

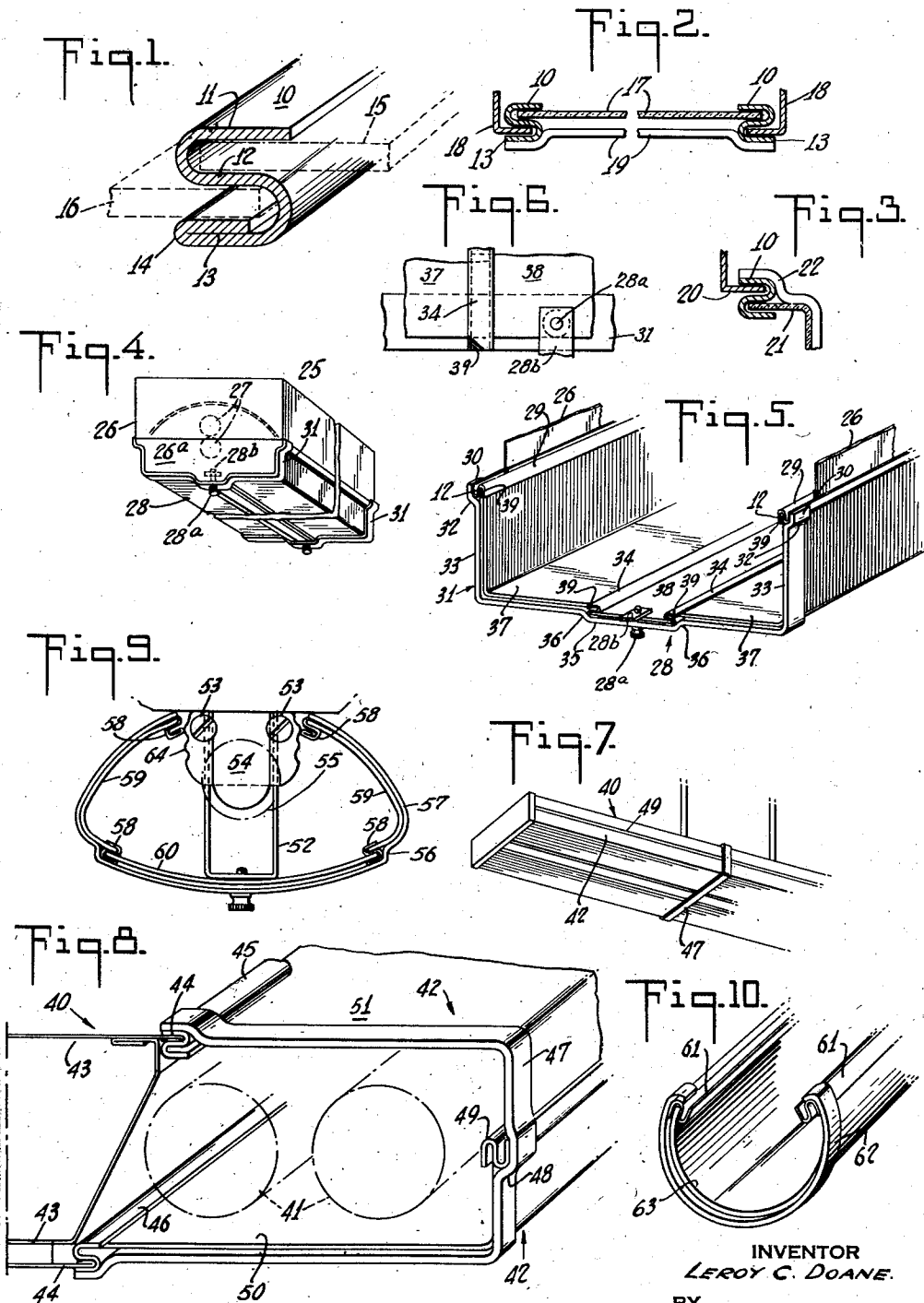
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SCREEN FOR LIGHTING FIXTURES

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SCREEN FOR LIGHTING FIXTURES

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The present invention relates to screens for lighting fixtures.

The desirability of screening the tubes of direct lighting fluorescent equipment is well recognized and both glass and plastic sheet material have been used for this purpose. Owing to the length of fluorescent lamps and the size of the pieces of plastic sheet material required it has been found necessary to design screening equipment employing such material in such a way that the sheet plastic is so supported that it is held to shape and yet allowed to freely expand and contract relative to its supports.

