Jan. 3, 1933. E. P. SCHWARZ 1,892,708

DOOR CONSTRUCTION

Filed March 31, 1927

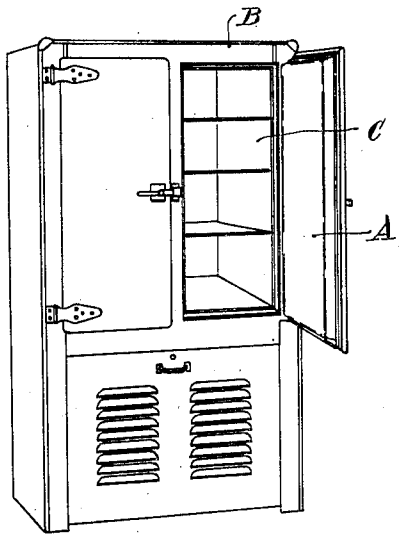


Fig. 1

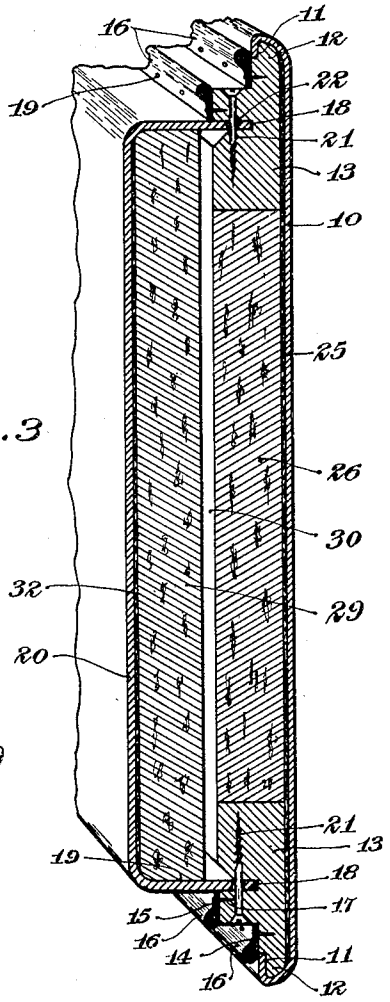


Fig. 3

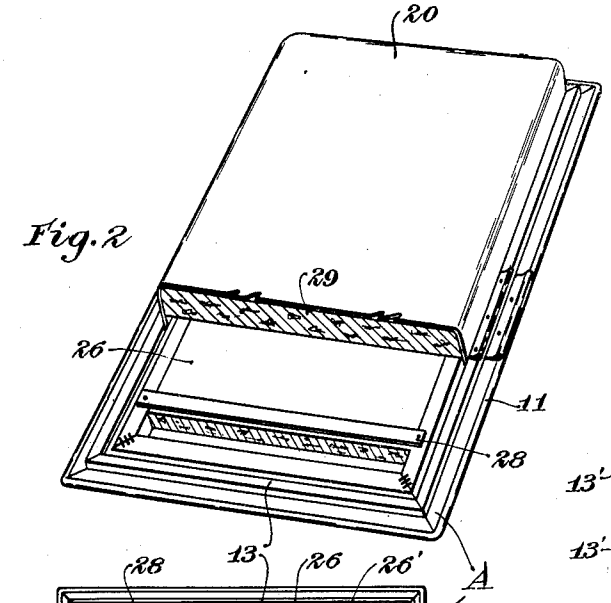


Fig. 2

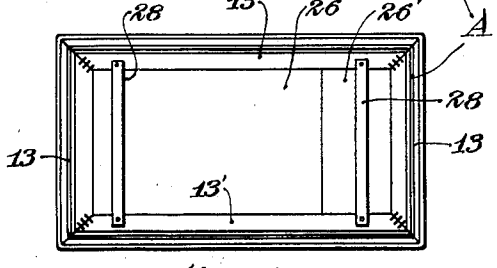


Fig. 4

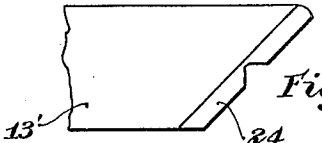


Fig. 5

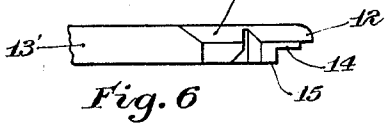


Fig. 6

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Patented Jan. 3, 1933 1,892,708

UNITED STATES PATENT OFFICE

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DOOR CONSTRUCTION

Application filed March 31, 1927. Serial No. 179,877.

My invention relates to refrigerator doors which include a construction adapted to provide a door structure which is fully insulated and having an inner and outer surface which can be readily cleansed.

A feature of the invention resides in providing a metal enameled outer facing for the door and a metal enameled inner facing.

