Jan. 16, 1962 E. PRICE 3,016,997

LIGHTING LOUVERS

Filed Nov. 27, 1958 3 Sheets-Sheet 1

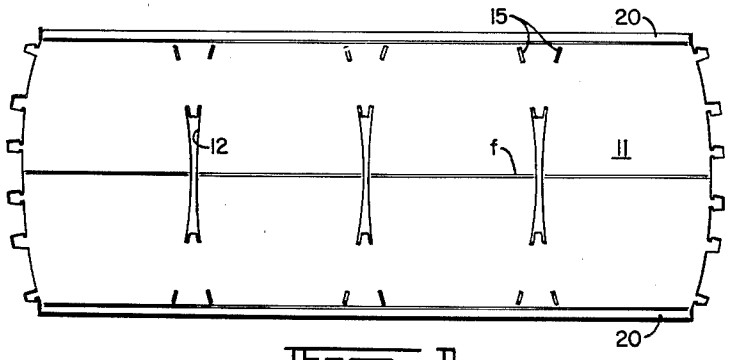


FIG. 1

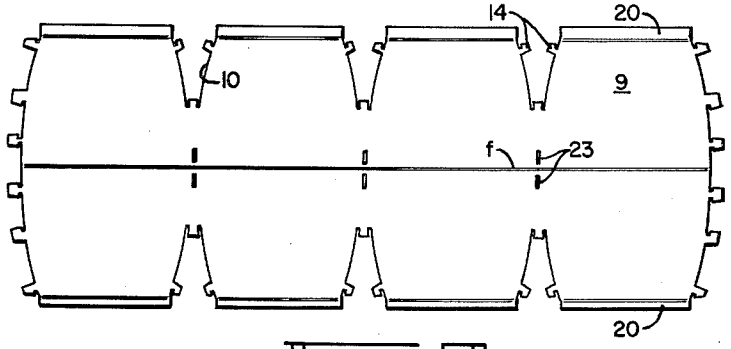


FIG. 2

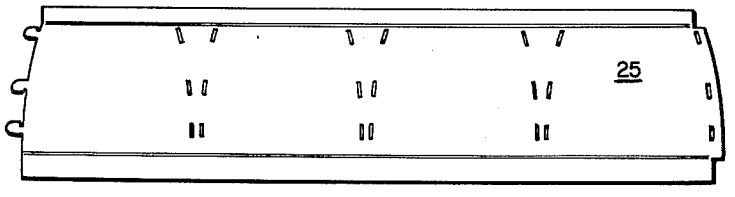


FIG. 3

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LIGHTING LOUVERS

Filed Nov. 27, 1959

3 Sheets-Sheet 2

