March 18, 1930. F. R. EAGLESFIELD 1,750,631

CLOSURE

Filed Nov. 18, 1926

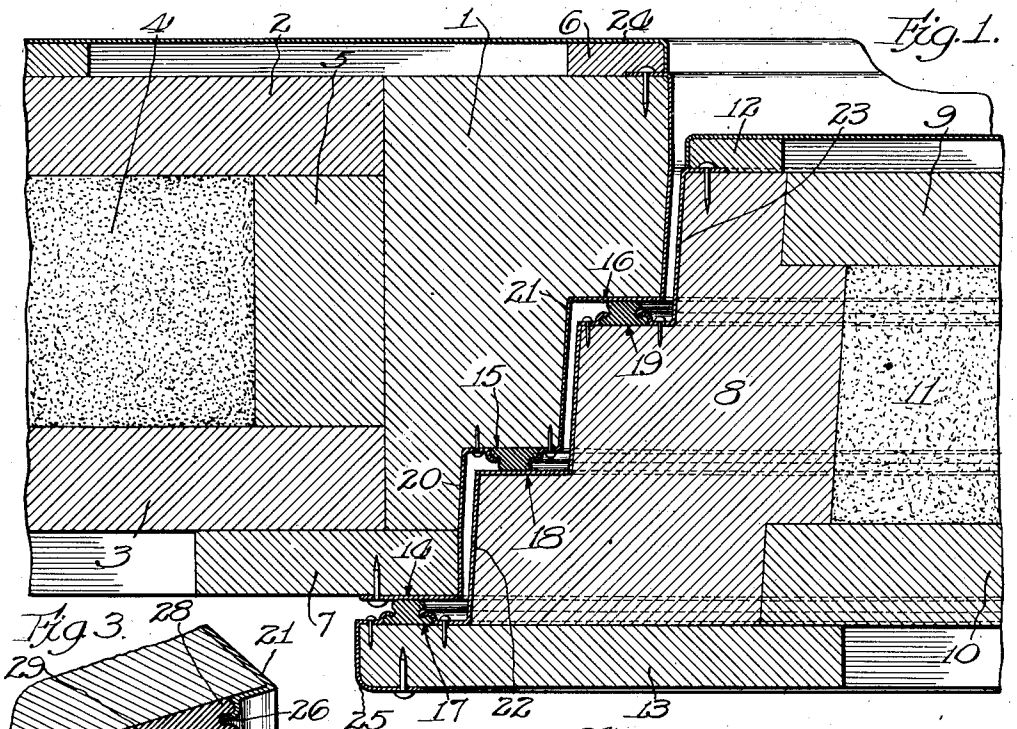


Fig. 1.

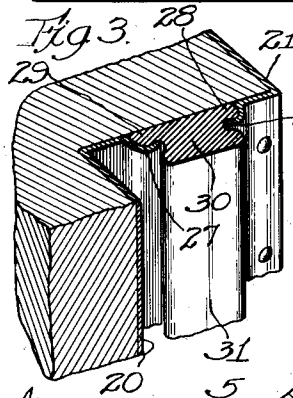


Fig 3.

Fig. 2.

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UNITED STATES PATENT OFFICE

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CLOSURE

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The present invention relates to closures of the type having sealing or insulating means, such as used in refrigerator doors and the like.

Among the objects of the invention is to provide a novel closure or door comprising relatively movable members provided with facings and insulating or sealing means or both so cooperating therewith as to form a sealing contact from one to the other of the facings when the door is closed. The facings are preferably of sheet material, such as sheet metal and attached or secured to the adjoining faces of the door members, such as the frame and the door itself. The insulating or sealing means, which may be in the form of liners, are preferably arranged to alternate with each other from one facing to the other and also preferably at alternate points or lines on each member, such that when the door is closed, the liners on the door may contact-seal with the facing on the frame, and those on the frame may contact-seal with the facing on the door. The facings are preferably formed with one or more interruptions, as by making the facings with sections with spaced edge portions to form such interruption or interruptions. The insulating member may be located in or at such interruptions and held in place by the edge portions of the sections or, as in a specific embodiment, by raised flanged portions at the edges of the sections with portions, such as flange portions, of the liners being held behind or beneath said flanges, and with the liners extending from such interruptions preferably laterally with reference to the plane of the facing, so as to be able to engage with a sealing contact with the face of an opposed facing, and preferably in break-joint relation or alternate with the interruptions of the latter facing.

