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Anderson et al.

[11] **3,725,693**

[45] **Apr. 3, 1973**

[54] LINEAR PHOTOFLASH LAMP ARRAY AND REFLECTOR UNIT THEREFOR

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[52] **U.S. Cl.** **240/1.3**

[51] **Int. Cl.** **G03b 15/02**

[58] **Field of Search** ..... 240/1.3, 41.35, 103 R; 95/11 L; 431/92, 93, 95

[56] **References Cited**

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1,614,650	1/1927	Carstarphen	240/41.35 R
3,430,545	3/1969	Wick	240/1.3 X
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132,365	6/1929	Switzerland	240/103 R

Primary Examiner—Samuel S. Matthews
Assistant Examiner—Fred L. Braun
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[57] **ABSTRACT**

A two-sided linear photoflash lamp array having a multiple reflector unit comprised of a pair of complementary strip-like thin-walled molded plastic reflector panels each formed with a row of side-by-side lamp reflectors and mounted back-to-back in aligned relation with their reflectors facing outwardly in opposite directions and located in staggered nested relation. The reflector panels have interfit members and abutting stand-off shoulders on their backsides for locating the two panels in properly aligned back-to-back position with their reflectors in staggered nested relation and spaced a predetermined distance apart. Stiffening flanges extending between and integrally joining adjacent reflectors of each reflector panel rigidify the panel and prevent heat distortion of any reflector thereof by the flashing of the photoflash lamps in next adjacent reflectors.

17 Claims, 8 Drawing Figures

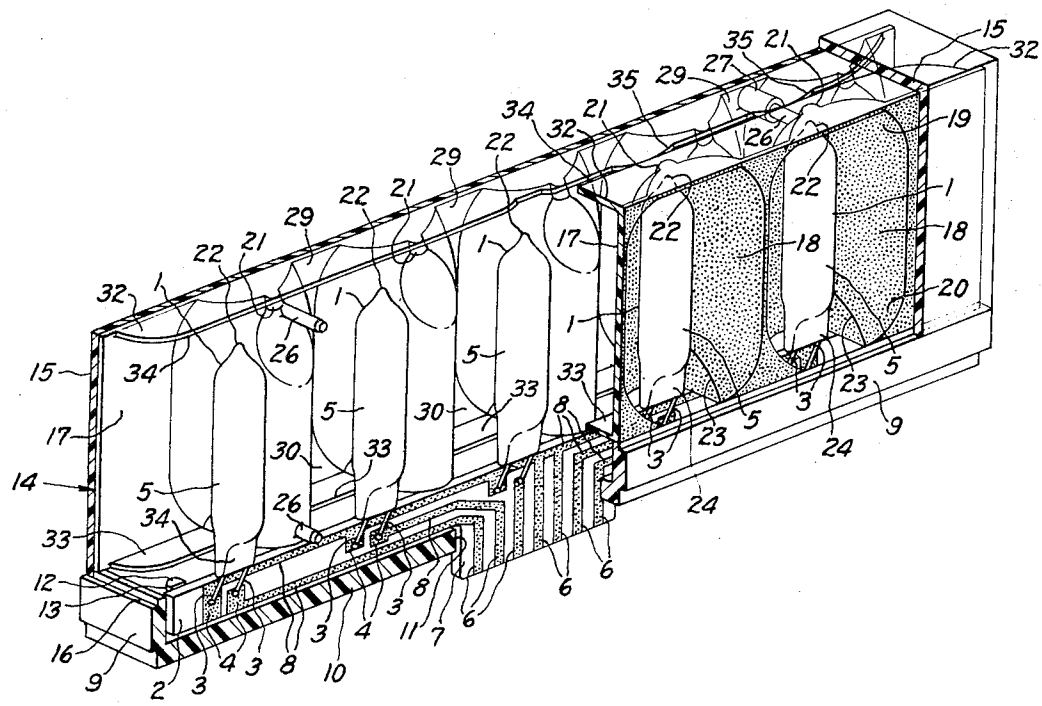


Fig. 1.

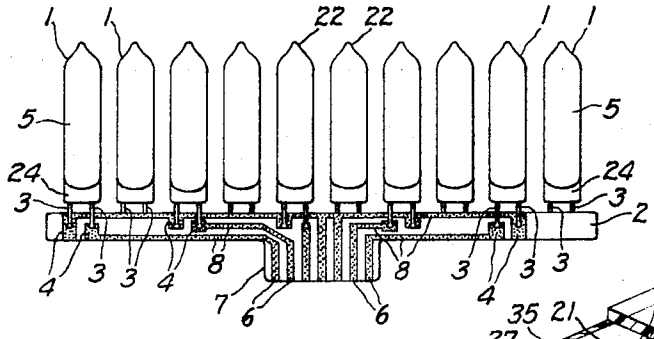


Fig. 2.

