

[54] **RECESSED LIGHTING FIXTURE HOUSING**

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[57] **ABSTRACT**

A housing construction for a recessed lighting fixture having a sidewall to completely surround a lamp chamber. The sidewall has top and bottom edges defining the height of the lamp chamber, and has first and second side edges connecting the top and bottom edges. A plurality of openings are spaced along the first side edge and a plurality of corresponding lock tabs are spaced along the second side edge, with the tabs and openings aligned to interengage for rigidly interlocking the adjacent side edges of the sidewall together. A top plate closes the upper end of the chamber and has a depending flange embracing the upper marginal portion of the interengaged sidewall. Inwardly struck shear formed bosses on the flange project into holes in the upper marginal portion of the sidewall to interlock the flange and top plate to the sidewall forming the lamp chamber. The structure may be assembled without tools.

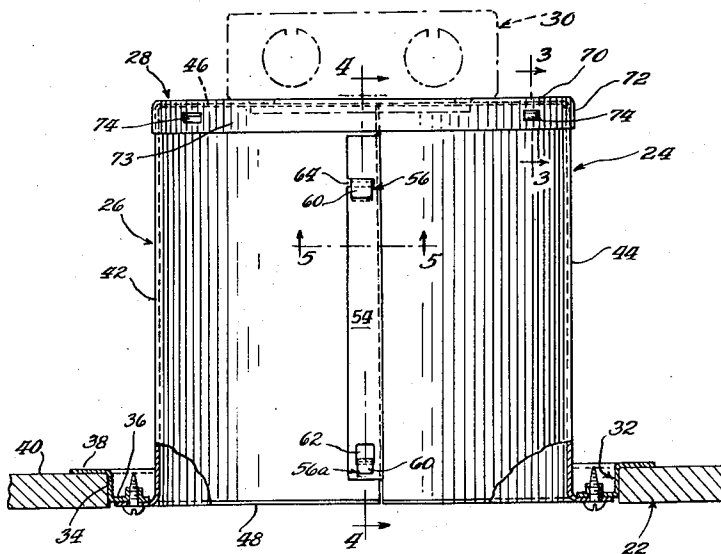
[52] U.S. Cl.220/3.94, 220/76
[51] Int. Cl.H02g 3/08
[58] Field of Search220/3.94, 3.92, 3.3, 5 R, 76, 220/75

