March 24, 1942. W. A. ELLSWORTH 2,277,483

DOOR CONSTRUCTION

Filed Dec. 12, 1939 2 Sheets-Sheet 1

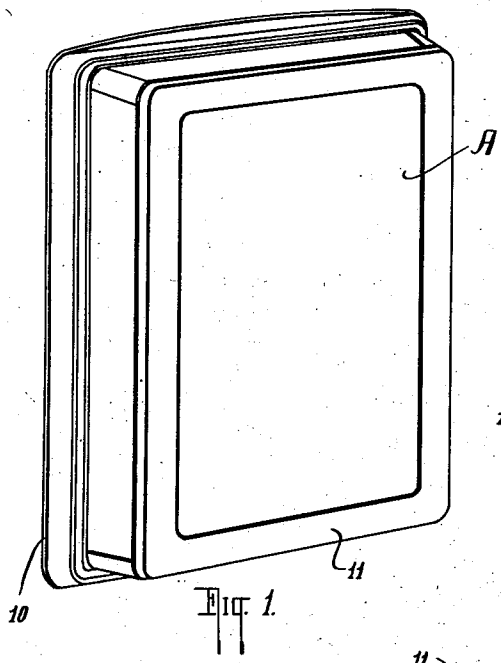



Fig. 1.

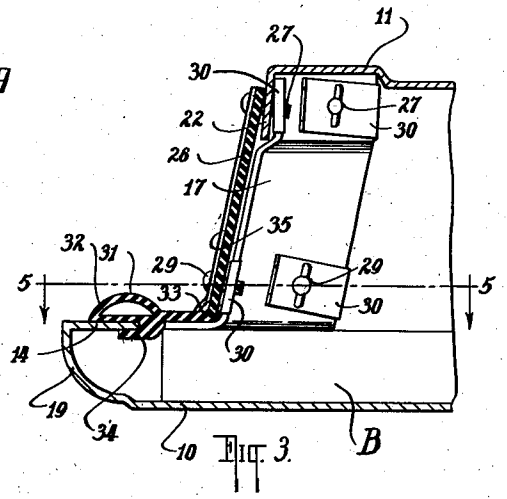



Fig. 3.

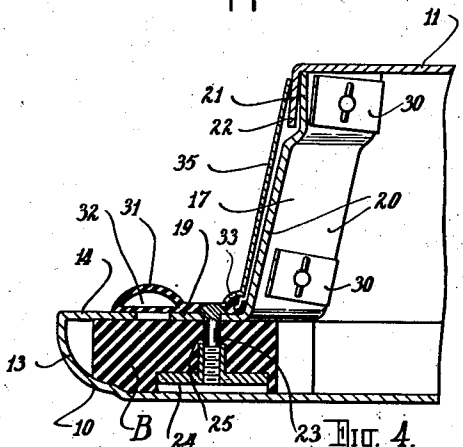



Fig. 4.

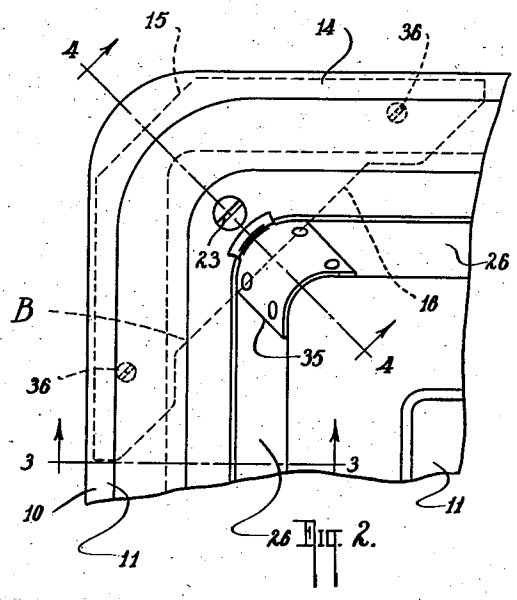



Fig. 2.

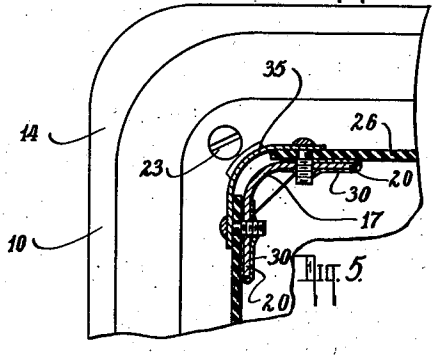



Fig. 5.