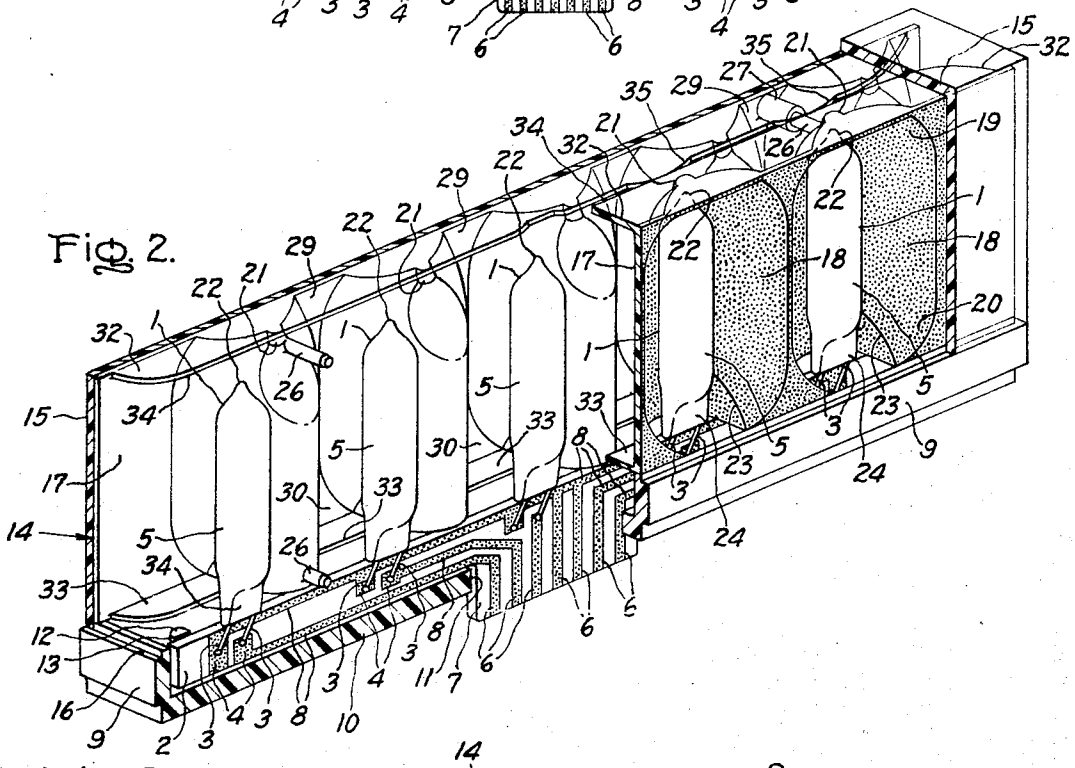


Fig. 3.

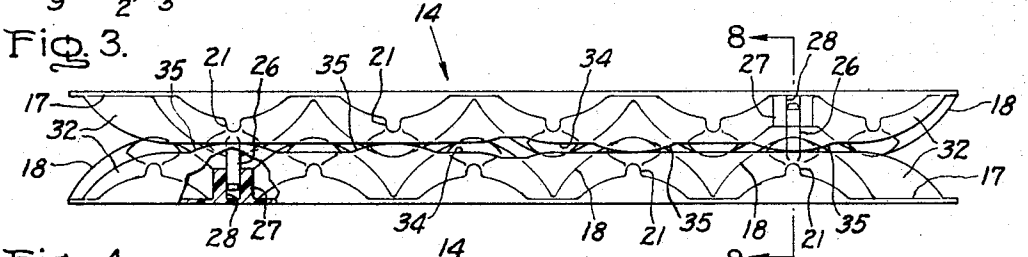


Fig. 4.

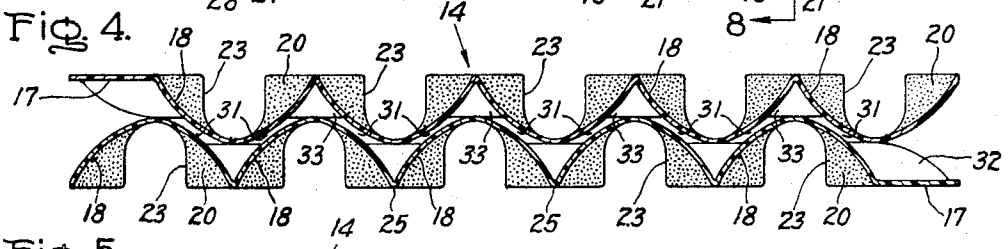


Fig. 5.

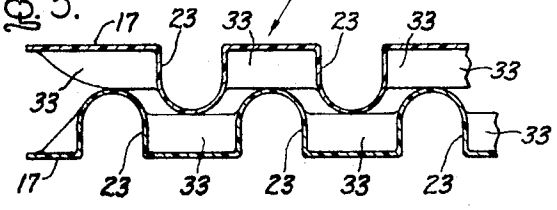


Fig. 6.

