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RAIL AND WIRE SUPPORT CONSTRUCTION

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FIG. 1

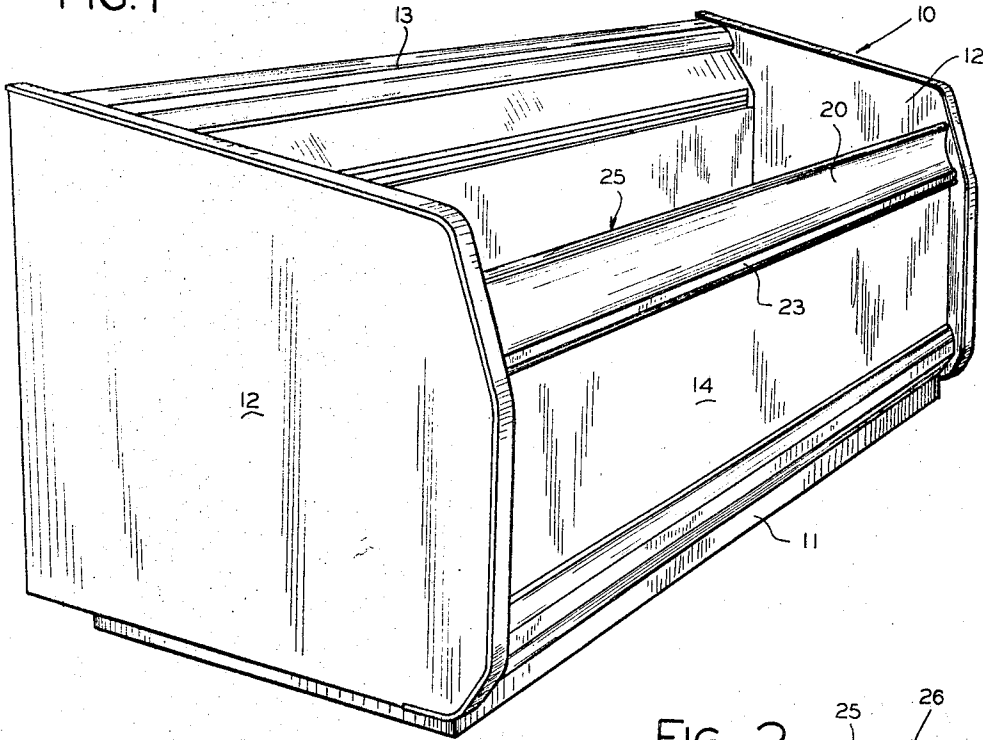


FIG. 2

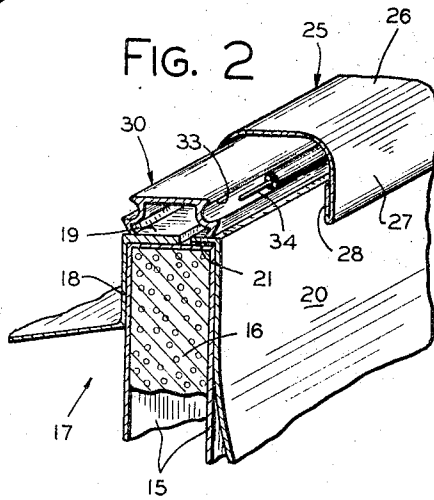
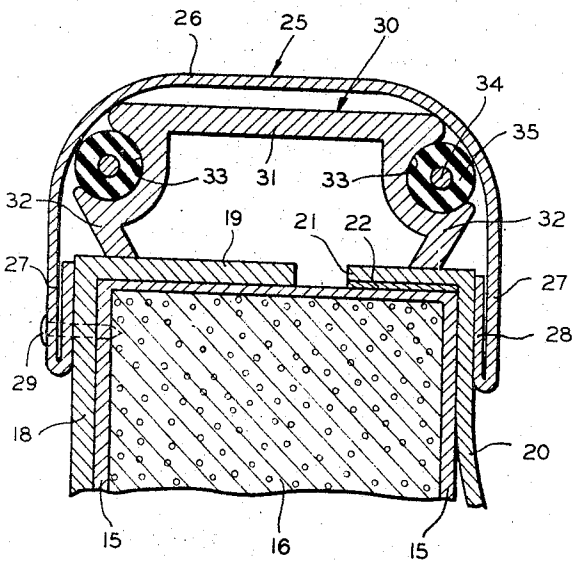


FIG. 3



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**RAIL AND WIRE SUPPORT CONSTRUCTION**  
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 10 Claims. (Cl. 219—218)

**ABSTRACT OF THE DISCLOSURE**

An elongated member is disposed under a rub rail on a wall edge and has a conduit element along at least one edge to carry heating or cooling means in juxtaposition to the rail, the member serving to locate the rail properly during securement on the wall and to strengthen it against deformation in use.