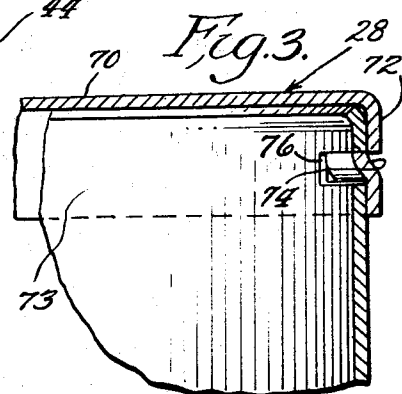
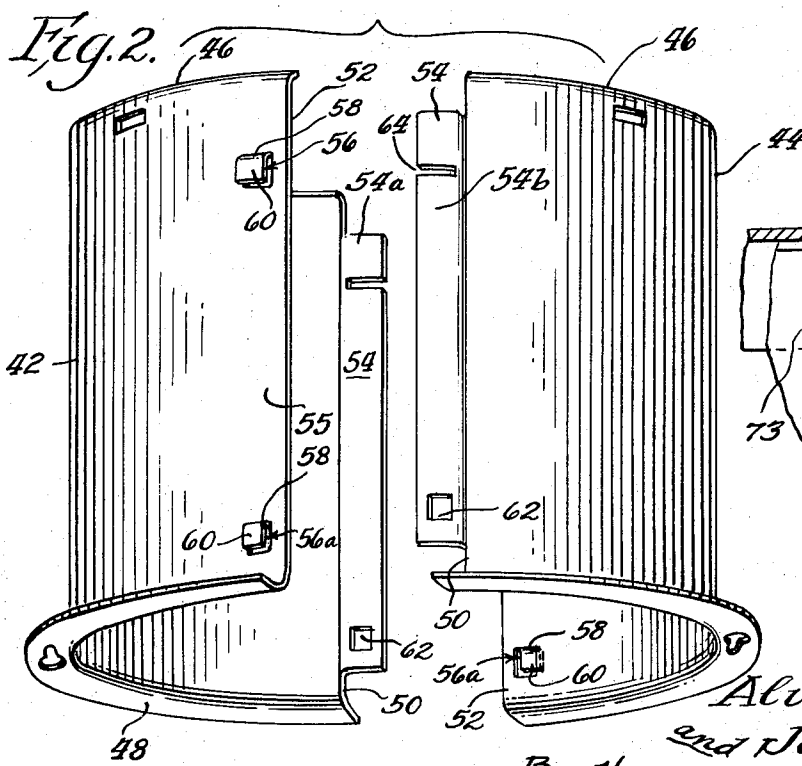
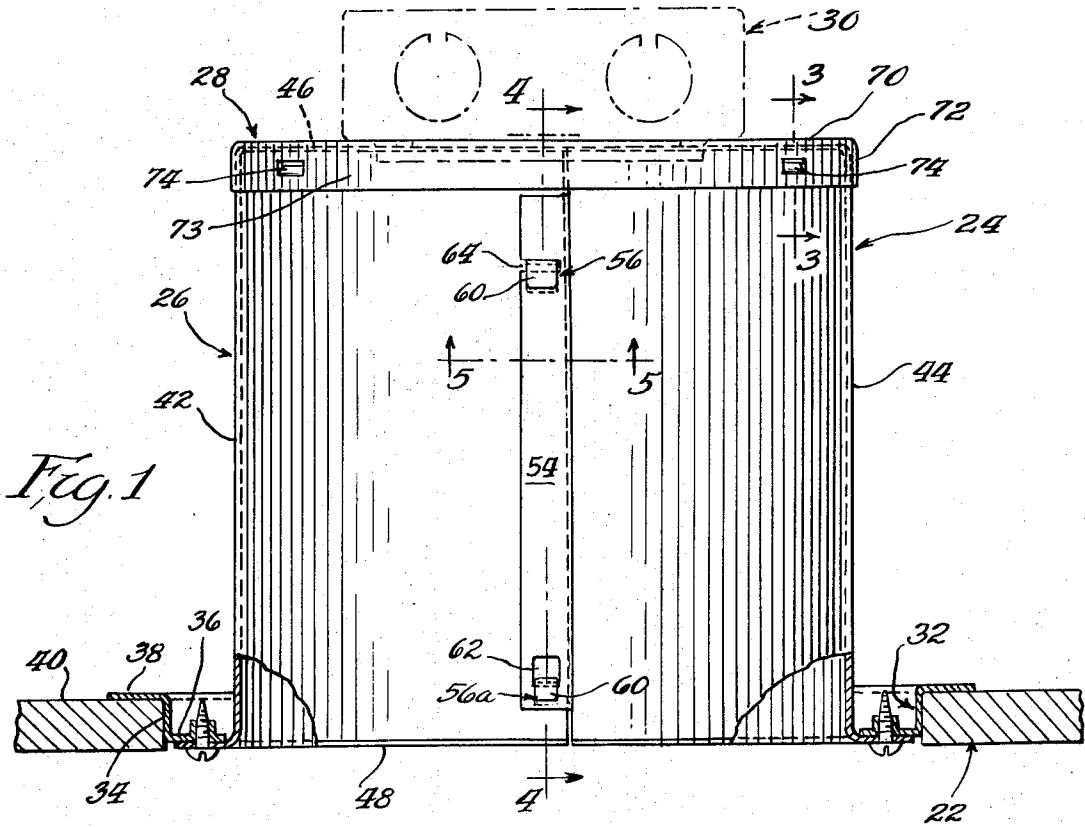
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