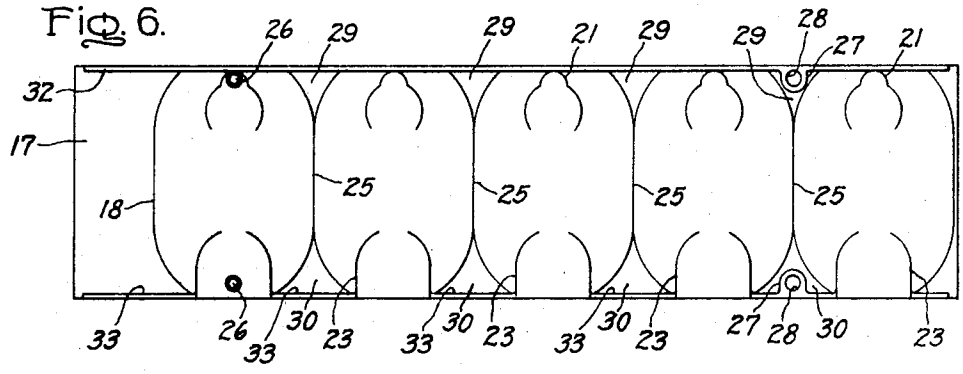


Fig. 7.

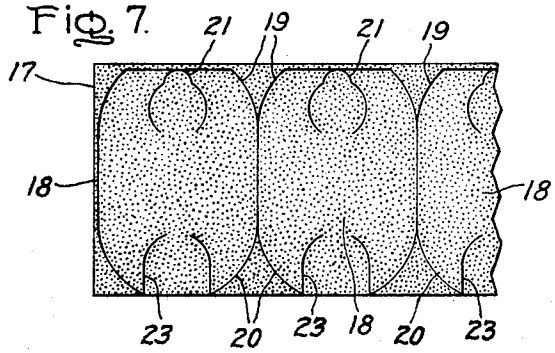
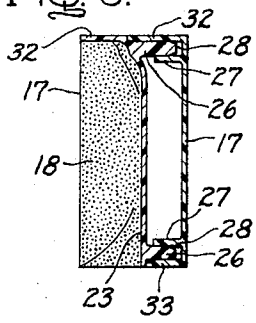


Fig. 8.



LINEAR PHOTOFLASH LAMP ARRAY AND REFLECTOR UNIT THEREFOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates, in general, to linear type multiple photoflash lamp arrays and, more particularly, to a multiple reflector unit therefor.

2. Description of the Prior Art

Multiple photoflash lamp arrays of two-sided linear form having a plurality of lamp-reflector units or modules facing outwardly in two oppositely facing directions are well known in the art as disclosed, for example, in U.S. Pat. No. 3,598,984, Slomski, issued Aug. 10, 1971. The lamp-reflector modules in such linear photoflash lamp arrays are generally arranged in two parallel rows with the lamps and reflectors of one row staggered relative to the lamps and reflectors of the other row, and with the reflectors of one row preferably nested back-to-back with the reflectors of the other row in order to thereby achieve significant compaction yielding a thickness dimension for the two-sided array which is substantially the same as or only slightly greater than that required for a single-sided array. Also, for reasons of economy and convenience in handling and assembly, the reflectors of at least each row thereof in such linear lamp arrays are generally unitized.

In the most simplified arrangement, the nested back-to-back rows or arrays of reflectors are formed from a common or single piece of sheet material such as plastic or aluminum foil sheet, as by folding or corrugating the sheet material, so that the opposing corrugated faces of the same sheet of material, aluminized if necessary to render it reflecting, form the reflectors for separate lamps. Such single sheet reflector units, however, besides having the disadvantage that the resulting shape of the individual reflecting surfaces obtainable on either side of the single reflector strip are not optimum for best light-reflectance characteristics or performance, also have the disadvantage of being subject to appreciable distortion or warpage of individual ones of their reflectors by the intense heat developed by the flashing of a photoflash lamp in an adjacent reflector on the opposite side of the reflector unit and with which they have a common wall, the distortion of such reflectors thereby seriously impairing their subsequent light-reflecting performance.

In another form of prior reflector arrangement, each individual row of reflectors on each side of the lamp array is formed as a separate reflector strip member or unit, as by vacuum-forming according to practice well known in the art, from a single sheet of aluminum foil or plastic which is subsequently aluminized to render it light-reflective, and two such reflector strip units then nested together back-to-back, without any positive interconnection and fixation thereof, and the nested set of reflectors inserted into place in the space between the two staggered rows of photoflash lamps of the array. With such prior two-piece reflector arrangements, however, the unconstrained reflector strip units are free to move about into contact with one another with the result that the contacting reflectors are likewise subject to the above-mentioned heat distortion by the flashing of adjacent lamps. To prevent and assure against such reflector distortion, therefore, in such prior two-piece reflector arrangements, it has been

customary to insert a suitable heat-insulating barrier or heat shield member, such as a sheet of asbestos for instance, between the two opposing back-to-back reflector units. The use of such a heat barrier member, however, involves the addition of another part to the array construction and an additional assembly operation which together add to the cost of the finished array. Also, the vacuum-formed sheet type reflector strip members require the use of relatively expensive sheet material which therefore adds to the overall cost of the finished reflector assembly. In addition, because of their flimsy nature, they are subject to frequent damage during the handling and assembly thereof as well as during the various secondary manufacturing operations that are required to be performed thereon such as hole piercing, slitting apart from one another, and trimming, so that the finished reflectors often are of poor quality insofar as their light-reflecting characteristics are concerned.