The present invention relates to a rail and wire support construction, and more particularly to a support for a heater wire and rub rail of a refrigerated case or the like.

A large proportion of refrigerated cases for food or other products, particularly in self-service stores such as supermarkets, are of the open type, that is, partially or completely open at the top or a side. This permits better display of the refrigerated products, and easier access thereto by a customer. The opening is partially defined or bounded by the horizontal upper edge of a wall or wall portion of the case, over which a customer reaches and/or bends when selecting an item from the case, so that customers frequently come into contact with the "rub rail" which provides the upper surface of the wall or wall portion. To prevent formation of frost on the rub rail due to condensation and subsequent freezing of moisture from the relatively warm air outside of the case, the rub rail is heated, usually by an electrical resistance, or "heater" wire.

It has been a problem to hold the rub rail in the desired position on the case wall while securing it thereon, and to provide support for it preventing deflection or deformation thereof, and it has furthermore been a problem to dispose the heater wire or wires therein in the desired location or relation, for maximum effectiveness. Jig means employed during assembly are apt to allow movement of the rail so that correct positioning is difficult and time-consuming. After assembly, the strength of the unsupported rail, usually hollow, has been relied upon to resist deflection and deformation, and in some cases this has proved inadequate. As to disposition of heater wires, attempts have been made to secure them to the interior of the rail by adhesive tape or the like, and in some cases they have merely been allowed to lie without securement on the top of the wall, inside the rail. Neither of these expedients, nor some others which have been tried, are satisfactory, because they do not assure location of the heater wires in proper relationship to the rail. Wires secured by adhesive tape, for example, not only are not properly aligned throughout, but are very apt to pull away from the rail.

The present invention provides a combined rub rail support and wire channel which not only serves to locate the rub rail properly during its assembly on the case, but thereafter supports it in its secured position. In addition, the support carries a heater wire or wires in such location or position as to have the desired close relation to the interior of the rail and thus assure the desired heat transfer. The combined rail support and wire carrier of the invention thus performs several functions, serving as a jig to position the rail during assembly thereof with the case wall, supporting and reinforcing the rail after assembly,

and supporting the heater wire in predetermined relation to the rail.

The device according to the invention may take a great variety of forms, illustrated in the present application by way of example as an extrusion of aluminum or other suitable material of generally channel section with a web portion from which extend two supporting leg portions, a groove extending along the juncture of each of the leg portions with the web portion to receive a heater wire and hold the same in the desired relation to the supported rub rail.

It is an object of the invention to provide a combined rail support and temperature element carrier.

Another object is the provision of a support for a capping or finishing rail on the edge of a wall member which maintains the rail in desired relation to the wall member during securement of the rail thereon, supports and reinforces the rail after its securement on the wall member, and carries means for affecting the rail temperature.

Another object is the provision of a support for a capping rail for the upper edge of a wall member which serves to locate the rail for assembly on the wall member, and to support and reinforce the rail after securement thereof to the wall member.

Another object is the provision of a support for a capping or finishing rail for the edge of a wall member or the like which is formed also to support, in predetermined relation to the rail, means for affecting the temperature of the rail.

A further object is the provision of a support for a rail which serves to hold in predetermined relation to the rail means for affecting the rail temperature.

Other and further objects, advantages and features of the invention will be apparent to those skilled in the art from the following detailed description, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a perspective view of an open-topped refrigerated case incorporating the present invention;

FIGURE 2 is an enlarged fragmentary view of a portion of the case shown in FIG. 1, with parts broken away for clearness of illustration; and

FIGURE 3 is an enlarged cross-sectional view of the structure shown in FIG. 2.

