July 8, 1930. C. V. HILL 1,769,951

REFRIGERATOR DISPLAY CASE DOOR

Filed Nov. 15, 1928 2 Sheets-Sheet 1

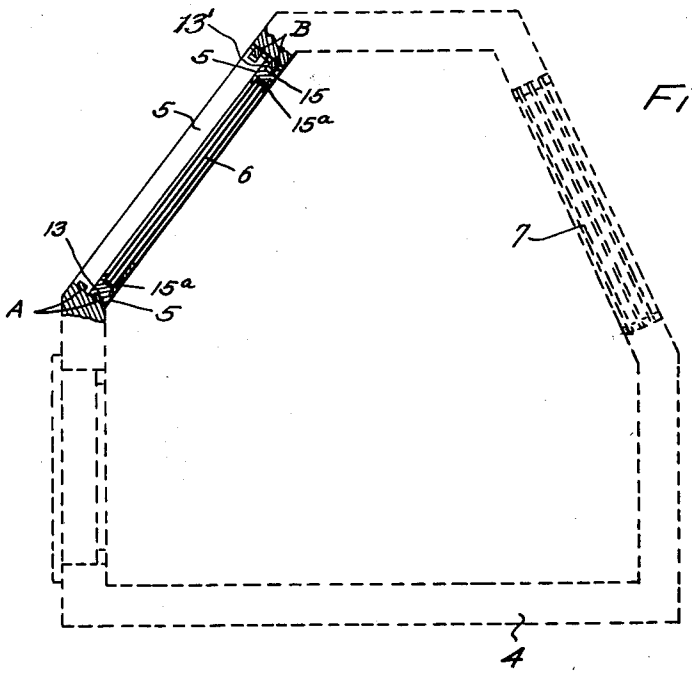


Fig. 1.

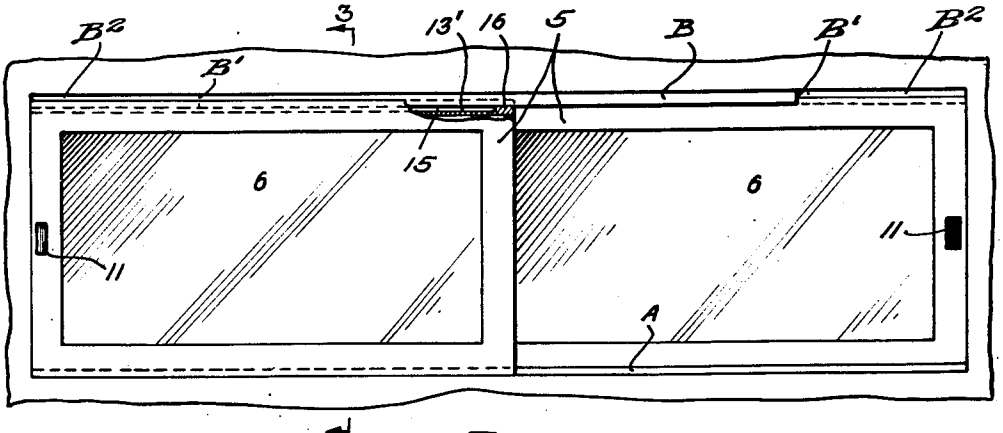


Fig. 2.

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Fig. 3.

