Oct. 16, 1962 C. R. CHESTER 3,058,611

FLUORESCENT LIGHTING FIXTURE CONSTRUCTION

Filed June 1, 1959 2 Sheets-Sheet 1

Fig. 1.

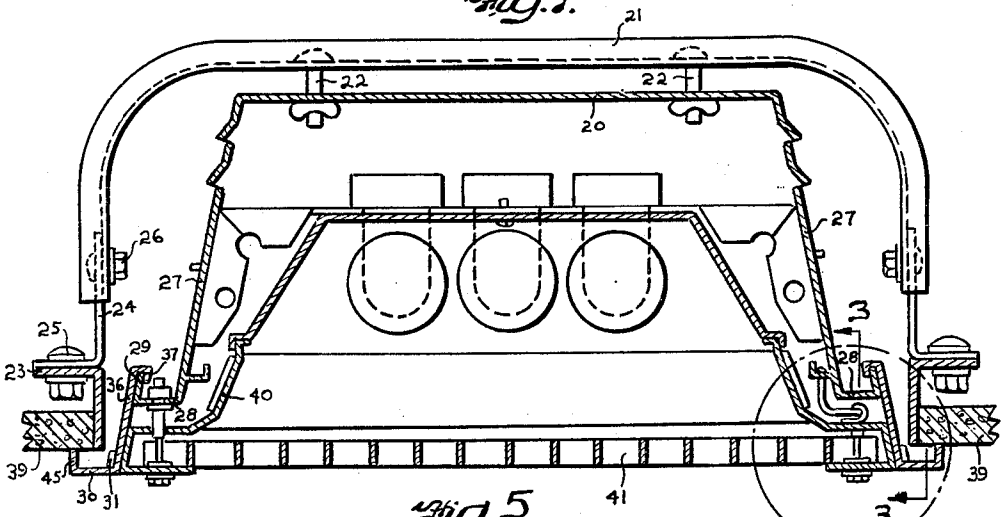


Fig. 5

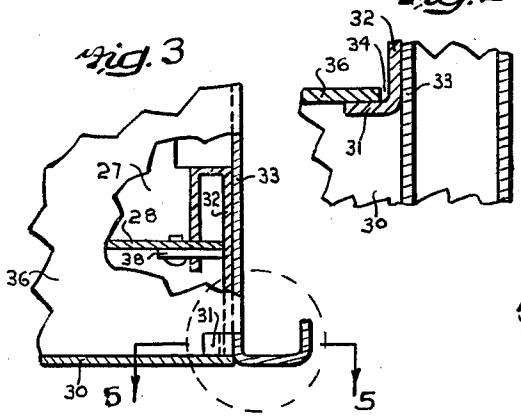


Fig. 3

Fig. 2

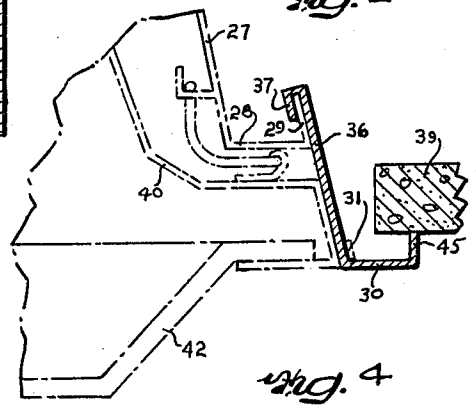


Fig. 4

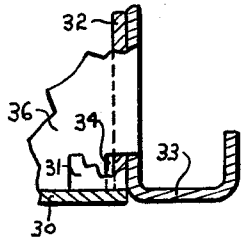
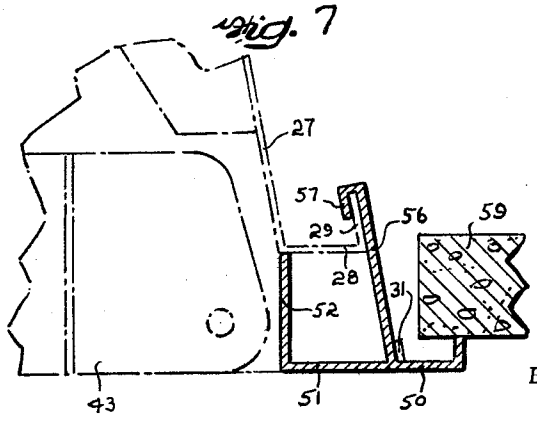