The present invention is directed toward improvements in such screens, the supporting frames therefor and the parts of these frames. According to the present invention S-shaped sheet metal strips are employed to receive the edges of the sheet plastic. These strips usually extend lengthwise of the screen and provide rigidity in this direction and are preferably welded to suitable cross members which give the screen its contour and stiffen it. The S-shaped strips and cross members form a rigid frame and the outwardly opening grooves are available for the reception of the edges of sheet metal fixture bodies or boxes. The frame may also employ intermediate S-shaped strips so that the edges of different pieces of plastic may be held in alignment and the appearance and lighting effects be varied without change of general contour.

Other and further objects and advantages of the present invention will appear as the description proceeds.

The accompanying drawing shows for purposes of illustration the preferred form of S-shaped strip employed in the screens and several screens employing such strips, it being understood that the drawing is illustrative of the invention rather than limiting the same.

In the drawing:

Figure 1 is an enlarged view illustrating a strip of S-shaped cross section;

Figures 2 and 3 are fragmentary views illustrating typical relations between the edges of various forms of fixture bodies and the screens;

Figure 4 is a fragmentary perspective view of a direct lighting fixture with open mouth reflector and covering screen;

Figure 5 is an enlarged perspective view of the screen of Figure 4;

Figure 6 is a fragmentary view illustrating a detail;

Figure 7 is a fragmentary perspective view of a

pendent fixture adapted for both direct and indirect lighting;

Figure 8 is an enlarged perspective view of the fixture of Figure 7; and

Figures 9 and 10 are views illustrating small screens each adapted for use about a single fluorescent lamp.

The S-shaped strip 10 of Figure 1 is preferably made with the top portion 11, midportion 12 and bottom portion 13 parallel. The bottom portion 13 is preferably of double thickness, as indicated, so as to provide stiffening and a smooth edge at 14.

These S-shaped strips are designed to receive sheet material indicated in dotted lines at 15 and 16. This material may be any of the well known forms of plastic sheet material used as screens in lighting equipment, or may be the edges of sheet metal boxes, housings or bodies customarily found in lighting equipment, or another S-shaped strip. When made for this purpose the S-shaped strip may have two grooves slightly more than $\frac{1}{8}$ of an inch wide and approximately $\frac{1}{4}$ of an inch deep, the overall dimension of the S-shaped strip being approximately $\frac{1}{8}$ of an inch in each cross wise direction. It may readily be made in any convenient length and cut to the lengths required, and possesses remarkable stiffness.

The strip 10 of Figure 1 is used throughout the various showings in the remaining figures in the drawing, but owing to the thinness of the parts the double thickness of the portion 13 of the U is not brought out in these figures. In these figures the thickness of all the parts is somewhat exaggerated.

Figure 2 illustrates the application of two of the strips 10 in the support of a sheet of plastic light screening material 17 as a closure between two inwardly flanged members 18, 18 of a fixture box. Here the S-shaped strips 10, 10 are secured to cross straps 19 by welding to the outside of the U, usually the double walled portion 13. A closure, such as indicated in Figure 2, would be attached to the box by sliding it lengthwise of the oppositely facing flanges 18, 18.

In the fragmentary showing in Figure 3 the fixture body has an outwardly extending flange 20 which enters a groove of the strip 10. The other groove of the strip receives a horizontally extending piece of sheet material indicated at 21. A strap 22 welded to the outside of the strip 10 extends away from the strip a short distance and then the direction of the strap and plastic material changes as desired.

Figures 4 and 5 illustrate a typical inverted

sheet metal trough 25 whose edges 26, 26 extend vertically downward as indicated in Figure 5. These edges may be doubled. Such a trough may receive a number of fluorescent lamps depending upon the size of the trough and of the lamps. Two such lamps are indicated by dotted circles 27. The bottom of the trough 25 may be provided with a suitable form of closure carrying sheet plastic light diffusing material, such as indicated at 28.

