June 23, 1953 A. R. ELMENDORF 2,643,328

ELECTRIC LIGHT FIXTURE SHADE AND CHASSIS CONSTRUCTION

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Fig. 1.

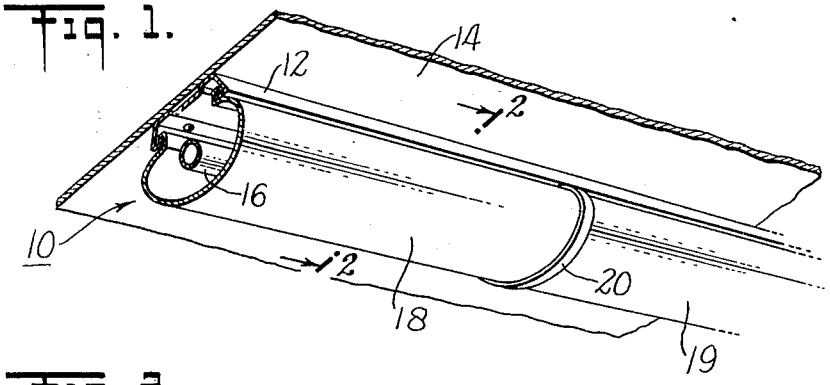


Fig. 2.

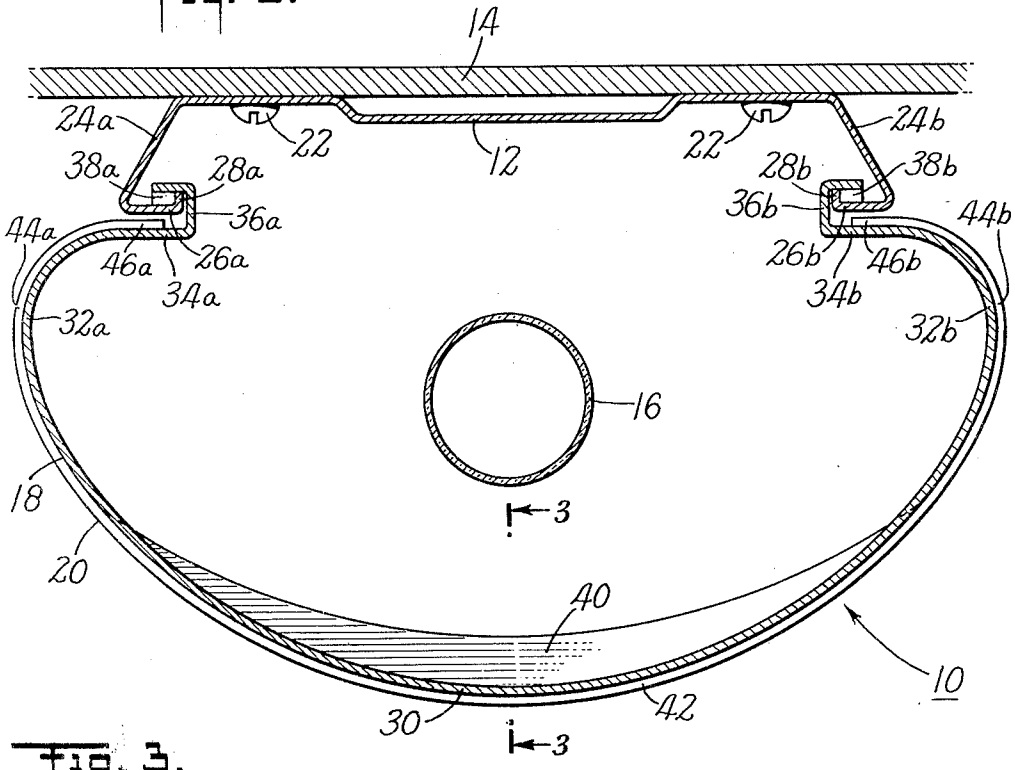
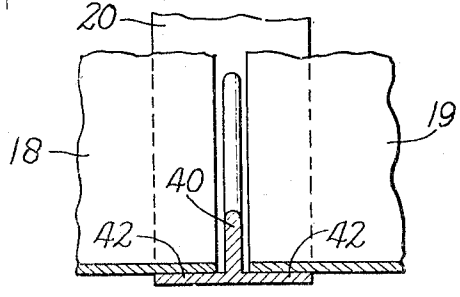


Fig. 3.