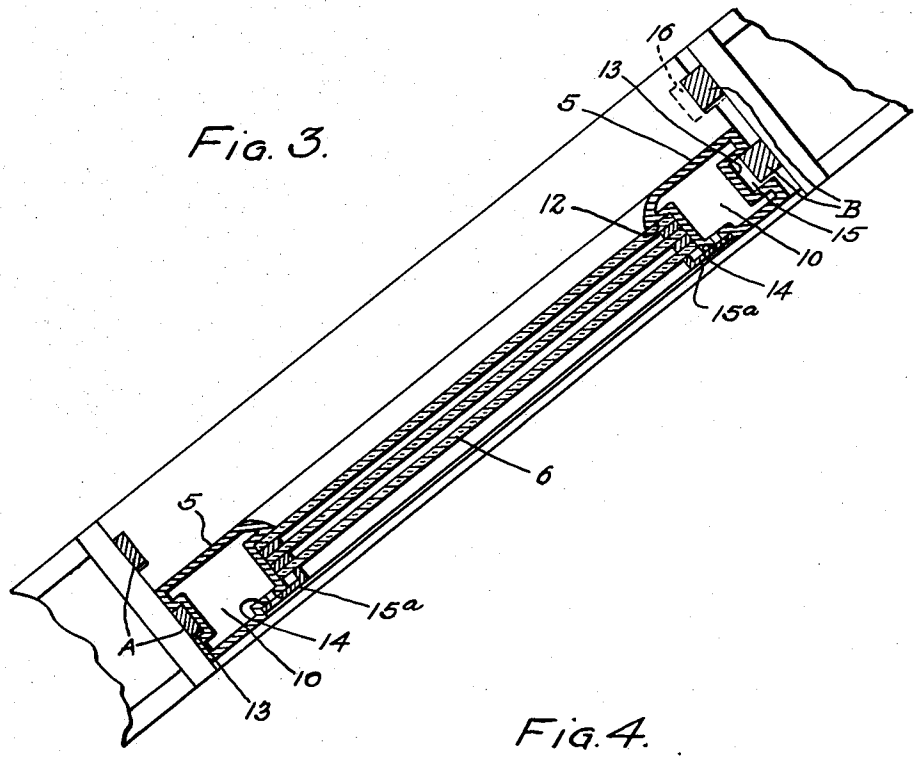
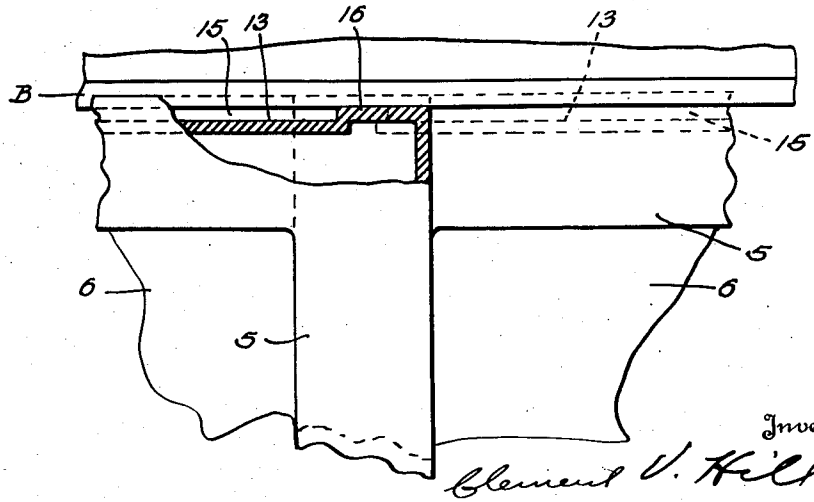


Fig. 4.



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Patented July 8, 1930

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UNITED STATES PATENT OFFICE

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REFRIGERATOR-DISPLAY-CASE DOOR

Application filed November 15, 1928. Serial No. 319,676.

The use of display refrigerator cases in stores for meat, etc., has become recognized as a necessity in the trade and many expediences have been adopted to make these display cases as air tight as is possible to prevent the collection of condensation on the glass, as well as on the doors of the case.

It is almost, if not entirely, universal to build the doors, which in many cases, are sliding doors, for these display cases of wood. Wooden doors are prone to absorb dampness, will eventually swell, perhaps crack, warp or check, will not hold varnish or paint, and as soon as moisture penetrates the wood freely, the doors discolor, decay and soon go to pieces, or swell up so that they will not fit the place they were designed to operate in.

Another fault with the wood door is that as soon as the door frames become saturated with moisture they become a greater conductor and swell all the more.