Fig. 7



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Oct. 16, 1962 C. R. CHESTER 3,058,611

FLUORESCENT LIGHTING FIXTURE CONSTRUCTION

Filed June 1, 1959 2 Sheets-Sheet 2

Fig. 9

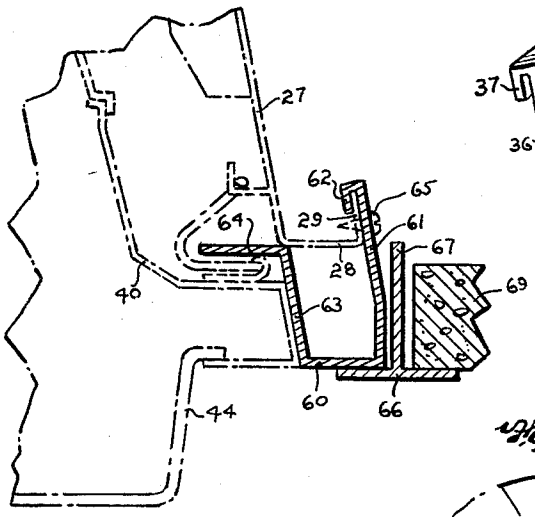


Fig. 6

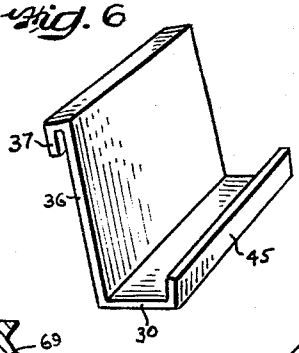


Fig. 12

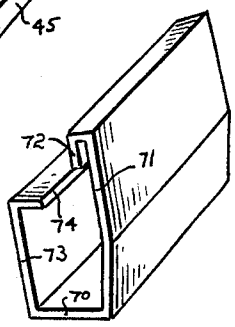


Fig. 11

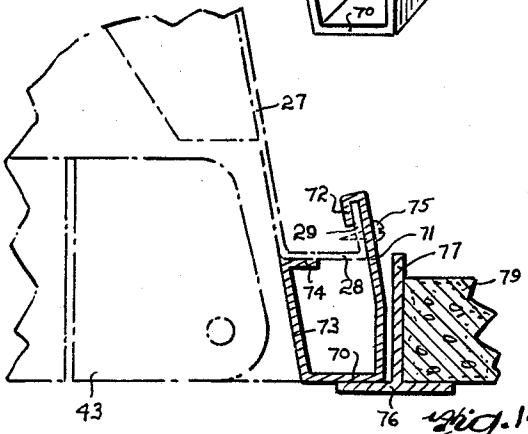


Fig. 10

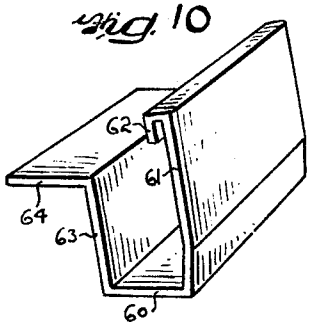


Fig. 14

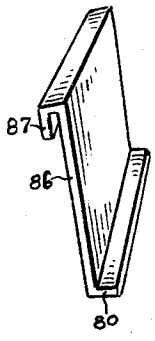


Fig. 8

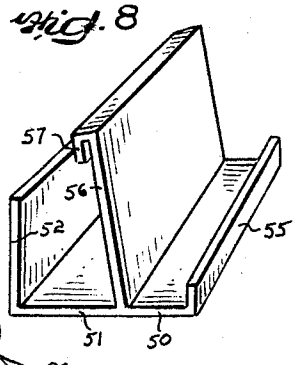
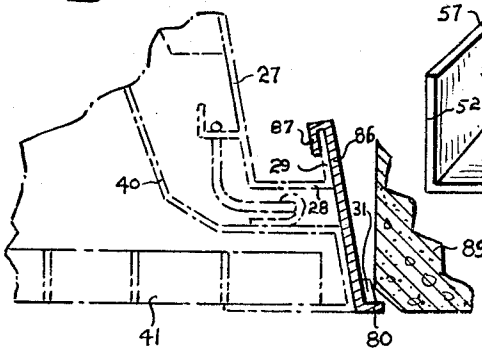


Fig. 13



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3,058,611

FLUORESCENT LIGHTING FIXTURE CONSTRUCTION

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Filed June 1, 1959, Ser. No. 817,155
2 Claims. (Cl. 220—3.5)

This invention relates to lighting fixtures, and more particularly relates to lighting fixtures of the recessed mounting type which are generally ceiling mounted with the fixture bottom framing substantially flush mounted with the ceiling.

In general, lighting fixtures are mounted in one of three ways. In one mounting arrangement, the lighting fixture is suspended from the overhead joists independently of the ceiling, whereas in a second way a lighting fixture may be suspended from overhead joists and may also act as a ceiling support, as for example when a ceiling is made from sound absorbing panels partially supported by the lighting fixture frame about its periphery. A third way of mounting a ceiling lighting fixture involves the use of supporting members such as inverted T-shaped members which support a ceiling hung below the overhead joists and also support the lighting fixture itself which may be seated upon flanged portions of the ceiling supporting T members.

The foregoing mentioned types of ceiling and lighting fixture systems encompass a goodly portion of the conditions encountered today and likely to be encountered for some time to come for hanging lighting fixtures and ceilings. These different methods of ceiling and lighting fixture installation involve divergent structural aspects, and each type of installation generally requires that the lighting fixture be provided with a frame