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RECESSED LIGHTING FIXTURE

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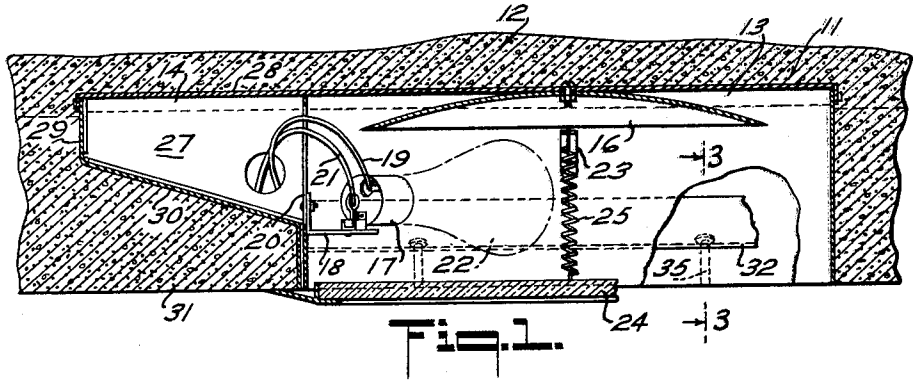


Fig. 1.

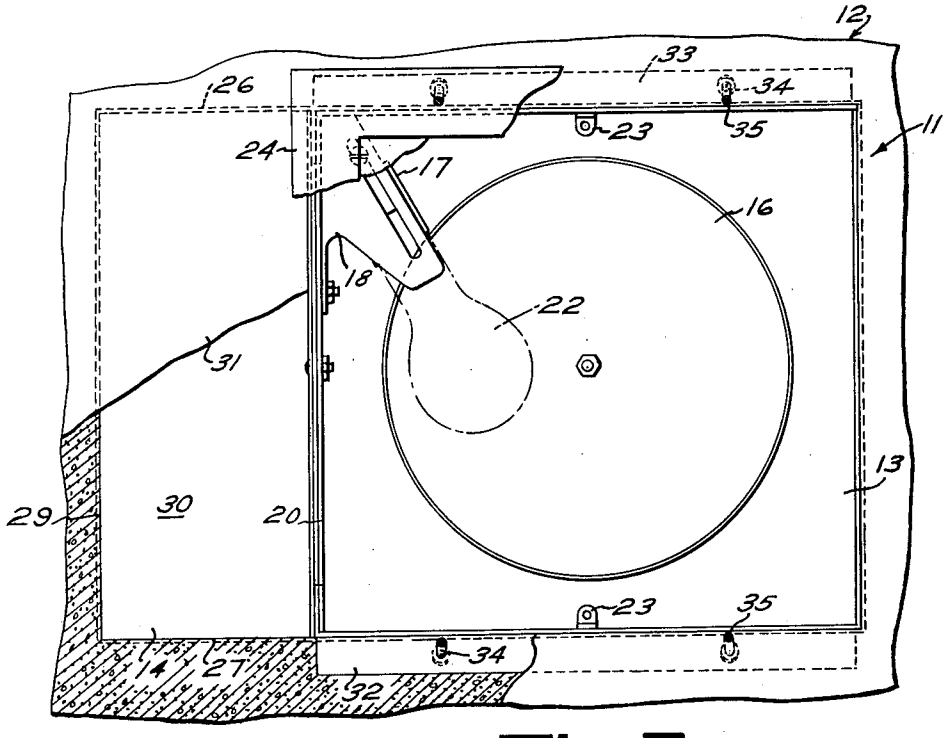


Fig. 2.

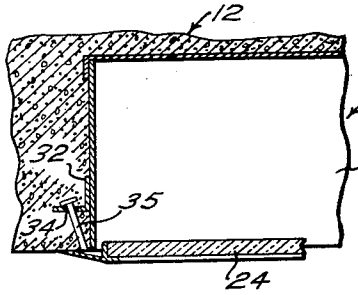


Fig. 3.

INVENTOR.
PRESTON A. JONES
BY
Garbey & Zimmerman
ATTORNEYS

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RECESSED LIGHTING FIXTURE

Preston A. Jones, San Rafael, Calif., assignor of one-half to Wallace D. Runswick, Berkeley, Calif.

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This invention relates to recessed lighting fixtures in general, and is particularly directed to such a fixture which is particularly adapted to recessed mounting within a concrete wall structure.

Although a variety of recessed lighting fixtures are well known, none of these are suited for recessed disposition within a poured concrete slab of the variety extensively employed as inter-floor walls in present day multi-floor building construction. More specifically, conventional fixtures have been provided with housings wherein the side walls have been entirely vertical and devoid of projections which could serve to adequately support the fixture within a concrete slab. In other words, without the use of brackets or other auxiliary securing means, the fixtures would be unsupported and free to fall from the ceiling surface of a slab wall in which recessed. Inasmuch as brackets are not particularly conducive to securance to concrete, substantial problems have been encountered in facilitating adequate support of a conventional recessed fixture in a concrete slab. Furthermore, in conventional recessed fixtures no provision is made to adequately dissipate the heat transmitted to the junction box from the light bulb. Hence, the box is commonly so warm as to detrimentally influence the life of the insulation of wires contained therein.

