

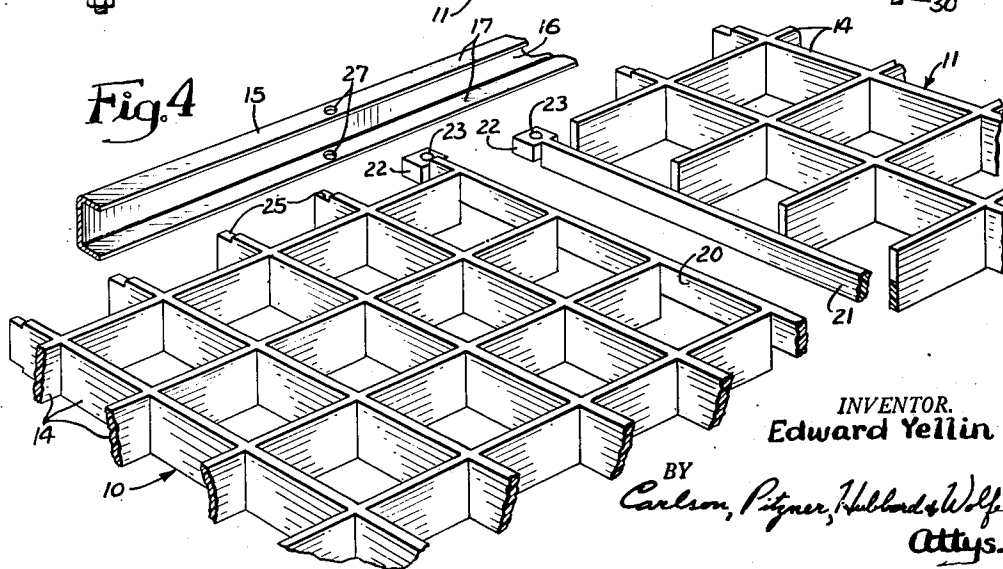
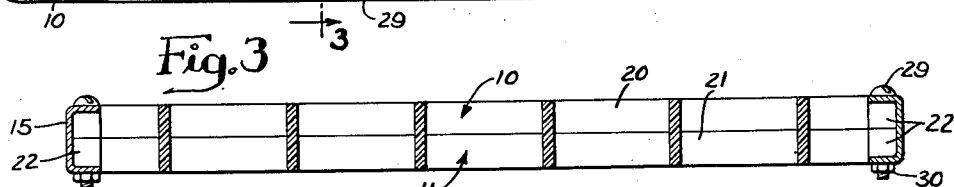
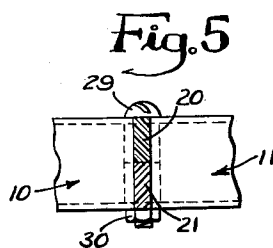
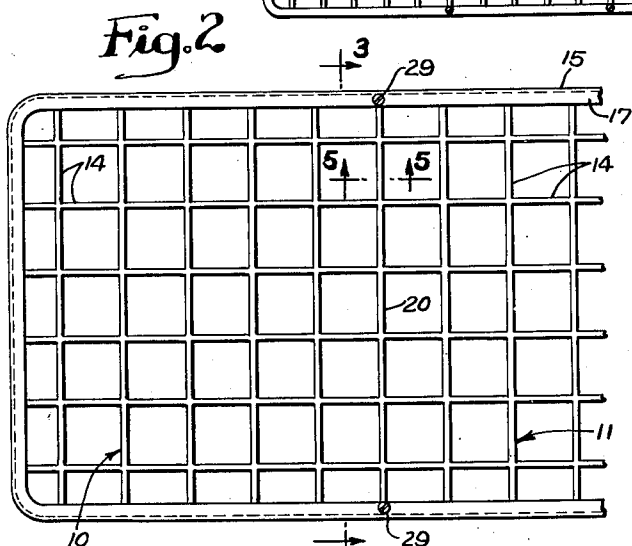
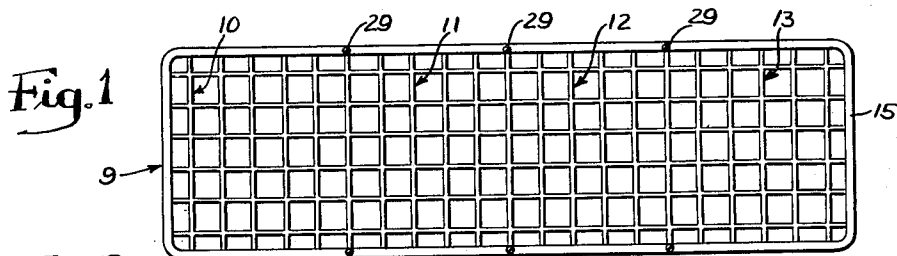
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E. YELLIN