which differs from one type of installation to another. It, therefore, becomes a matter of necessity for the manufacturer of lighting fixtures to make, and the dealer in such fixtures to stock, a relatively large number of lighting fixtures each adapted to use in a particular type of installation. This, of course, represents a highly undesirable situation because a substantial amount of capital must necessarily be tied up in inventory, and hence is not available for use as working capital. Accordingly, it is a prime object of my invention to provide a novel ligthing fixture adaptable for use with all conceivable types of installation.

It is another object of my invention to provide a novel lighting fixture adaptable for use in all types of installations by providing a fixture having a housing of such configuration that it may have secured thereto any one of a wide variety of frame types, each frame type being best suited for a particular kind of installation.

Still another object of my invention is to provide a novel lighting fixture of the foregoing type which allows the manufacturer of such fixture to reduce his inventory by making only one type of housing and making a completed fixture by attaching thereto the desired type of fixture framing.

It is yet another object of my invention to provide novel lighting fixtures wherein the desired type of fixture framing may be easily and rapidly secured to the fixture housing to provide a completed lighting fixture.

The foregoing and other objects of my invention will become clear from a careful reading of the following specification together with an examination of the appended drawings, wherein:

FIGURE 1 illustrates a cross-sectional view through a fluorescent lighting fixture taken transversely through the fluorescent tubes, illustrating an overhead supported fixture housing provided with a fixture frame adapted to operate as a ceiling supporting element;

FIGURE 2 is an enlarged fragmentary view of the structure enclosed by the phantom circle of FIGURE 1, some parts being shown in section and other parts in phantom;

FIGURE 3 is a view taken along the lines 3—3 of FIGURE 1 with some parts being shown in section and other parts in elevation;

