Nov. 27, 1928. 1,693,355

M. E. THOMPSON

REFRIGERATING APPARATUS

Filed June 16, 1927

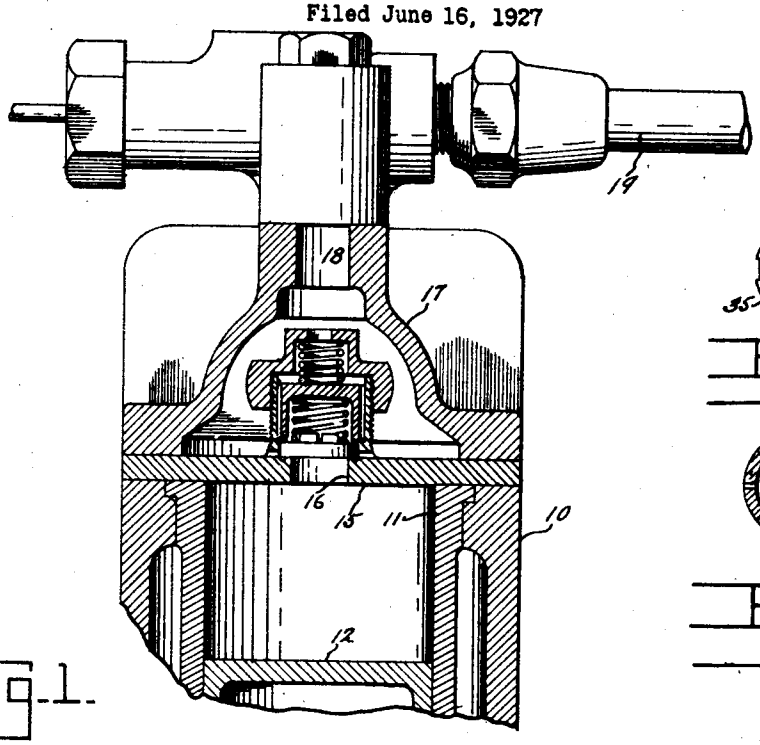


Fig. 1.

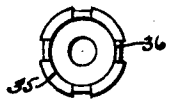


Fig. 4.

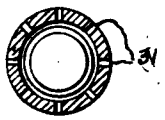


Fig. 5.

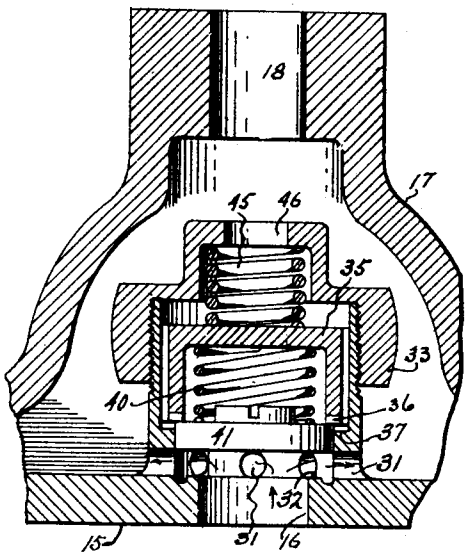


Fig. 2.

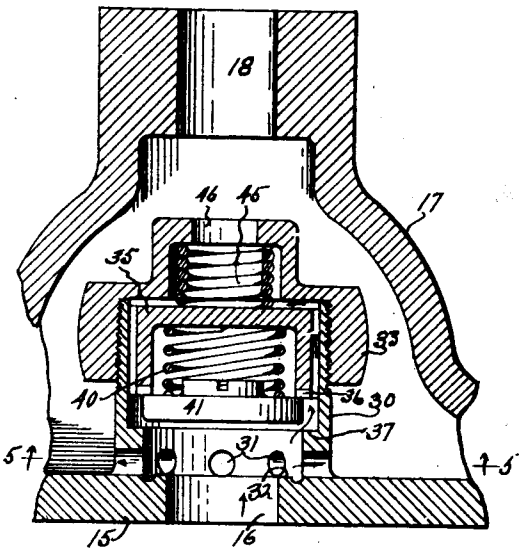


Fig. 3.