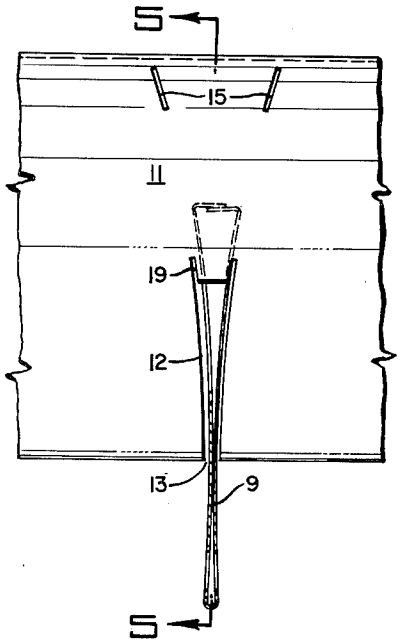


FIG. 4

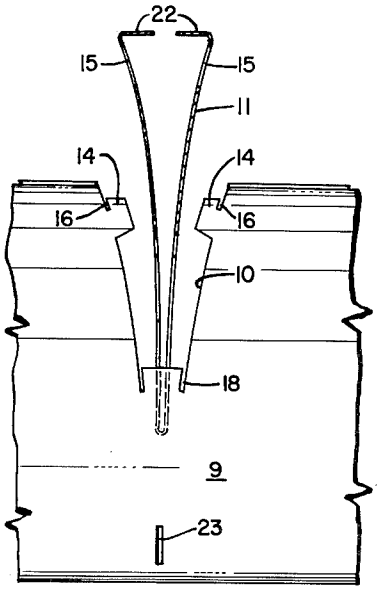


FIG. 5

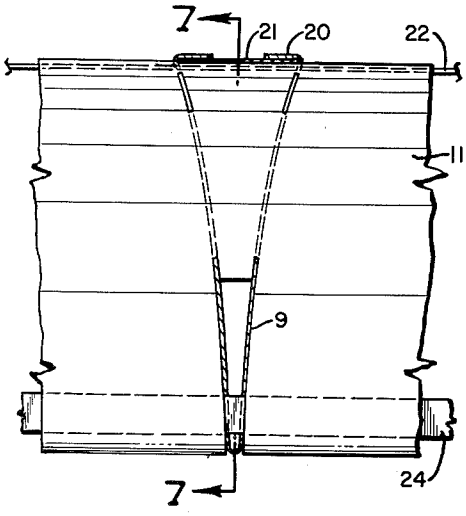


FIG. 6

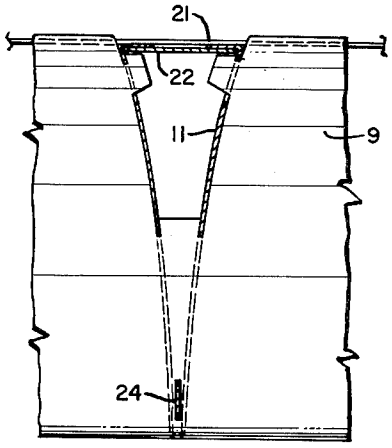


FIG. 7

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LIGHTING LOUVERS

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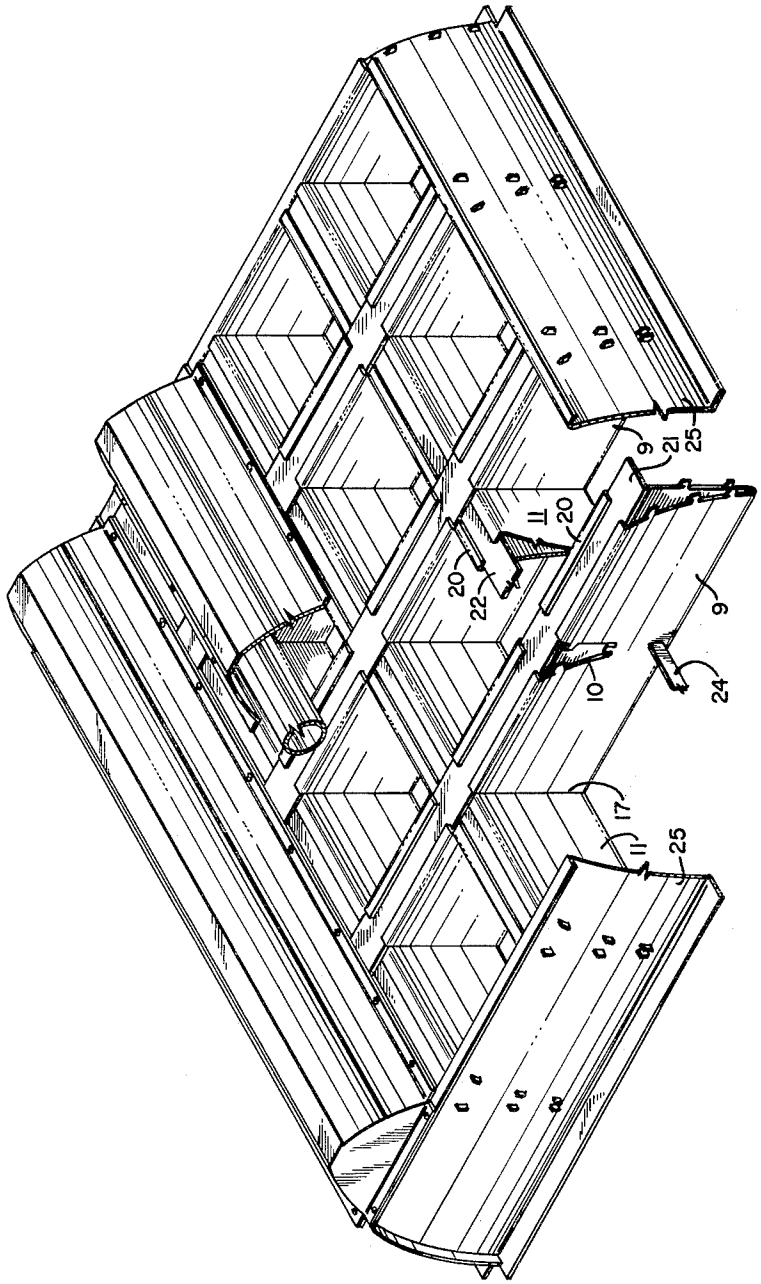