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DOOR CONSTRUCTION

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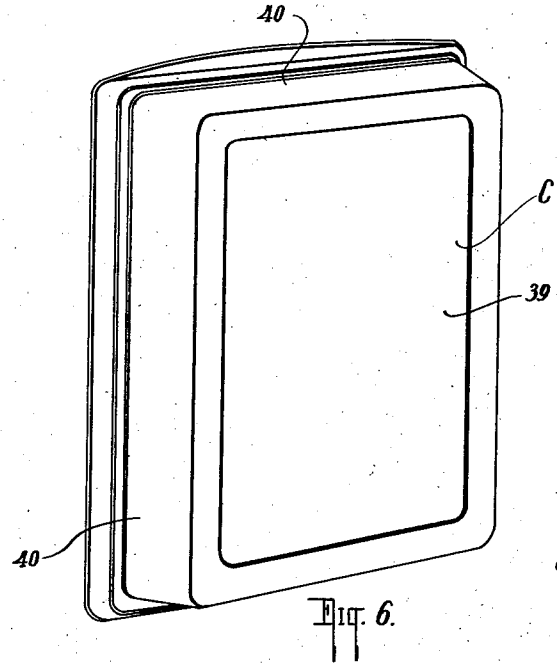



Fig. 6.

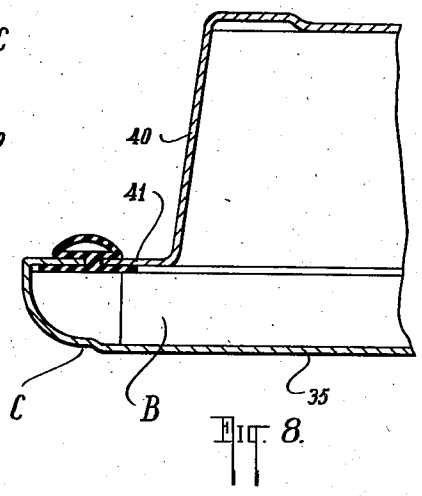



Fig. 8.

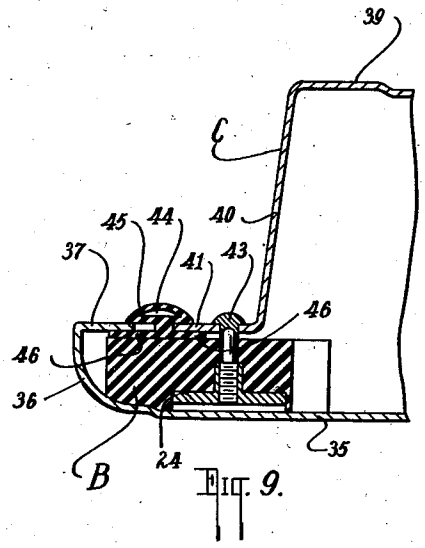



Fig. 9.

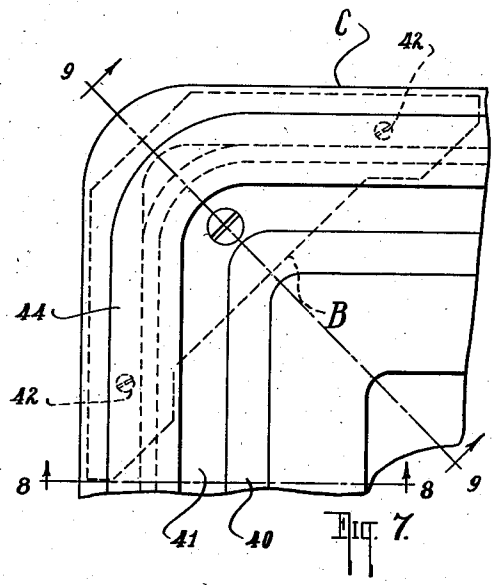



Fig. 7.

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# UNITED STATES PATENT OFFICE

2,277,483

## DOOR CONSTRUCTION

Walter A. Ellsworth, St. Paul, Minn., assignor to Seeger Refrigerator Company, St. Paul, Minn., a corporation of Minnesota

Application December 12, 1939, Serial No. 308,805

2 Claims. (Cl. 20—35)

My invention relates to an improvement in refrigerator doors wherein it is desired to provide a type of door construction in which the door is assembled with a minimum of effort and in which little heat is permitted to travel through the door.

Various methods have been formed of assembling refrigerator doors and the like to permit the formation of the door with the least amount of cost while still maintaining an efficient type of closure. The present invention relates to refrigerator doors generally rectangular in shape in which corner blocks of hard rubber or other insulating material extend beneath the inturned edge of the outer door covering and form a connection between the outer and inner door coverings.

