

[54] AISLE LIGHT

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[58] Field of Search 240/1 EL, 2 R, 2 B, 7.3, 240/8.26, 46.45, 151; 52/28, 182

[56]

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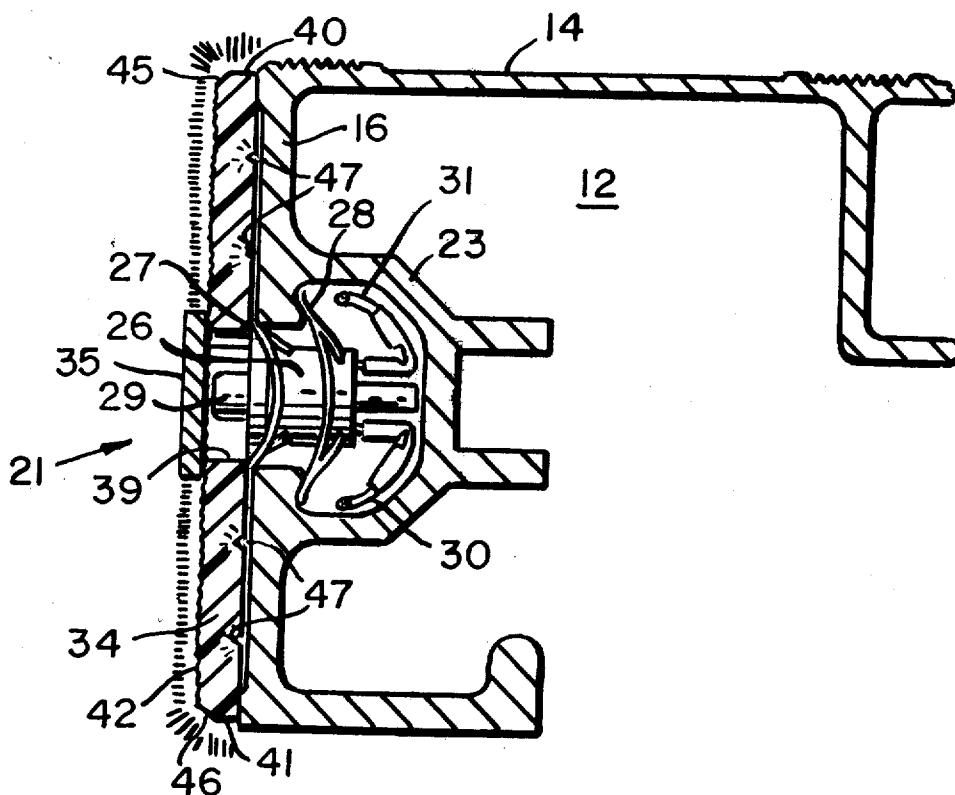