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Fig. 4.

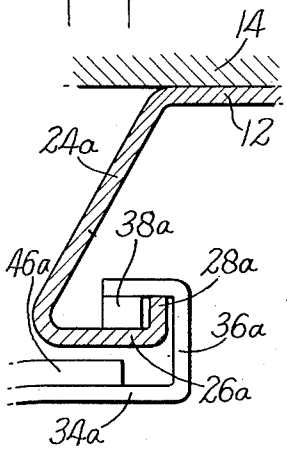


Fig. 5.

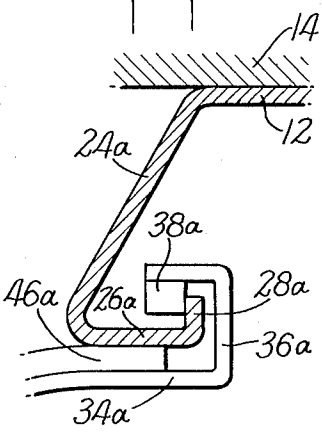


Fig. 6.

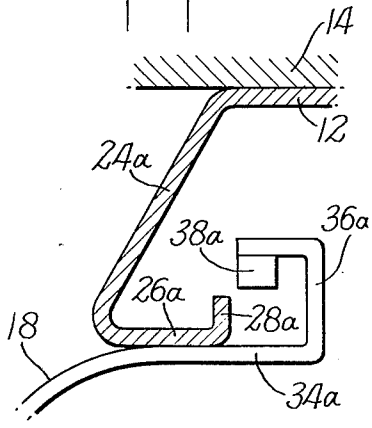
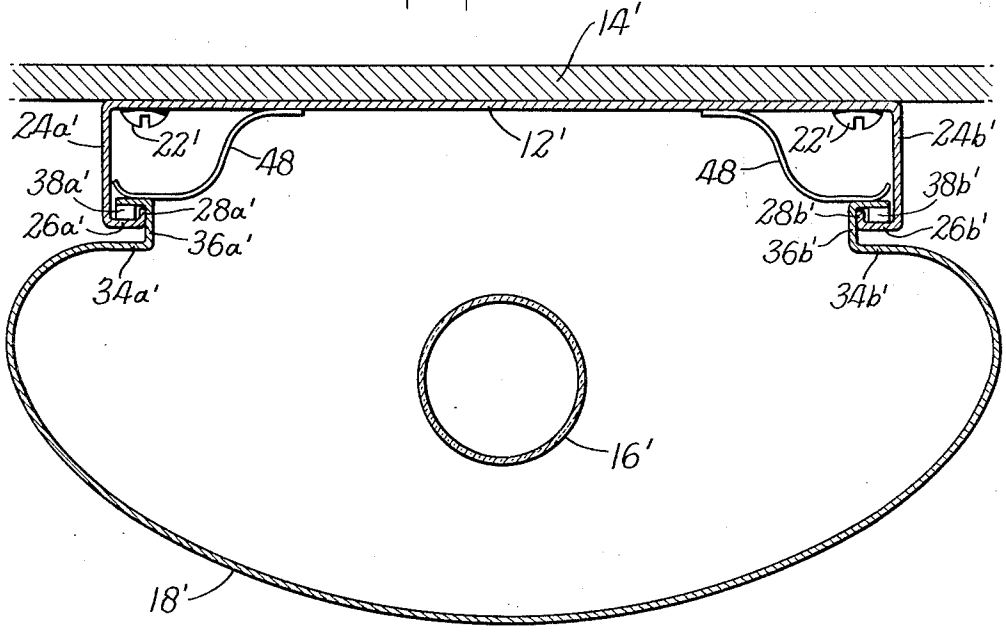


Fig. 7.



