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[56]

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[54] CHECKERED GRID PREFERABLY FOR USE AS ANTIDAZZLE SCREEN AT FLUORESCENT TUBE FITTINGS

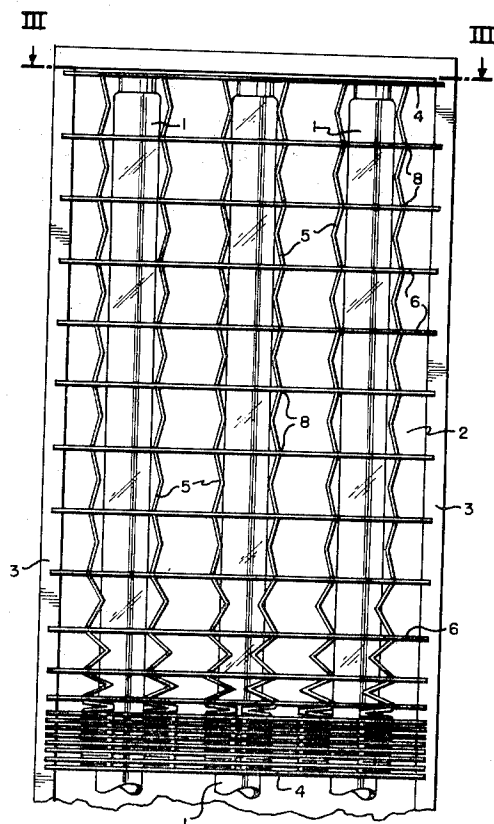
8 Claims, 3 Drawing Figs.

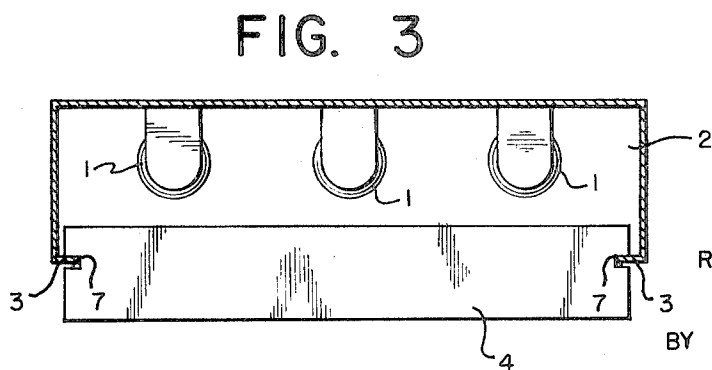
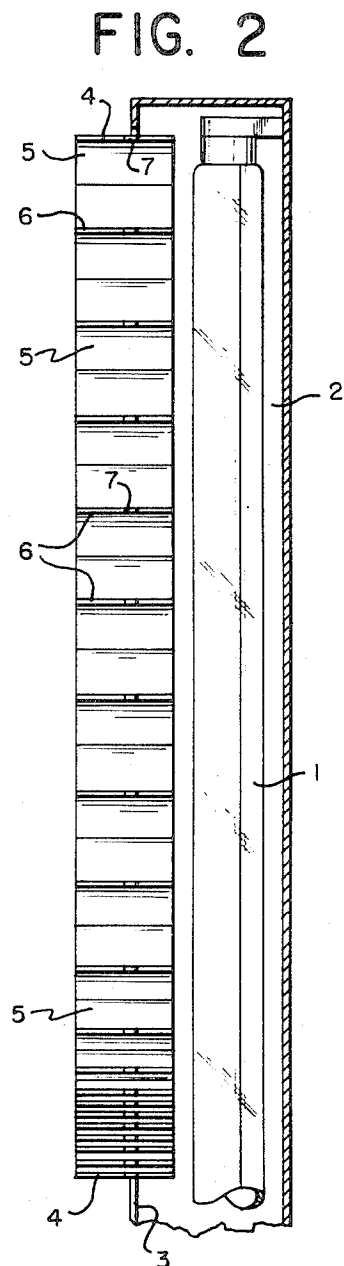
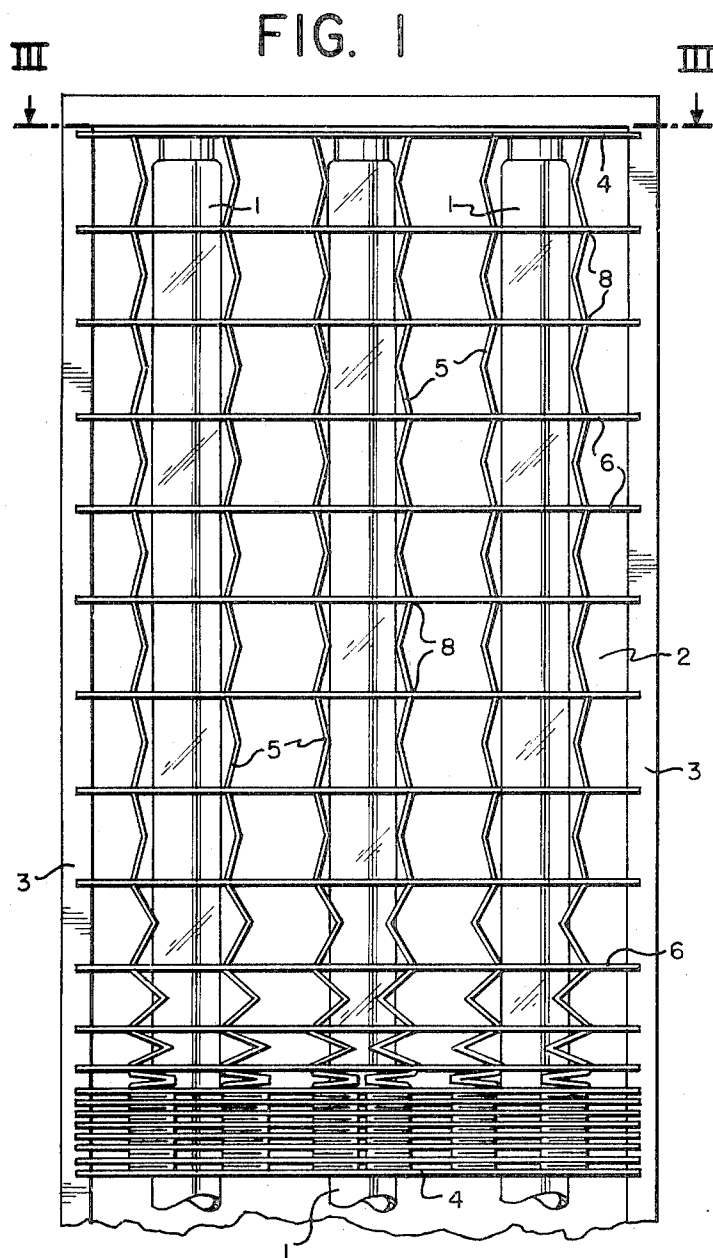
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ABSTRACT: A collapsible antidazzle screen for use in connection with lighting fixtures includes a plurality of longitudinal strips foldable at spaced-apart points and a plurality of transverse strips connected to the longitudinal strips at fixed points, said transverse strips being placed upright in parallel and interconnecting with a plurality of longitudinal strips to form a bellowslike structure extendable in the longitudinal direction of the longitudinal strips.