FIG. 3

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United States Patent Office 3,016,997 Patented Jan. 16, 1962

3,016,997

LIGHTING LOUVERS

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Filed Nov. 27, 1959, Ser. No. 855,807
5 Claims. (Cl. 189—82)

The invention relates to lighting baffles having a crisscross grid of intersecting wedge type louvers.

It has been found that with the use of wedge type louvers in overhead lighting baffles it is possible to obtain a more concentrated distribution of light. If the wedge louver is one with a specular (mirror bright) reflecting surface having parabolic curved sides it is also possible to provide good lighting efficiency while at the same time minimizing louver brightness in the shielded zone. However, when it is desired to provide a grid of criss-crossed specular wedge louvers, a difficult manufacturing problem is presented in view of the complexity encountered in assembling components of interesecting parabolic or other curved or inclined surfaces. One attempted solution has been to produce the parabolic wedge louver grid by injection molding, or by casting. The form of the grid is well adapted to production by usual molding techniques, but the cast or molded grid does not have a sufficiently smooth bright surface for true specular reflection. As a refinement of such methods of producing a wedge louver grid, one manufacturer molds the grid of plastic material and then coats it will bright aluminum. In terms of specular reflection the results are far from satisfactory. The surface is one which diffuses the light, and which would be described by lighting engineers as a "semi-diffuse" aluminum or as a "satin" reflector. The surfaces of such reflectors produce an increased louver brightness which is often undesirable.

A satisfactory and relatively inexpensive way of producing a specular reflecting surface is to begin with sheet material such as aluminum sheet which is easily polished to a mirror-like finish. But here arises the problem of building the complex of intersecting parabolic surfaces of the grid. So we have either the simplicity of casting or molding coupled with the difficulty of getting a proper specular surface on it, or the simplicity of getting the specular surface on an aluminum sheet coupled with the difficulty of fabricating the grid complex. However, I have discovered a very simple way of fabricating the grid complex by which I take advantage of the resiliency of the sheet material in an interlocking construction of V-shape louvers. My improved lighting baffle construction comprises two sets of V-shape louvers of resilient sheet material intersecting in a crisscross grid. The louvers of one set have spaced upwardly opening notches and those of the other have notches tapering upwardly and outwardly from narrow downward openings for interlocking engagement with the upwardly opening notches of the first set of louvers. The sides of the first set of louvers being resilient, they can be squeezed together to pass through the downward openings of the notches of the other set. These resilient sides form wedge shape interlocks between the two sets of louvers. Further, the resilient sides of the second set of louvers permit squeezing them together to pass projecting locking tabs in the notches of the first set. Special means are provided for holding the sides of both sets of louvers apart to lock the two sets in assembled relation. The construction is such that the interlocking notches become almost indiscernable in the assembled baffle, for all that can be seen is the clean intersection line of the cornering parabolic surfaces.

With reference to the drawings I shall now describe the best mode contemplated by me for carrying out my invention.

FIG. 1 is a face view of a blank for forming a baffle in what is sometimes referred to herein and in the appended claims as the "other set" of baffles.