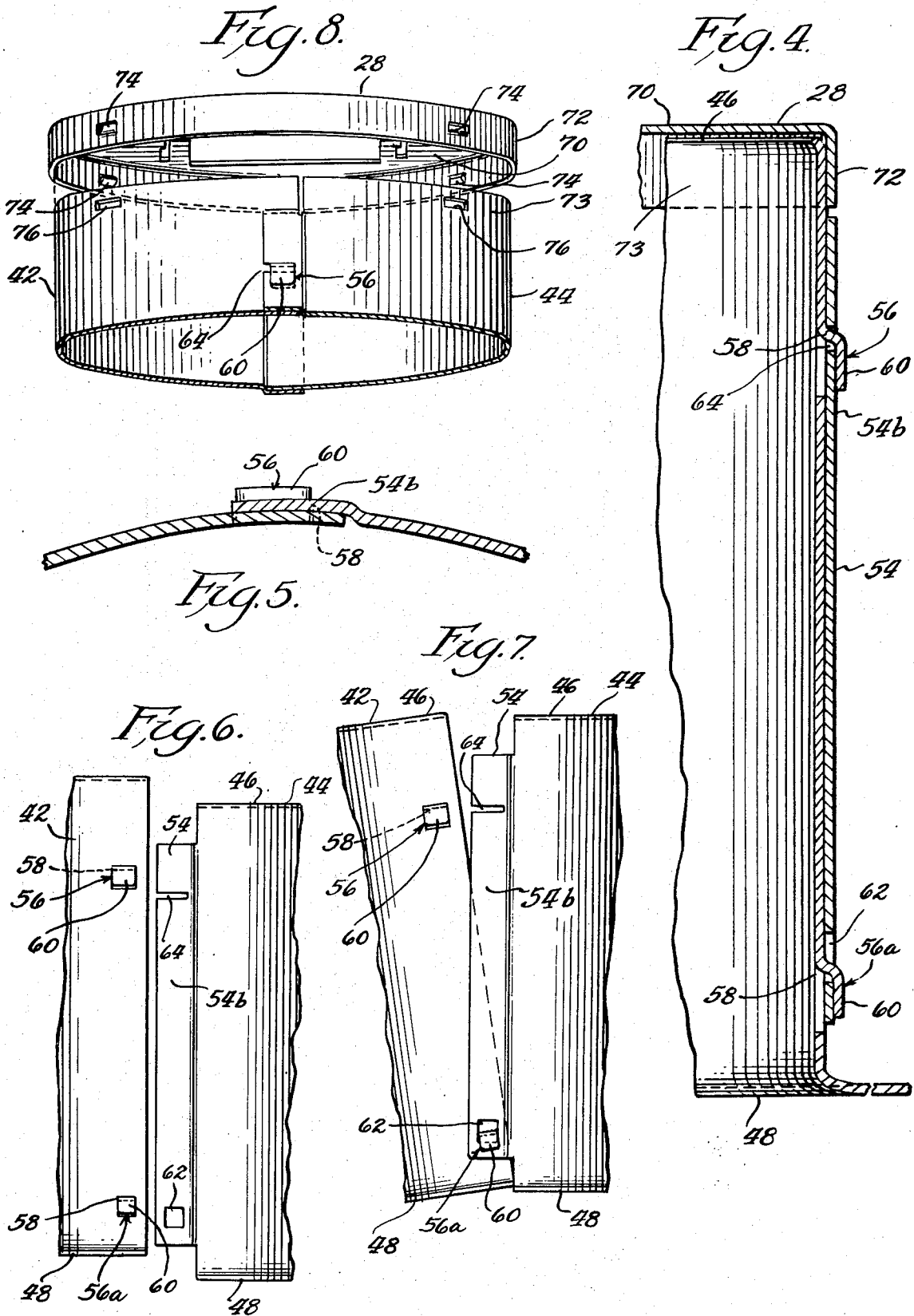
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6 Claims, 8 Drawing Figures