FIGURE 4 is a enlarged fragmentary view of the structure included within the phantom circle of FIGURE 3;

FIGURE 5 is a fragmented sectional view as seen when viewed along the lines 5—5 of FIGURE 3;

FIGURE 6 is a perspective view of the frame portion of the fixture seen in FIGURE 1;

FIGURES 7, 9, 11 and 13 are views similar to that of FIGURE 2 but illustrating the use of different types of fixture framing members each suited for a particular type of installation;

FIGURES 8, 10, 12 and 14 are perspective views of the framing members seen in section respectively in FIGURES 7, 9, 11 and 13.

In the several figures, like elements are denoted by like reference characters.

Considering first FIGURE 1, there will be seen a lighting fixture having a housing including a top wall **20** and a pair of downwardly diverging side wall **27** integrally formed with the top wall **20**. A pair of wingnuts and bolts **22** secure the fixture by the top wall **20** to a U-shaped channel bracket **21**, which latter may be secured to overhead joists for the purpose of hanging the light fixture therefrom. A certain amount of vertical adjustment is possible by virtue of the adjustability of the suspending bolt and nut **22**. Depending from each side of the U-shaped channel bracket **21** are a pair of assemblies each including an L-shaped bracket **24** secured to an inverted L-shaped bracket **23** by means of a nut and bolt arrangement **25**, the entire depending assembly being secured to the channel bracket **21** by means of the nut and bolt **26**. The inverted L's act as a backing or stop for the ceiling material **39**, which may be sound absorbing block material or wall board or wet plaster.

The depending sides **27** of the lighting fixture are each turned horizontally outward for a distance as indicated at **28**, and are then turned upward and slightly inward for a short distance to provide a lip like projection **29**. Secured to the lighting fixture housing are a pair of substantially L-shaped framing members having a substantially horizontally outwardly extending bottom flange portion **30** joined to an inwardly upwardly extending main side portion **36**, the latter terminating in an inwardly and downwardly-hooked lip projection **37**. As seen in FIGURE 1, it is observed that the vertically extending lip portion **29** of the housing is sandwiched between the part **36** and downwardly inwardly hooked terminal portion **37** of the framing member. The portions **36** and **37** of the framing member may be crimped inwardly toward each other to clamp the housing lip **29** securely therebetween, or alternatively, the upwardly extending lip portion **29** of the housing may be welded to the framing member.

Additionally, a tab **31** which is bent outward from the end section of the lighting fixture housing is projected through a notch in the framing member and bent inwardly thereagainst to lie snugly in the angle between the horizontal flange portion **30** and vertically extending side portion **36** of the framing member. The tab **31** may optionally also be welded to the framing member for a permanent bond. Thus, the tab **31** prevents the framing member from shifting longitudinally relative to the housing, and the clamping of the vertically extending lip portions **29** of the housing between the portion **36** and **37** of

the framing member prevents downward shifting of the latter relative to the housing.

Turned vertically upward from the horizontally extending bottom flange portion of the L-shaped framing member is a terminating lip **45** which underlies and closely seats against the undersurface of the ceiling **39**. If the ceiling **39** is a wet plaster ceiling, and hence fixed in position, the upwardly extending lip portions **45** of the framing members are brought into registry therewith by adjustment of the wingnuts and bolts **22** suspended from the U-shaped channel support **21**. If the ceiling **39** is formed from acoustical material or other dry panels then the lighting fixture is secured in position and the ends of the dry ceiling panels are laid inwardly over the turned up lip portions **45** of the framing members and into abutment with the inverted L bracket **23**.