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CHECKERED GRID PREFERABLY FOR USE AS ANTIDAZZLE SCREEN AT FLUORESCENT TUBE FITTINGS

This invention relates to a checkered grid preferably to be used as an antidazzle screen at fluorescent tube fittings. A highly effective type of antidazzle device (or light distributor) usually used at present at fluorescent tubes is the checkered grid, which in principle is built up of cells, in most cases with square cross section, where the walls defining every cell are in common with the walls enclosing the cells. A grid of this type, usually made of plastic or metal, is mounted in the lower edge of the fitting cover below the fluorescent tubes proper.

Owing to the fact that the fittings normally have a relatively large light area—in most cases exceeding in length one meter and with a minimum width of about 20 centimeters, increasing with the number of parallel fluorescent tubes—the fittings of conventional design are less economic, especially in consideration of the high-manufacturing costs involved and of the great space requirement for storage and transportation. As regards transportation, the freight costs are increased additionally by the fact that careful packing is required for preventing damaging or deforming of the grids which because of their fragile construction are relatively easily damageable.

These disadvantages are eliminated in that the checkered grid according to the invention is characterized by two end bars of a relatively rigid material and a plurality of longitudinal strips placed upright substantially in parallel between said bars, said strips being made of a foldable material with reflecting properties, and a plurality of parallel upright transverse strips interconnecting said longitudinal strips and made of a similar material as the longitudinal strips so as together with the latter to form a structure shaped like a bellows in the longitudinal direction of the longitudinal strips, in such a manner, that the grid from its state for storage and transportation, in which state the grid is folded together to form a package with the end bars as close together as possible, can so be extended to its normal grid shape that the end bars are fixed in a spaced relationship and the grid therebetween is stayed by engagement between both ends of every transverse strip and guide members extending from one end bar to the other.