It is therefore an object of the present invention to provide a recessed lighting fixture which is arranged for fully supported recessed disposition in a concrete slab without requirement of auxiliary support devices.

Another object of the invention is to provide a recessed light fixture having a housing of a configuration that is conducive to cantilever support thereof when embedded in a concrete slab.

Still another object of the invention is the provision of a recessed fixture of the class described which facilitates a fixture to concrete support construction that is sturdy and substantially unbreakable.

It is yet another object of the invention to provide a recessed lighting fixture having provision for the efficient dissipation of heat from the junction box whereby the life of wiring insulation contained in the box is materially extended.

A further object of the invention is the provision of a unitary recessed lighting fixture housing and junction box construction wherein the box is offset from the housing proper to provide a bearing surface for supporting the fixture in a concrete slab and a substantial transfer surface for dissipating heat from the box to the slab.

A still further object of the invention is to provide a recessed lighting fixture having a materially increased area of access to the junction box.

An even further object is to provide a recessed lighting fixture of the class described which facilitates the efficient entry and ready flow of concrete under the offset junction box during the mounting of the fixture in the slab.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

FIGURE 1 is a sectional view of a recessed lighting fixture in accordance with the invention mounted within a concrete slab,

FIGURE 2 is a bottom plan view of the fixture of FIGURE 1 with portions broken away, and

FIGURE 3 is a sectional view taken at line 3—3 of FIGURE 1.

Referring now to the drawing, there is shown a recessed lighting fixture **11** in accordance with the present invention which is adapted to be fully supported in a concrete slab **12** without the usual requirement of difficult to use auxiliary fastening means. To this end, the fixture **11** includes a rectangular light housing **13** having a closed top and open bottom, together with a junction box **14** which projects outwardly from one side wall of the housing. The box is of such a configuration as to serve as a cantilever support for the entire fixture in a manner subsequently described when embedded in concrete. Furthermore, the projecting junction box construction of the fixture provides a large surface area of junction box for direct contact with the slab whereby heat will be effectively dissipated from the box to the concrete and the box will be maintained cool.

The light housing **13** is provided with a parabolic reflector **16** centrally secured to its closed end wall and a light socket **17** secured as by means of a slotted bracket **18** to the side wall of the housing adjacent the junction box. Leads **19**, **21** to the socket extend through the side wall into the junction box and a light bulb **22** is secured in the socket. When the bulb is energized the light emanating therefrom is reflected from the reflector **16** out of the open end of the housing. In addition, apertured brackets **23** are provided on several side walls of the housing to facilitate the attachment of a frosted diffuser plate **24** or the like by means of suspension springs **25** in closing relation to the open end thereof. All of the foregoing are conventional in existing recessed lighting fixtures, and accordingly further description thereof is not included herein.

It is to be noted that by virtue of the rectangular configuration and vertical side walls of the light housing **13**, the housing per se could not be recessed in slab **12** without provision of additional support means. As mentioned previously, herein, the support of the housing and over-all fixture is uniquely facilitated in the present invention by the junction box **14**. More specifically, the box **14** projects from one of the transverse side walls of the housing, preferably the wall **20** upon which the socket **17** is mounted. The box preferably extends the entire length of the adjacent transverse side wall **20** of the housing and is laterally defined by parallel longitudinal side walls **26**, **27** which are coplanar with the corresponding longitudinal side walls of the housing. In addition, the box includes a top wall **28** which is coextensive with the top wall of the housing, and a transverse end wall **29** which extends between the ends of side walls **26**, **27** and is in parallel spaced relation to the transverse side wall **20** of the housing.

Of particular importance to the ends of the invention the side walls **26**, **27** are of trapezoidal configuration, these walls having inclined lower edges which extend upwardly from locations preferably intermediate the height of the transverse wall **20** of the housing to the lower edge of end wall **29**. A bottom wall **30** of the junction box secured between the inclined lower edges of side walls **26**, **27** and between the wall **20** of the housing and end wall **29** is hence also inclined to the horizontal. By virtue of the inclination of the bottom wall **30**, a relatively large surface area is provided which projects laterally of the side of the housing and which is elevated relative to the bottom opening thereof. Hence the housing may be dis-

