invention.

In the drawing:

Figure 1 is a view, partly in section, of a thermostatically controlled expansion valve employing the invention.

Figure 2 is a cross-sectional view of the specific refrigerant flow restrictor.

In the drawing:

In Figures 1 and 2, an expansion valve casing 1 has an inlet passage 2 in which is positioned a removable housing 3, comprising a tubular portion 4 having an outwardly turned flange 5, serving as a gasket member to seal the seating face 6 of the strainer supporting member 7, to which is secured the strainer 8 which loosely fits inside the bore of the tubular portion 4.

The flange 5 also serves as a seal for the seating face 9, of the casing 1, whenever the flare nut 10 is drawn up so that its angular seating portion 11 compresses the flared portion 12 of the refrigerant inlet tubing 13 against the angular seat 14 of the strainer supporting member 7.

The upper end, of the housing 3, has an opening 15, preferably smaller than the bore of the tubular portion 4 into which is pressed an orifice bushing 16 having an orifice 17, the size of which is dependent upon the desired maximum amount of refrigerant fluid to be passed by the valve.

The housing 3 is preferably made of copper or other suitable material to serve as a gasket means, at its flange portion 5, between the strainer member 7 and the seating face 9 of the casing 1.

The orifice bushing 16 is preferably made of material having a low flow erosion rate, since the rapid flow of refrigerant fluid, through the orifice 17, would soon tend to enlarge the size, of the orifice 17, if soft materials, such as copper, would be employed.

By the experimental determination of proper restrictor orifice sizes, for given conditions of refrigeration, it is possible to use a valve casing, having a large sized automatically operative valved passage, with a potential high rate of refrigerant flow, and limit the potential refrigerant flow to the desired reduced refrigerant flow.

I claim:

1. A device of the character described, comprising a casing member having a valved passageway therethrough, a removable housing situated within the inlet portion of said passageway, a strainer screen within said housing, and an orifice, at the exit end of said housing, to limit the maximum flow through said valved passageway.

2. A device of the character described, comprising a casing member having a valved passageway therethrough, a removable housing situated within the inlet portion of said passageway, a strainer screen within said housing, and an orifice, at the exit end of said housing, to limit the maximum flow through said valved passageway; the said strainer screen being fastened to an annular compression seating member at its inlet end, and the said housing having an outwardly formed flange providing a gasket for the annular compression seating member of the strainer screen upon assembly.

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