April 17, 1928. 1,666,258

E. R. HAMMOND

REFRIGERATOR DOOR

Filed Oct. 12, 1927 2 Sheets-Sheet 1

Fig. 1.

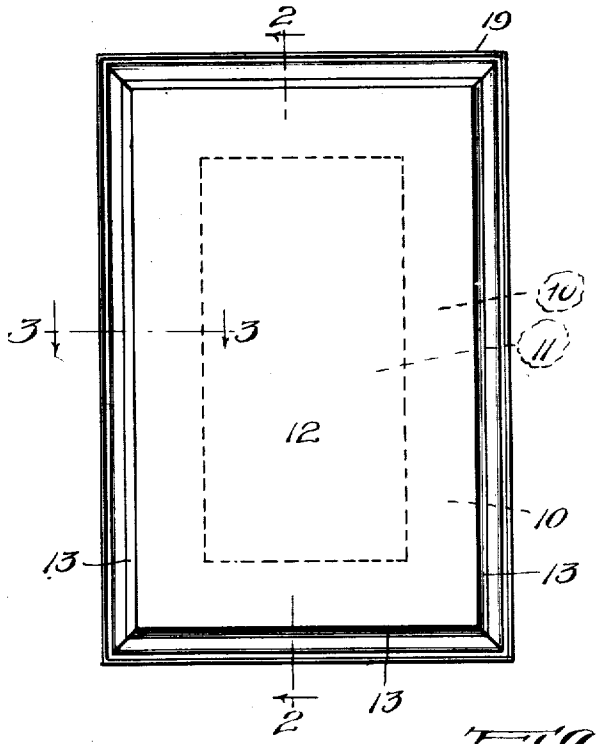


Fig. 2.

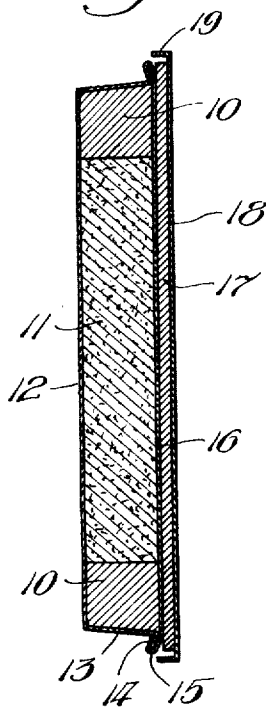
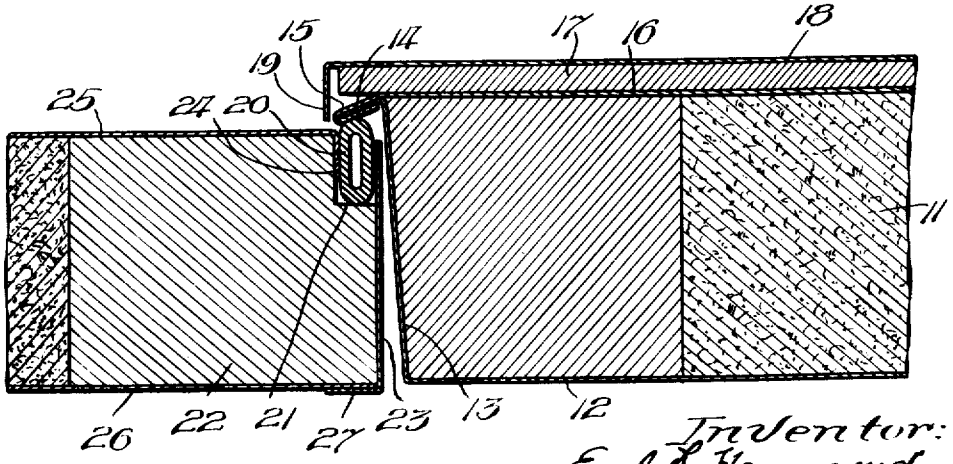


Fig. 3.



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Fig. 4.