It has also been proposed to vacuum-form the reflectors for both sides of the array as a single unit from a single sheet of aluminum foil, or plastic sheet material which is subsequently aluminized, that is folded back upon itself along one or more fold lines extending parallel to and between the two rows of reflectors. When folded together, the reflectors of the two rows thereof nest together back-to-back. Such a single sheet vacuum-formed reflector unit, however, has substantially the same disadvantages as those mentioned above for the two-piece vacuum-formed reflector assembly.

In still another reflector arrangement employed heretofore for the above-mentioned two-sided photoflash lamp arrays, the two rows of reflectors are provided in monolithic form by injection molding one piece of material such as plastic to produce all the individual lamp reflectors at once. However, in order to possess sufficient thermal stability to assure against heat distortion of the individual reflectors thereof by the flashing of an adjacent flash lamp in the array, such unitary injection molded reflector units ordinarily have to be made of appreciable thickness and of relatively expensive material such as adds to the bulkiness and weight, and overall cost of the finished array.

SUMMARY OF THE INVENTION

It is an object of the invention, therefore, to provide a two-sided linear photoflash lamp array having a novel multiple reflector unit possessing superior optics and handling convenience and the light-reflecting performance of which is unimpaired by the flashing of the lamps in the array.

Another object of the invention is to provide a multiple reflector unit for two-sided linear photoflash lamp arrays which is of novel and relatively inexpensive and lightweight construction and the light-reflecting performance of which is not adversely affected by the flashing of the lamps in the array.

Still another object of the invention is to provide a multiple reflector unit for linear photoflash lamp arrays which is easy and inexpensive to fabricate and which possesses superior handling convenience for ease of assembly into the finished array.

Briefly stated, in accordance with one aspect of the invention, the reflector arrangement in a two-sided linear photoflash lamp array is comprised of a pair of

complementary strip-like thin-walled rigid plastic molding reflector panels each having a row of side-by-side reflecting cavities defining individual lamp reflectors and mounted back-to-back in aligned and fixedly interconnected relation to form a single unified rigid structure with their reflectors facing outwardly in opposite directions and located in staggered and nested relation but spaced a predetermined distance apart so as to be out of contact with one another at all times.

In accordance with a further aspect of the invention, the two complementary reflector panels are provided with interfitting connection means to locate and fixedly hold the panels together as a unit in properly aligned assembled relation and with stand-off shoulder means which abut one another, in the assembled position of the panels, to locate the panels in predetermined spaced back-to-back relation with the reflectors of each one of the panels spaced from and out of contact with those of the other panel.

Further objects and advantages of the invention will appear from the following detailed description of species thereof and from the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a front elevation of an exemplary form of an assembly of photoflash lamps mounted on a lamp support and contact board for use in a linear photoflash lamp array according to the invention;

FIG. 2 is a perspective view on an enlarged scale of a two-sided linear photoflash lamp array comprising the invention and shown partly broken away in section to more clearly illustrate the construction thereof;

FIG. 3 is a top view on an enlarged scale of the assembled reflector unit comprising the invention and shown partly broken away in section to illustrate the interconnection means of the two reflector panels thereof;

FIG. 4 is a horizontal section through the assembled reflector unit comprising the invention;

FIG. 5 is a horizontal section similar to FIG. 4 but taken through the tunnel portions of the individual reflectors of the reflector unit;

FIG. 6 is a rear elevation of one of the reflector panels of the reflector unit;

FIG. 7 is a fragmentary front elevation of one of the reflector panels; and

FIG. 8 is a vertical section through the assembled reflector unit taken on the line 8—8 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, in the photoflash lamp array comprising the invention two parallel rows of miniature type photoflash lamps 1 of generally tubular configuration are supported in upright side-by-side manner, as shown in FIG. 1, on a relatively thin but substantially rigid lamp support and contact bar or blade 2, with the lamps of one row staggered and extending part way into the spaces between the lamps of the other row so that the two parallel staggered rows of lamps can be said to be interfitting or overlapping. The axes of the individual lamps 1 are, of course, substantially in parallelism, and the planes through the axes of the lamps in each of the rows are approximately parallel to the plane of the contact bar 2. While the number of photoflash lamps 1 in the array is immaterial, there is shown by way of illustration ten lamps 1 arranged in two five-lamp rows mounted respectively on each side of the combination lamp support and contact bar 2. Each lamp has a pair of wire leads or lead-in wires 3 secured in some suitable fashion, as by soldering or welding, in electrical connection with an adjacent pair of lamp contact areas or tabs 4 on the bar 2. The photoflash lamps 1 are tubular and baseless and, as well known in the art, comprise a hermetically sealed tubular glass bulb or envelope 5 containing an ignition filament and filled with a filamentary combustible material such as shredded foil of zirconium or aluminum or hafnium, for instance, which ignites and produces a momentary light flash of high intensity when an electric current is supplied to the ignition filament through the wire leads 3. The lamps 1 may be of the type described in U.S. Pat. No. 2,982,119, Anderson, dated May 2, 1961, or in U.S. Pat. No. 3,506,385, Weber et al., dated Apr. 14, 1970.