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ELECTRIC LIGHT FIXTURE SHADE AND CHASSIS CONSTRUCTION

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Application May 18, 1950, Serial No. 162,704

4 Claims. (Cl. 240—51.11)

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My invention relates to an electric lighting fixture, and more particularly to shade and chassis constructions for such a fixture.

Elongated light sources are finding many new applications, particularly with the advent of the fluorescent tube, and modern fixtures to accommodate the tubes generally may comprise a specially shaped chassis or plate which is secured to a bulkhead and to which is attached the lighting tube together with a translucent shade encircling the tube and affixed to the plate to diffuse the light and protect the tube from injury.

Fixtures adapted for running longitudinally overhead, as across a ceiling, sometimes are equipped with a convex shade consisting of a series of abutting elongated sections which have flanged edges that rest on the ceiling chassis or plate, and accordingly they permit convenient access to the fluorescent tube. This construction, though simple, is not satisfactory in many instances, for when the fixture is used on a moving vehicle excessive freedom in the fitting of the shade causes rattling, and should the shade become warped or otherwise deformed, it may not remain in place and consecutive sections will be out of alignment. Also, a fixture with a shade which merely slides or snaps into place is easily tampered with.

Accordingly, it is among the objects of this invention to provide a fluorescent fixture with a flexible shade having flanges which interlock with the ceiling plate. Another object is to provide a locking construction for such lighting fixture so that the shade cannot be removed unless the interlocking flanges of the shade are moved upwardly and inwardly. It is also an object to provide a shade which fits securely to the fixture and which may be locked or held tightly in place. A further object is to provide a spacer between successive longitudinal sections of a shade which limits movement of the shade sections both horizontally and vertically and which keeps the shade sections in alignment. Another object is to provide a shade of the type described which will not be distorted at the ends when a spring spacer is placed between shade sections. A still further object is to provide a shade which is securely held to the fixture even when spacers are not employed. These and other objects will be apparent from the description which follows.

The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts, and relation and order of each of the same to one or more of the others, all as will be illustratively described herein and

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the scope of the application of which will be indicated in the claims.

In the drawings:

Figure 1 is a partial perspective view of an overhead fluorescent lighting fixture;

Figure 2 is an enlarged sectional view taken along line 2—2 of Figure 1;

Figure 3 is a partial sectional view taken along line 3—3 of Figure 2;

Figures 4, 5 and 6 are enlarged fragmentary views of the left flange of the shade as it interlocks with the ceiling plate channel; and

Figure 7 is a sectional view of an alternate securing arrangement for a shade forming another embodiment of this invention.

Similar reference characters refer to similar parts throughout the several views of the drawings.

In the illustrative embodiment of the present invention, a long fluorescent lighting fixture, suitable for overhead use, containing a succession of fluorescent tubes, is provided with a series of flexible plastic shade sections. Each shade section is somewhat elliptical in cross-section, but is open at the top so as to substantially encircle the lighting tube and fit onto a plate, which attaches to the ceiling in any convenient manner. This plate supports the tubes on the usual electrical fittings and has upturned lips forming underhanging longitudinal channels along the inside. The edges of the shade sections on each side of the top opening are flanged and have lugs attached to interlock over the upturned lips of the ceiling plate to hold the shade in position. The plate channel and shade flange are shaped to permit part of the shade section to lie a short distance below and parallel to the underside of the channel so that the shade section must be elevated to a point where the lugs pass over the upturned lips on the channel before it can be removed. In consequence, a shade section cannot be removed unless its lugs are shifted first upwardly and then horizontally until the entire shade flange clears the channel. The shade section can then be lowered free of the fixture.

The ends of each shade section are square so that consecutive sections may abut one another, and in one embodiment of my invention a spring spacer is placed around the outside at the juncture of two shade sections, and, being T-shaped in cross-section along the bottom, it fits between the sections and covers the joint. The upper ends of the spacer are flat to extend between the shade and the underside of the ceiling plate channel; they are of sufficient thickness to pre-

vent removal of the shade until the spacer is taken off, i. e. the shade cannot be lifted sufficiently for its lugs to clear the upturned lips of the plate channel. The interlocking parts are rather closely fitted, and movement of the shade is limited horizontally as well as vertically so that spring action of the spacer will align the shade sections. Distortion of the shade ends is prevented, however, by the lugs fitting firmly against the upturned lips of the channel. The fixture, when assembled, is accordingly trim and secure, and the various parts are held together tightly by virtue of their interlocking features.