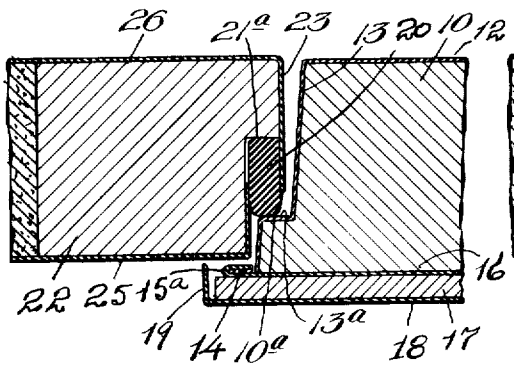


Fig. 5.

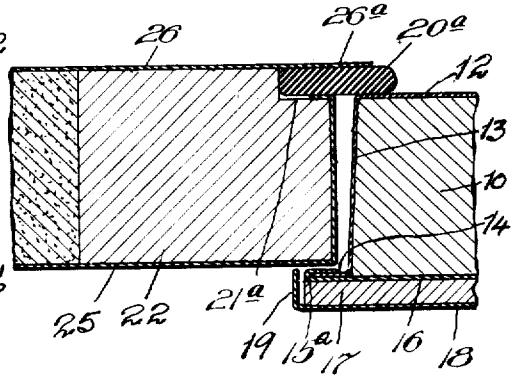


Fig. 6.

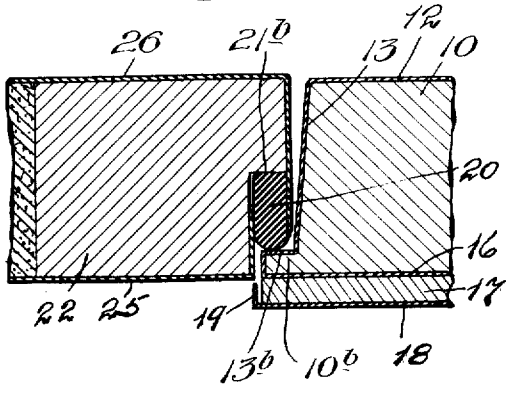
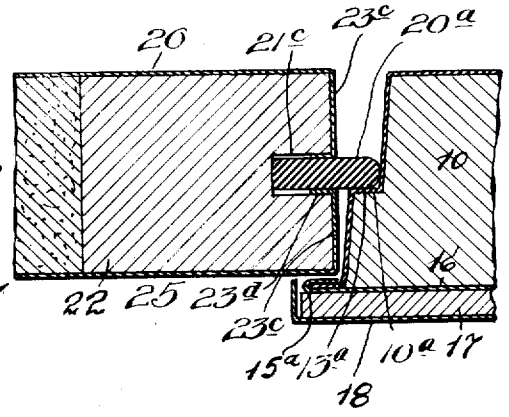


Fig. 7.



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Patented Apr. 17, 1928. 1,666,258

UNITED STATES PATENT OFFICE.

EARL R. HAMMOND, OF FREMONT, NEBRASKA, ASSIGNOR TO CRYSTAL REFRIGERATING CO., OF FREMONT, NEBRASKA, A CORPORATION OF NEBRASKA.

REFRIGERATOR DOOR.

Application filed October 12, 1927. Serial No. 225,717.

The primary object of this invention is to provide a steel walled refrigerator door and casing therefor so constructed and arranged as to guard the refrigerator against loss of cold air due to the conductivity of the metallic walls of the door and casing. The present invention has to do with the construction of metallic walled refrigerators, and in view of the fact that metal is a ready conductor of heat, it is highly desirable to interrupt the continuity of the metal of the inner and outer wall surfaces, so that the transference of heat units will be reduced to a minimum.

With this end in view, the invention consists in the construction and arrangement of a non-conductive sealing gasket in such a way as to not only seal the door against the discharge of air, but to also act as an insulating barrier between the inner and outer metal portions of the structure which is highly desirable for the reason stated.

In this respect, the invention may be said to consist in a combination refrigerator door gasket and circuit breaker. More specifically, the invention consists in the mounting and arrangement of the gasket in any one of several ways, so that it will subserve the double function of a sealing gasket and circuit breaker.

