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TWO-WAY LIGHTING DEVICE FOR REFRIGERATORS

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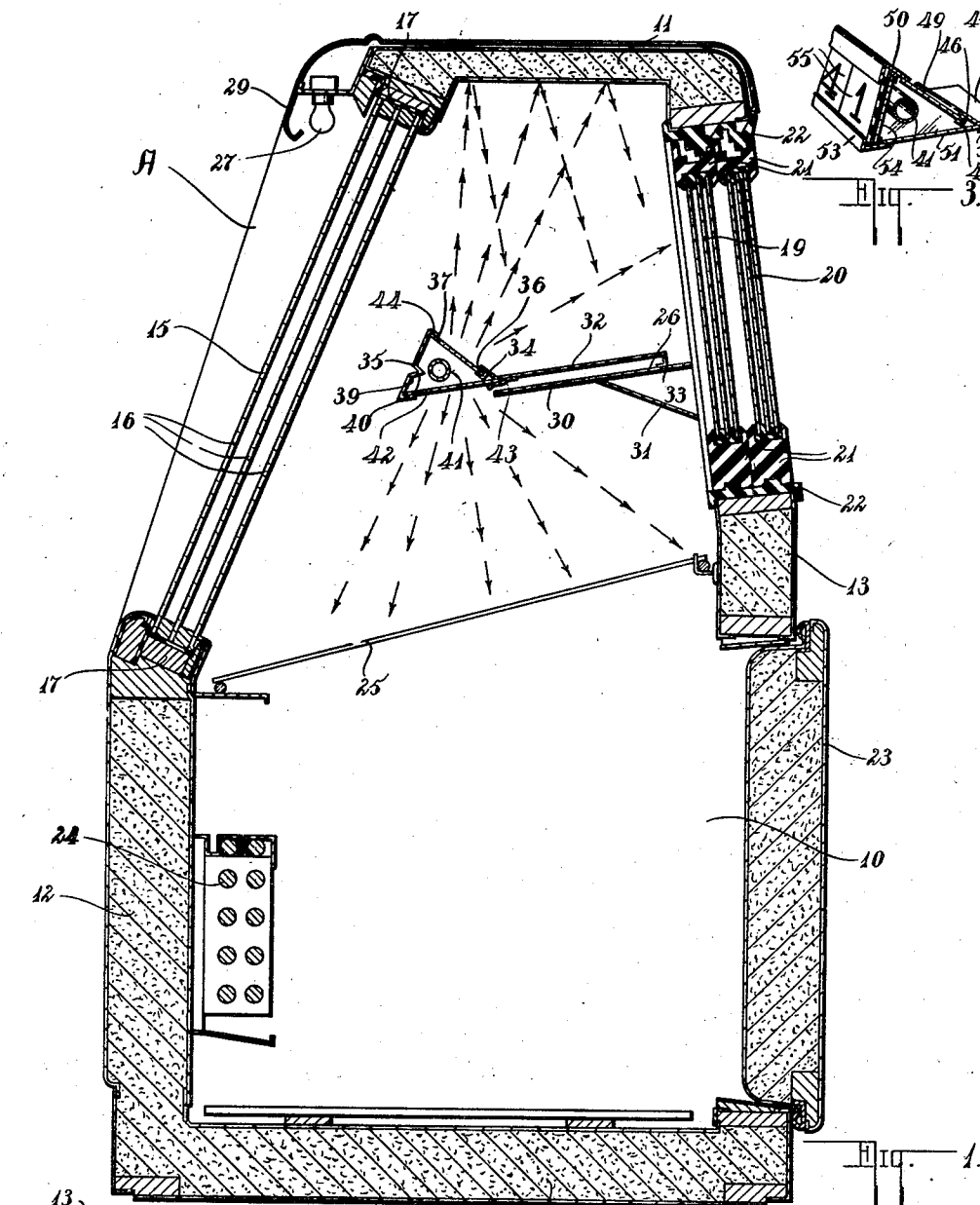


FIG. 1.

FIG. 3.

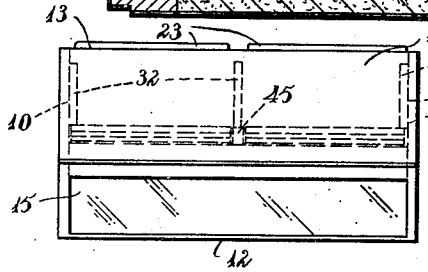


FIG. 2.

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TWO-WAY LIGHTING DEVICE FOR REFRIGERATORS

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3 Claims. (Cl. 240—6)

Our invention relates to an improvement in a two-way lighting device for a refrigerator in which it is desired to provide an efficient means of illuminating the entire interior of a refrigerator.