The invention also comprehends the forming of the adjoining faces of the door and frame of a tortuous contour, or, as in a specific illustrative embodiment, in stepped form or shape, and with sheet material, such as sheet metal, facings therefor with the insulating means at alternate steps of each, such that they will be located on one in alternate relation with those on the opposed steps. A channel may be interposed in either member, with an associated projection or rib on the opposed member, in order to produce a more tortuous course between the adjoining faces of the door structure.

Other objects, advantages, capabilities and features are comprehended by the invention as will later appear and are inherently possessed thereby.

Referring to the drawings, Fig. 1 is a fragmentary horizontal or vertical sectional view through a closure constructed in accordance with the invention.

Fig. 2 is a similar view of an alternate form.

And, Fig. 3 is a perspective fragmentary view showing the form of sealing means used in this invention.

Referring now more in detail to the drawings, the embodiment selected to illustrate the invention is shown in connection with a refrigerator door comprising a wall or frame member 1 secured in any suitable manner to wall members 2 and 3 providing a space therebetween for heat insulation material 4 and a spacing element 5.

To the inner and outer faces of the wall and to the frame member 1 may be secured, in any suitable manner, facing strips 6 and 7 as clearly shown in the drawings.

The door may be similarly constructed and comprise a frame member 8 secured to spaced wall members 9 and 10 in any suitable manner, and to provide a space therebetween for the inclusion of suitable heat insulating material 11. The inner and outer walls of the door may also be provided with spacing elements or strips 12 and 13 as clearly shown in the drawings.

The adjoining faces of the door and door

frame are preferably of tortuous form or stepped formation forming a plurality of steps 14, 15 and 16 on the wall frame of the refrigerator, and similar opposed steps 17, 18 and 19 on the door itself. The surfaces of the steps, as well as the surfaces of the faces connecting these steps are preferably covered with sheet metal sections 20 and 21 on the members 1 and 7 and with similar sheet metal facing sections 22 and 23 upon the door members 8 and 13. Similarly sheet metal members may be secured to and cover the strips 6 and 13 by sheet metal sections 24 and 25 as shown. These sections may be secured in place by any suitable mechanism, such as nails or the like, as shown, the same being driven into the members 1 and 7 of the wall frame portion and 8 and 13 of the door structure.

It will be noted that these sheet metal members extend around the edges of the door and the frame of the door to form a continuous metal facing for each. The sections are so arranged and located with the edges of adjacent sections spaced from each other, these edges being preferably in the form of raised or laterally bent flanges 26 and 27 to provide channels or spaces between these flanges and the surface of the members 1 or 8 as the case may be. These channels extend around the door and the frame. It will be noted that one of these interruptions is provided on the step 19 of the door, while another is provided on the step 15 of the wall frame, and still another upon the overlapping part of the strip 13, as clearly shown in Fig. 1. In this way the interruptions are located at alternate points upon one of the members such as the door, and they alternate or break-joint with the interruption on the wall frame member 1. Within each of these interruptions is located a yieldable insulating liner, such as rubber or the like, having flanged portions 28 and 29 adapted to fit snugly into the channels behind the flanges 26 and 27, and be held firmly in position thereby. The liner also has a body portion 30 extending laterally from the facing and forming a head portion 31 adapted to engage with a sealing contact with an opposing smooth face part of a facing section. As for example, the liner on the step 19 will engage with the facing 16, when the door is closed. Similarly, the liner on the step 15 will engage with the facing on the step 18 of the door. Also the liner on the overlapping part or step 17 will engage with the metal facing secured to the facing strip 7 of step 14. In this way multiple sealing contacts may be effected. While three of these are shown in the illustrative embodiment, it is to be understood that the invention comprehends the use of but one of these, or any other number greater or less than that shown upon the drawings.