Referring first to FIG. 1, there is shown a refrigerated case generally designated 10, having an open top through which refrigerated products disposed within the case may be viewed and reached. The case 10 comprises a rectangular base 11 from which extend a pair of end walls 12, a rear wall 13, and a front wall 14. The upper portion of the front wall 14 defines the forward edge of the top opening in the case. It is over the upper edge of the front wall that people bend and reach in inspecting and selecting the refrigerated items in the case, and which they are apt to touch in so doing. The front wall is of hollow insulated construction at least at its upper portion, having top-connected inner and outer panels or facings 15 between which heat-insulating material 16 such as foamed plastic is provided. Ducts are formed in or along the front and rear walls for circulation of refrigerating air over the open top of the case. The duct of the front wall is indicated at 17, defined by the inner facing 15 and a sheet or panel 18 spaced inwardly therefrom, the upper portion of which meets the facing and has a horizontal flange 19 overlying the top of the wall 14, to which it may be secured in any suitable manner. A trim panel 20 is provided covering the upper portion of the outer facing 15, and having a flange 21 lying on the top of wall 14, as shown in FIGS. 2 and 3. The trim panel 20 in this instance is of thinner material than the panel 13, and a shim strip 22 is disposed under the flange 21 so that the upper surface of the latter will lie in the same plane as the upper face of the flange 19.

The trim panel may have any desired configuration, and at its lower edge may be provided with a suitable decorative arrangement 23 connecting it to the outer facing 15, or to a decorative or protective sheet or panel overlying the outer facing.

The upper edge of the front wall 14 is defined by a rub rail 25 which finishes and caps it. The rail in this instance is shown as formed of suitable sheet material, such as sheet metal, in a desired length, with a generally U-shaped or channel cross section, as best shown in FIG. 3, with a web 26 and flanges 27. The longitudinal edge portions of the flanges may be doubled back into the rail if desired, as at 28. The rub rail 25 is disposed in inverted position, open side down, in telescoping relation with the upper portion of the wall 14 and receiving the same therein, the free edges of the flanges 27 overlapping the upper portions of the duct panel 18 and trim panel 20, and is secured to the wall in any suitable manner, as by screws 29.

A spacing support generally indicated at 30 is provided on the upper edge of the wall 14, and has the rub rail 25 resting thereon. The support 30 in the present instance is an extrusion of aluminum or similar material, having a generally channel cross section, with a generally flat web portion 31 from the opposite edges of which extend flange or leg portions 32. Each of the leg portions is provided with a channel or groove 33 extending longitudinally adjacent its juncture with the web portion, and opening outwardly, that is, exteriorly of the angle between the respective leg portion and the web portion. Each channel or groove 33 is adapted to receive therein an element or means by which the temperature of the rub rail 25 may be affected, shown in this case as a resistance or heater wire, comprising the wire 34 proper and its insulation 35, the grooves thus serving as wire conduits. In the present instance, the grooves 33 are of arcuate cross section, to conform to the generally cylindrical shape of the heater wire insulation 35, but might be of other configuration if desired. Any appropriate means may be provided for connecting each heater wire 34 to a source of electricity.

In the illustrated embodiment, the grooves 33 are arranged so as to dispose the heater wires close to, if not in actual contact with, the inner surface of the rub rail 25 along two generally parallel lines substantially equally spaced from the midplane of the rail. The leg portions 32 provide a base engaging on the top of the wall 14, specifically on the flanges 19 and 21 of the duct-defining sheet 18 and the trim panel 20, respectively. The provision of the shim 22 under the flange 21 assures a level footing for the support. Of course, the wall construction might be other than that shown, and similarly a base or other supporting structure for the web portion 31 might be provided by structure other than the leg portions 32. The support 30, it will be obvious, need not be secured in place except by its confinement within or engagement between the rail 25 and the top of the wall 14, as shown.

As already indicated, the support 30 is employed to locate and maintain the rub rail 25 in desired position relative to the wall 14 during assembly therewith, or securement thereto, thus serving as a locating jig for the rail. After the rub rail has been secured on the wall, the support 30 supports and rigidifies or reinforces the rail, and if desired may be shaped to conform to the inner surface of the rail so as to have a large total area of contact therewith. The rail is supported by the edges of the web portion 31 engaging the inner surface thereof, but of course the construction might be varied as desired. The support 30 also serves as simple, positive, and efficient means for holding the heater wires or like means in the desired positional relationship to the rail, so that the desired most efficient heat exchange relationship is maintained. It thus solves the problem of holding heater wires or other temperature-maintaining or temperature-affecting means at desired locations throughout the life of the structure, which has posed difficulties in the past.

Instead of the heater wires 34, tubes conducting or merely containing fluid or other material at a predetermined temperature may be carried by the grooves 33. Similarly, instead of the open channels or grooves 33, tubular channels or passages might be provided to serve as conduits for the heater wires, or for such fluid or other material, to affect the temperature of the rail. While heater wires may be employed only to warm the rail, fluid or like material, whether circulated or otherwise, may be used either to warm or to cool the rail, or both warm and cool it. The number and location of channels or conduits provided in the support 30, whether in the form of open grooves or hollow passages, may be varied as desired or as required by particular conditions. The means for maintaining a desired temperature of the rail, or otherwise affecting its temperature, it will be evident, may cool the rail rather than warming it, or may be employed for both warming and cooling, as desired.