Further objects and details will appear from a description of the invention in conjunction with the accompanying drawings wherein

Figure 1 is a face view of the interior of a refrigerator door embodying the features of the present invention;

Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1;

Fig. 3 is an enlarged detail taken on line 3—3 of Fig. 1 showing the preferred arrangement of the gasket and door flange cooperating therewith; and

Figs. 4, 5, 6 and 7 are views similar to Fig. 3 showing various modifications in detail of the arrangement of the door and gasket.

Referring particularly to the construction shown in Figs. 1, 2 and 3, the door comprises an open marginal wooden frame 10 of rectangular formation within which is located a filling 11 of cork or other heat insulating material. The walls of the door are preferably formed of steel and comprise an inner plate 12 having marginal flanges 13, which preferably extend in slightly oblique relation to the inner plate and serve to embrace the outer edge walls of the door frame.

The flanges 13 terminate in outwardly extending lips 14 which interlock with the grooves or channels 15 formed by reversely bending the marginal edge of an outer metallic plate 16. Outside of the metallic plate 16 is a wooden facing panel 17, the edges of which extend substantially to the same degree as the edges of the grooved portion 15 and the wooden panel is surfaced by a metallic plate 18 having marginal flanges 19, which latter overlap the edges of the wooden panel without, however, touching the grooved metallic edges 15, so that a break or gap is thus afforded between the metallic inner and outer surfaces of the door, which gap affords a break in the continuity of the metal with an attendant reduction of the heat transference from one metallic surface to the other.

The grooved interlocking flange 15, as shown, is bent obliquely inwardly away from the inner face of the protruding portion of the wooden panel, and this grooved flange co-acts with a gasket 20 of cork, rubber tubing or other suitable sealing material, which gasket occupies a position within a shouldered recess 21 in the wooden frame 22 of the door casing. The frame is provided along its inner face with an edge face plate 23, the outer edge of which protrudes beyond the base of the shouldered portion 21 to furnish a socket for the retention of the gasket which lies between this protruding edge and the inturned flange 24 of an outer metallic face plate 25.

The inner face of the door casing is afforded by the inner plate 26, which is overlapped by a flange 27 at right angles to the edge plate 23. With the construction indicated, the gasket will afford a non-conducting or insulating barrier between the edge face plate 23 and the outer face plate 25; so that the continuity in the metal composing the inner and outer walls of the door casing will be thus interrupted with a consequent reduction in the transference of heat at this point.

The arrangement of the metallic surface plates is thus not only interrupted by the gasket, but the metallic portions also serve to afford a socket for the proper retention of the gasket in such a way as to co-act with the door flange in maintaining the door in sealed relation with respect to the walls of the opening.

It will be understood that the construction shown extends completely around all sides of the door opening, so that the sealing will be complete around the walls of the door. It will also be observed that the arrangement of the door is one which affords metallic inner and outer surfaces, but the contact of the metal is interrupted, so that the outer panel facing will not be chilled to an extent which will cause condensation of moisture or "sweating" on the outer surface of the door which would often take place if the metal extended uninterruptedly from the interior to the exterior of the door.

In like manner, the outer metallic surfaces of the casing and contiguous portions of the refrigerator are preserved against excessive chilling with consequent condensation and a transference of heat units along the metal. The arrangement is one which gives all of the advantages of a metal construction which is rigid, non-shrinking, non-warping and non-swelling without any of the disadvantages due to the conductive properties of metal.

Fig. 4 differs from that previously described only in the fact that the recess 21^a in the inner wall of the door casing is located at a greater depth within the outer surface of the door which necessitates a shoulder 10^a in the edge of the wooden door frame 10 and a corresponding shoulder 13^a in the marginal flange 13. In other respects, the construction is the same as that first described, so that detailed reference thereto is not deemed necessary.

The modification shown in Fig. 5 consists in the provision of a gasket 20^a which lies within the protruding edge 26^a of the inner metallic wall 26 of the door casing and the wall of a shouldered recess 21^a, the recess in this instance being formed along the inner marginal edge of the door casing rather than along the outer edge thereof as in the construction first described. In this instance, the door itself is substantially identical with the door first described, save for the fact that the grooved marginal portion 15^a and the flange interlocked therewith lie flat against the inner surface of the wooden facing panel 17 rather than in diverging relation thereto, as in Fig. 3.