In the illumination of refrigerators, elongated tubular lights of various types have been found suitable for properly illuminating the interior of the refrigerator. Certain of these lights, however, do not operate well in the cold atmosphere at which the interior of the refrigerator is ordinarily maintained. It is therefore desired to provide an illuminating means which not only will clearly illuminate the interior of the cabinet, but which also will be enclosed in a suitable enclosure so that the temperature surrounding the illuminating means will be greater than the temperature throughout the refrigerator cabinet so as to permit efficient operation of the illuminating means.

It is a feature of our invention to provide a refrigerator display case with an illuminating means extending longitudinally of the casing adjacent an edge of the shelf and to provide a partially transparent housing enclosing this illuminating means. The transparent portions of the housing are so arranged that light is directed toward a plurality of shelves so that all of the goods displayed within the refrigerator may be clearly illuminated.

It is a further feature of our invention to provide a refrigerator lighting device which is designed to throw a beam of light toward the reflecting surface on the top of the refrigerator casing which acts to reflect the light downwardly upon the top of the uppermost shelf therein. Thus light shines down upon the goods displayed on this top shelf virtually as effectively as if a separate illuminating means were provided at the top of the cabinet.

It is a further feature of our invention to provide a non-transparent portion in the casing which acts as a reflector to reflect light upon the goods on a plurality of shelves within the cabinet. This opaque portion of the housing is positioned between the illuminating means and the display window so that the light from the illuminating means is directed toward the goods displayed in the refrigerator rather than toward the eyes of a person viewing these goods. All of the light from the illuminating means is directed towards the goods displayed rather than out through the display window in the cabinet.

It is a feature of our invention to provide a reflector for the illuminating means which is so shaped as to direct light upon the goods displayed within the refrigerator. A raised ridge in the reflector projects inwardly toward the light so as to divide the rays and to reflect them upwardly through one transparent portion of the casing or downwardly toward another transparent portion of the casing.

It is a further feature of our invention to provide an illuminating means which may be supported directly by the shelf edge and which is provided with a housing enclosing a series of transparent elements through which light rays may be directed. The transparent portions of the casing are so arranged that they may be removed when necessary for replacing the illuminating means or for cleaning the illuminating means and the associated reflector.

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

In the drawing forming a part of our specification:

Figure 1 is a transverse section through a refrigerator illustrating the shape of the illuminating means and the housing enclosing the same.

Figure 2 is a top plan view of the display cabinet showing the position of the reflecting means associated therewith.

Figure 3 is a perspective view of a modified form of construction.

The refrigerator A may be of any desired or preferred type and is illustrated as having end walls 10, a top insulated wall 11, a front wall 12, a rear wall 13, and a bottom wall 14. The various walls are insulated in a suitable manner so as to maintain the interior of the refrigerator at a low temperature when cooled by a suitable cooling unit.

The front of the refrigerator includes an elongated display window 15 preferably comprising a series of spaced window panes 16. A frame 17 seals the window 15 with respect to the top, front and end walls of the refrigerator. Insulated sliding doors 19 and 20 are provided at the rear of the refrigerator, which doors are equipped with frames 21 which slide on suitable sliding tracks 22. Doors 23 may be provided if desired to provide access to the interior of the lower portion of the display cabinet.

The refrigerator body may be cooled in any desired manner such as by the cooling coil 24 which contains a suitable refrigerant from a source of cooled refrigerant such as a compressor or the like. Such compressors are well known in

the art, and the form of the compressor is not shown in the present drawing.

A display shelf 25 extends between the front wall 12 and the rear wall 13 to support goods or articles to be displayed within the refrigerator. A shelf 26 is positioned in the body of the refrigerator above the shelf 25, and this shelf supports a suitable illuminating means of a type which will be later described in detail. If it is desired, one or more illuminating means 27 may be positioned externally of the window 15 and shielded by an enclosing shield 29 which may direct light downwardly through the window 15 toward the goods displayed on the various shelves. This latter illuminating means 27 is not ordinarily needed and need not be provided if it is so desired.

The shelf 26 comprises a shelf element 30 which extends into proximity with the rear wall of the refrigerator 13 adjacent the windows 19 and 20 and which is supported by an auxiliary brace 31. A series of spaced brackets 32 are secured at one end 33 to the shelf 30 and are secured at their other end to an inclined wall 34 forming a part of the illuminating means enclosure. End plates 35 are secured to the inclined wall 34, and the upper marginal edge of the inclined wall 34 is grooved at 36 to accommodate a transparent plate 37.

Connecting the end plates 35 I provide a forward enclosure wall 39 which acts as a reflector to direct light rearwardly and upwardly and rearwardly and downwardly. This forward wall 39 is provided with a longitudinally extending ridge 40 which divides the light rays emanating from the elongated illuminating means 41 and which directs some of the light rays in an upward direction and some of the same in a downward direction.

A transparent plate 42 is provided between the forward wall 39 of the enclosure and the rear end of the inclined wall 34. This plate 42 is held in place by spring clips 43 so that the plate may be removed for the purpose of replacing the illuminating means. The transparent plate 37 is held in place by spring clips 44 so that this plate may also be removed when it is desired.