When building a large cooler with the wall frame 5 to 7 inches a wood door can be insulated sufficiently so that it will not sweat on the outside. But it is impossible to make a door less than two inches in thickness of wood and insulate the same sufficiently to maintain a cold temperature without the doors sweating or collecting moisture on the outside which is due to lack of insulation. The cold pentrating through the wood to the outside surface will cause cold surfaces to condense moisture.

The primary object of my invention is to provide for display refrigerator cases a door made of a hot and cold insulating material such as rubber, bakelite, etc., and I have found by actual experience that a door made of such material is not only unbreakable, but is very durable, and positively moisture proof, and is an absolute insulation to cold and heat whereby the interior of the door is maintained at the same temperature of the case on the inside, while the exterior of the surface of the door is maintained at the temperature of the room in which it is exposed.

Another advantage of making the doors of this material is that there is no appreciable wear on the door, and I have noticed that the longer you use a door of such material, such, for instance, as rubber, the better it looks; It becomes polished and smooth like a beautiful piece of ebony, while with the wood door the varnish or paint soon wears off on the wearing parts, thus allowing moisture to penetrate the wood.

It is my practice to mold the doors embodying my invention and they can be molded of any shape or thickness.

I have ascertained that these rubber doors hold the nails and screws better than the wood, and that these doors possess wonderful wearing qualities, never swell, warp, crack, or come apart, and that they are a lasting proposition and add very materially to the efficiency and durability of a refrigerator.

In molding my improved refrigerator door they are molded hollow with a dead air space.

Another object of my invention is to provide a cutoff at the end of one of the tracks of the door to prevent the leaking of cold air from the case.

Still another object of my invention is to provide a sliding door which is proof against accidental displacement but may be easily slipped into and out of working position in the doorway.

In the drawings:

Figure 1 is a vertical transverse section of a refrigerator display case showing one of my doors in position.

Figure 2 is a front elevation of a portion of the case showing a pair of sliding doors involving my invention in position, a part of one door being shown in section.

Figure 3 is a section on the line 3—3, Figure 2.

Figure 4 is an enlarged detail view partly in section showing the plug seal on the door frame. The reference numeral 4 designates a refrigerator display case of any improved construction and is provided with sliding doors 5 having glass panel 6. The other side of the case is provided with permanently fixed glass panels 7.

The case is provided with tracks A and B for the sliding doors, there being a track at the top and a track at the bottom for each door.

The door frame is molded from heat and

cold insulating material such as rubber and bakelite, whereby a dead air space 10 is formed in the structure of the frame, which air space functions as a non-conductor and prevents the radiation of heat or cold through the door frame. This air space plus the heat and cold insulating material from which the frame is made insures a door frame which will prevent radiation of heat or cold through it and, thereby, as above set out, prevents the accumulation of moisture on the frame.

Another advantage of the material from which the frame is molded is that it is not subject to swelling or shrinking; it will not crack, warp, or check, and it improves in appearance with use, resulting in the frame taking on a very high and smooth polish.

The frame is molded with a hand grip 11 and a glass shelf or bead 12 and with the track ways 13 and 13′ which slidably engage the track rails A and B at the bottom and top of the doorway.

I mold a recess 14 in the inner face of the door so that I may attach a metal stop 15ª therein to support the glass and seal the glass airtight, said metal strip holding the cement or putty in position and protecting it from being scratched or defaced, or turned in any way which would allow the air to leak through. This metal strip is laid just a bit lower than the face of the door lies within the recess 14, so that the doors can slide together making a tight joint where the two doors lap in the center.