FIG. 2 is a face view of a blank for forming a baffle in what is sometimes referred to as the "one set" of baffles.

FIG. 3 is a face view of a blank for forming an edge baffle of a grid fixture.

FIG. 4 is a detail view showing how the baffles are assembled in crisscross relation.

FIG. 5 is a detail cross sectional view taken on line 5—5 of FIG. 4.

FIG. 6 is a detail view of a completed intersection of the assembled baffles.

FIG. 7 is a detail cross sectional view taken on line 7—7 of FIG. 6.

FIG. 8 is a top perspective view of a completed louver, partly broken away to reveal construction.

The V-shape louvers of my crisscross baffle construction are made from blanks of sheet material, for example polished aluminum, in the general forms shown in FIGS. 1 and 2. The blanks are die-cut and then shaped to a predetermined parabolic, or other, curvature as desired. The curved sides are formed into a wedge or V-shape by bending them around fold lines *f*. Preferably the sides of the V as formed from the blanks of FIG. 1 will be disposed at a somewhat wider angle than is shown in the assembled baffle, FIGS. 7 and 8, so that, upon assembly, these sides of the V will spring tightly outward against the curved edges of the notches of the companion louvers and be held accurately in the desired predetermined angular relationship to the source of light.

My lighting baffle comprises two sets of these resilient V-shape louvers of sheet material intersecting in a crisscross grid, FIG. 8, the louvers 9 of one set having spaced upwardly opening notches 10 and the louvers 11 of the other set having notches 12, FIG. 4, tapering upwardly and outwardly from narrow downward openings 13 for interlocking engagement with upwardly opening notches 10. As the sides of louvers 9 are resilient, they can be squeezed together in the manner shown in FIG. 4 to pass through the narrow downward openings 13 of the notches of the other set. The extent of deformation required to squeeze the sides of the one set of louvers through the narrow openings 13 in the other set is such as not to exceed the elastic limit of the sheet material of the louvers. Thus the accurate positioning of the reflecting surfaces of the louvers is not disturbed by assembly maneuvers. After assembling, the resilient sides of louvers 9 form wedge shape interlocks, FIG. 6, between the two sets of louvers.

In my preferred construction, the notches 10 of louvers 11 have upwardly and outwardly tapering edges and tabs 14 projecting into the notches for engagement with complementary slits 15 formed in louvers 11. As the sides of louvers 11 also are resilient, they can be squeezed together in the manner shown in FIG. 5 to pass by the projecting tabs 14, then released to snap slits 15 over the tabs, FIG. 7. Tabls 14 may further be provided with slits 16, FIG. 5, at their bases to receive and position the sides of the louvers 11 and thereby assist in holding the sides firmly apart in predetermined light reflecting position.

Notice that in bringing louvers 9 and 11 into assembled relation a double squeezing action is performed, the sides of louvers 9 being squeezed to pass through the narrow openings 13 of notches 12 while at the same time the sides of louvers 11 are squeezed to pass by the tabs 14. Then when full intersection of the louvers is achieved, the sides of both sets of louvers 9 and 11 spring outwardly to accomplish several purposes: accurate positioning of the light reflecting surfaces of both sets of louvers and locking all of the louvers in both vertical and hori-

zontal directions. By this construction I have also made it possible to avoid the complexity introduced when a single set of continuous wedge louvers must be used with a multiplicity of individual short spacing louvers fastened separately at intervals throughout the lengths of the continuous louvers. Further, as can be discerned in FIG. 8, my peculiar form of intersecting louvers renders the notches **10** and **12** virtually indiscernable in the final assembly which reveals only the clean curved line **17** describing the intersection between two cylindrical surfaces at each corner of the grid openings. The final masking of the notch edges is achieved through the outward spring action of the resilient sides of the louvers.

As a further desirable refinement of my improved louver construction, notches **10** are provided with slits **18** in their lower corners to receive and further assist in positioning the sides of the mating louvers. Similarly, notches **12** have slits **19** in their upper corners. Either one of these sets of notches can be used without use of the other set, but I prefer to use them both for maximum rigidity in positioning of the light reflecting surfaces.