If it is so desired, the brackets supporting the illuminating means may be removably secured to the shelf 26 so that the shelf may be removed individually of the illuminating means. In place of being welded or otherwise affixed at 33 to the shelf 26, the brackets 32 may be removably secured thereto or the ends 35 of the enclosure may be secured to the end walls 10 of the refrigerator. A central partition 45 is in preferred form secured between the ends of the illuminating means in case the cabinet is of considerable length. A suitable number of partitions may be provided depending upon the length of the display case so that the elongated illuminating means 41 may be effectively supported by the pairs of sockets.

From an examination of the drawing it will be obvious that the enclosure for the illuminating means shields the light rays from the illuminating means from the eyes of a person looking through the window 15, and it will be obvious that the light from the illuminating means will be directed upwardly through the transparent plate 37 toward the roof of the display box which will act to reflect the light downwardly upon the uppermost shelf. The forward wall 39 of the enclosure will reflect light rearwardly toward articles upon the shelf, and also in a rearward direction toward the lower shelf through the transparent plate 42. Light rays may pass directly through the transparent plate 42 downwardly upon goods placed upon the lower shelf 25. Thus the single illuminating means is positioned in a manner to effectively illuminate articles placed upon both the main display shelf 25 and the auxiliary shelf 26 which is sometimes known as the mezzanine shelf.

In Figure 3 of the drawing I have disclosed a modified form of construction. In this form, the shelf 45 is provided with an upturned edge 46 bearing a glass channel 47. A transparent or translucent pane 49 is supported in the channel 47 and extends into engagement with the angle member 50. A second transparent or translucent pane 51 extends between a channel 52 on the shelf 45 and the angle 53.

A translucent or transparent plate 54 connects the angle strips 50 and 53. The angles provide channels between the plate 54 and the forward sides of the angles, to accommodate letters or numerals 55. Each letter, numeral, symbol or word 55 is preferably formed or opaque material with the indicia punched out; or the members 55 may be of translucent material and parts thereof may be painted with opaque paint so that the indicia may be visible. The members 55 form a display sign or advertisement which may be changed daily or from time to time.

It will be noted that the illuminating means may be replaced with little difficulty as either of the glass or transparent plates 37 and 42 may be removed when it is so desired. When the enclosure houses illuminating means of the fluorescent type, the enclosure forms a chamber which is maintained at a higher temperature than the surrounding temperature when the illuminating means is in operation. When the current is turned on, the illuminating means will become dimly illuminated due to the surrounding cold temperature and will give off a certain amount of heat. This heat will be retained around the illuminating means so that the temperature of the illuminating means will raise sufficiently to permit effective operation of the fluorescent light. Thus the enclosure not only acts to properly direct the light toward the goods but also to maintain the proper temperature surrounding the illuminating means for effective operation thereof in case the fluorescent type lighting is used. With certain other types of illumination such as may be commonly used, the retention of heat within the enclosure is not so important.

In accordance with the patent statutes, we have described the principles of construction and operation of our two-way illuminating means for refrigerators; and while we have endeavored to set forth the best embodiments thereof, we desire to have it understood that these are only illustrative of a means of carrying out our invention and that obvious changes may be made within the scope of the following claims without departing from the spirit of our invention.

We claim:

1. In combination with an elongated refrigerator, an elongated shelf in said refrigerator, an elongated enclosure substantially triangular in cross-section, means supporting said enclosure to a longitudinal edge of said shelf, a transparent bottom in said enclosure substantially parallel to said shelf, an opaque forward wall in said enclosure on the side of said enclosure opposite said shelf, and a second transparent portion in said

enclosure, and an elongated illuminating means in said enclosure.

2. In a display refrigerator having a display window therein, a shelf for displaying goods visible through said display window, a second shelf above said first named shelf, an elongated enclosure secured parallel and adjacent the forward edge of said second shelf, an illuminating means within said enclosure, a reflecting wall in said enclosure to conceal said illuminating means from view through said display window, an inwardly extending ridge in said reflecting wall to divide the light rays emanating from said illuminating means and to direct some of said rays upwardly and some of said rays downwardly, a transparent portion in the bottom of said enclosure, a second transparent portion in the top of said enclosure, and said reflecting wall adapted to direct light rays through said transparent portions.

3. In combination with a display refrigerator, an elongated refrigerator shelf, an elongated enclosure longitudinally secured to said shelf and substantially triangular in cross section, illuminating means within said elongated enclosure, an opaque forward wall in said enclosure acting as a light reflector, said opaque wall having an inwardly extending ridge to divide light rays from said illuminating means, a removable transparent portion in the bottom of said enclosure, a second removable transparent portion in the top of said enclosure and said opaque wall adapted to direct the rays of light from said illuminating means through said transparent portions.

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