In the modification shown in Fig. 6, the gasket is positioned within a shouldered recess 21^b which is located somewhat further within the edge of the door casing than the recess shown in Fig. 3, which brings the contacting face of the gasket well within the outer edge of the door casing, and, in this instance, the wooden frame 10 of the door is shouldered at the point 10^b and the metallic edge plate 13 is shouldered at the point 13^b, so that the edge of the door will lie within the shouldered portion of the casing rather than exterior thereof, as in the construction first described.

In the modification shown in Fig. 7, the door itself is in all respects similar to the one shown in Fig. 4, but a gasket similar to the one shown in Fig. 5 is employed, which is entered into a recess 21^c centrally located within the edge of the door casing, so that the gasket protrudes centrally from the door casing and affords a stop for the shouldered portion of the door. In Fig. 7 the inner metallic plate 26 and the outer metallic plate 25, which furnish the inner and outer walls of the refrigerator, are both inwardly bent to afford the constituent portions 23^c of the metallic facing, and each of these portions is provided with a flange 23^d inturned into the recess in the wooden framing of the door casing.

The various modificatior are shown as exemplifications of the invention, it being understood, however, that other modifications in the location and arrangement of the gasket and the co-operating portions of the door may be made without departing from the principle of the invention.

The gasket, as shown, may be of the tubular formation indicated in Fig. 3, which specifically illustrates the use of a rubber tubing for the purpose, or the gasket may be of solid rubber or cork, as shown in Figs. 4, 5, 6 and 7, or it may be of wood, composition or of cotton or wool enclosed in a rubberized fabric. In each instance shown, the gasket is socketed in such a way that it may be readily removed for purposes of renewal without the necessity for the employment of attaching means, the socket affording a mounting for the gasket into which the latter may be wedged or pressed and held by friction alone.

The construction is one which enables the refrigerator as a whole to be constructed with metallic walls upon a wooden framing, the walls being packed with an insulating filling, and this results in a structure which is free from any tendency to become warped or otherwise distorted, and the provision of the insulating or circuit breaking gasket in any one of the forms shown and described, avoids the ill effects of thermal transference by conduction through metal which are overcome or reduced to a negligible degree.

I claim:

1. In a refrigerator, the combination of a door casing provided with inner and outer metallic wall plates, a metallic edge facing plate, the metallic wall plates contiguous to

the edge being spaced to afford a socket recess, an insulating compressible gasket socketed within said recess, and a door provided with inner and outer metallic wall plates and a metallic edge plate, the edge plate being shouldered to afford an abutment adapted to engage said gasket when the door is closed, substantially as described.

2. In a refrigerator, the combination of a door casing provided with inner and outer metallic wall plates, a metallic edge facing plate, the metallic wall plates contiguous to the edge being spaced to afford a socket recess, an insulating compressible gasket socketed within said recess, and a door provided with inner and outer metallic wall plates and a metallic edge plate, the edge plate being shouldered to afford an abutment adapted to engage said gasket when the door is closed, and the door being provided with a metallic surfaced panel, a gap being provided between the surfacing of the panel and the metallic edge plate of the door, substantially as described.

3. In a refrigerator, the combination of a door casing provided with inner and outer metallic wall plates, a metallic edge facing plate, the metallic wall plates contiguous to the edge being spaced to afford a socket recess, an insulating compressible gasket socketed within said recess, and a door comprising a wooden marginal frame, a front and rear metallic wall plate and a metallic edge plate enclosing the frame, the front wall plate and the metallic edge plate being united by an interlocking marginal flange constituting an abutment adapted to engage the gasket, substantially as described.