These facings might be termed porcelain faces for the door, as they have a porcelain coating on the surface of the same. By means of a door of this construction I provide a refrigerator closure which can be readily cleansed both on the outside and the inside very easily. This door construction also permits the outer casing of the refrigerator to be made of a porcelain nature and the doors will thus match up with the finish with the rest of the casing of the refrigerator to provide a uniform appearance to the whole outer surface of the refrigerator.

My door includes a means of separating the inner and outer faces by an insulating means, thereby preventing either the cold air from the inside being carried by the inner face to the outer atmosphere, or the warm outer atmosphere being carried to the inner face of the door. This is an important feature of the invention as it permits the use of metallic enameled faces for the inner and outer faces of the door without the detrimental or objectionable feature of permitting the atmosphere on one side of the door to affect that on the other side.

It is also a feature of my invention to provide a door having a dead air space therein which increases the efficiency of the door as a refrigerator closure.

These features, together with other objects and details will be more fully and clearly set forth in the specification and claims.

In the drawing forming part of my specification:

Figure 1 is an illustration of my refrigerator.

Figure 2 is a perspective view of my door, a portion of which is broken away.

Figure 3 is a section on the line 3—3 of Figure 2, partly in perspective.

Figure 4 is a view of the inside of my door with the inner face and insulating removed, looking toward the outer face and insulating thereof.

Figure 5 is a detail of a portion of my door.

Figure 6 is an edge view of the member illustrated in Figure 5.

My refrigerator door A is adapted for use with a refrigerator B which may be of any suitable construction, as illustrated in Figure 1.

The doors A are adapted to close the refrigerating compartments of the refrigerator and are designed and constructed to provide an insulating wall for closing the opening C of the refrigerator so that when the door or doors A are closed the wall portion of the case formed by the door is practically as efficient an insulator as the remaining or closed walls of the case of the same.

Heretofore it has been difficult to provide a door for a refrigerator with a properly insulated construction. This has been more of a problem where it is designed to use an outer enameled surface for the refrigerator B, as the porcelain coverings and connecting parts have been inclined to carry the atmospheric temperatures from one side of the door to the other. This is very undesirable and I have overcome this in the construction of my door by providing inner and outer enameled faces.

My door A is provided with an outer face 10 formed of enameled sheet material and provided with an annular or peripheral inwardly extending flange 11 which extends about the outer face 10. The inwardly extending flange 11, as illustrated in Figure 3, is adapted to form a shoulder beneath which the edge 12 of the connecting members 13 are adapted to engage. The connecting members 13 are of a non-metallic material and of a material poorly conductive of heat and cold.

These members 13 are formed with a rabbeted edge to provide the shoulder 14 and a second shoulder 15 adjacent the shoulder 14 to provide the rabbet edge for the door A. Suitable sealing members 16 are secured by the nails 17 to the shoulders 14 and 15, respectively, in a manner to extend about the same or entirely about the door A. The sealing

members 16 provide the necessary packing for engaging against the rabbeted surfaces in the doorways C of the refrigerator B to provide a practically air-tight joint about the doors A of the refrigerator B.

The members 13 are provided with longitudinally extending slots 18 which are adapted to receive the inwardly extending flange 19 formed about the inner face 20 of the door A. The face 20 is formed of enameled sheet material and is adapted to form the inner face of the door, being positioned approximately parallel to the outer face 10 and having the same characteristic properties in being made of enameled sheet material.

By means of the grooves 18 in each of the members 13 the flange on the inner face 20 is adapted to fit very readily into the members 13. By means of long screws 21 which are adapted to extend through holes 22 properly positioned in the flange 19, the face plate 20 is held firmly and rigidly in place connected to the members 13.

In assembling my door A it is desirable to follow a method of assembly which facilitates the putting together of the parts and this is accomplished virtually as follows: Three of the members 13 are placed with the edge 12 extending beneath the flange 11 on three sides of the door. Then the fourth side which may be designated as 13′ and which is provided with beveled ends 24 which permit it to be slipped under the flange 11 into mitered engagement with the other three members 13, is placed into position as illustrated in the plan view in Figure 4, thereby placing all of the four sides 13 of the insulating and connecting frame for the faces of the door A into position as illustrated in Figure 4 in engagement with the back of the outer face plate 10.

The members 13 on three sides and the member 13′ on the fourth side from the frame are of wood or other insulating material which extends about and forms the frame in the door A.

Before the members 13 and the member 13′ are placed in position in the plate 10 which forms the front and outer face of the door A, a wool felt paper sheet 25 is placed in position over the inner surface of the plate 10. After the frame 13 is in place then the center of the frame is filled by a cork member 26 which is divided into two parts 26 and 26′, the member 26 being of a larger nature than the portion 26′, and the member 26′ being forced into place to impinge against the sides of the frame 13. Spacing bars 28 are then placed across the frame 13 as illustrated in Figure 4 and a cork insulated board or member 29 is laid across the spacing bars 28, leaving an air space 30 between the cork blocks 26 and 29.