As shown in Figure 5 the closure has upper strips 29, 29 made of the material shown at 10 in Figure 1, spaced to receive the lower edges 26 of the body of the fixture and a strip of gasket material, if desired. The ends of the S-shaped strips 29, 29 are welded to the ends 30, 30 of cross straps 31 in such a way that the upwardly opening U-shaped troughs of the strips 29, 29 are open both longitudinally and laterally of the troughs. The straps 31 are bent inwardly, as indicated at 32, 32, to bring the inner faces 33, 33 of the straps exactly opposite the midportion 34 of the S-shaped strips. When the straps 31 are given the contour shown in Figure 5 they are generally U-shaped configuration, and while a single piece of light diffusing material may extend across from one S-shaped strip 29 to the other, it is preferable to provide intermediate S-shaped strips such as indicated at 34, 34. Where two such strips are used, the midportion 35 of the U-shaped cross straps 31 is off-setted, as indicated at 36, 36, to accommodate the S-shaped strips 34, 34. In this case two pieces of plastic light diffusing material 37, 37 are received between the inner grooves of the strips 29 and the upper grooves of the strip 34, and a narrow strip 38 of plastic material is received in the lower grooves of the S-shaped strips 34.

The plastic material is preferably made somewhat shorter than the overall length of the frame. Its edges lie against the straps 32, as will be apparent from the drawing, and the ends of the S-shaped strips 29 and 34 extend beyond the ends of the plastic sheet material as more clearly shown in Figure 6. These projecting ends of the S-shaped strips are collapsed slightly as indicated at 39 to hold the plastic sheet material in place. There may be a substantial play between the plastic and the metal so that there is no tendency for the plastic to buckle or bend out of shape at different temperatures, yet its edges are held in the desired position.

The closure screen 28 may be held in place by thumb-screws 28a threaded into lugs 28b carried by the ends 26a of the fixture box or body.

The frame composed of longitudinally extending S-shaped strips and cross straps is first made up by welding the parts together in proper position, the plastic material is cut to proper size, bent to the shape desired and otherwise treated to conform to the design and light control intended. The plastic material may then be slid into the grooves lengthwise and securement is completed by merely bending down the ends of the S-shaped strips as indicated at 39. Where the closure has, as shown in Figure 5, a multiplicity of pieces of plastic sheet material, it is possible to select materials of different character for the different parts of the closure, for example, a tinted strip 38 may be employed to provide a modification of the color characteristic of the fixture.

The fixture 40 shown in Figures 7 and 8 is a pendent type of fluorescent lighting fixture in which the lamps 41 are arranged side by side and

enclosed in a light diffusing screen 42 which is both below and above the lamps and on the outside of the lamps. The fixture has a body, one-half of which is indicated at 43. This body has horizontally extending flanges 44, 44. The closure employs an upper S-shaped strip 45 and a lower S-shaped strip 46 secured to U-shaped straps 47, 47. These straps have an offset, indicated at 48, opposite which is placed a third S-shaped strip 49. The S-shaped strips and the cross straps are fastened together as above described, and in this case a lower L-shaped piece of plastic sheet material 50 is received between the oppositely facing grooves of the S-shaped strips 46 and 49, while another piece of plastic sheet material 51 is received between the oppositely facing strips 45 and 49. With this arrangement it is possible to select the light controlling characteristics of the plastic material 50 and 51 so as to control the lighting characteristics of the complete fixture, for example, the lower piece may have a slight color correction, while the upper piece have no color correction. In this way the light through the lower part is slightly modified, while the indirect light received from the ceiling is not modified to the same extent by the plastic closure.

In the arrangement shown in Figure 9 yokes such as 52 are secured by screws 53 to the opposite sockets 54 employed in supporting a fluorescent lamp 55. These yokes support a screen frame 56 employing cross straps 57 and S-shaped strips 58 in the relation indicated. The upper pieces of plastic 59 may be coated to reduce transmission and increase reflection, and the lower piece 60 have the desirable light transmission and screening action. The upper S-shaped strips are stiffeners as well as supporters of the sheet plastic.