Although for the purposes of the invention the lamp support and contact bar 2 may be of any suitable form, it is preferably of the printed circuit type disclosed and claimed in U.S. Pat. No. 3,598,985, Harnden, Jr., et al., dated Aug. 10, 1971, and comprising a thin metallic sheet substrate such as steel having on both its flat surfaces a coating of an insulating material such as porcelain enamel or glass or some other vitreous material on which is deposited, on each side of the bar 2, a printed circuit conductive pattern made of, for example, silver and glass paste. The conductive pattern on each side of the bar 2 includes a plurality of lamp terminal contact areas 6 located on a projecting contact tab portion 7 of the bar 2 centrally located along the longitudinal edge thereof opposite that edge of the bar from which the lamps 1 upstand. The terminal contacts 6 are in the form of elongated strips that extend parallel to one another and perpendicularly to the edge of the tab 7, and they are selectively interconnected by suitably shaped conductive lines 8 with a plurality of lamp contact areas or pads 4 which are generally aligned adjacent the opposing edge of the bar 2, there being two contact pads 4 for each of the lamps 1. It will be noted that for a row of five lamps 1 there are six of the terminal contacts 6, one for each of the lamps and one that is common to all of the lamps.

In the particular form of array illustrated, the lamp support and contact bar 2, as in the aforementioned Harnden et al. U.S. Pat. No. 3,598,985, is mounted in upright position within an elongated mounting block 9 made, for instance, of a suitable plastic such as polystyrene. As shown, the mounting block 9 may be of trough-shaped form with the contact bar 2 received within the hollow interior of the block and resting on the bottom wall 10 thereof, and with the contact tab portion 7 of the contact bar extending down through a centrally located longitudinal through slot 11 in the bottom wall 10 of the mounting block so as to project from the underside thereof to expose the lamp terminal contacts 6 thereat. The contact bar 2 is suitably supported in upright position within the mounting block 9 as by the bar snugly fitting at its opposite ends into slots in support posts 12 upstanding from the bottom wall 10 of the block. The top ends of these support posts 12

may be heat softened and peened over the upper edge of the contact bar **2**, as indicated at **13**, to lock the bar securely in place within the mounting block **9**.

In addition to the lamps **1** mounted on the contact bar **2** and the mounting block **9**, the array also comprises a multiple reflector unit or assembly **14** of a type according to the invention and a rectangular box-shaped light-transmitting protective cover or enclosure case **15** of a suitable transparent plastic such as polystyrene. The reflector unit **14** is inserted down between the two rows of lamps **1** and rests on the shouldered upper rim **16** of the mounting block **9**. The cover **15** is positioned down over the assembled lamps **1** and reflector unit **14** and encases the four sides of the mounting block **9** around the shouldered upper rim portion **16** thereof. The cover **15** may be ultrasonically welded or otherwise suitably fastened to the mounting block **9** to provide a unitary construction for the array that can be plugged onto a camera or flash accessory as a unit and then removed and thrown away when all of the lamps have been flashed.

In accordance with the invention, the reflector unit **14** is comprised of a pair of identical complementary strip-like reflector halves or panels **17** in the form of thin-walled rigid moldings made of a suitable inexpensive plastic material such as polystyrene and each formed with a row of side-by-side lamp-receiving cavities (five in the particular case illustrated) defining lamp reflectors **18** for receiving respective ones of the lamps **1** therein, as shown in FIG. **2**. The reflector panels **17** are preferably made by injection molding techniques such as are well known in the plastic molding art, and the sides of the panels formed with the lamp-receiving reflector cavities are provided with suitable specular reflecting surfaces, as by applying thereonto a coating of aluminum or other suitable reflecting material, as by conventional vacuum deposition methods, for instance. The specific shape of the individual reflector cavities or cells constituting the lamp reflectors **18** does not form an essential part of the present invention, and any suitable shape can be employed therefor. In the particular case illustrated, the reflectors **18** are of complex parabolic-like trough shape, such as that disclosed in U.S. Pat. No. 3,609,332, Schindler, dated Sept. 28, 1971, for accommodating the tubular lamps **1** lengthwise therein, with generally paraboloidal-shaped upper and lower end portions **19** and **20**, respectively (FIG. **2**), that extend around the upper and lower ends of the lamps positioned in the reflectors. Conveniently, each individual reflector cavity or cell **18** has at its upper end portion an indentation **21** for receiving the exhaust tip **22** of its respective lamp **1**, and a tunnel-shaped through-passageway **23** at its lower end for the accommodation therein of the flattened press seal base end **24** of the lamp **1** and passage therethrough of the wire leads **3** of the lamp that connect to the contact pads **4** on the contact bar **2**. For reasons of economy, as well as to keep the assembled reflector unit **14** of comparatively light overall weight, the reflector panels **17** are made of relatively thin-wall section ranging around 0.020 inches or so in wall thickness throughout most of their extents. Also to minimize the total overall length of of the reflector panels **17**, the trough-shaped reflectors **18** formed in each panel **17** are located immediately next to one another, with their outer edges meeting, as indicated at **25** in FIG. **4**.