The interior structural aspects of the lighting fixture illustrated in FIGURE 1 are completely described in my co-pending application for United States Letters Patent entitled Fluorescent Lighting Fixture, Serial No. 745,082, filed June 27, 1958. Briefly, however, the reflector structure of the lighting fixture is formed in two separable sections, the lower of which is designated as **40** in FIGURE 1 and which is illustrated as extending outward into abutting engagement with the L-shaped framing members and turned inwardly to also provide support for a light diffuser indicated generally at **41** in FIGURE 1. It will become clear from the remaining portion of the specification that my invention does not reside in the use of a light reflector such as that illustrated at **40** in FIGURE 1 but may in fact be employed with a wide variety of reflector structures and light diffusers, and in fact, without regard to the presence or absence of such. Accordingly, in FIGURES 2, 7, 9 and 11 differences in reflector construction and diffuser types is illustrated.

Turning now to FIGURES 3, 4 and 5 for a clear understanding of the interlocking engagement between the tab **31** and the L-shaped framing members, and referring first to FIGURE 3, there will be seen a main housing end section **33** secured to which and lying immediately to the left thereof is an inverted U or L-shaped member **32**. Turned upwardly out of the body of the member **32** is a tab **38** riveted or otherwise secured to the horizontally outwardly extending section **28** of the fixture main housing. Also turned out of the member **32** is the tab **31** which extends through a notched aperture **34** and lays over against the upwardly extending portion **36** of the L-shaped framing member, these latter details being most clearly visible in the showings of FIGURES 4 and 5.

Alternatively to the showing of FIGURES 1 through 6, the framing member may be shaped as seen in FIGURE 8 and combined with the housing as seen in FIGURE 7. The parts **55, 50, 56** and **57** correspond to the parts **45, 30, 36** and **37** of FIGURE 6. It is immediately apparent that the framing member of FIGURE 8 differs from the framing member of FIGURE 6 in that the former includes the additional inwardly extending horizontal portion **51** and the portion **52** extending vertically upwardly from the horizontal portion **51**. As seen in FIGURE 7, the framing member according to FIGURE 8 is secured to the lip **29** of the housing side portion **27** and to the tab **31** extending from the housing end structure member **32** in identically the same fashion as already described in connection with the framing member illustrated in FIGURE 6. Additionally, however, the vertically extending portion **52** of the framing member according to FIGURE 8 is seated on the undersurface of the horizontally extending portion **28** of the lighting fixture housing side portions **27**. This provides a rigid, non-bending structure which is desirable because the light diffuser structure **43** provides no side bearing support for the framing member such as is provided in the showings of FIGURES 1, 2 and 13 by the reflector portion **40**.

Turning now to an examination of FIGURES 9 and 10 there is seen a third type of framing member most suitably adapted for use where the lighting fixture is itself to be supported upon auxiliary suspension means which also support a portion of the ceiling. Of course, the entire weight of the lighting fixture need not be so supported but may be in the main supported by a structure similar to that shown at **21** in FIGURE 1 with the lighting fixture lowered just sufficiently to seat lightly upon the ceiling supporting structure, as for example the inverted T-member seen in FIGURE 9. As seen in FIGURE 9 there is a member of inverted T-shape having a horizontally extending portion **66** and a vertically extending portion **67**, the ceiling **69** being supported by the horizontal portion **66** which extends toward the right and the lighting fixture being seated upon the horizontally extending portion which extends to the left.

The framing member according to the showing of FIGURE 10 is secured to the lighting fixture housing in an alternative fashion to that shown in FIGURE 1, in that a self-tapping screw **65** is seen to be threaded through the upwardly extending side portion **61** of the framing member and the vertically extending lip portion **29** of the main housing thereby pinning the two together. This screw fastening is, of course, an optional alternative and the securement between the housing and the framing member could just as readily be provided by crimping or welding as previously described. Additionally, it will be observed that the locking tab **31** shown in FIGURES 1 through 5 is not utilized, and that a differently shaped light diffuser **44** is illustrated. The parts **60, 63** and **64** of FIGURE 10 have no corresponding parts in the structure of FIGURE 6. The vertically extending portion **63** of FIGURE 10 contactingly underlies the outwardly turned portion **28** of the housing side wall so that the latter seats down upon the portion **63** when the fixture is supported as shown in FIGURE 9.