In the use of the device, when the door is opened, the faces of the door and door frame are protected by the sheet metal facings, and the liners do not project to any distance to interfere with the use of the door. When the door is closed, the heads 31 of the liners will engage with the opposed faces of the facing sections and form a close contact therewith so as to seal the space between the door and door frame against the passage of air, as well as insulating against the transmission of heat or cold. The liners will also act as resilient members to prevent sudden impacts of door closings.

Fig. 2 is constructed in accordance with the structure of Fig. 1 but differs therefrom by having the tortuous path between the door and the frame more tortuous by the provision therein of a channel 32 in which may extend a projecting portion 33 forming a part of the door frame member 8'. In this case the liner may be located in an interruption on the step 34 forming a part of the frame member 1' and adapted to engage with the end 35 of the projection or rib 33, the rib portion 35 acting as a step or overlapping portion. In other respects this alternate structure is the same as that described in connection with Fig. 1 of the drawings.

While I have herein described and upon the drawings shown a few illustrative embodiments of the invention, it is to be understood that the latter is not limited thereto but may comprehend other details, arrangements of parts, features and constructions without departing from the spirit thereof.

Having thus disclosed the invention, I claim:

1. In a closure device having relatively movable parts, sheet material facings for said parts, and insulating means carried by the facing of one of said parts and adapted to form a sealing contact with the facing of the other of said parts.

2. In a closure device having relatively movable parts, sheet material facings for said parts, and an insulating member secured to the facing on one of said parts and engageable with a sealing contact with the facing of the other of said parts.

3. In a closure device having relatively movable parts, sheet material facings for said parts, the facing on one of said parts having an interruption, an insulating means in said interruption and adapted to engage with a sealing contact with the facing of the other of said parts.

4. In a closure device comprising relatively movable parts having overlapping portions, metal facings for said portions, interruptions in said facings arranged with the interruptions of one facing in break-joint relation with those of the other facing, and sealing means in said interruptions and adapted to engage opposed facings between the interruptions therein.

5. A sealing device for doors, comprising sheet material facings for the adjacent faces of the door frame and the door, a yieldable insulating element secured to a facing and located to form a sealing contact with the other facing when the door is brought into closed condition.

6. A sealing device for doors comprising relatively movable door members having tortuous adjoining surfaces, sheet material facings attached to and covering said surfaces, yieldable insulating liners carried by said facings and located to form a sealing contact with the opposed facings when the door is in closed condition.

7. A sealing device for closures comprising a door frame and a door therefor, the adjoining faces of said frame and door being stepped, sheet metal facings covering said stepped faces, yieldable insulating means at alternate steps of the door and at alternate steps of the frame and alternating with each other, each insulating means contacting the opposed facing with a sealing contact.

8. A sealing device for closures comprising a door frame and a door therefor, the adjoining faces of said frame and door being stepped, sheet metal facings covering said stepped faces, said facings having interruptions at alternate steps and arranged with those of the steps of the door alternating with those of the frame, and insulating members in said interruptions and adapted to form sealing contacts with the facings on the opposed steps when the door is closed.

9. A sealing device for closures comprising a door frame and a door therefor, the adjoining faces of said frame and door being stepped, sheet metal facings covering said stepped faces, said facings having interruptions at alternate steps and arranged with those of the steps of the door alternating with those of the frame, said facings at the interruptions having raised flanges, and insulating members having flanged portions held between said raised flange and said faces and extending from said interruptions for making sealing contacts with the opposed facings when the door is closed.

10. A sealing means for doors, comprising a sheet metal facing having an interruption, raised flanges at said interruption, yieldable sealing means held beneath said flanges and having a sealing portion extending beyond the facing for making sealing contact with an opposed facing when the door is closed.

11. A sealing means for doors, comprising a sheet metal facing comprising sections having spaced edge portions to form an interruption in said facing, an insulating member in said space and held in position by said spaced edge portions, said member extending laterally from the facing to contact with an opposed facing when the door is closed.

12. A sealing means for doors, comprising a sheet metal facing comprising sections having spaced and flanged edge portions to form an interruption in said facing, a yieldable insulating member in said interruption and having portions held behind said flanges and a sealing portion extending therefrom and adapted to form a sealing contact with an opposed facing when the door is closed.

In witness whereof, I hereunto subscribe my name to this specification.

FREDERICK R. EAGLESFIELD.