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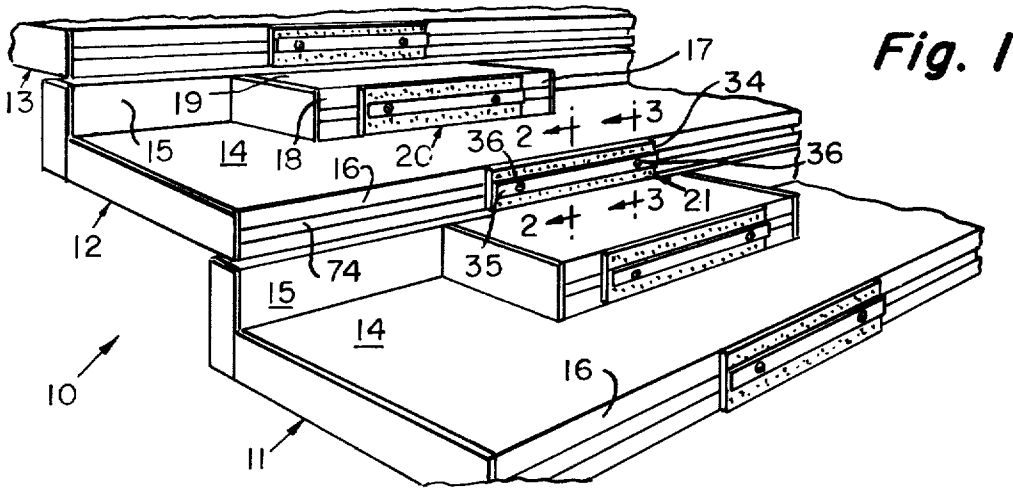
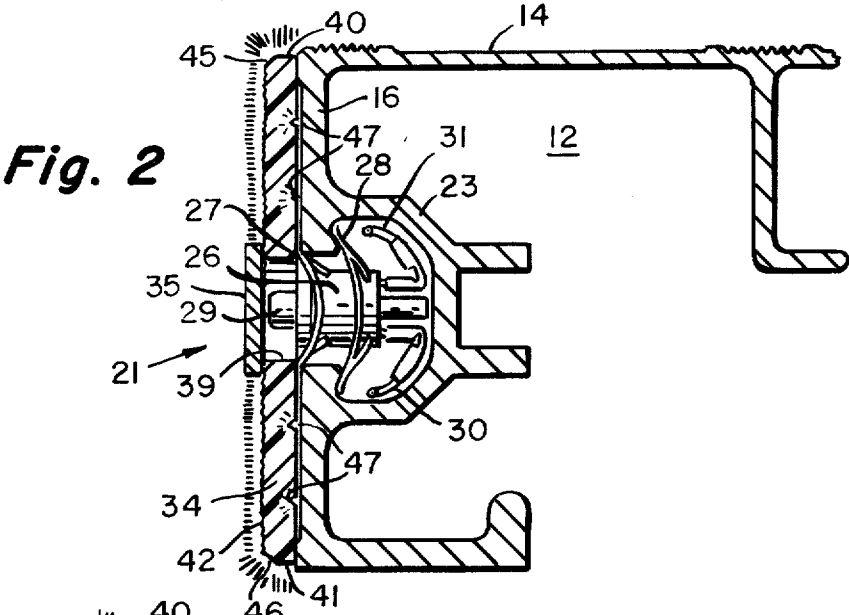
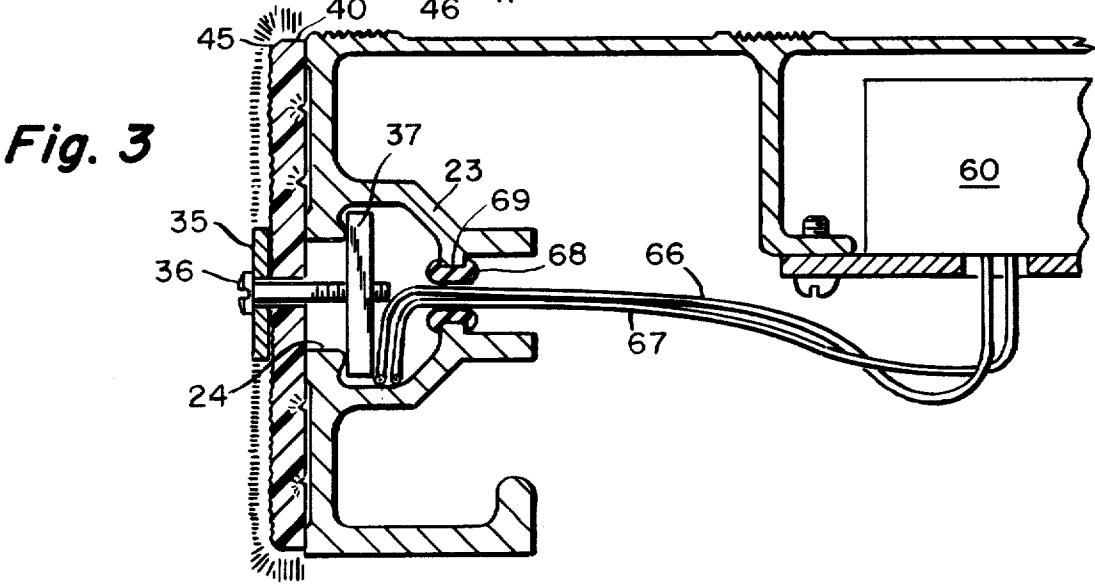
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ABSTRACT

A shatterproof light diffusion plate is mounted to the riser of a stair with the upper edge of the plate immediately adjacent the forward edge of the tread. A source of light illuminates the diffusion plate, and transmits light to the upper edge to also illuminate it, thereby providing a visible line marking the front edge of the tread for guiding traffic up and down the aisle and defining tread depth.

5 Claims, 4 Drawing Figures





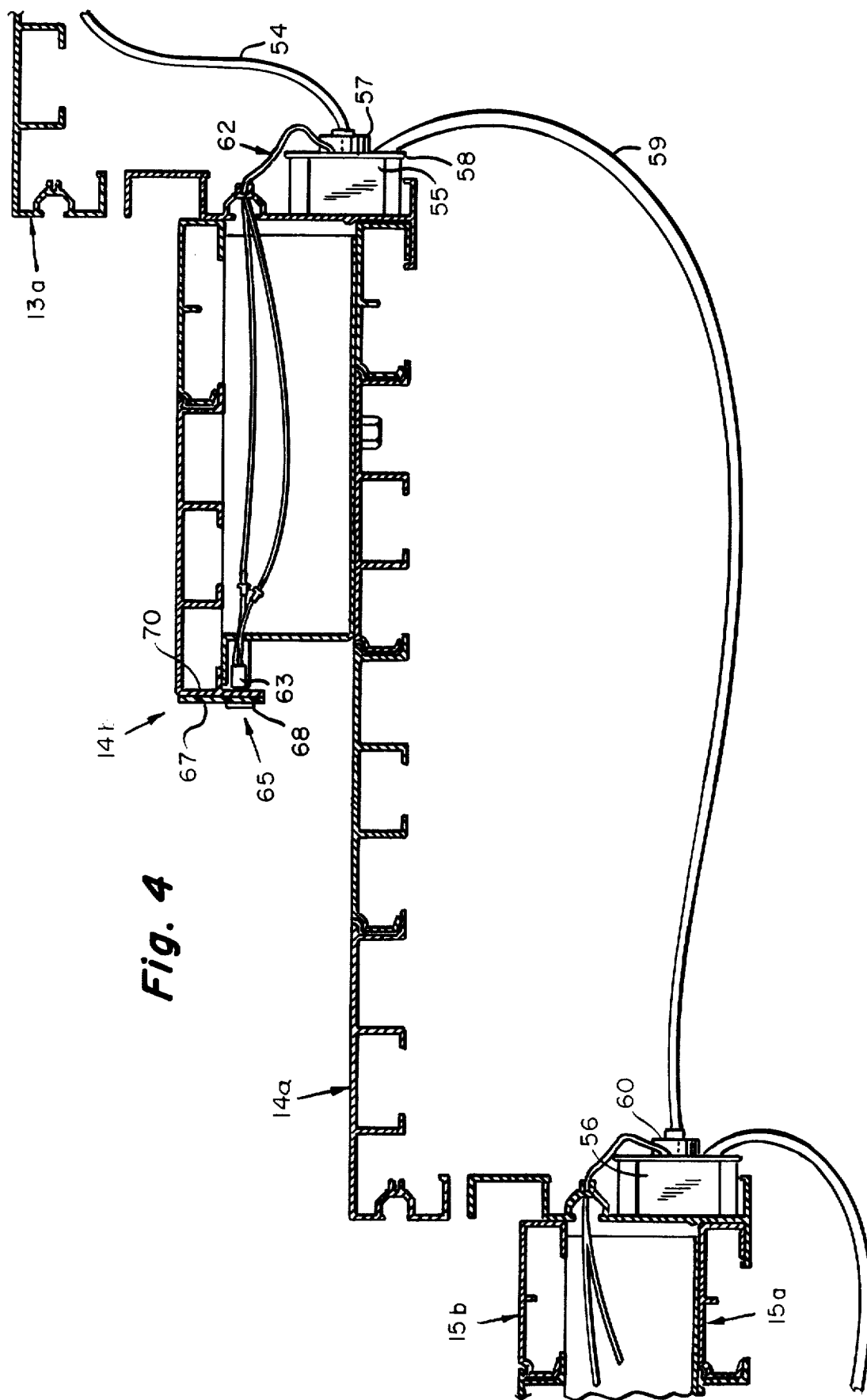


Fig. 4

AISLE LIGHT

BACKGROUND AND SUMMARY

The present invention relates to a system for providing aisle lighting for guiding traffic up and down an aisle. The invention is particularly useful for lighting the aisles of seating systems such as the telescoping chair platforms used in auditoriums and sports arenas.

Aisle lights are known, for example, in theatres, wherein the lights are mounted to the end standards of fixed seating. However, it has been difficult to provide a reliable aisle lighting system for telescoping seating systems because of the rugged conditions of use and because the aisle light must not provide an obstruction either to traffic moving up and down the aisle or to traffic entering the aisle from a seating row.

The present invention includes a shatterproof light diffusion plate, preferably made from a plastic such as Plexiglas, which is secured to the riser of a stair with the upper edge of the diffusion plate immediately adjacent the forward edge of the tread of the stair. A shock-resistant light is placed in an aperture in the diffusion plate to radiate light into the plate. The light is transmitted through and confined by the diffusion plate to illuminate the edge of it, thereby providing a visible line at the upper edge of the plate which marks the front edge of the tread and guides traffic up and down the aisle. The upper edge of the diffusion plate may be beveled in order to avoid catching the heel of a person going down the aisle, and this beveled edge further provides an illuminated line more visible to persons moving up the aisle.

A metal strip having a height greater than the light bulb aperture in the diffusion plate extends horizontally across the front of the diffusion plate and covers the light bulb in order to hide the bright spot that would otherwise be caused by the filament. The strip also provides a means for securing the diffusion plate to the riser of the stair.

In a preferred embodiment wherein the lighting system equips a telescoping seating system (including either bleachers or chair platforms), the electrical wiring is provided in modules, with the 110-volt power being fed to a step-down transformer which provides a low voltage output voltage. The individual lamps are shock-resistant and designed to operate low voltage, such as 6.3 volts. The power is fed via flexible low voltage lines from the transformer to a junction box associated with and mounted to each row in the seating system. Power is fed from the junction box through a slot provided in a channel in the riser to the light bulbs. Each platform section may be provided with a half step, and a single junction box would feed an aisle light both at the half step and at the upper portion of the riser.

Other features and advantages will be apparent to persons skilled in the art from the following detailed description of a preferred embodiment accompanied by the attached drawing wherein identical reference numerals will refer to like parts in the various views.

THE DRAWING

FIG. 1 is an upper perspective view of a telescoping platform system incorporating the present invention;

FIG. 2 is a cross sectional view taken through the center of one of the aisle lights of FIG. 1 as indicated by the sight line 2—2;

FIG. 3 is a transverse cross sectional view taken through the same aisle light at the location indicated by sight line 3—3; and

FIG. 4 is a side cross-sectional view illustrating the electrical distribution system for a structure having aisle lights only at the half steps.

DETAILED DESCRIPTION

Referring first to FIG. 1, reference numeral 10 generally designates a telescoping platform system which may be of the type disclosed in the copending, co-owned application of Vance, et al, entitled "System for Mounting Articles to Telescopic Structures", Ser. No. 349,959, filed Apr. 11, 1973, Ser. No. 349,959, Ser. No. 349,959. What is shown in FIG. 1, of course, is merely the central portion of a telescoping system—namely, an aisle.

In systems of this type, a plurality of row sections generally designated 11, 12 and 13 are adapted by means of suitable supporting structure to be either extended, as shown in FIG. 1, to the use position or telescopically retracted for storage. Each of the row sections is similar so that only one need be referred to for a complete understanding of the invention. Referring then to the platform section 12, it includes a platform forming a tread 14, a rear riser portion 15, and a forward riser or "nose" portion 16. A complete riser for an extended section of the illustrated embodiment includes the forward riser portion of an upper row, designated 16, and the rear riser portion of the next lower row designated 15. Thus, the vertical distance between adjacent platforms 14 may be too high for a convenient step, and a half step 17 may be included for each row section. There are, of course, chairs or benches provided to either side of the aisle if it is a center aisle, although for purposes of the present invention, it will readily be appreciated that the lighting system may be accommodated to aisles regardless of their location and it is useful for aisle lighting for stationary as well as for telescopic seating systems.

The half step 17 also includes a riser portion 18 and an upper tread portion 19. The forward riser 18 of the half step 17 and the riser nose 16 of each row section are each provided with an aisle light generally designated respectively by reference numerals 20 and 21 respectively. These aisle lights are constructed according to the present invention. Because the aisle lights 20, 21 are similar in structure, only one will be disclosed in further detail.

Turning then to FIGS. 2 and 3, the forward riser portion 16 of the platform section 12 is provided with a continuous, horizontally elongated channel housing 23 which defines a continuous forward slot 24. A bulb socket 26 is received within the channel housing 23, and mounted to the depending lips defining the slot 24 by means of first and second spring steel tinnermans 27 and 28. The socket 26 carries a forward-removable shock resistant bulb 29, the filament of which is connected between the conductive terminals 30, 31. Additional details concerning the construction of the riser portion 16 may be obtained from the above-identified copending application.

A light-diffusing faceplate 34 is mounted to the riser portion 16 in a manner best seen in FIG. 3. A metal strip 35 extends horizontally across the width of the diffusion plate 34 and it is located directly in front of the slot 24. A pair of threaded bolts 36 extend through the

light cover 35 and the diffusion plate 34, and they are received in rectangular plates, one of which is shown in FIG. 3 and designated by reference numeral 37, which serve the function of nuts. As best seen in FIG. 1, the bolts 36 are located toward the sides of the aisle light 21.

Returning now to FIG. 2, the center of the diffusion plate 34 is provided with an aperture 39 into which the lamp 29 extends. Direct view of the filament of the lamp 29 is prevented because the light cover 35 extends over it. Light from the lamp 29 is radiated laterally, and it is transmitted through the body of the diffusion plate 34. The light cover 35 is preferably aluminum or other metal to enhance the reflection of light into the diffusion plate.

The diffusion plate 34 includes an upper edge 40, a lower edge 41, and side edges, all of which are roughened; and a front surface 42 which may be stippled or of rough texture. This stippling of the front surface has been found to be of convenience in viewing the aisle light by a person approaching the aisle from either side of the row in which it is located because it casts a flow which is more visible from the side. The diffusion plate 34 is preferably made of Plexiglas. In order to provide greater illumination from different angles, particularly for a person in traffic going up the aisle, the upper and lower surfaces 40, 41 are beveled as at 45, 46 respectively. Greater visibility can be achieved, if desired, by forming horizontal grooves as at 47 across the rear surface of the diffusion plate 34.

Light entering the diffusion plate 34 travels in a vertical plane i.e., the light is "piped" to the edges of the plate 34, confined by the diffusion plate; and it illuminates the horizontal upper edge 40 of the diffusion plate as well as the beveled upper edge 45. It will be observed that the upper edge 40 is immediately adjacent the upper edge of the riser 16, and thereby provides a luminous line to indicate to a person moving down the stairs where the edge of the platform 14 is located. The beveled edge 45 of the diffusion plate 34, as mentioned, defines a similar luminous line marking the upper edge of the riser 16 to persons moving up the aisle; and it serves the dual function of preventing the catching of heels of persons moving in down traffic.

For persons entering the aisle from the side, as already mentioned, the front stippled surface 42 of the diffusion plate casts an adequately visible glow.

Turning now to FIG. 4, there is shown a preferred embodiment of the electrical distribution system for the aisle lights shown in FIGS. 1-3. A primary junction box (not shown) may be secured in any suitable location beneath the structure being lighted, preferably in a location wherein it remains stationary if the structure being lighted is a telescopic system. A step-down transformer, having a primary winding adapted to be connected to a conventional 60 Hz., 110 v. grounded wall outlet is located at the primary distribution box.

The secondary winding of the transformer has a voltage of 6.3 v. and is connected to two outlet wires contained in a flexible, insulated distribution cord 54. The cord 54 is shown to be routed from an upper row section 13a; and in the embodiment illustrated in FIG. 4, only the half steps are provided with aisle lights, as at 14b and 15b for the row sections 14a and 15a respectively.

Located at the rear of each of the row sections 14a, 15a is as junction box designated respectively 55 and

56. The distribution cord 54 is provided with a plug 57 of the twist type—that is, it is provided with prongs having feet so that it may be inserted into a receptacle mounted to the cover plate 58 of the junction box 55 and turned to lock in place.

Within the junction box 55 connections are made to a second distribution cord 59 coupling power to the junction box 56 by means of a second twist lock 60, and in addition, connections are made to a pair of wires generally designated 62 which are connected to the terminals of the low-voltage, shock-resistant light 63 forming part of an aisle light generally designated 65. The aisle light 65 includes a faceplate 67 similar to the previously discussed faceplate 34 which is held in place by means of a metal strip 68 covering the lamp which is a part of the light 63. In this embodiment, the half-step 14b includes a forward vertical flange 70 to which the faceplate 67 is directly secured by means of screws holding the faceplate and the metal strip 68 in place. The light 63 is mounted to the rear of the flange 70 adjacent an aperture so that the lamp again extends into the aperture.

Additional wires such as those shown at 62 may extend from the junction box 55 for as many lamps as are required for the row section 14a. Additionally, if aisle lights were provided at the forward nose portion of the row section 14a, they would be routed from the junction box 55 because this junction box travels with that row section. In other words, any aisle lights that may be included in the forward nose portion of the upper row section 13a would not be energized from the junction box 55, but rather, from the junction box associated with that particular row section which is not shown in FIG. 4.

There are a number of advantages in this type of distribution system. One advantage from the viewpoint of safety is that the only power coupled from the main junction box is at low voltage. The shockproof lamps 29 are designed to operate on 6.3 volts, one such lamp commercially available is manufactured by Industrial Devices, Inc. of Edgewater, New Jersey, Model No. B 3060 D-3. Not only is this lamp designed for shock resistance so as to withstand the rugged use conditions of the preferred embodiment; but the bulb is removable from the socket of the light and easily replaced from the front. In other words, only the fastening screws 36 need be removed in order to replace a burned-out bulb.

Another advantage of the electrical distribution system just described is that it is modular and capable of being extended to meet any practical system.

Having thus described in detail a preferred embodiment of the present invention, persons skilled in the art will be able to modify certain of the structure which has been disclosed and to substitute equivalent elements for those illustrated while continuing to practice the principle of the invention; and it is, therefore, intended that all such modifications and substitutions be covered as they are embraced within the spirit and scope of the appended claims.

We claim:

1. An aisle light for providing guidance illumination for a step having a tread and a riser comprising: a light-piping shatterproof plastic faceplate panel extending substantially the entire height of said riser and having an upper edge immediately adjacent and parallel to the upper edge of said riser, the forward part of said panel edge being beveled, the outer surface of said faceplate

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being stippled; means for securing said faceplate to said riser; a source of light carried by said riser and radiating light into the body of said faceplate panel whereby said light travels through said panel and illuminates said upper edge thereof, said light source including a low-voltage, shock-resistant, replaceable bulb; and a metal cover strip having a height less than the height of said panel and extending across said panel and located directly in front of said bulb to shield the filament of said bulb from direct vision.

2. The apparatus of claim 1 wherein said faceplate panel comprises transparent rigid plastic material scored along horizontal lines on the rear surface and defines an aperture, said low-voltage bulb extending bodily into said aperture for facilitating radiation of light into the body of said faceplate panel.

3. The apparatus of claim 2 wherein said riser includes a horizontally elongated channel housing providing a continuous horizontal slot and wherein said source of light is removably secured to said riser and extends within said housing, said housing serving as an electrical conduit for feed wires to said source.

4. The apparatus of claim 3 wherein said securing means includes fastener means extending through said cover strip and said faceplate panel into said channel housing; and plate means receiving said fastener means within said channel housing and reacting thereagainst to hold said cover plate and said faceplate panel to said riser.

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5. In a telescopic seating system having a plurality of row sections adapted to be selectively moved between an expanded use position and a retracted storage position, said row sections providing an aisle for access, the improvement comprising: an aisle light associated with each one of a plurality of risers in said aisle, said aisle light including a light-piping shatterproof plastic faceplate panel extending substantially the entire height of said riser having an upper edge immediately adjacent and parallel to the upper edge of said riser, the forward part of said panel edge being beveled; means for securing said faceplate to said riser; a source of light carried by said riser and radiating light into the body of said faceplate panel whereby said light travels through said panel and illuminates said upper edge thereof, said light source including a low-voltage, shock-resistant, replaceable bulb; and a metal cover strip having a height less than the height of said panel and extending across said panel and located directly in front of said bulb to shield the filament of said bulb from direct vision; said system further including a step-down transformer having its primary connected to a 60-hertz source of electricity; a plurality of said row sections including a junction box mounted thereto; wires coupling electricity from said junction box to the lights associated with that section; and flexible conductor cord means connecting the junction box of its associated row section with the junction box of an adjacent row section.

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