FIGURES 11 and 12 are similar to FIGURES 9 and 10 excepting that whereas FIGURE 10 shows an inwardly projecting horizontal flange portion **64**, the framing member of FIGURE 12 shows an outwardly extending and somewhat shortened horizontal portion **74**. This, of course, is seen to be necessitated by the difference in the light diffuser **43** illustrated in the showing of FIGURE 11 as compared to the light diffuser **44** seen in FIGURE 9, it being apparent that the framing member shown in FIGURE 10 would interfere with the mounting of the light diffuser **43** seen in FIGURE 11. The parts **70, 71, 72** and **73** of the framing member of FIGURE 12 correspond to the parts **60, 61, 62** and **63** of FIGURE 10.

Finally, turning to the framing members illustrated in FIGURES 13 and 14 it will be seen that the member shown in FIGURE 14 is similar to the framing member illustrated in FIGURE 6 with the exception that the horizontally extending portion **80** of the FIGURE 14 showing turns outwardly in horizontal extent for a substantially shorter distance than the horizontally outwardly extending portion **30** of the framing member of FIGURE 6, and that the upwardly turned lip portion **45** of the framing member of FIGURE 6 is completely absent from the showing of FIGURE 14, the parts **86** and **87** corresponding, of course, to the parts **36** and **37** of FIGURE 6. As shown in FIGURE 13, the framing member of FIGURE 14 is secured to the lighting fixture housing in identically the same manner as is the framing member of FIGURE 6 secured in the showing of FIGURE 1. The essential difference between the showings of FIGURES 13 and 1 is that in the showing of FIGURE 13, the lighting fixture is hung independently of the ceiling structure **89**, and is merely recessed upward into an appropriately shaped opening of the proper size so that the bottom of the framing member of FIGURE 14 is substantially flush mounted with the undersurface of the ceiling **89**.

From the foregoing it may now be appreciated that the underlying concept of my invention includes the providing of a lighting fixture housing which is so con-

structed that it may be combined with a wide variety of different types of framing members to provide a finished lighting fixture suitable for use in installations requiring varied and particular types of framing structures. Accordingly, although my invention has been described in connection with a plurality of particularly illustrated embodiments of different types of framing members, it is to be understood that many modifications and variations thereof will naturally occur from time to time to those persons normally skilled in the art for the purpose of satisfying the requirements of a particular kind of installation, and such variations and modifications will of necessity fall within the spirit and the scope of the concept of my invention, and it is therefore intended to claim the same broadly as well as specifically as indicated by the appended claims.

What is claimed as new and useful is:

1. In a lighting fixture adapted for recessed ceiling mounting, in combination, a fixture housing having depending side walls each including an outwardly turned extension, fixture housing bottom framing members secured to and extending downwardly from said side wall extensions for a substantial distance below the lower terminus of said housing side walls, whereby when said fixture housing is installed in a ceiling the lower terminus of said side walls extends downward to a point above the undersurface of the ceiling, and said bottom framing members extend downward from the terminus of said side walls to a point substantially flush with the ceiling undersurface lying outwardly beyond the outermost extent of said side wall extensions, said housing side walls outwardly-turned extension including an upwardly extending terminating lip and said bottom framing members including an inwardly-extending downwardly-hooked lip overlyingly interfitted with said side walls terminating lip, whereby said bottom framing members are secured against downward and outward displacement relative to said housing, said bottom framing members at the lowermost point thereof being turned inwardly in underlying spaced relationship to said side walls outwardly turned extension, said inwardly turned portion being also turned upwardly into underlying contacting relationship with said outwardly turned side walls portion, whereby said bottom framing members are secured against upward displacement relative to said housing.

2. The fixture according to claim 1 wherein said housing side walls upwardly extending terminating lip is secured to a side wall of said bottom framing members adjacent thereto by pinning means extending through said housing side walls terminating lip and framing members side wall.

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