The plate 20 is then covered on its inner surface with an insulating paper 32 and is placed over the cork block 29 with the flange 19 extending into the groove 18 formed in the frame 13. Then the screws 21 are inserted through suitable openings formed in the frame member 13 and through holes 22 formed in the frame 19 so as to firmly and rigidly secure the plate 20 to the frame 13. The cork block 26 pinches the frame 13 into engagement with the plate 10 by means of the inwardly extending flange 11 which engages the portion 12 extending about the frame 13.

In this manner I provide an insulated door for a refrigerator with enameled sheet faces of a single piece for each face which are secured together and spaced apart by means of an insulating frame so as to provide a closure or door for a refrigerator of a very desirable nature. The efficiency of my door is increased by means of the cork filling in the blocks 26 and 29 and the air space 30 between the blocks so that this form of refrigerator door together with the sealing member 16 extending about the door A form a closure for a refrigerator with practically the same efficiency as the closed side wall of the refrigerator proper. This is very important in the construction of a refrigerator as it is desirable to have a door of an efficiency to prevent the loss of refrigeration.

It is also a very important feature of my invention to provide a door with enameled faces which are separated by insulating means so that neither heat nor cold is transmitted from one side to the other of the door, the faces being virtually separated by a poor conductor of heat and cold and thereby accomplishing a feature very much desired for refrigerator closures.

In accordance with the patent statutes I have described the principles of operation of my invention and while I have endeavored to illustrate in the drawing a particular construction and formation thereof I desire to have it understood that the same is only illustrative and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A refrigerator door comprising, inner and outer enameled faces, a frame formed of nonmetallic material supported by one of said faces, insulating means carried by said frame, spacer members secured to said frame insulating means supported within the other face and flange means upon said other face cooperating with groove means in said frame for securing said other face to said frame.

2. A refrigerator door comprising inner and outer enameled faces formed of sheet material, a retaining flange formed on said outer face, insulating sheets and blocks adapted to be carried by said faces, an insulating frame adapted to be supported beneath said retaining flange on said outer face, said inner face

being slidably inserted into a groove in said frame, and means extending through a portion of said inner face to secure the same in place.

3. A refrigerator door including, inner and outer enameled faces formed of sheet material, a sectional insulating connecting frame, a flange on said outer face adapted to engage the outer edge of said frame, block insulating material adapted to press the sections of said frame into engagement with said flange, spacer bars, insulating block means within said inner face adapted to be positioned against said spacer bars, and means for securing said inner face to said insulating frame.

4. A refrigerator door comprising inner and outer faces, a complete insulating frame assembled within one of said faces, means for holding said completed frame in operative position, and means for removably connecting the other of said faces embedded in said completed connecting frame.

5. A refrigerator door formed of sheet material including, inner and outer face plates, a frame adapted to connect said face plates being a poor conductor of heat and cold, and means extending between opposite sides of said frame to hold said frame assembled and to space insulating material in said faces to provide a dead air space between the insulating material within said door.

6. A refrigerator closure comprising, inner and outer faces formed of sheet material, an insulating frame for connecting said faces, rabbeted edges formed on said frame, sealing members extending about said rabbeted edges, means for connecting said frame together within one of said faces and for holding insulating blocks positioned within said faces spaced apart to provide a dead air space.

7. A door for refrigerator cabinets comprising a frame member formed of heat insulating material, an integral rib extending laterally from the front of said frame member, a sheet metal outer facing bent around and substantially enclosing said rib, and a sheet metal inner facing enclosing the remaining exposed surfaces of said frame member, the edges of said inner facing being spaced from the edges of said outer facing and embedded in the rib of said frame member.

8. A refrigerator door including, inner and outer faces formed of sheet material, a completely assembled insulating frame held within one of said faces, an annular groove in said frame, side edges on the other face adapted to removably fit into said groove in said completed frame without taking apart said frame and means for holding said other face to said frame.

9. A refrigerator door including, inner and outer faces, a retaining flange on one of said faces, an assembled insulating frame held by said retaining flange to said face, a groove in said frame, side edges on the other face, said side edges slidably extending into said groove, and means passing through apertures in said side edges for removably holding said other face to said assembled frame.

10. A refrigertor door comprising, inner and outer faces, an insulating frame secured within one of said faces, an annular groove in said frame, inwardly extending side walls upon the other face adapted to fit in said annular groove, screw means in said frame passing through apertures in said side walls for securing said other face to said frame.

11. A refrigerator door comprising inner and outer faces formed of sheet material, a sectional insulating frame for connecting said faces, insulating material within said frame, strip members holding said insulation in place, and insulation material interposed between said strip members and one of said faces.

12. A refrigerator door comprising, inner and outer faces of sheet material, a retaining flange on one of said faces, a sectional insulating frame connecting said faces, a lip on said frame sections extendable under said flange, and insulation within said frame in line with said lip on said frame sections to space the assembled frame sections apart holding said lip on said frame sections under said flange and preventing removal of said sections.

EMIL P. SCHWARZ.