Another embodiment of the invention employs a similar ceiling plate and identical shade sections, but the fixture is adapted for use without spacers. Instead, leaf springs are secured to the ceiling plate which press against the top edges of the shade to hold the lugs in the channel. Here too, a shade section may not be removed until its lugs are shifted both upwardly and inwardly, but resistance to upward movement is provided by the leaf springs which hold the various parts securely in place.

Referring now to the drawings, in Figure 1 an overhead lighting fixture, generally indicated at **10**, is shown with a ceiling plate **12** fixed to ceiling **14**. Part of a fluorescent tube **16** may be seen at the left, this being supported below ceiling plate **12** by electrical sockets (not shown). Successive shade sections **18** and **19** are attached to ceiling plate **12** by an arrangement hereafter to be described, and a spacer **20** is fitted between the two shade sections. The shade is made of a suitable flexible, translucent material, such as plastic, and spacer **20** is preferably a similar material—thus providing a non-metallic spacer and joint covering band (however, a resilient metal band may be employed if desired).

As seen in Figure 2, ceiling plate **12** is attached to ceiling **14** by screws **22**. Sides **24***a* and **24***b* project downwardly and have contiguous horizontal portions **26***a* and **26***b*, respectively, which extend inwardly of the sides. The horizontal portions have upturned lips **28***a* and **28***b* forming channels into which shade lugs **38***a* and **38***b* fit as described below.

Shade **18** has a large convex portion **30** which surrounds light tube **16** at a distance therefrom, and convex sides **32***a* and **32***b* with inwardly extending horizontal portions **34***a* and **34***b* which lie parallel to similar portions **26***a* and **26***b* of plate **12**. Shade **18** is open at the top and is provided with inverted L-shaped flanges **36***a* and **36***b* which extend up over lips **28***a* and **28***b*, respectively. These flanges in turn have lugs or strips **38***a* and **38***b* which overhang the lips.

Spacer **20** is contoured to rest snugly around the periphery of the shade and has an arcuate projection or tongue **40** (Figs. 2 and 3) projecting perpendicularly on its inner side to separate sections **18** and **19**, leaving an outside strip **42** on either side as a flange to cover the exposed ends of the shades. Side **44***a* of spacer **20** is flat and spring-fits around convex side **32***a* of shade **18**, and a straight section **46***a* lies snugly over horizontal portion **34***a*. Spacer **20** is preferably made from a resilient material, and side **44***a* is prestressed inwardly so that a compression force will be exerted around the periphery of the shade sections at their juncture. The right half of spacer **20** is similarly constructed with side **44***b* terminating in straight section **46***b*, and thereby two shade sections are securely held in alignment and the seam is attractively concealed.

The shade sections are made from a translucent material which diffuses the light emitted by tube **16**; they are sturdy enough to protect the tube, and they possess sufficient resilience to permit sides **32***a* and **32***b* to be flexed inwardly until flanges **36***a* and **36***b* clear lips **28***a* and **28***b* of plate **12** when the shade is to be attached. Both sides need not be flexed, however, to place shade **18** in the position shown in Figure 2, for if one edge is inserted into a plate channel at an angle, the other edge can be slipped into the opposite channel by stressing the adjacent side. If sides **24***a* and **24***b* of plate **12** are made flexible, then a rigid shade section can be used; however, it is preferable to have the shade flexible because of the availability of suitable inexpensive and lightweight plastic materials for this purpose, and because of the greater convenience of manipulating the shade.