The grids, furthermore, as known must be dismantled at times, so that dust, dirt and fat deposits can be removed which deteriorate the reflecting capacity and are disturbing from an aesthetic view. The work required for performing this cleaning in an accurate and effective way obviously is tedious, requires to some extent skilled labor and thereby is expensive, and it further requires special detergents for obtaining a satisfactory result. According to a further development, the invention offers a remedy also to this situation.

An embodiment of the arrangement according to the invention is described in the following, with reference to the accompanying drawing in which

FIG. 1 shows in a schematic way a plane view seen from below of a fluorescent tube fitting with a checkered grid according to the invention,

FIG. 2 shows a side view of the fitting with grid, and

FIG. 3 shows an end view along the section III in FIG. 1.

In said figures, three fluorescent tubes 1 are shown mounted in the cover 2 of a fluorescent tube fitting. For reasons of simplicity, part of the cover and of the fluorescent tubes is cut away along the line III—III. Said cover is of a usual rectangular box shape, with flanges 3 bent inwardly at two opposite long-side edges. Between two end bars in the form of flat bars 4 a plurality of longitudinal strips 5 are mounted upright in parallel. The strips 5 are mutually connected by a plurality of transverse strips 6 placed upright in parallel with the end bars 4 and having in the embodiment shown the same shape as the bars 4. Both the transverse strips 6 and the bars 4 are of a length exceeding slightly the free distance between the flanges 3 of the cover, and are provided at each end with a recess 7. The longitudinal strips 5 are folded, and the transverse strips 6 are connected with the longitudinal strips in every second folding line 8. Hereby the end bars 4, transverse strips 6 and longitudinal strips 5 form a bellows-shaped structure which from its

position, in which it is entirely folded together and forms a compact package, can be extended to a length corresponding to the fluorescent tube fitting.

As material for the longitudinal and transverse strips advantageously cardboard can be used which on both sides is coated with a highly reflecting coat, such as aluminum. Such aluminum-coated strips can be manufactured in a simple way, for example by causing a cardboard web from a first supply roll to pass between two aluminum webs from two supply rolls whereby the aluminum webs are glued onto both sides of the cardboard web. Thereafter the cutting to desired lengths is effected and the recesses 7 in the transverse strips 6 are punched out. The folding of the longitudinal strips can be effected by causing the strips to pass first through a jig outlining the folds and thereafter through a bending apparatus for completing the folding. In connection therewith, the longitudinal strips 5 can be provided along every second folding line 8 with a cut extending from the lower edge up to about half the strip height (width), and the transverse strips be provided with a corresponding cut extending downwards from above, so that the mutual connection between longitudinal and transverse strips simply can be effected by inserting the strips one into the other and thereby to form the final grid. As appears from the figures, the (straightened) longitudinal strips 5 have about the same division as the transverse strips 6, which division also substantially is equal to the strip width. Hereby "cells" are obtained which are of substantially square shape and the height of which substantially agrees with the length of the cell walls. This brings about the usual 45°-dimming effect. The end bars 4 of the grid may also be made of cardboard, preferably of a quality more rigid than the strips. The end bars, for example, (in the embodiment shown) may be formed by glueing together a plurality of transverse strips.

It is understood that the grid package in its state folded together offers optimum advantages with respect to storage, packing and transportation, due to its small dimensions and its mechanical stability imparted to it by its folded state (in spite of the strip material which per se is weak).

The grid is mounted in a simple way: The fitter, after having screw on the fitting cover and mounted the fluorescent tubes, places the grid package obliquely in relation to the edge flanges 3 of the cover, in such a manner, that the package can be inserted between the flanges 3 and thereafter again be so directed that the flanges 3 fit into the strip and bar recesses 7 aligning at the short sides of the package. Thereafter one end bar 4 of the package is fixed in a suitable way (not shown) at the nearest end wall of the fitting cover 2, and the second end bar 4 is moved in the direction to the opposite cover end wall while simultaneously the grid is extended and the recesses 7 slide along the end flanges 3 of the cover. This motion is shown in FIG. 1 and 2. Said second end bar finally is fixed at the associated end wall of the cover.

For exchanging fluorescent tubes, the aforesaid steps, of course, are taken in an inverse order. In connection with such exchange (or at another suitable time) the old grid can be replaced by a new grid package, especially if grids of the above exemplified cheap material and inexpensive manufacturing method are used. Hereby the complicated cleaning operation is eliminated at the same time as one can be sure that the grid mounted in place has fully satisfactory properties.