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FLUORESCENT LIGHT SCREEN

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INVENTOR.
Edward Yellin

BY
Carlson, Pitzner, Hubbard & Wolf
Attys.

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FLUORESCENT LIGHT SCREEN

Edward Yellin, Chicago, Ill., assignor, by mesne assignments, to Leader Electric Company, Chicago, Ill., a corporation of Illinois

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7 Claims. (Cl. 189—82)

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The present invention relates generally to a screen or louvre for diffusing the light emitted from one or more sources and finds particular but by no means exclusive utility as a means for diffusing the light cast by fluorescent lamps.

In the past, the conventional light diffusion louvre has been made by assembling a number of separate slats together so as to define some sort of network. The slats may be made of sheet metal, wood, or plastic material and their spacing determines the cut-off characteristic of the louvre. By this is meant the angle between the horizontal and the region in which light begins to radiate directly through the openings in the louvre. Because of the opaqueness of the material out of which they may be constructed, or because of the separate slat mode of construction, conventional louvres have notoriously poor light transmission properties and substantially impair the lighting efficiency of the lamp or lamps with which they may be associated. In addition, screens or louvres constructed in a conventional manner lack structural rigidity and become very unwieldy when made in large sizes.

One object of the invention is to provide a novel light diffusion screen or louvre of the general character set forth which is relatively rigid structurally yet light in weight and exceptionally high in light transmission efficiency.

A further object is to design a screen or louvre of the above character which is made up in integral sections or grids assembled by simple means.

Another object is to provide a screen of the foregoing type which will be susceptible of mounting in a marginal supporting frame with the grids assembled in end-to-end relation therein.

An additional object is to enhance the light conductive efficiency of the novel screen by making the same of translucent or light conductive plastic material.

Other objects and advantages will become apparent as the following detailed description proceeds, taken in the light of the accompanying drawings, wherein:

Fig. 1 is a top plan view of an illustrative light diffusion louvre embodying the present invention.

Fig. 2 is an enlarged fragmentary view detailing the left-hand portion of Fig. 1.

Fig. 3 is an enlarged transverse sectional view taken in the plane of the line 3—3 of Fig. 2.

Fig. 4 is a group perspective view showing sec-

tions of the screen and frame in position preparatory to assembly.

Fig. 5 is an enlarged fragmentary sectional view taken in the plane of the line 5—5 of Fig. 2.

While the invention is susceptible of various modifications and alternative constructions, a preferred embodiment has been shown in the drawings and will be described below in considerable detail. It should be understood, however, that there is no intention to limit the invention to the specific form disclosed, but on the contrary, the intention is to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Referring more specifically to the drawing, there is shown an illustrative light diffusion louvre or screen 9 comprising a plurality of individual translucent grids or sections 10, 11, 12 and 13 assembled together in end-to-end relation to define a continuous network. Each individual one of the grids constitutes an integral and substantially rigid structure comprising a plurality of intersecting ribs or bars 14 all lying generally perpendicular to the plane of the grid and having substantially uniform width and thickness, their exposed edges defining opposed outer faces on the grid and which are virtually identical. This makes the grid invertible, permitting it to be installed in the screen with either face visible from below and no perceptible difference between the faces being apparent to an observer standing below the screen. In the instant case, the ribs 14 may be arranged in two mutually perpendicular sets defining a series of uniformly spaced rectangular or square interstices. Preferably, the sections or grids are made of dimensionally stable thermoplastic material, such as polystyrene which, although translucent, possesses excellent light transmitting properties. While provision is made for rigidly securing a plurality of the grids or sections together in abutting relation to make the louvre a sound, unitary structural entity, it might on occasion be found desirable to provide the louvre with a relatively light marginal supporting frame 15 which, in the present instance, may be made of channel stock 16 having intumed flanges 17, and which frame, when the parts are assembled, is adapted to snugly embrace the ends of one set of ribs of each grid to confine said grids together in a rigid self-supporting screen structure.