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RECESSED LIGHTING FIXTURE HOUSING

BACKGROUND OF THE INVENTION

This invention relates to a housing to surround a lamp chamber in a recessed lighting fixture.

Before the present invention, the housings for recessed lighting fixtures have generally been formed from deep draw sheet metal into an integral shell. The production of housings by deep draw imposes limitations on the nature of the housing structure and the housings are relatively expensive.

Initially, in a deep draw there is a definite limitation of the ratio of the depth of draw to the diameter of the shell being drawn. Thus, for a given diameter of draw the shell cannot exceed a specified depth.

Deep drawn metal housings may be made only from a limited group of expensive deep draw steels; and deep drawing requires periodic annealing which imposes additional expense. The production of housings by deep drawing also precludes the use of prefinished metals, so finishing the housing is a separate step after it has been drawn. Tooling for production of deep drawn housing is expensive, because of the drawing and annealing equipment and the requisite painting and drying equipment, and because all punching and forming of the housing wall must be performed after drawing and this requires special jigs and fixtures.

SUMMARY OF THE INVENTION

It is a principal object of the present invention to provide a new and improved housing construction for a recessed lighting fixture having a simple structure and which reduces the material and assembly cost.

In one embodiment of the housing construction of this invention, a cylindrical housing includes a pair of identical sections which form a sidewall surrounding a lamp chamber. Each sidewall section has top and bottom edges defining the height of the lamp chamber, and has first and second side edges connecting the top and bottom edges. A plurality of openings are spaced along the first side edge of each sidewall section, and along the second side edge a plurality of corresponding lock tabs are spaced to interengage with the aligned openings along the first side edge and interlock the pair of sidewall sections together to form a continuous sidewall for the lamp chamber. The openings and tabs are so formed that they may be interengaged and interlocked without the use of tools.

Each sidewall section may be punched, sheared and provided with offset lock tabs while it is flat, and may then be curved to the radius of the housing. Consequently, the sidewall sections may be formed from any metal that may be punched, sheared and curved to the desired shape of the sidewall sections, and the sections may be formed from prefinished material. Thus, the sidewall of the housing is simply formed from interlocking sections, and the expensive deep draw process is eliminated by this invention.

A top plate closes the upper end of the chamber formed by the sidewall, and a depending peripheral flange on the top plate embraces the upper marginal portion of the sidewall. Inwardly struck shear formed bosses on the flange protrude into aligned holes in the upper marginal portion of the sidewall to interlock the top plate with the sidewall; so the top plate may be pressed onto the upper end of the sidewall.

The top plate, when interlocked with the sidewall sections, retains the uppermost lock tabs and openings interengaged. The lower lock tabs and openings are self-locking.

The structure is disclosed as applied to a cylindrical housing, but it is apparent that the invention is applicable to the manufacture of housings of other shapes, such as rectangular, octagonal, and oval.

Further objects will become more fully apparent in the following description of the embodiment of this invention and from the appended claims.

DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a side elevational view of one embodiment of the housing made according to the present invention, showing two sidewall sections interlocked and the top plate in place on top of the sidewall, and a junction box which surmounts the top plate being illustrated in broken lines;

FIG. 2 is a perspective view of an identical pair of detached sidewall sections;

FIG. 3 is a fragmentary sectional view on an enlarged scale, taken substantially as indicated along the line 3—3 in FIG. 1, showing one interlocked shear formed boss of the top plate flange and opening in the upper marginal portion of the sidewall;

FIG. 4 is a fragmentary sectional view on an enlarged scale, taken substantially as indicated along the line 4—4 in FIG. 1, showing the tabs and openings of the pair of sidewall sections interlocked;

FIG. 5 is a fragmentary sectional view on an enlarged scale, taken substantially as indicated along the line 5—5 of FIG. 1, presenting another view of the interconnected upper tab and slot;

FIG. 6 is a fragmentary side elevational view of two adjoining sidewall sections in position for interengagement of the lower tab and opening;

FIG. 7 is a fragmentary side elevational view of the two adjoining sidewall sections of FIG. 6 with the lower tab and opening interengaged and in position for engagement of the upper tab and slot; and

FIG. 8 is a fragmentary perspective view of the interengaged sidewall sections, and the top plate positioned for interlocking to the top of the sidewall sections.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, a recessed lighting fixture, generally designated 20, is shown in place in a ceiling, generally designated 22. A housing construction, generally designated 24, for the recessed lighting fixture 20 has a continuous sidewall, generally designated 26, which forms a hollow lamp chamber, and a top plate, generally designated 28, which encloses the upper end of the sidewall 26. A junction box, generally designated 30, provides for electrical connections between a building circuit and a lamp which may be mounted within the housing 24 in any desired way.

A plaster frame, generally designated 32, has an upright annular wall 34 seated in a hole cut into the ceiling 22, and an outwardly directed flange 38 at the upper end of the frame rests on the upper surface of the ceiling 22. An outwardly directed circumferential flange 36 at the lower end of the housing 24 abuts the lower edge of the plaster frame wall 34 and underlies the surrounding ceiling. The housing may be secured in the plaster frame by any of several means known to the art, and the particular means illustrated is that of U.S. Pat. No. 2,835,791.

In a preferred embodiment, the housing 24 is cylindrical and has a pair of identical arcuate sidewall sections 42 and 44, which are engageable as shown in FIGS. 1, 2, 4, 5, 6 and 7; and the top plate 28, which can be interlocked with the sidewall sections 42 and 44 as illustrated in FIGS. 1, 3, 4 and 8. When interengaged, the sidewall sections 42 and 44 define the sidewall 26, and the top plate 28 encloses the upper end of the sidewall 26 forming the top of the lamp chamber. The sidewall sections 42 and 44 may be formed from any acceptable material which can be cast or molded, or from any metal which may be stamped and bent to the desired shape.