The two reflector halves or panels **17** comprising the assembled reflector unit **14** are mounted in aligned back-to-back relation with their respective rows of reflectors **18** facing outwardly in opposite directions and located in staggered and nested relation, as shown in FIGS. **2–4**. To locate and fixedly hold or interconnect the two reflector panels **17** together as a unit in such aligned back-to-back assembled relation for ease in handling and assembly with the other components of the array, the reflector panels are provided on their backsides with an identical arrangement of a plurality of interengaging and interfitting shoulder means comprised, for example, of mating sets of locating pins **26** and socket means **27** having a snug or press interfit, as shown in FIGS. **3** and **8**, and so arranged on the reflector panels as to align and interfit with one another when the two panels **17** are positioned in their back-to-back assembled relation with their respective rows of reflectors **18** nested with one another. In the particular case illustrated, four such mating sets of locating pins **26** and socket means **27** are provided in the assembled reflector unit **14**, each reflector panel **17** being provided on its backside with a pair of locating pins **26** located adjacent one end thereof and one above the other and respectively adjacent its top and bottom edges (FIG. **2**), and with a corresponding pair of socket means **27** suitably in the form of apertured studs or bosses having pin-receiving recesses **28** and located adjacent the other end of the panel and likewise one above the other and respectively adjacent the top and bottom edges of the panel. As shown, the two locating pins **26** on each reflector panel **17** preferably extend from the backside of, and in the axial center plane of one of the end reflectors **18** in the row thereof in the panel, so that the two locating pins **26** are disposed directly opposite and approximately aligned with the deepest part of that one of the channel-like cavities or spaces which are formed in the backside of the other reflector panel **17** between the backsides of the first two reflectors **18** in the row thereof in such other panel, the deepest part of such cavity coinciding with the meeting line **25** of the adjacent side edges of the first two reflectors **18**. In this way, the two locating pins **26** on each reflector panel **17** are located directly opposite the generally triangularly-shaped flat backside areas **29** and **30** which are present on the opposed other reflector panel **17** and are respectively located at the top and bottom thereof between the first two reflectors **18** in the row thereof on such other panel **17**. As a consequence, the pin-receiving socket means **27** on the reflector panels **17** can be conveniently located, as shown, on such flat triangularly- shaped backside areas **29** and **30** of the reflector panels rather than directly on the backside of a particular one of the reflectors **18** thereof. Thus, the socket means **27** is effectively recessed within the space formed on the back of the reflector panel **17** between the backsides of the two particular reflectors **18** between which the socket means **27** are located, thereby permitting a sufficient interfitting extent of overlap or press fit to be obtained between the locating pins **26** and the socket means **27** to assure a firm holding together of the two reflector panels **17** as a unit in their assembled back-to-back relation. Other securing

means may, of course, be employed instead of the press fit of the locating pins **26** in the socket means **27** for the purpose of holding the two reflector panels **17** together as a unit in their assembled position. Thus, they may be adhesive or solvent bonded, or ultrasonically welded together along abutting surfaces or edges thereof.

It is, of course, well known that the flashing of any photoflash lamp such as the flash lamps **1** is accompanied by the development of a considerable amount of heat energy. This heat energy, if permitted to be conducted by an associated reflector **18** to other reflectors **18** on the opposite side of the array with which it may be in back-to-back contact, would then be apt to cause warpage or distortion of such other reflectors so that if their associated lamps **1** have not as yet been flashed, their light-reflecting performance on subsequent flashing of their associated lamps **1** is considerably impaired. Accordingly, to prevent the occurrence of any such heat distortion of the reflectors **18** in the array according to the invention, the reflector panels **17** are provided on their backsides with suitable stand-off shoulder means for abutting interengagement with one another to assure the spacing of the reflectors **18** of one panel **17** from those of the other panel **17** with which they are nested a predetermined slight distance apart of at least around one sixty-fourth inch or so at the nearest approaching regions on their backsides, as shown at **31** in FIG. **4**, and maintain them in such predetermined spaced apart relation out of contact with one another at all times. In the particular case illustrated, the stand-off shoulder means is comprised, in part, of top flange or rib means **32** formed on the backsides of and extending continuously along the top edges of the reflector panels **17** and adapted to abut one another on assembly of the two panels together back-to-back as shown in FIGS. **3** and **8**, and in part by a plurality of bottom stiffening flanges or ribs **33** formed on the backsides of and extending along the bottom edges of the reflector panels **17** between adjacent ones of the reflectors **18** thereof and adapted to abut against the backsides of the tunnel portions **23** of the reflectors **18** of the opposing panel **17**, as shown in FIGS. **4**, **5** and **8**. The longitudinally extending back or abutment edge **34** of the top stand-off flange or rib means **32** on each reflector panel **17**, rather than being formed as a straight edge, is formed instead with a plurality (two in the particular case shown) of projecting stand-off lobes or humps **35** (FIGS. **2** and **3**) at spaced points therealong which abut against the straight-extending portions of the back edge **34** on the stand-off flange **32** of the opposing reflector panel **17** to provide the stand-off function thereof. By this means, the top standoff flanges **32** of the reflector panel **17** can be made of minimal depth throughout the greater part of their respective lengths, thus not only effecting a saving in the amount and cost of the plastic material required for their formation but also assuring that the opposed back edges **34** of the two top stand-off flanges **32** on the back-to-back assembled reflector panels **17** are spaced from one another throughout most of their lengths for the accommodation in such space of any internal projections that may be formed on the inside of the top wall of the plastic cover **15** which is applied over the reflector unit **14**.

