Dec. 13, 1938. G. WINGARD 2,139,991

REFRIGERATOR BREATHER TUBE

Filed March 29, 1937

Fig. 1.

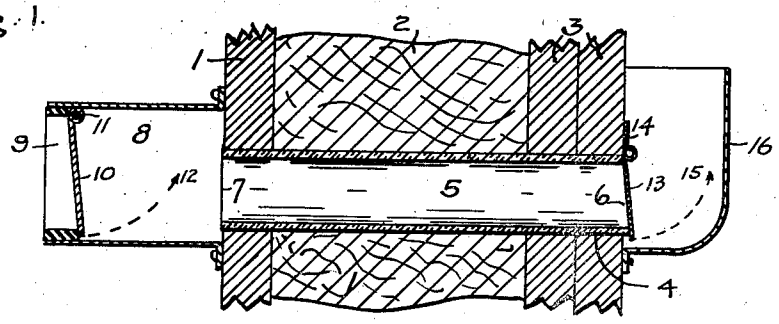
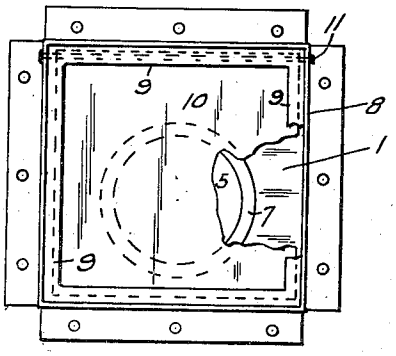



Fig. 2.



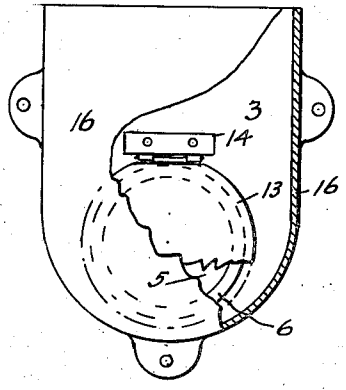




Fig. 3.

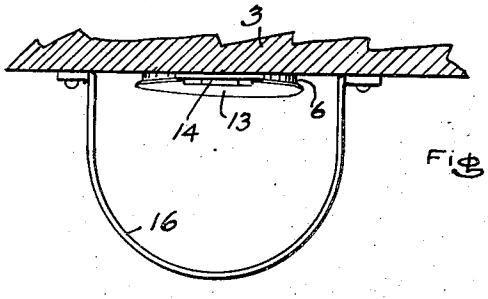



Fig. 4.

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## REFRIGERATOR BREATHER TUBE

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Application March 29, 1937, Serial No. 133,596

6 Claims. (Cl. 220—14)

This invention relates particularly to commercial refrigerators, such as refrigerating showcases and meat storage rooms, but is also applicable to the smaller refrigerators adapted for domestic use. The invention consists of a valved tube passing through the wall of the refrigerator and adapted to release air which is compressed in the refrigerator by the closing of the air-tight door, without permitting any substantial loss in the insulating qualities of the wall.

The objects of this invention are, first, to provide such a device which will constantly keep a volume of dead air imprisoned therein; second, which will operate automatically upon any increase of pressure within the refrigerator; third, which is substantially non-heat-conducting; and fourth, which is cheap to make and effective in use.

I attain these and other objects by the devices and arrangements illustrated in the accompanying drawing, in which—

Fig. 1 is a cross-section of a refrigerator wall and a longitudinal section of my device installed therein; Fig. 2 is a front elevation of the inside valve box, parts thereof being broken away to reveal the inner parts thereof; Fig. 3 is a similar view of the outside valve box; and Fig. 4 is a plan view of the said outside box. Similar numerals of reference refer to similar parts throughout the several views.

The doors of refrigerators are quite commonly self-closing, through the action of suitable springs, but, on account of the air-tight character of the refrigerator and its door, an appreciable pressure is built up in the refrigerator by the act of closing the door, and this pressure retards or prevents the complete closing of the door to such an extent that the latch of the door will fail to act. By my breather tube I provide a means of instantly relieving the pressure as it is built up, thus removing the resistance to the closing of the door and permitting the latch to act without manual aid.