When shade **18** is fitted to plate **12** and spacer **20** is snapped in place around it by expanding sides **44***a* and **44***b*, the shade is securely held in proper alignment and cannot be removed. In this normal position of use, straight section **46***a* of spacer **20** lies between horizontal portions **26***a* and **34***a* (Figure 4), and these coacting parts have relative dimensions which prevent lugs **38***a* from clearing lip **28***a* (Figure 5); hence, shade section **18** cannot be removed from ceiling plate **12** until spacer **20** is first removed (Figure 6). These illustrations are of the left side of the fixture, but the same construction is provided for the opposite side (Figure 2). When a taut spacer is employed, adjoining shade sections are held firmly in alignment because lugs **38***a* and **38***b* bear against lips **28***a* and **28***b*, respectively, to arrest inward distortion. Accordingly, there is provided a lighting fixture with rigidly held interlocking parts which may be assembled with comparative ease.

In another embodiment of the invention, shown in Figure 7, the spacers between shade sections are not employed. Shade **18'** is essentially the same as shade **18**, and it encircles a lighting tube **16'** that is suspended from ceiling plate **12'** which is attached to ceiling **14'** by screws **22'**. Corresponding horizontal portions **34***a'* and **34***b'*, flanges **36***a'* and **36***b'*, and lugs **38***a'* and **38***b'* are provided for the functions previously described for similar parts of shade section **18**. Plate **12'** is constructed like plate **12** with sides **24***a'* and **24***b'*, horizontal portions **26***a'* and **26***b'*, and upturned lips **28***a'* and **28***b'*, while lugs **38***a'* and **38***b'* slip into the channels thus formed in the manner previously described for plate **12** and shade section **18**. A plurality of leaf springs **48** are secured to the underside of plate **12'** and extend over the top of flanges **36***a'* and **36***b'* to retain shade **18'** in place. Springs **48** are strong enough to hold lugs **38***a'* and **38***b'* firmly seated in their respective channels, while these lugs are closely fitted inside lips **28***a'* and **28***b'*, with the result that shade **18'** is confined against either horizontal or vertical movement. Consequently, with this arrangement, spacers between successive shade sections need not be used, and one less operation is necessary to assemble the fixture. Thus, a practical and efficient lighting fixture has been achieved in which the several objects hereinabove set forth have been successfully accomplished.

As many possible embodiments may be made of the features of the above invention, and as

the art herein described might be varied in various parts, all without departing from the scope of the invention, it is to be understood that all matter hereinabove set forth, or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. In a lighting fixture, the combination of a trough-shaped base member adapted to be secured to a ceiling or the like and having depending sides terminating in inwardly extending horizontally-disposed sections bordered by integral, substantially vertically-disposed flanges to form two longitudinal channels at the bottom of and inside said depending sides, a tubular light source suspended longitudinally below said base member, a plurality of light transmitting shade sections substantially trough-shaped in cross section adapted to be suspended from the channels in said base member, the longitudinal edges of said sections being substantially U-shaped in cross section to provide two horizontal portions joined by a vertical portion, the upper horizontal portions extending outwardly and being provided with a series of depending lugs spaced from said vertical portions and thinner than the height of said vertical portions to rest upon the bottom of said channels in said base member, and resilient means associated with said fixture and adapted to press said shade sections against said base member so that said lugs fit snugly in said channels and the assembly is held rigid against vibration.

2. The lighting fixture combination as defined in claim 1 in which the resilient means comprises a series of U-shaped resilient strips with inturned ends adapted to fit about said sections and spaced longitudinally therealong with their free ends

extended between the bottom of the channel portions of said base member and the portions of said shade sections immediately therebeneath to hold said lugs firmly against the bottom of said channels.

3. The lighting fixture combination as defined in claim 1 in which there are a series of resilient spacer elements in the form of U-shaped strips with longitudinal ridges therein and inturned ends adapted to fit over the ends of adjacent shade sections with the ridges disposed between the ends of said sections and said elements fitting around said shade sections with the ends thereof disposed beneath said channel portions to hold said lugs firmly against the bottom of said channels.

4. The lighting fixture combination as defined in claim 1 in which the resilient means comprises a plurality of leaf-spring members secured to said trough-shaped member and depending downwardly to engage the upper horizontal edges of said shade sections to urge said lugs against said channels.

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