To provide high light conductive efficiency in

the louvre, each grid is molded as a seamless integral unit and is so constructed that it can be assembled into the louvre with a concealed joint between itself and its neighbor, such joint possessing a light transmission efficiency substantially commensurate with that of other comparable regions in the louvre. In furtherance of such objective, one or more of the end ribs of each grid are of fractional width compared to the intermediate ribs of the grid, such width in the present instance being approximately half the width of the intermediate ribs. Thus as an incident to assembly of two or more grids in end-to-end relation, their adjacent fractional width ribs overlap edgewise and complement each other so as to define a joint rib having substantially the same thickness, width and length as the intermediate ribs in either of the grids. Referring more specifically to Fig. 4, it will be perceived that the mating rib 20 of one of the grids extends from the top surface of such grid to a point only halfway down; and the companion mating rib 21 is similarly constituted from the bottom toward the top of the adjacent grid. Thus, when the grids 10, 11 are united, the rib 20 overlies the rib 21, forming a lap-joint between such grids. In order to rigidly secure adjacent grids in the foregoing assembled relation, each of the fractional width end ribs is fashioned with a plurality of thickened portions defining integral enlargements 22 spaced so that when the grids are assembled in the manner described the enlargements will register with each other and cooperate with appropriate fastening means. In the illustrative louvre 9, the enlargements 22 happen to be of block-like form and have central bores 23 running there-through for the receipt of a suitable fastening pin or bolt.

In instances where the frame 15 is provided, common means is also provided to secure the grid sections to each other and to the frame. As indicated earlier herein, the frame 15 is channeled on the inner side, as shown at 16. The height of the frame is the same as that of the ribs in order to render the outer faces of the louvre 9 flush with the frame. Therefore, the ends of those ribs entering the channel of the frame are cut down or grooved as indicated at 25 from the top and bottom to secure the necessary fit in the frame. The grooves or cuts 25 also apply to the lateral enlargements or blocks 22, enabling the latter to fit between the flanges 17 of the frame in the same manner as the other rib ends.

When a given pair of the blocks 22 is lodged in the channel of the frame 15, the flanges 17 of the frame are bored as at 27 in alignment with the bores 23 of the blocks to receive fastening means such as a bolt 29 whose shank passes down through the associated parts to receive a securing nut 30 below. Now each pair of adjoining sections of the louvre is not only fastened together, but also the frame 15, making it impossible for the sections of the louvre to separate either from each other or from the louvre in case the fit of the latter in the frame is not accurate.

It will be apparent that the novel louvre is an appliance which may be assembled with as many sections as is desired, according to the length required for a specific installation. As assembled, the louvre or screen is to all appearances in a single piece. Moreover, by reason of its novel construction, the assembled louvre possesses substantially the same light transmission efficiency as if the individual grids had been formed as a

single integral member. In addition, the mode of assembling the grids disclosed above makes it possible to create a lightweight louvre having remarkable strength and structural rigidity, enabling the same to be handled without undue care and without developing looseness when it is set up or subjected to vibration.

I claim:

1. In a light diffusion louvre, the combination comprising a generally rectangular supporting frame of channel cross section, a plurality of grids each formed as an integral unit of dimensionally stable translucent thermoplastic material, each of said grids having first and second sets of ribs perpendicular to each other and of substantially uniform thickness, the ends of one of said sets of ribs being disposed inside the channel cross section of said frame, the end ribs of said first set being approximately half the width of the intermediate ribs in said first set, said grids being assembled in coplanar abutting relation in said supporting frame with said half width ribs of adjacent grids disposed in edgewise overlapping relation with each other, integral enlargements at the extremities of said half width end ribs on each of said grids, said enlargements of each said grid overlapping those of the adjacent grid in said frame and having aligned bores therein, said frame also having a plurality of pairs of aligned holes disposed in registry with the aligned bores of respective pairs of said enlargements, and a series of common fasteners projecting through corresponding pairs of said aligned bores and holes and securing said grids in said frame.