It is an object of my invention to provide a corner block of rubber, plastic or other material effective for insulating purposes, and to mount one of these corner blocks at each corner of the door. The corner block is held in place by the inturned marginal flange usually found on refrigerator doors of this type, and forms a means of supporting the inner metallic covering of the door. These corner blocks are relatively small and may be inserted in the corners of the outer covering with little difficulty and may if desired be held in place by suitable screws or other holding means. Therefore, while the corner blocks are not connected or held in any definite relationship at the time of insertion, they are supported in definite fixed relationship when the door has been assembled.

It is a feature of my invention to provide a door assembly embodying corner blocks which are small relative to the door and which are formed of insulating material. These corner blocks may be held in proper position to hold the entire door assembled by the rigidity of the inner and outer door coverings rather than by any separate connector means mounted between the blocks. The inner door covering may be either secured directly to these corner blocks or may be connected through a suitable connecting corner clip. In either event, however, the corner blocks are held spread by their connection with the inner door covering, and the same connecting means may be utilized to hold the corner blocks in proper position with relation to the outer covering and also with relation to the inner covering.

It is a feature of my invention that the inner door covering is spaced from the outer covering by the corner blocks formed of insulating material so that there is no point at which the heat from the exterior surface of the door may travel through a metallic conductor to the inner surface of the door. The corner blocks may be connected to the outer covering and also to the inner covering if it is desired, but these connecting means do not extend from one conducting surface to the other, and therefore do not provide a metallic contact between the inner and outer door coverings.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a perspective view of a door embodying corner blocks of my design.

Figure 2 is a view looking toward the inner door covering showing the detail of construction at one corner of the door.

Figure 3 is a cross-sectional view through a portion of the door, the position of the section being indicated by the line 3—3 of Figure 2.

Figure 4 is a cross-sectional view taken through the corner of the door along a diagonal line, the position of the section being indicated by the line 4—4 of Figure 2.

Figure 5 is a transverse section through a corner of the door, the position of the section being indicated by the line 5—5 of Figure 3.

Figure 6 is a perspective view of a modified form of door construction embodying my corner blocks.

Figure 7 is a view looking toward the inner surface of one corner of the door illustrated in Figure 6 showing my modified form of construction.

Figure 8 is a cross-sectional view through an edge of the door near one corner thereof, the position of the section being indicated by the line 8—8 of Figure 7.

Figure 9 is a sectional view diagonally through the corner of the door, the position of the section being indicated by the line 9—9 of Figure 7.

The refrigerator door A includes an outer metallic covering 10 and an inner metallic covering 11. I do not desire to restrict myself to coverings formed of metal, but this material is a material in most common usage at the present time.

The outer covering 10 is provided with an edge 13 having a marginal inwardly extending flange 14 connected thereto. This marginal flange 14 is ordinarily substantially parallel with the outer surface of the refrigerator door and is spaced therefrom.

At each corner of the door A, I provide a cor-

ner block B formed of hard rubber, plastic material, or the like. This material is preferably an efficient insulator and relatively nonconductive of heat. The corner block B is substantially triangular in shape having the apex of one of its angles cut off at 15 or rounded so as to fit within the rounded corner of the outer covering 10. The side of the triangular block opposite the corner 15 may also be cut away to some extent as at 16 to make the corner block smaller without greatly reducing the strength thereof.

At each corner of the door angle corner members 17 are provided connecting the corner block B with the inner door covering 11. The angle corner members 17 include a flat flange 19 overlying the inner surface of the corner block B and is also provided with substantially right-angularly arranged angle portions 20 which ordinarily incline inwardly and rearwardly. Offset ends 21 are provided at the inner extremity of the angle corner members 17 and the marginal flange 22 of the inner covering 11 extends over these offset portions 21 and is secured thereto.

The angle corner members 17 are secured to the corner blocks B by means of a bolt 23 which extends into a socket 24 recessed in the corner block B. The socket 24 is embedded in each corner block B during the manufacture thereof, and a hole 25 is formed through the corner block to the rear surface thereof opposite the surface contacting the outer covering 10. As will be noted in Figures 3 and 4 of the drawings, the flange 19 is spaced from the inturned marginal flange 14 to prevent heat conductivity between the metallic outer covering 10 and each angle corner member 17.