It will be observed that each door 6 is of such depth with relation to the depth of the doorway that when the door is in working position the bottom grooved edge of the door rests on the bottom wall of the doorway and engages its bottom track rail A with the top wall of the groove 13 resting on said rail, while the upper grooved edge of the door is spaced from the top wall of the doorway and the base wall of the groove 13′ is spaced from the bottom of the top track rail B to such an extent as to allow the door, unless held from upward movement, to be lifted sufficiently to disengage it at the bottom from the rail A and to allow it to be tilted outwardly on the rail B as a center of motion and then disengaged at its upper edge from the rail B, whereby removal of the door may be easily effected. In order to obviate liability of casual displacement of the door and to prevent its upward sliding movement and removal except when in a prescribed position, a stop block or projection 16 is provided which decreases the depth of the groove 13′ at one end adjacent to the rear edge of the door and normally bears on the rail B to prevent the door from being lifted and at the same time acts to seal the groove at such end against leakage of cold air or entrance of warm air. The track rail B is, however, provided at its rear end with a cutaway portion B′ at a distance from the rear end of the doorway and forming a clearance space B². When the door is slid rearwardly to a partly open position and the block 16 passes beyond the rail end B′ and registers with the clearance space B², the block 16 is free to move upward into said space when the door is lifted, thus allowing removal of the door. In an obvious manner, also, the door may be replaced by bringing its upper grooved edge into engagement with rail B, when such engagement is permitted by block 16 being so positioned as to move upward into space B², so that the door may be tilted to bring its lower edge to a position above the rail A′, whereupon the door may be allowed to drop down into engagement with said rail, so that by sliding the door forward to partly closed position block 16 will be brought to bear against rail B to hold the door from upward movement and casual displacement from the bottom track rail in the normal opening and closing movements of the door.

In display cases where the doors are positioned in an inclined angle, as shown in Figure 1, the doors rest against the runways or guide slips, and each door is always tight against the guide on the outside, but on the inside there is a little play between the edge of the door and the guide strip which is necessary for the door to slide easily. It is from this little space, which in many cases is equal to about the thickness of bond paper, the cold air enters, incident to the play that the cold air enters the grove or trackway in the top of the door and would come out at the end of the groove causing waste of cold air if the sealing block 16 were not there to prevent it.

It will also be understood that a detachable handle or pull may be secured to the door instead of molding it in the door.

The details of construction shown in the drawing are selected merely for the purposes of illustrating my invention, hence it will be understood that changes may be made within the scope of the appended claims.

What I claim is:

1. A display case having a doorway provided with bottom and top track rails, the latter being cut away at its rear end so as to provide a clearance space at the top of the doorway between said end of the top rail and the rear end of the doorway, and a sliding door having grooved top and bottom edges receiving and engaging said rails, the door and its top groove being of such depths respectively with regard to the doorway and top rail as to have freedom of upward and downward sliding movements on said rail when the door is in a certain open position to disengage the lower grooved edge of the door from or engage it with the bottom rail and allow the door when so disengaged to be tilted on the top rail into and out of aline-

ment with the bottom rail, said door being provided with a projection at the rear end of the top groove sealing the space between the top rail and bottom of the top groove and bearing against said rail to hold the door from upward sliding movement except when the door is moved backward to a sufficiently open position to bring the block beyond the rear end of the top rail and beneath said clearance space.

2. A display case having a doorway provided with bottom and top track rails, the latter being cut away at its rear end so as to provide a clearance space at the top of the doorway between said end of the top rail and the rear end of the doorway, and a sliding door having grooved top and bottom edges receiving and engaging said rails, the door and its top groove being of such depths respectively with regard to the doorway and top rail as to have freedom of upward and downward sliding movements on said rail when the door is in a certain open position to disengage the lower grooved edge of the door from or engage it with the bottom rail and allow the door when so disengaged to be tilted on the top rail into and out of alignment with the bottom rail, means sealing the space between the top rail and bottom of the top groove and to hold the door from upward sliding movement except when the door is moved backward to a sufficiently open position to bring the said means beyond the rear end of the top rail and beneath said clearance space.

3. A display case having a doorway provided with bottom and top track rails, the latter being cut away at its rear end so as to provide a clearance space at the top of the doorway between said end of the top rail and the rear end of the doorway, and a sliding door having grooved top and bottom edges receiving and engaging said rails, the door and its top groove being of such depths respectively with regard to the doorway and top rail as to have freedom of upward and downward sliding movements on said rail when the door is in a certain open position to disengage the lower grooved edge of the door from or engage it with the bottom rail and allow the door when so disengaged to be tilted on the top rail into and out of alignment with the bottom rail.

In testimony whereof I affix my signature.

CLEMENT V. HILL.