Each of the sidewall sections 42 and 44 has a top edge 46 and a bottom edge 48 which define the height of the lamp chamber, as best illustrated in FIG. 2. Each section also has a first side edge 50 and a second side edge 52 which connect the top and bottom edges 46 and 48. In each section the top and bottom edges 46 and 48 and first and second side edges 50 and 52 define a half cylindrical shell of the sidewall 26.

The first side edge 50 of each section 42 and 44 has a rectangular locking flap 54 which is slightly offset outwardly from the sections, and the inner surface 54a of the flap 54

makes a facing engagement with the outer surface 55 of the adjoining section adjacent the second side edge 52 when the two sections 42 and 44 are interengaged.

Adjacent the second side edge 52 of each sidewall section 42 and 44 are upper and lower lock tabs, generally designated 56 and 56a, respectively, each of which has an outwardly extending base portion 58 and a downturned portion 60 generally parallel to the outer sidewall surface 55.

Openings in the locking flaps 54 consist of rectangular holes 62 near the lower ends of the flaps and circumferential slots 64 near the upper ends of said flaps. The holes 62 and slots 64 are aligned, respectively, with the lower lock tabs 56a and the upper lock tabs 56 to allow the base portions 58 to pass through the slots 64 with the inner surfaces of the downturned portions 60 making facing engagement with the outer surfaces 54b of the locking flaps 54. The width of the lower tabs 56a is such that they fit closely in the holes 62, while the upper tabs 56 are so related to the slots 64 as to abut the inner ends of the slots as seen in FIG. 1.

In order to interengage sections 42 and 44, both sections are first positioned with the locking flaps 54 directed toward the lock tabs 56 and 56a of the adjoining sections, as illustrated in FIG. 6. As illustrated in FIG. 7, the lower lock tab 56a is then introduced through the adjoining hole 62 followed by a slight upward movement of section 44 relative to section 42 to cause facing engagement of the inner surface of the downturned portion 60 of the lower tab 56a with the outer surface 54b of the adjoining locking flap 54 directly below the hole 62, as shown in FIGS. 1, 4 and 7. This engagement interlocks the lower portions of sections 42 and 44 together.

After the lower tab 56a and hole 62 has been interlocked, inward rotary movement of the upper portions of the two sections 42 and 44 causes the base portion 58 of the upper tab 56 to slide into the slot 64 of the locking flap 54. When the base portion 58 has been fully introduced into the slot 64, the inner surface of the downturned portion 60 of the upper tab 56 makes facing engagement with the outer surface 54b of the flap 54 directly below the slot 64, as illustrated in FIGS. 1, 4, 5 and 8; and the two sections 42 and 44 are interengaged forming the continuous sidewall 26 as illustrated in FIG. 1.

Continuing now to the top plate 28, as illustrated in FIGS. 1, 3, 4 and 8, a transverse body 70 covers the lamp chamber when the top plate 28 is positioned on the interlocked sections 42 and 44, and a depending peripheral flange 72 of the top plate embraces the upper marginal portion 73 of the sidewall 26 in continuous facing engagement with the outer surface of the sidewall around said upper marginal portion.

As illustrated in FIGS. 1, 3 and 8, a plurality of inwardly struck shear formed bosses 74 are formed in the flange 72 and a plurality of holes 76 in the upper marginal portion 73 of the sidewall are aligned with bosses 74 so as to be impaled by the bosses when the top plate 28 is in place. Thus, with the top plate 28 pressed over the sections 42 and 44 the bosses 74 snap into the holes 76 to interlock the top plate 28 with the sections 42 and 44 and to lock the upper lock tabs 56 in slots 64. This interlocks the upper portions of sections 42 and 44, and thus interlocks the housing components.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as modifications will be obvious to those skilled in the art.

We claim:

1. A housing construction for a recessed lighting fixture comprising, in combination: a sidewall completely surrounding and defining the perimeter of a lamp chamber, said sidewall having top and bottom edges and overlapping first and second side edges joining said top and bottom edges, said sidewall being the height of said chamber; a plurality of spaced first elements along the first side edge of said sidewall and a plurality of spaced second elements along the second side edge of said sidewall, said first and second elements providing interengaging means for rigidly interlocking said adjacent side edges of said sidewall, the first element adjacent the top edge

of said sidewall comprising a slot perpendicular to and intersecting said first side edge, and the second element adjacent the top edge comprising a downwardly extending tab parallel to and offset outwardly from said sidewall and interengaged in said slot; a top plate closing the upper end of said chamber; face engaging flange means at the periphery of said top plate engaging the outer face of the upper marginal portion of said sidewall; and interlocking means on said flange means rigidly securing said top plate to said sidewall.