The bottom stiffening flanges or ribs **33** on the reflector panels **17** extend between and integrally join adjacent ones of the reflectors **18** together in each respective panel **17**, thus serving the added purpose of stiffening or rigidifying the reflector panel along its lower edge throughout its longitudinal extent. The bottom stiffening flanges or ribs **33**, together with the top stand-off flange **32**, thus assure that each reflector panel **17**, on removal from its forming mold and cooling from its heated molding condition, will remain in the substantially straight line form throughout its longitudinal extent in which it is initially molded and will not take on, instead, a wavy or undulating shape such as might otherwise result from the internal stresses which develop within the plastic material of the panel **17** during the cooling down thereof.

Besides their above-mentioned functions as stand-off means for the reflector panels **17** and as stiffening means therefor, the bottom flanges or ribs **33** serve the further and highly important additional function of preventing warpage and distortion, and consequent impairment of the light-reflecting performance of the reflectors **18** in each respective panel **17** by the heat produced by the flashing of a lamp in an adjacent one of the reflectors **18** in such panel **17**. Reflector panels **17** not provided with bottom strengthening ribs **33** extending between and adjoining adjacent reflectors in the panel, are subject to severe reflector warpage and distortion by such heat, apparently due to the fact that the burning combustible material in the flashing lamp **1** drops to the bottom of the lamp envelope **5** and thus heats the bottom end portions of not only the associated reflector **18**, but the next adjacent reflectors **18** as well in the respective reflector panel **17**, to an exceedingly high temperature such as to cause the aforementioned heat distortion of the reflectors **18**.

In place of utilizing the top and bottom stiffening flanges or ribs **32** and **33** as the stand-off means for spacing the two reflector panels **17** apart from one another in the assembled reflector unit **14**, the stand-off panel-spacing function may be performed instead by the locating pins **26** and socket means **27** which, for such purpose, may be constructed so that the outer ends of the locating pins **26** bottom or abut against the bottoms of the pin-receiving recesses **28** in the respective socket means **27** to space the reflector panels **17** the desired predetermined distance apart, or the locating pins **26** may be provided with shoulder means, as by larger diameter shank portions thereon, for abutting against the outer ends of the socket means **27** to thereby form the stand-off means for the reflector panels. Where such alternative stand-off means are employed, the top and bottom stiffening flanges or ribs **32** and **33** in such case may be made of lesser width so as not to abut against one another or against the backsides of the tunnel portions **23** of the reflector panels **17**.

Form the above description of the invention, it will be evident that we have provided a two-sided linear type photoflash lamp array incorporating a multiple reflector unit of comparatively light overall weight and of relatively inexpensive but nevertheless sturdy construction and possessing superior optical characteristics and handling convenience for assembly with the other components of the array. In addition, because the reflecting surfaces of the individual reflectors of the array are not distorted in any way by the heat accompanying the flashing of any one of the lamps thereof,

the light-reflecting performance of the array therefore is maintained unimpaired throughout the flashing of all the lamps in the array.

While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. A multiple reflector unit for a linear photoflash lamp array comprising a pair of complementary strip-like thin-walled plastic molding reflector panels each having a row of side-by-side cavities in its front side formed with reflecting surfaces defining individual lamp reflectors, said reflector panels being mounted in aligned back-to-back relation with their reflectors facing outwardly in opposite directions and located in staggered nested relation, and stand-off shoulder means located on the backsides of said reflector panels and abutting one another to locate the two opposed reflector panels in predetermined back-to-back relation with their nested reflectors spaced a predetermined distance apart.

2. A multiple reflector unit as specified in claim 1 wherein the said abutting stand-off shoulder means comprises rib means on the said reflector panels adjacent the top and bottom longitudinal edges thereof.

3. A multiple reflector unit as specified in claim 1 wherein the said abutting stand-off shoulder means comprises interfitted abutting pin and socket means on said reflector panels.

4. A multiple reflector unit as specified in claim 1 wherein the said abutting stand-off shoulder means comprises rib means at the top edges of the reflector panels and abutting against each other and also rib means at the bottom edge of each reflector panel and abutting against the backsides of the reflectors of the other reflector panel.

5. A multiple reflector unit for a linear photoflash lamp array comprising a pair of complementary strip-like thin-walled plastic molding reflector panels each having a row of side-by-side cavities in its front side formed with reflecting surfaces defining individual lamp reflectors, said reflector panels being mounted in aligned back-to-back relation with their reflectors facing outwardly in opposite directions and with the reflectors of each reflector panel spaced from and located in staggered nested relation to the reflectors of the other reflector panel, and interfitting shoulder means on the backsides of said reflector panels to locate them in the said aligned back-to-back position with their reflectors in staggered nested relation.