In the arrangement shown in Figure 10, two S-shaped strips 61 are secured to suitable cross members 62 and a piece of sheet plastic light screening material 63 is inserted into the outer grooves of the S-shaped members. This form of construction is particularly well adapted for use as a cover for a single fluorescent tube. The inner face of the S-shaped members serve to stiffen the construction and provide an inside member for convenient mounting. They may fit the serrated edges 64 of the yokes of Figure 9.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What is claimed is:

1. A lighting fixture screen frame comprising two rigid, parallel sheet metal strips and two rigid parallel, spaced apart cross straps fixedly secured to the strips, the strips each being of S-shaped cross section with the mid portion of each strip parallel to the outer portions thereof to form two oppositely opening U-shaped grooves extending to the ends of the strips, each end of each cross strap being secured to one only of the outer portions of each S-shaped strip and extending away from the strip in a direction to avoid crossing the U-shaped groove which opens in the direction the strap extends, whereby the said grooves are left open both laterally and at the ends thereof to receive sheet material.

2. A frame such as claimed in claim 1, wherein the cross members are of U-shaped configuration in planes transverse of the strips, and the out-

wardly opening grooves of the strips are in parallel planes.

3. A frame such as claimed in claim 1, wherein the cross members are offset to accommodate the half of the S to which they are secured and provide a surface in alignment with the midportion of the corresponding S.

4. A lighting fixture screen, comprising at least three rigid parallel metal strips each of S-shaped cross section to provide two oppositely opening U-shaped grooves, cross straps fixedly secured to all the strips to provide two rectangular frame openings and leave both grooves of each strip open both laterally of the grooves and at the ends thereof, the cross straps being offset adjacent the strips to accommodate the half of the S to which they are secured and provide surfaces in alignment with the midportions of the corresponding S, and two sheets of plastic light screening material each filling an opening and having its edges in the grooves of the strips and its ends adjacent the cross straps.

5. A frame for lighting fixture screens, comprising two narrow parallel strips of S-shaped cross section disposed to provide two parallel longitudinally extending grooves opening in the same outward direction and two similar inwardly opening grooves, and spaced cross straps of generally U-shaped configuration in planes transverse of the strips and with a depth substantially greater than the width of the strips, the ends of the cross straps being secured to the outside of the S-shaped straps and being bent inwardly to come under the bottoms of the outwardly opening grooves and again bent to extend away from the strips substantially in the plane of the midportion of the S-shaped strips.

6. A frame such as claimed in claim 5, wherein each of the cross straps has an offset intermediate its ends and a similar S-shaped strap is secured to the cross straps at said offsets.

7. A lighting fixture cover comprising a screen frame including two rigid, parallel sheet metal strips and two rigid parallel, spaced apart cross straps fixedly secured to the strips, the strips each being of S-shaped cross section with the mid portion of each strip parallel to the outer portions thereof to form two oppositely opening U-shaped grooves extending to the ends of the strips, each end of each cross strap being secured to one only

of the outer portions of each S-shaped strip and extending away from the strip in a direction to avoid crossing the U-shaped groove which opens in the direction the strap extends, whereby the said grooves are left open both laterally and at the ends thereof to receive sheet material, and light screening material extending from a groove of one strip along the cross straps and into the groove of the other strip adjacent said strap and being slidable into said grooves from the open ends thereof.

8. In a lighting fixture, in combination, a rigid body having thin straight edges, a screen frame including two rigid, parallel sheet metal strips and two rigid parallel, spaced apart cross straps fixedly secured to the strips, the strips each being of S-shaped cross section with the mid portion of each strip parallel to the outer portions thereof to form two oppositely opening U-shaped grooves extending to the ends of the strips, each end of each cross strap being secured to one only of the outer portions of each S-shaped strip and extending away from the strip in a direction to avoid crossing the U-shaped groove which opens in the direction the strap extends, whereby the said grooves are left open both laterally and at the ends thereof to receive sheet material, and light screening material extending from a groove of one strip along the cross straps and into the groove of the other strip adjacent said strap and being slidable into said grooves from the open ends thereof, the edges of the fixture body entering into the grooves in the S-shaped strips opening away from the cross straps.

9. A lighting fixture comprising a rigid body having thin straight edges, a screen frame having at least three parallel metal strips, each of S-shaped cross section and each of the outer strips receiving an edge of the body in a groove, cross members secured to all the strips to leave all the grooves open both laterally of the grooves and at the ends thereof, the cross members being offset adjacent the strips to accommodate the half of the S to which they are secured and provide surfaces in alignment with the midportions of the corresponding S, and sheets of plastic light screening material secured in the oppositely facing grooves of adjacent S-shaped strips.

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