It is to be noted that the rub rail serves not only to clamp the support 30 in place, thus eliminating the need for any fastening means, but also to conceal the top edge of the wall proper and the elements thereon, and thus give a finished and attractive appearance to the construction. The particular form and configuration of the rail 25 may of course vary considerably from that shown for purposes of illustration, but obviously it will meet the same basic requirements.

The invention is not limited to rub rails of open-type refrigerated cases, but is applicable to similar rails which present problems of support during assembly or use and/or are to be maintained at a particular temperature. Similarly, the invention is not limited to horizontal or straight rails or the like.

It will be understood that the single embodiment of the invention illustrated herein is exemplary of the inventive concept and that the invention is not limited to such embodiment, since modifications and variations thereof, some of which have been described and suggested hereinabove, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

#### I claim:

1. A combined rail and heater wire support, comprising an elongated generally channel-shaped member of sufficient rigidity to support a rail and including a rail-engaging web portion with a pair of leg portions extending from opposite longitudinal edges thereof in generally angular relation thereto, and at least one groove extending longitudinally adjacent a juncture of a leg portion with said web portion and opening exteriorly of the angle therebetween.

2. A combined heater wire and rail support comprising an elongated generally channel-shaped member of sufficient rigidity to support a rail and having a rail-engaging web portion, a base portion supporting said web portion, and a groove extending longitudinally adjacent an edge of the web portion and opening away from the base and web portions.

3. A combined wire and rail support comprising an elongated member of sufficient rigidity for supporting a rail and having a rail-engaging web portion, a supporting structure connected to said web portion, and at least one conduit extending longitudinally of the web portion adapted to receive a wire therein.

4. A combined support for a rail and means for affecting the temperature of the rail, comprising an elongated member of sufficient rigidity to support a rail and having a rail-engaging portion, a supporting structure for said rail-engaging portion, and at least one conduit for said temperature-affecting means extending longitudinally of the rail-engaging portion.

5. A rail support and wire channel structure comprising an elongated support member of general channel section having a web portion and a pair of leg portions extending from opposite edges of said web portion in generally angu-

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lar relation thereto, at least one groove extending along a juncture of a leg portion with the web portion and opening exteriorly of the angle therebetween, a heater wire extending in at least one groove, and a rail member in supported relation on said support member and in heat exchange relation with any said heater wire, said rail member concealing the support member and any heater wires extending therein.

6. A rail support wire channel structure comprising an elongated support member having a web portion and a pair of leg portions extending from said web portion, at least one groove extending along an edge of the web portion and opening outwardly of the leg and web portions, at least one of said grooves having a wire extending therein, and a rail member supported on said support member in overlying relation and predetermined adjacency to any wires extending therein.

7. A rail and rail-temperature-affecting means support structure, comprising an elongated support member having a web portion and a base supporting said web portion, at least one conduit extending longitudinally of the web portion, temperature-affecting means in at least one conduit, and a rail member supported on said support member in heat exchange relation with said temperature-affecting means.

8. A rail and rail-conditioning means support structure, comprising an elongated support member having a web portion, a structure supporting said web portion, at least one conduit extending longitudinally of said web portion, rail-conditioning means in at least one conduit, and a rail member supported on the support member in predetermined relation to said conditioning means.

9. In a refrigerated case having an opening for access to the contents thereof defined in part by a rub rail forming the upper edge of a wall of said case and enclosing at least one heater wire effective to prevent frost formation

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thereon, the improvement of a combined rub rail and heater wire support comprising an elongated member of general channel section including a web portion and a pair of flange portions extending from opposite edges of said web portion, said support being disposed on said wall and supporting said rub rail thereon, and a groove extending adjacent at least one of the junctures between the web portion and said flange portions and opening exteriorly of the angle therebetween carrying a heater wire therein, each groove being located to dispose the heater wire therein in predetermined heat exchange relation with the rub rail.

10. In a refrigerated case having an opening for access to the contents thereof defined in part by a rub rail forming the upper edge of a wall of said case and enclosing heating means effective to prevent frost formation thereon, the improvement of a combined rub rail and heating means support comprising an elongated member including a web portion with a supporting base portion therefor, and conduit means extending along the web portion, said support being disposed on said wall and supporting said rub rail thereon and carrying said heating means in said conduit means, and the conduit means being located for disposition of the heating means in predetermined heat exchange relation with the rub rail.

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