2. A light diffusion louvre comprising, in combination, a plurality of grids each molded as an integral unit of translucent plastic material, each of said grids having first and second sets of ribs of substantially uniform thickness, all of said ribs being perpendicular to the general plane of said louvre, the end ribs of said first set being of fractional width compared to the intermediate ribs in said first set, said grids being assembled in coplanar abutting relation with said fractional width ribs of adjacent grids disposed in edgewise overlapping relation with each other, block-like enlargements integral with said fractional width end ribs, said enlargements of each said grid overlapping those of the adjacent grid in said louvre, and fastening means coacting with said overlapping enlargements and securing said grids together in a rigid self-supporting louvre structure.

3. In a light diffusion louvre of the character set forth, a translucent plastic grid molded as an integral unit and comprising the combination of a first set of ribs of substantially uniform thickness, a second set of ribs also of substantially uniform thickness and mutually perpendicular to said first set, said ribs having exposed edges defining substantially identical opposed outer faces on said grid, the end ribs of said first set being of fractional width compared to the intermediate ribs in said first set for edgewise overlapping of said fractional width ribs incident to the assembly of said grid in coplanar abutting relation with similar grids, and enlargements integral with said fractional width end ribs and susceptible of overlapping as said grid and similar grids are assembled end-to-end, said enlargements having preformed holes for receiving means for securing said grids in assembled relation in the louvre.

4. In a light diffusion louvre, a grid molded as

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an integral invertible unit of dimensionally stable thermoplastic material, said grid comprising, in combination, a first set of ribs of substantially uniform thickness, a second set of ribs also of substantially uniform thickness, all of said ribs being substantially perpendicular to the general plane of said grid and defining substantially identical faces thereon, the end ribs of said first set being approximately half the width of the intermediate ribs in said first set for edgewise overlapping of said half width ribs upon assembly of two or more of said grids in coplanar abutting relation, each said half width rib having one edge coplanar with a face of said grid and integral enlargements on said half width end ribs, each said enlargement having a bore therethrough for receiving a fastener.

5. In a light diffusion louvre, the combination comprising a pair of invertible grids each molded as an integral unit of dimensionally stable plastic material, each said grid having two intersecting sets of ribs of substantially uniform thickness and lying perpendicular to the plane of the grid, the outer ribs of one set being of fractional width compared to the intermediate ribs of said one set but each having one edge coplanar with a face of the grid, said grids being secured in coplanar abutting relation with adjacent ones of said fractional width ribs overlapping each other, an enlargement on each said overlapping fractional width rib, the enlargement of one of said overlapping fractional width ribs being disposed in registry with that of the other overlapping fractional width rib, and a fastener disposed transversely of said overlapping fractional width ribs and engaging the registered enlargements thereof.

6. In a light diffusion louvre, the combination comprising a pair of invertible grids each molded as an integral unit of dimensionally stable plastic material, each said grid having two intersecting sets of ribs of substantially uniform thickness and lying perpendicular to the plane of the grid, the outer ribs of one set being of fractional width compared to the intermediate ribs of said one set but each having one edge coplanar with a face of the grid, said grids being secured in coplanar abutting relation with adjacent ones of said fractional width ribs overlapping each other, an enlargement on each said overlapping fractional width rib, the enlargement of one of said over-

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lapping fractional width ribs being disposed in registry with that of the other overlapping fractional width rib, a frame having a portion disposed in registry with said registered enlargements, and a fastener disposed transversely of and engaging said frame portion and said registered enlargements.

7. A light diffusion screen comprising, in combination, a plurality of translucent grids each molded as an integral unit of dimensionally stable plastic material, each said grid having two sets of intersecting ribs all lying substantially perpendicular to the general plane of the screen, the side surfaces of each said rib being smooth and unbroken except for intersections with other ribs, at least one end rib of one said set being of fractional width compared to the width of the intermediate ribs in said one set but having one edge coplanar with a face of the grid, said grids being assembled together in coplanar abutting relation with the fractional width ribs of adjacent ones of said grids overlapping each other and with concealed joints between adjacent ones of said grids, and a surrounding marginal frame extending transversely of and snugly embracing the ends of said one set of ribs of each said grid and confining said grids together in a rigid self-supporting screen structure.

EDWARD YELLIN.

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