Also, in my preferred construction the upper edges of the louvers have inwardly projecting flanges **20** to stiffen them and to hold the crisscrossing locking strips **21, 22** which are inserted beneath the flanges. These locking strips hold apart the sides of the assembled interlocking louvers, and in some instances it may be desired to omit lock tabs **14** when such locking strips are employed. Also, if desired, slits **23** may be provided near the lower edges of louvers **9**, FIG. 5, to receive continuous locking strips **24**, FIGS. 6 and 7, which are slipped through the length of louvers **11** and through said slits to firmly position the louvers of the two sets against sideways movement in the plane of the bottom of the assembled baffle. Edge baffles **25**, FIGS. 3 and 8, and lighting and mounting accoutrements can be of any suitable construction.

The particular form of the reflecting surfaces may be that disclosed and claimed in the copending application of Price and Goodbar, filed September 18, 1958, Serial No. 857,641 for Lighting Fixtures, and the subjects matter claimed in said copending application to such extent as it may be disclosed also in my present application, is the joint invention of Edison Price, the applicant herein, and Isaac Goodbar.

The terms and expressions which I have employed are used in a descriptive and not a limiting sense, and I have no intention of excluding such equivalents of the invention described as fall within the scope of the claims.

I claim:

1. A lighting baffle comprising two sets of V-shape louvers of sheet material intersecting in a crisscross grid, the louvers of one set having spaced upwardly opening notches with upwardly and outwardly tapering edges and tabs projecting from said edges in engagement with complementary slits formed in the sides of the louvers of the other set, and the louvers of said other set having notches tapering upwardly and outwardly from narrow downward openings in interlocking engagement with said upwardly opening notches, the sides of the louvers of both sets being resilient to permit squeezing those of the one set together to pass through the narrow downward openings of the notches of the other set and to permit squeezing the sides of the louvers of the other set together to pass said projecting tabs.

2. A lighting baffle comprising two sets of V-shape louvers of sheet material intersecting in a crisscross grid, the louvers of one set having spaced upwardly opening notches with upwardly and outwardly tapering edges and tabs projecting from said edges on engagement with complementary slits formed in the sides of the louvers of the other set, and the louvers of said other set having notches tapering upwardly and outwardly from narrow downward openings in interlocking engagement with said upwardly opening notches, the sides of the louvers of both sets being resilient to permit squeezing those of the one set together to pass through the narrow downward openings of the notches of the other set and to permit squeezing the sides of the louvers of the other set together to pass said projecting tabs, and spacer means for holding the sides of both sets of louvers apart to lock the two sets in assembled relation.

3. A lighting baffle comprising two sets of V-shape louvers of sheet material intersecting in a crisscross grid, the louvers of one set having spaced upwardly opening notches and those of the other having notches tapering upwardly and outwardly from narrow downward openings for interlocking engagement with said upwardly opening notches, the two sets of louvers being assembled with the edges of the notches of the one set in engagement with the sides of the other set and the edges of the notches of the other set in engagement with the sides of the other set and with the bases of the V's of the two sets of louvers lying substantially in a common plane whereby a clean intersection of cornering surfaces is provided over substantially the full height of both sets of louvers.

4. A lighting baffle according to claim 3, in which the upper edges of the louvers of both sets have inwardly projecting flanges lying in substantially the same plane, and crisscross locking strips are inserted beneath said flanges to hold apart the sides of the assembled interlocking louvers.

5. A lighting baffle according to claim 1, in which the upper edges of the louvers of both sets have inwardly projecting flanges lying in substantially the same plane, and crisscross locking strips are inserted beneath said flanges to hold apart the sides of the assembled interlocking louvers.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,016,997 January 16, 1962

Edison Price

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 19, for "interesecting" read -- intersecting --; column 2, line 58, for "Tabls" read -- Tabs --; column 3, line 41, for "subjects" read -- subject --; column 4, line 9, for "on" read -- in --.

Signed and sealed this 22nd day of May 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents