March 29, 1949. C. E. HEILIG, JR 2,465,648

LIGHT TRANSMITTING MEMBER FOR INDICATING LEAKAGE IN CABINET CLOSURES

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FIG. 1

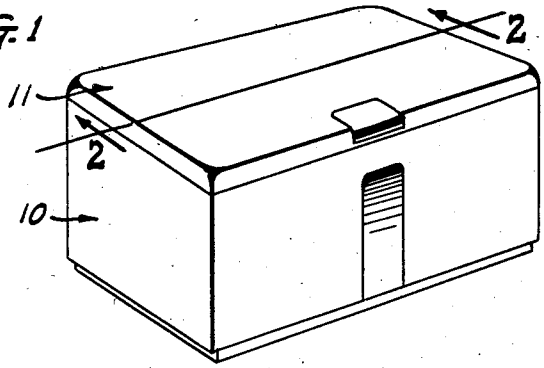
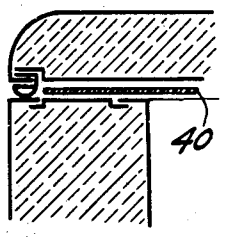


FIG. 5.



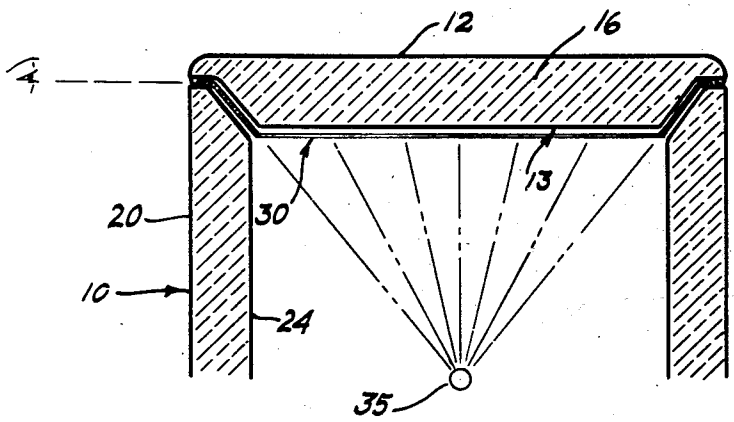


FIG. 2.

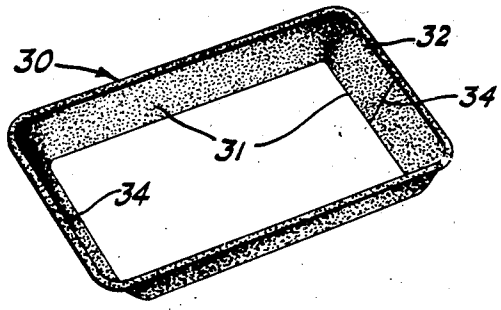
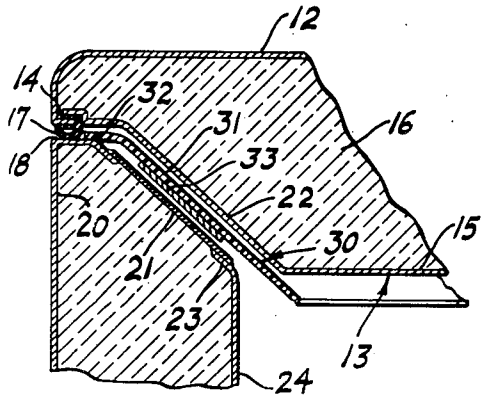


FIG. 4.

FIG. 3.



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LIGHT TRANSMITTING MEMBER FOR INDICATING LEAKAGE IN CABINET CLOSURES

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2 Claims. (Cl. 88—14)

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This invention relates to cabinet construction and has especial reference to the investigation of structural defects therein.

More particularly, the invention is concerned with a method of and apparatus for visually indicating the condition of refrigerator door gasket seals, whereby investigation may be made thereof.

Refrigerator door constructions usually include, about the perimeter thereof, a soft rubber gasket which is adapted to impinge against the door jamb of the cabinet to seal the interior against leakage. It is important that this seal be perfect or at least complete, and therefore manufacturers take care to see that such is the condition before the refrigerator is released for sale.

Determination of this condition requires some kind of inspection procedure, of which, one is to place a bright light in the interior of the cabinet, close the door, and then pass the cabinet through a dark room, at which time the seal may be investigated by scanning the juncture of the gasket and the door jamb to see if any light is visible. If no light is visible, it is apparent that the seal is sufficiently complete, but if light is visible then the seal is not complete and must be repaired prior to release of the refrigerator.

In many refrigerators this method of inspection is unsatisfactory as it is difficult and sometimes impossible so to position the light within the storage compartment that illumination therefrom will be visible, through any small apertures or clearances between the gasket and door jamb.

Accordingly, it is an important object of the present invention to provide an improved method of and apparatus for indicating and investigating structural defects in cabinet construction.

More particularly, it is an object of the present invention to provide an improved method of and apparatus for visually indicating the sealed condition of a refrigerator door gasket when the door is in closed position against the door jamb.

Another object of the invention is the provision of such method and apparatus characterized by simplicity and ease of operation.

The invention is intended for use in the inspection of all types of cabinet construction, however, it has found particular usefulness in the inspection of that type of refrigerator cabinet construction with which is used what is generally termed a "plug" type door, that is, a door in which the inner panel has an offset portion which extends inwardly of the liner and in close adjacency to the cabinet breaker strip. While it should be clearly understood that the invention is not to

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be so limited, the following description is directed principally to that type of construction, and is thus illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of a top-access refrigerator of the type utilizing a "plug" type door;

Figure 2 is a vertical sectional view on an enlarged scale, taken substantially along the plane of line 2—2 of Figure 1, showing the apparatus of the present invention and also illustrating diagrammatically the principles of the invention in in the method aspect;

Figure 3 is a still further enlarged, fragmentary sectional view of the door jamb structure of the refrigerator, showing a portion of the door with its associated gasket and with a portion of the apparatus of the invention in position for use;

Figure 4 is a perspective view of a component of the apparatus of the present invention, illustrated as removed from the refrigerator; and

Figure 5 is a view similar to Figure 3, but showing a flush type door construction and a modified form of apparatus of the invention in position between the door and door jamb of the refrigerator.

Referring more particularly to the details of the drawings, and particularly to Figures 1, 2, and 3 thereof, the numeral 10 designates a top-access refrigerator cabinet which has its access opening closed by a closure member on door 11.

The door is of the conventional well known plug type construction comprising an outer panel 12, and an inner panel 13, joined about their perimeters by any suitable means (not shown), and with the breaker-strip portion of a soft rubber combined gasket-breaker-strip member 14 interposed therebetween. The central portion 15 of panel 13 is pressed outwardly to provide additional space between the panels to accommodate suitable insulating material 16. It is this portion of the door which is responsible for the "plug" designation, as it extends inwardly of the cabinet in a manner to plug the access opening.

As seen most clearly in Figure 3, the gasket portion 17 of member 14 is positioned on the comparatively narrow co-planar marginal edge portions of the door and is adapted, when the door is in closed position, to impinge upon a substantially horizontal ledge or jamb 18 of cabinet 10, which ledge is formed by an inturned flange portion of outer shell 20 of the cabinet. Secured to the inner edge of this ledge is a breaker strip 21 which extends inwardly of said

cabinet in a plane angled with respect to the vertical and substantially parallel to and slightly spaced from wall 22 of the central portion of inner panel 13. Securely attached to the bottom edge of breaker-strip 21 is the outwardly turned flange 23 of inner linner 24, which defines the food storage compartment of the refrigerator.

Considering this type of construction as one with which the invention is particularly useful, it may readily be seen that, because of the angle formed at the juncture of the breaker strip 21 with the horizontally positioned ledge 18, it would be impossible for light from a source within the cabinet to be emitted from beneath the gasket, if its seal with the ledge was imperfect.

The present invention makes it possible to inspect the gasket seal in even such constructions, by providing apparatus for transmitting light rays to the juncture of the gasket and ledge 18 thereby providing ample illumination for inspection purposes.

In particular accordance with the apparatus concept of the invention, there is provided a frame-like member 30 having thin sloping side walls 31 arranged to fit in the space or air-gap between the sloping wall 22 of inner panel 13 and the angularly positioned breaker-strip 21. Formed on the upper rim of the frame is an outwardly turned lip portion 32 which, when the frame is in position, rests upon ledge 18 to support the frame on the cabinet. When in this position, lip 32 is directed at the juncture of gasket 17 with the ledge. It should be understood however that the frame may be otherwise supported, as by having its walls 31 rest upon the breaker-strip 21.

Preferably frame 30 is molded of a light-transmitting and directing material, such as, for example, one of the methyl-methacrylate resinous plastics designated by the trade names "Lucite" or "Plexiglas," which are characterized by high coefficients of light transmission, and substantial refractive properties.

While it is quite feasible that the frame may be self-supporting, it may be desirable in some applications to provide a reinforcing band 33 (see Figure 3) of suitable material, such as metal, about the walls of the frame. Further, when the refrigerator is provided with a lid-stay (not shown) to hold the door in elevated position, the frame may be split along the lines 34, 34 (Figure 4) to permit positioning of the frame around said lid-stay.

In practicing the invention, and as illustrated in Figure 2, a light 35 is placed within the cabinet, the apparatus or frame is positioned as described above, the lid is closed and the juncture of the door gasket with the ledge is scanned to determine if light may be seen therethrough. To facilitate detection of such light, it is best to place the refrigerator in a dark room. It is understood, of course, that light directed to that edge portion of frame 30 extending within the cabinet will be transmitted through the frame and directed to the juncture of the gasket and ledge so that, should the gasket seal be imperfect, rays will be emitted through the space therebetween and be seen by the inspector, who then marks or otherwise identifies the cabinet for repair.

In the embodiment illustrated in Figure 5, there is shown a flush type door used with modified apparatus in accordance with the invention. In this form, the frame is flat, and may have its inner edge beveled, as shown at 40, to ensure entrance of sufficient light from the source. It will be apparent that rays from the light source will be transmitted to the juncture of the gasket with the door jamb in the manner and for the purposes heretofore described, in relation to the preferred form.

I claim:

1. Apparatus for indicating leakage in the region of contact between a cabinet door and jamb cooperating to define a sealed chamber wherein the cabinet has thick walls and the sealing means is disposed at the perimeter of the door and including a source of light adapted to illuminate the interior of the chamber, said apparatus comprising a light-transmitting and directing peripheral frame member having flat sides and adapted to be disposed within the space between the walls and the door in close adjacency to and inwardly of said region of contact between the sealing means for the door and jamb, said member having a light-receiving inner edge portion adapted to extend within the chamber into position to receive light from said source and a second outer edge portion from which the received light is directed upon said region of contact.

2. Apparatus for indicating leakage in the region of contact between a cabinet door and jamb cooperating to define a sealed chamber wherein the cabinet has thick walls and the sealing means is disposed at the perimeter of the door, and including a source of light adapted to illuminate the interior of the chamber, said apparatus comprising a light-transmitting and directing member having flat sides adapted to be disposed within the space between the walls and the door in close adjacency to and inwardly of said region of contact between the sealing means for the door and jamb, said member having a light-receiving inner edge portion adapted to extend within the chamber into position to receive light from said source and a second outer edge portion from which the received light is directed upon said region of contact.

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