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UNITED STATES PATENT OFFICE.

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REFRIGERATING APPARATUS.

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The present invention relates to refrigerating compressors and more especially to outlet valves therefor.

Among the objects of the invention is a valve which shall be efficient in operation and simple in construction.

Another object is one which shall be free from objectionable noise under operating conditions.

Still another object is a valve which, while under ordinary operation shall have a small movement, shall be capable of considerable movement under extraordinary conditions.

Other objects will readily occur to those skilled in the art upon reference to the following description and accompanying drawing in which:—

Fig. 1 is a sectional view of a compressor head showing the valve in section on a small scale;

Fig. 2 is a similar larger scale view showing the valve in open position;

Fig. 3 is a view similar to Fig. 2 but showing the valve in its extreme open position;

Fig. 4 is a plan view of one of the parts;

Fig. 5 is a section, on line 5—5 of Fig. 3, of the valve guide.

In the drawings, a compressor cylinder is indicated at 10 with its liner 11 and piston 12. The upper end of the cylinder is shown as closed by a plate 15 provided with an outlet opening 16 and carrying the outlet valve to be described. Over the plate 15 is mounted a collecting dome 17 having an outet opening 18 connected to a pipe 19 leading to the rest of the apparatus which may be of any suitable type.

The outlet valve above referred to consists of a guide sleeve 30 which may be integral with plate 15 or secured thereto in any suitable manner. Sleeve 30 will surround opening 16 and be provided with suitable openings 31 and, within said sleeve, plate 15 will be provided with a valve seat 32. Sleeve 30 will also be externally threaded at its upper end for attachment of a suitable cap 33.

The interior of sleeve 30 is preferably countersunk to a short distance above openings 31 for the reception of a thimble 35 open at its lower end. This thimble is grooved lengthwise on its outer surface and has notches 36 in its lower edge. Further its wall thickness is somewhat greater than the width of the shoulder 37 formed by the countersink.

Within thimble 35 is a light spring 40 adapted to maintain on seat 32 a disc valve 41 of such diameter as to be guided in that part of sleeve 30 below shoulder 37. This valve 41 is preferably of nonmetallic material to reduce noise.

Acting upon the upper end of thimble 35 and tending to hold it upon shoulder 37 is a stiff spring 45 and this is held in place by the cap 33, which latter is provided with an opening 46 in its upper end.

In the ordinary operation of the device with this tandem arrangement of light and heavy springs, valve 41 travels only the short distance between its seat 32 and the lower edge of thimble 35 being resisted by the action of the light spring 40, but, whenever unyielding material, like liquefied refrigerant is forced out of the cylinder through the opening 16, the valve 41 is permitted a further upward travel to the position shown in Fig. 3, through compression of spring 45, and the liquid may then pass not only out of openings 31 but also around the edge of the valve and along the grooves in thimble 35 out of the opening 46 as well. This free exit of the liquid from the valve cage eliminates the pounding which otherwise is apt to occur when any liquid refrigerant collects on top of piston 12.

Now having described the invention and the preferred form of embodiment thereof it is to be understood that the said invention is to be limited, not to the specific details herein set forth but, only by the scope of the claim which follows.

I claim:—

A compressor outlet valve comprising a guide sleeve surrounding the outlet port, a disc valve guided therein, said sleeve having lateral openings below the normal upper travel of said valve and being open at its upper end, an abutment in said sleeve for normally limiting the upward movement of said valve, and yielding means for permitting movement of said abutment to allow abnormal movement of said valve, said abutment being provided with passages adapted to be opened by such abnormal movement to connect the space under the valve with the open end of said guide sleeve.

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