4. In a refrigerator, the combination of a door casing provided with inner and outer metallic wall plates, a metallic edge facing plate, the metallic wall plates contiguous to the edge being spaced to afford a socket recess, an insulating compressible gasket socketed within said recess, a door comprising a wooden marginal frame, a front and rear metallic wall plate and a metallic edge plate enclosing the frame, the front wall plate and the metallic edge plate being united by an interlocking marginal flange constituting an abutment adapted to engage the gasket, and a wooden panel superimposed upon the front metallic wall plate, and overlying the flange, and a metallic panel facing provided with an inturned flange in spaced relation to the flange to afford a gap for preventing conductivity of heat units through the metal, substantially as described.

5. In a refrigerator, the combination of a door casing comprising a wooden frame having front and rear metallic wall plates and a metallic edge plate, the frame being shouldered, and one of the contiguous metallic plates being extended beyond the margin of the shouldered portion to afford in conjunction therewith a socket, a compressible sealing gasket entered and held within said socket, and a door adapted when closed to abut against said gasket, substantially as described.

6. In a refrigerator, the combination of a door casing comprising a wooden frame having front and rear metallic wall plates and a metallic edge plate, the frame being shouldered, and one of the contiguous metallic plates being extended beyond the margin of the shouldered portion to afford in conjunction therewith a socket, a compressible sealing gasket entered and held within said socket, and a door provided with inner and outer metallic wall plates and a metallic edge plate, the edge plate being shouldered to afford an abutment adapted to engage said gasket when the door is closed, substantially as described.

7. In a refrigerator, the combination of a door casing comprising a wooden frame having front and rear metallic wall plates and a metallic edge plate, the frame being shouldered, and one of the contiguous metallic plates being extended beyond the margin of the shouldered portion to afford in conjunction therewith a socket, a compressible sealing gasket entered and held within said socket, and a door provided with inner and outer metallic wall plates and a metallic edge plate, the edge plate being shouldered to afford an abutment adapted to engage said gasket when the door is closed, and the door being provided with a metallic surfaced panel, a gap being provided between the surfacing of the panel and the metallic edge plate of the door, substantially as described.

8. In a refrigerator, the combination of a door casing comprising a wooden frame having front and rear metallic wall plates and a metallic edge plate, the frame being shouldered, and one of the contiguous metallic plates being extended beyond the margin of the shouldered portion to afford in conjunction therewith a socket, a compressible sealing gasket entered and held within said socket, and a door comprising a wooden marginal frame, a front and rear metallic wall plate and a metallic edge plate enclosing the frame, the front wall plate and the metallic edge plate being united by an interlocking marginal flange constituting an abutment adapted to engage the gasket, substantially as described.

9. In a refrigerator, the combination of a door casing comprising a wooden frame having front and rear metallic wall plates and a metallic edge plate, the frame being shouldered, and one of the contiguous metallic plates being extended beyond the margin of the shouldered portion to afford in conjunction therewith a socket, a compressible sealing gasket entered and held within said socket, a door comprising a wooden mar-

ginal frame, a front and rear metallic wall plate and a metallic edge plate enclosing the frame, the front wall plate and the metallic edge plate being united by an interlocking marginal flange constituting an abutment adapted to engage the gasket, and a wooden panel superposed upon the front metallic wall plate, and overlying the flange, and a metallic panel facing provided with an inturned flange in spaced relation to the flange to afford a gap for preventing conductivity of heat units through the metal, substantially as described.

EARL R. HAMMOND.

CERTIFICATE OF CORRECTION.

Patent No. 1,666,258. Granted April 17, 1928, to

EARL R. HAMMOND.

It is hereby certified that the assignee in the above numbered patent was erroneously described and specified as Crystal Refrigerating Co., whereas said assignee should have been described and specified as Crystal Refrigerator Co., as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of May, A. D. 1928.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)

ginal frame, a front and rear metallic wall plate and a metallic edge plate enclosing the frame, the front wall plate and the metallic edge plate being united by an interlocking marginal flange constituting an abutment adapted to engage the gasket, and a wooden panel superposed upon the front metallic wall plate, and overlying the flange, and a metallic panel facing provided with an inturned flange in spaced relation to the flange to afford a gap for preventing conductivity of heat units through the metal, substantially as described.

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