Extending between the corners of the door I provide suitable connecting strips such as the plastic strips 26 which are connected to the flanged edge 22 of the inner covering member 11 and the angle corner members 17 by means of suitable bolts 27 and 29. The bolts 27 extend through a plastic strip 26, through the inturned flange 22 of the inner covering 11 and into the angle corner member 17 being secured to this angle corner member. If desired, metallic threaded clips 30 may be provided on the angle corner member to engage the threads of the bolts 27 to hold these bolts in place. These threaded clips 30 are known in the art, and take the place of nuts or threaded sockets or may take the place of threading the angle corner members 17. As the angle corner members are of thin metallic material and would engage but a small portion of the bolts, the threaded clips 30 may be utilized.

The bolts 29 extend through the plastic strips 26 and are anchored into the angle corner members 17. As was previously mentioned, threaded clips 30 may be used in place of threading the angle corner members 17, as these clips form a better anchor for the bolts 29.

A gasket 31 is provided with a hollow bead 32 overlying the joint between the flanges 19 and the inwardly extending flange 14. This gasket 31 is provided with a bifurcated end 33 which receives the outer edge of the plastic strips 26 to conceal the strip edges and to form a connection between the plastic strips 26 and the inwardly extending flange 14 of the outer covering 10. Between the corners of the refrigerator, the gasket 31 may overlie the insulation material within the body of the door and may, if preferred, be provided with a flange 34 as illustrated in Figure 3 of the drawings extending beneath the inturned flange 14.

In order to conceal the joint between the adjoining ends of the plastic strips 26 at the corners, I provide a thin covering corner strip 35 bent into right-angular formation which overlaps the ends of the strips 26 at the corners of the door. In order to hold the corner blocks in proper position during assembly, I may provide a pair of screws 36 which extend through the inturned flange 14 and into the corner block B to hold the corner blocks in place. These screws are concealed when the door is assembled by the bead 32 of the gasket 31.

The corner covering members 35 may be of any suitable type or may be omitted entirely if desired. When formed in the manner illustrated, these clips may be secured in place by the bolts 27 and 29. However, if desired, these clips may extend beneath the ends of the plastic strips 26 or may be secured in position to conceal the corner in any other suitable manner.

In Figures 6 through 9 of the drawings I disclose a modified form of door construction C. In this construction the door C is provided with an outer covering 35 identical with the outer covering 10, and may be equipped with corner blocks B identical to those disclosed in connection with the door A. The outer covering 35 is provided with an edge 36 having a marginal inturned flange 37 thereupon. The door is provided with an inner covering member 39 having outwardly and forwardly sloping edges 40 thereupon. Extending peripherally about the forward edge of the edges 40, I provide an outwardly extending flange 41 which extends in substantial alignment with the flange 37 of the outer covering 35. The corner blocks B extend beneath the inturned flange 37 and may be held in place if desired by means of screws 42 or the like. The flanges 41 and 37 are held in spaced relation by bolts 43 which extend into sockets 24 embedded within the corner blocks B. The sockets 24 hold the bolts 43 in place and permit the inner covering 39 to be secured to the corner blocks B which in turn are secured to the outer covering 35 by extending beneath the flange 37, and if desired by the screws 42. A gasket 44 having a bead 45 and anchoring flanges 46 extend beneath the inturned flange 37 and the peripheral flange 41 forming a nonmetallic and low heat conducting joint between the outer and inner coverings 35 and 39.

In the formation of the doors A and C, it is understood that the interior of the doors between the inner and outer coverings thereof is preferably filled with insulation of any desired type. The corner blocks are usually first inserted in place. The insulation to extend between the coverings is placed in the outer covering, and the inner covering is then attached to the corner blocks with the gasket positioned between the inturned flange of the outer covering and either the metallic support for the inner covering or the inner covering itself.

In accordance with the patent statutes, I have described the principles of construction of my refrigerator door; and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that this is only illustrative of a means of carrying out my invention, and that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A refrigerator door comprising an outer

covering member, an edge extending marginally about the same, an inturned marginal flange on said edge, corners in said covering edge and flange, corner block means of nonmetallic material wedge beneath said flange at each said corner, angularly extending clips secured to said corner block in spaced relation to said outer covering member, an inner covering member marginally secured to said clips, and closing strips secured between said angular corner members.

2. A refrigerator door comprising an outer covering member having a marginal edge thereupon, an inturned flange upon said marginal edge, corners on said outer covering member, corner blocks wedged beneath the said inturned flange at said corners, an inner covering member, means securing said inner covering member to said corner blocks in spaced relation to said inturned flange, said means holding said corner blocks wedged in place beneath said flange, nonmetallic spacing strips extending between said securing means, and covering corner members overlapping the adjacent ends of said spacing strips.

WALTER A. ELLSWORTH.