6. A multiple reflector unit as specified in claim 5 wherein the said interfitting shoulder means on said reflector panels are comprised of matching pin and socket means thereon having a snug sliding interfit serving to position and hold the two reflector panels together as a unit in their assembled back-to-back position.

7. A multiple reflector unit as specified in claim 5 and comprising, in addition, stiffening ribs on the backsides of said reflector panels extending between and integrally joining adjacent ones of the reflectors in the respective panels to rigidify each of said panels.

8. A multiple reflector unit as specified in claim 5 and comprising, in addition, stiffening ribs on the backsides of said reflector panels extending between and integrally joining adjacent ones of the reflectors in the respective panels at regions adjacent both the top and bottom longitudinal edges thereof to rigidify each of said panels.

9. A multiple reflector unit as specified in claim 8 wherein the said stiffening ribs adjacent the top edges of said panels abut against one another, and the stiffening ribs adjacent the bottom edge of each one of said panels abut against the backsides of the individual reflectors of the opposed other one of said panels, to together form stand-off means coacting to locate the two opposed reflector panels in predetermined back-to-back relation with their nested reflectors spaced a predetermined distance apart.

10. A multiple reflector unit as specified in claim 5 and comprising, in addition, a stiffening flange on the backside of each said reflector panel extending approximately the full length of the panel at the top edge thereof to rigidify the panel thereat, and a plurality of stiffening flanges on the backside of each said reflector panel extending between and integrally joining adjacent ones of the reflectors in the panel at the bottom edge thereof to rigidify the panel thereat, the said stiffening flanges at the top edges of said panels abutting against one another, and the stiffening flanges at the bottom edge of each one of said panels abutting against the backsides of the individual reflectors of the opposed other one of said panels, to together form stand-off means coacting to locate the two opposed reflector panels in predetermined back-to-back relation with their nested reflectors spaced a predetermined distance apart.

11. A multiple reflector unit as specified in claim 10 wherein each of said individual reflectors have an open-ended tunnel portion extending to the bottom longitudinal edge of the respective reflector panel for the accommodation therein of the base end of a photoflash lamp positioned within the reflector, and wherein the said stiffening flanges at the bottom edge of each one of said reflector panels abuts against the backsides of the said tunnel portions of the individual reflectors of the opposed other one of said panels to thereby form the said stand-off means at the bottom edges of the said reflector panels.

12. A multiple reflector unit as specified in claim 11 wherein the said interfitting shoulder means on said reflector panels are comprised of a plurality of sets of matching pin and socket means having a snug sliding interfit serving to position and hold the two reflector panels together as a unit in their assembled back-to-back position.

13. A photoflash lamp array comprising an elongated base member, electrical connection means mounted on said base member, two parallel rows of photoflash lamps mounted on said base member and electrically connected to said electrical connection means with the lamps of one row staggered relative to the lamps of the other row, and a multiple reflector unit positioned between the said rows of photoflash lamps and comprised of a pair of complementary strip-like thin-walled plastic molding reflector panels each having a row of side-by-side lamp-receiving cavities in its front side formed with reflecting surfaces defining individual

lamp reflectors, said reflector panels being mounted in aligned backcto-back relation with their reflectors facing outwardly in opposite directions and located in staggered nested relation and the reflectors of each row accommodating therein a respective one of the lamps in the corresponding row thereof, and stand-off shoulder means located on the backsides of said reflector panels and abutting one another to locate the two opposed reflector panels in predetermined back-to-back relation with their nested reflectors spaced a predetermined distance apart.

14. A photoflash lamp array as specified in claim **13** wherein the said abutting stand-off shoulder means comprises stiffening flanges extending along the top edges of the said reflector panels to rigidify the panels thereat, and a plurality of stiffening flanges on each of said reflector panels extending between and integrally joining adjacent ones of the reflectors in the respective panel at the bottom edge thereof to rigidify the panel thereat.

15. A photoflash lamp array as specified in claim **13** wherein the said reflector unit comprises, in addition, matching sets of pin and socket means on said reflector panels having a snug sliding interfit serving to position and hold the two reflector panels together as a unit in their assembled back-to-back position.

16. A photoflash lamp array as specified in claim **15** wherein the said stand-off shoulder means comprises a stiffening flange on each said reflector panel extending approximately the full length of the panel at the top edge thereof to rigidify the panel thereat and a plurality of stiffening flanges on each said reflector panel extending between and integrally joining adjacent ones of the reflectors in the panel at the bottom edge thereof to rigidify the panel thereat, the said stiffening flanges at the top edges of said panels abutting against one another, and the stiffening flanges at the bottom edges of each one of said panels abutting against the backsides of the individual reflectors of the opposed other one of said panels to together form the said stand-off shoulder means of said reflector unit.

17. A photoflash lamp array as specified in claim **16** wherein each of said individual reflectors has an open-ended tunnel portion extending to the bottom longitudinal edge of the respective reflector panel for the accommodation therein of the base end of the photoflash lamp positioned within the reflector, and wherein the said stiffening flanges at the bottom edge of each one of said reflector panels abuts against the backsides of said tunnel portions of the individual reflectors of the opposed other one of said panels to thereby form the said stand-off shoulder means at the bottom edge of the reflector unit.

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