posed such that its bottom opening is flush with the bottom surface of the slab **12** and the junction box is fully embedded in the slab, the bottom wall **30** of the box being supported upon a substantial thickness of concrete as indicated at **31**. The junction box hence facilitates cantilever support of the over-all fixture within the slab. Furthermore, it should be noted that by virtue of the unique construction of the fixture, all of the exterior walls of the junction box, viz., side walls **26**, **27**, top wall **28**, end wall **29**, and bottom wall **30** are in direct contact with the slab. Not only does such substantial contact area provide an extremely sturdy and substantially unbreakable support of the fixture, but in addition it constitutes an extensive transfer surface for the dissipation of heat from the junction box to the slab. Hence the intensive heat that is radiated from the light bulb **22** to the surrounding walls of housing **13** and which is of greatest severity at the closest wall **20** and therefore in the region of the junction box does not maintain the box at an elevated temperature. Instead of the interior of the junction box becoming so hot as to cause deterioration of the insulation of wire therein with an attendant shortening of wire life, the heat is effectively dissipated to the slab by direct conduction thereto from the walls of the embedded junction box. Whereas the junction boxes of previous fixtures have become seriously hot after extended periods of use by virtue of the junction boxes depending upon conduction to the surrounding air for heat dissipation, the junction box of the present invention utilizes to great advantage the relatively high, as compared to air, thermal conductivity of concrete as a heat dissipation medium. It is further important to note that the specific housing and junction box configuration hereinbefore described facilitates the provision of a relatively large access area to the junction box such the wiring installation in the box may be readily accomplished. More particularly, in access area is provided that extends the length of wall **20** and is of a substantial height equal to the vertical distance between the top of the fixture and base of the upwardly inclined junction box bottom wall.

It will thus be appreciated that the fixture **11** of the present invention may be readily mounted in a concrete slab as by first placing the fixture in the form into which concrete is to be poured to construct the slab. More specifically, the fixture is placed in the form with the bottom edge surface of the housing **13** supported by the base of the form. In order to secure the fixture against movement in the form, a pair of angle brackets **32**, **33** are secured to the longitudinal side walls of the housing at horizontal positions intermediate the bottom of the housing and lower level of the junction box bottom wall **30**. The brackets are provided with bores **34** to facilitate temporary attachment of the fixture to the form by means of nails **35** or the like, the nails being preferably inclined toward the base of the housing and penetrating through the form base. After the fixture is thus secured in the form, the concrete is poured thereinto to produce the slab, the concrete readily flowing into the space between the bottom wall **30** of the junction box and base of the form to define the supporting thickness **31** of concrete. In this regard it should be noted that a large entry area for the concrete is defined between the upper end of wall **30** and the base of the form and the downward slope of the wall toward the housing is conducive to the ready flow of the concrete into the space. The slab may be poured around the fixture in one step whereby the same is fully embedded and thereafter access to the junction box is only possible from the housing interior through the wall **20**. Alternatively, the slab may be poured in two steps, the form being initially filled to a level beneath the top wall of the fixture as indicated by the dashed line of

FIGURE 1. The top of the fixture is then removed to provide access to the junction box interior for the installation of wiring. Thereafter the top is replaced on the fixture and the remainder of the form is filled to complete the slab. In either of the foregoing cases after the slab is set and the forms are removed the tips of the nails **35** are cut off flush with the undersurface of the slab as depicted in FIGURE 3. By virtue of the nails being slanted toward the housing, their exposed cut-off ends are sufficiently close to the housing periphery that they are covered by the cover plate **24** and hidden from view.

What is claimed is:

1. A housing construction for a recessed lighting fixture comprising a rectangular light housing portion having parallel spaced longitudinal side walls and interconnecting transverse side walls depending from a top wall, and a junction box portion projecting from one of said transverse side walls, said junction box portion having longitudinal side walls coplanar with the longitudinal side walls of the housing portion, said junction box side walls being of trapezoidal configuration with their lower edges inclined, an interconnecting end wall extending transversely between the junction box side walls, a top wall coextensive with the top wall of the light housing portion, and a bottom wall extending between the lower edges of the junction box side walls correspondingly inclined from a horizontal plane and elevated with respect to the bottom edges of the side walls of the light housing portion.

2. In combination with a concrete slab, a recessed lighting fixture comprising a rectangular light housing closed at its top end and open at its bottom recessed in said slab with the open bottom end of the housing projecting from the bottom surface of the slab, a light reflector interiorly secured to the top end of said housing, a socket for receiving a light bulb interiorly secured to a side wall of said housing, a junction box projecting exteriorly from the side wall of the housing to which said socket is secured and extending thereacross, said junction box being of rectangular configuration in plan and of trapezoidal configuration in side elevation with a bottom wall inclined from a horizontal plane through the side wall to which said socket is secured at a position intermediate its top and bottom edges, said junction box embedded in said slab with a thickness thereof underlying the bottom wall of the box, and input leads connected to said socket and extending into said junction box.

3. In a recessed lighting fixture construction, the combination comprising a light housing having a top wall and depending marginal side wall defining a bottom opening, a closed junction box exteriorly laterally projecting from the side wall of the housing and attached thereto with a bottom wall having portions elevated and upwardly inclined with respect to said bottom opening of the housing, and a concrete slab encompassing said light housing and junction box, said slab having a bottom surface flush with the bottom opening of said light housing and a slab portion underlying the bottom wall of said junction box in sole support of the box and housing within the slab.

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