The invention is not bound to the embodiment of a checkered grid shown by example, but many different modifications and changes in detail are possible within the scope of the invention. The longitudinal strips, for example, may be folded in a different way and the folds be turned into a direction other than shown in FIG. 1. The cell configuration shown there may also be formed in a different way than by two sets of perpendicularly intersecting strips. If, for example, the longitudinal strips are folded to form a meander (square inward and outward convolutions) every strip can be fastened at the corners directly on the adjacent strip so as to form the desired checker grid pattern without the use of any separate transverse strips, because the latter then are automatically

formed by the sling portions projecting perpendicularly to the general extension of the longitudinal strips and aligning with each other. In an analogous way only the transverse strips folded to meander shape may be used. It is also possible to use for the grid components material other than cardboard, for example plastic, metal foil, veneer material or other fibrous material, provided that this material at least in the longitudinal strips allows for the folding required. It is also apparent that the end recesses 7 at the transverse strips (and end bars) can be replaced by other engaging members suiting the fitting cover in question. The aluminum coating described can be replaced, if surface treatment of the grid strips is at all required or desired, for example, by plastic strips which were given a metal gloss by polishing. It is also possible to color the strip material on its surface or throughout, possibly in colors varying from one strip to the other. The strips may also be provided with a pattern. The grid, of course, can be given any desired dimensions (possibly with a curvature in one direction or the other instead of the planparallel design shown) and it may in sections or in one coherent piece be mounted as a sub-ceiling below a set of fluorescent tubes. The longitudinal and transverse strips can be given different width and also the division may be different (rectangular "cells").

The checkered grid has been described above in connection with its function as an antidazzle screen at fluorescent tubes, but it is obvious that it can be utilized as an antidazzle screen also at luminous bodies other than fluorescent tubes, and it can also serve for entirely different purposes, for example, in a self-supporting way as a cheap but highly effective decoration in window dressings, displays or other public exhibitions.

What I claim is:

1. An antidazzle screen for use with a fluorescent tube fitting comprising a pair of end bars of a relatively rigid material, a plurality of foldable longitudinal strips having reflecting properties, said longitudinal strips being mounted substantially in parallel between said end bars, a plurality of transverse strips having paired recesses and connected to support said longitudinal strips at spaced-apart points, a pair of lateral flanges depending inwardly from said fluorescent fitting, said transverse strips being movably supported on said rigid lateral flanges by means of said paired recesses.

2. An antidazzle screen as recited in claim 1, wherein said longitudinal strips and said transverse strips are made of card-

board covered with a reflective material.

3. An antidazzle screen as recited in claim 2, wherein said relatively rigid material is metal and said transverse strips are made of metal.

4. A checkered grid for use as an antidazzle screen in connection with illuminating bodies comprising two end bars of a relatively rigid material, a plurality of longitudinal strips having reflecting properties of a foldable material said longitudinal strips placed upright and mounted substantially in parallel between said bars, and a plurality of transverse strips of said foldable material being placed upright in parallel and interconnecting with the longitudinal strips at spaced-apart points so as to form together with said longitudinal strips a bel-lowslike structure extendable in the longitudinal direction of the longitudinal strips, said grid being extensible to a normal grid shape from a folded state in which said end bars are separated by a minimum distance, said end bars being fixed in a spaced relationship at respective ends of said fitting in said normal grid shape, and a rigid lateral flange located on either side of said fitting, said transverse strips being supported by engagement between said rigid lateral flanges.

5. A checkered grid according to claim 4, wherein said relatively rigid material is a fibrous material having a reflective coating.

6. A checkered grid according to claim 1, wherein said transverse strips have a length exceeding the free distance between the respective rigid lateral flanges and are provided at each end with a recess such that the checkered grid can be mounted in place by slightly skewing the grid package and engaging the respective recesses of the transverse strips on said rigid lateral flanges, and said grid after the fastening of one end bar at the corresponding end of the fitting can be extended and fixed by fastening the other end bar at the opposite end of the fitting.

7. A checkered grid according to claim 1, wherein said longitudinal and transverse strips have an equal width and a straight original shape for forming a plane grid.

8. A checkered grid according to claim 1, wherein the longitudinal strips and the transverse strips have substantially equidistant spacing in said extended grid state to form substantially square grid fields, and said strip width is equal to the distance between said strips.

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