Referring, now, to the drawing, it will be understood that the particular construction of the refrigerator wall forms no part of this invention. In Fig. 1 such a wall is shown as comprising an inner sheathing 1 of wood, a central body 2 of any suitable insulating material, and a double outer sheathing 3.

At any desired and suitable place in the wall or door, I make a hole 4 completely through the several parts 1, 2 and 3 thereof, and pass the tube 5 therethrough. This tube 5 may be of glass, hard rubber, or of any other suitable heat-insulating material. The outer end 6 of the tube 5 is preferably cut at a slight angle so that its lower portion projects out from the outer sheathing 3 of the wall a slightly further distance than its upper portion.

The inner end 7 of this tube 5 is open and is guarded by means of a rectangular box 8 suitably secured to the inner side of the inner sheathing 1 of the refrigerator wall, and surrounding the said open end 7. The outer end of the box 8 is open and is provided with an annular rubber cushion 9 secured around its inner periphery and forming a valve seat with its inner edge. This cushion 9 is also cut on an inclined line so that the said inner edge lies in an inclined plane, as shown in Fig. 1. A metal valve plate 10 is pivotally supported by a pin 11 and normally lies in contact with the inclined edge of the valve seat or cushion 9. The box 8 is of sufficient length to permit the valve plate 10 to swing inward into the box, as indicated by the broken line and arrow 12 when actuated by an increase of the pressure of the air in the refrigerator, without engaging the sheathing 1 of the refrigerator wall. A second flap valve 13 is hingedly secured to the outer side of the outside sheathing 3 of the wall, by means of the hinge 14, and normally lies lightly in contact with the outer inclined edge 6 of the tube 5. The valve 13 is adapted to swing outward and upward, as indicated by the broken line and arrow 15, when actuated by an increase in the pressure of the air in the tube 5 and to automatically fall into closed position as soon as such increase of pressure has been relieved. A shield 16 is attached to the outer sheathing 3 of the wall, surrounding said valve 13 and preferably comprising an upwardly open structure, substantially as shown in the drawing (Figs. 1, 3 and 4).

The action of my device is readily understood from the foregoing description. Upon the closing of the refrigerator door, the compression of the air forces the valve 10 to swing on the hinge pin 11 and the resulting increase in the pressure within the tube 5 forces the other valve 13 to turn on the hinge 14, thus the slight increase in air caught in the refrigerator escapes by the tube 5 through the valves 10 and 13, which immediately return to their seats on the rubber ring 9 and the tube-end 6 and imprison the air in the tube 5 between them. Thus the tube 5 and the dead air contained therein form a strong resistance to the admission of heat by way of my breather tube.

It is, of course, understood that the invention illustrated and described herein is in the pre-

ferred form but that many variations may be made in the details thereof without departing from the spirit of my invention as outlined in the appended claims; and that the words and terms used in the description and claims are chosen for convenience but are intended to be as generic in their meaning as the art will permit.

Having, therefore, described my invention, what I claim and desire to secure by Letters Patent, is:—

1. A breather tube for refrigerators, comprising a horizontal tube-piercing the wall of the refrigerator; an outward-opening valve closing the outer end of said tube; and a valve closing the inner end of said tube, and opening outward from the inside of said refrigerator whereby an increase of pressure within the refrigerator may be relieved without permitting the reentrance of outside air therethrough.

2. A breather tube for refrigerators as set forth in claim 1, wherein said tube is constructed of non-heat-conducting material.

3. A breather tube for refrigerators as set forth in claim 1, wherein said valves are hinged to swing upward, and are seated on slightly inclined seats whereby they are automatically closed by gravity.

4. A breather tube for refrigerators, comprising a horizontal tube piercing the wall of the refrigerator; an inner box surrounding the inner orifice of said tube; a valve seat mounted in the entrance of said box; a valve hingedly supported within said box and lightly seated on said valve seat and adapted to open outward from the inside of said refrigerator; and an outward-opening valve hingedly supported outside on said refrigerator and lightly seated on the outer orifice of said tube.

5. A breather tube for refrigerators as set forth in claim 4, wherein the valve seat and the outer end of the tube are each similarly slightly inclined to the vertical.

6. A breather tube for refrigerators as set forth in claim 4, together with a shield secured to the outside of the refrigerator and surrounding and protecting the second or outer valve thereof.

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