2. The combination of claim 1 in which the first element adjacent the bottom edge of said sidewall comprises a hole in the sidewall spaced inwardly from said first side edge, and in which the second element adjacent the bottom edge comprises a downwardly extending tab parallel to and offset outwardly from said sidewall to interengage in said hole.

3. A housing for a recessed lighting fixture comprising, in combination: a pair of identical sidewall sections each of which has top and bottom margins and side margins connecting said top and bottom margins, a first marginal portion of each sidewall section being outwardly offset and overlying a second marginal portion of the other sidewall section, with said two sections surrounding and defining the perimeter of a lamp chamber; openings in said first marginal portion and locking tabs on said second marginal portion which interengage with said openings in the first marginal portion to lock said sections to one another with their upper and lower margins aligned, the openings in the first marginal portions including a hole in each said portion near the bottom margin and near the first edge, and a circumferential slot in said first edge near the top margin, and each of the locking tabs having a short outwardly extending portion and a downwardly extending free end portion which is parallel to the outer surface of the second marginal portion, said free end portions overlying the first marginal portion below the hole and the slot, respectively, so said first marginal portion is firmly gripped between the tabs and the outer surface of the second marginal portion; a top plate which has a depending flange embracing an upper marginal portion of each of the two sidewall sections; and interlocking means on said flange and said upper marginal portions.

4. The housing of claim 3 in which the interlocking means on the top plate flange and the upper marginal portions of the sidewall sections comprise inwardly struck bosses on the flange and holes in the upper marginal portions into which said bosses project.

5. A housing for a recessed lighting fixture comprising, in combination: a pair of identical sidewall sections each of which has top and bottom margins and side margins connecting said top and bottom margins, a first marginal portion of each sidewall section being outwardly offset and overlying a second marginal portion of the other sidewall section, with said two sections surrounding and defining the perimeter of a lamp chamber; openings in said first marginal portion and locking tabs on said second marginal portion which interengage with said openings in the first marginal portion to lock said sections to one another with their upper and lower margins aligned, the openings in the first marginal portions including a circumferential slot in each of said first edges near the top margin, and said locking tabs including an upper locking tab which has a short outwardly extending portion and a downwardly extending portion which overlies the first marginal portion below the slot so each first marginal portion is firmly gripped between the tab and the outer surface of the second marginal portion, a top plate which has a depending flange embracing an upper marginal portion of each of the two sidewall sections; and interlocking means on said flange and said upper marginal portions.

6. A housing construction for a recessed lighting fixture comprising, in combination:

a plurality of adjoining sidewall sections completely surrounding and defining the perimeter of a lamp chamber, each of said sidewall sections having top and bottom edges and first and second side edges joining said top and

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bottom edges with the first edge of one section and the second edge of another section forming overlapping side edges of the sidewall, and said sidewall sections being the height of said chamber;

an outwardly offset locking flap defined by the edge portion adjacent the first side edge of each section, said flap having an inner surface in facing engagement with an outer sidewall surface defined by edge portions adjacent the second side edge of the next adjacent sidewall section, said locking flap having a hole adjacent said first side edge and near the bottom edge of the section and a circumferential slot intersecting said first side edge near the top edge of said section;

lower and upper lock tabs formed in each section adjacent said second side edge, each of said tabs having a base portion protruding outwardly from said outer sidewall surface and having a downturned portion parallel to said sidewall surface, each of said lower lock tabs extending

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over the lower margin of the lower hole of the next adjacent section, and each of said upper lock tabs having its base portion received in the upper slot of said next adjacent section, so said flap is held between the downturned portions of the tabs and the outer sidewall surface when the bottom edges of the adjoining sections are aligned, and said upper tab being engageable with said upper slot after the lower tab and hole have been previously engaged, said adjoining sections forming a continuous sidewall when said lower and upper tabs and flap are interengaged;

a top plate closing the upper end of said chamber; face engaging flange means at the periphery of said top plate engaging the outer face of the upper marginal portion of all said sidewall sections;

and interlocking means on said flange means rigidly securing said top plate to said sidewall.

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