Oct. 4, 1960 J. KAUFMAN ET AL 2,954,959

RECESSED LIGHT FIXTURE AND MOUNTING FASTENER THEREFOR

Filed April 1, 1959 2 Sheets-Sheet 1

FIG. 1

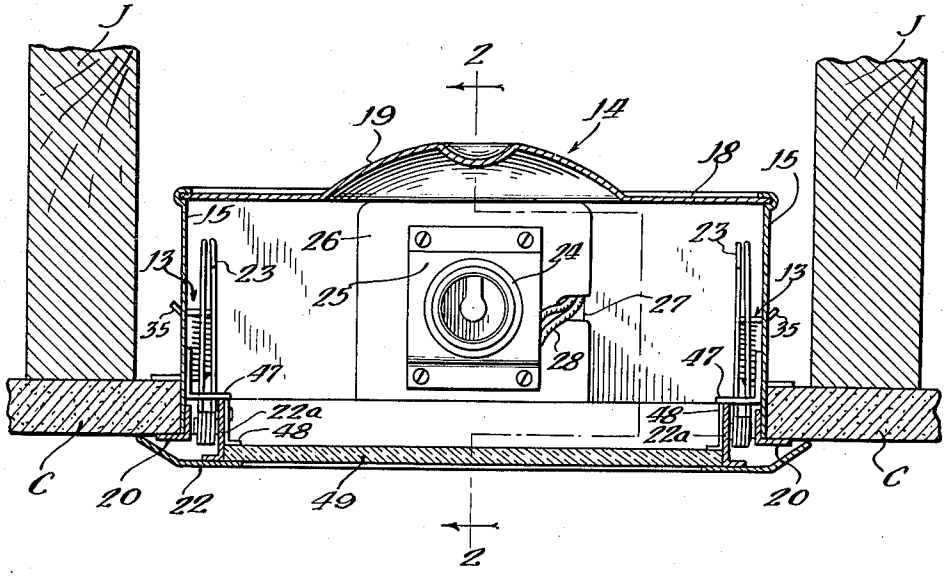
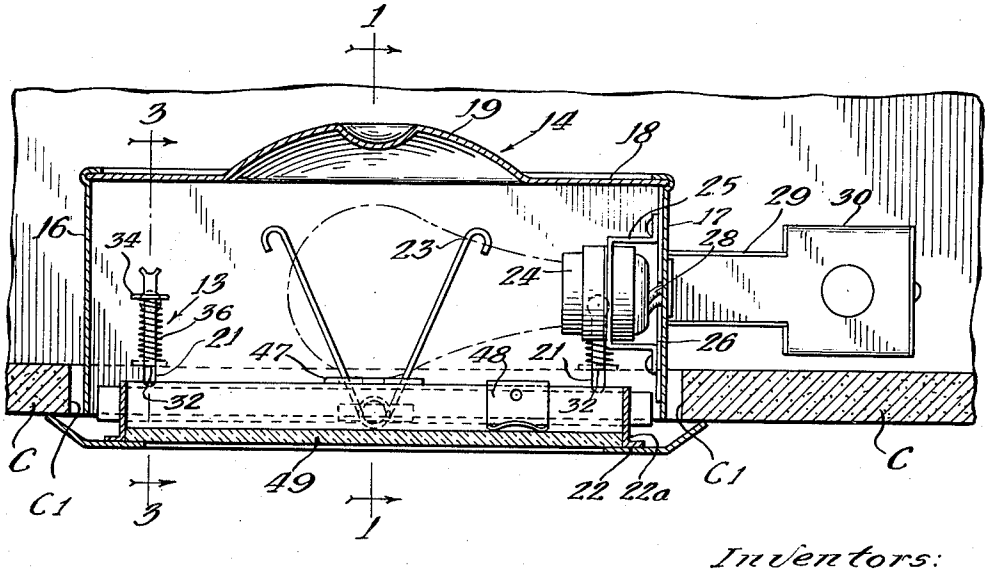


FIG. 2



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FIG. 6

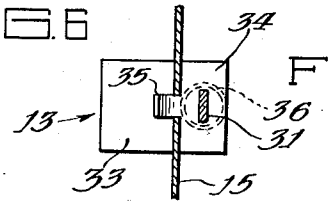


FIG. 7

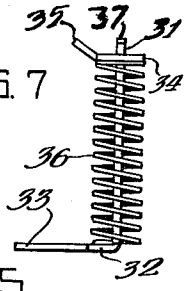


FIG. 3

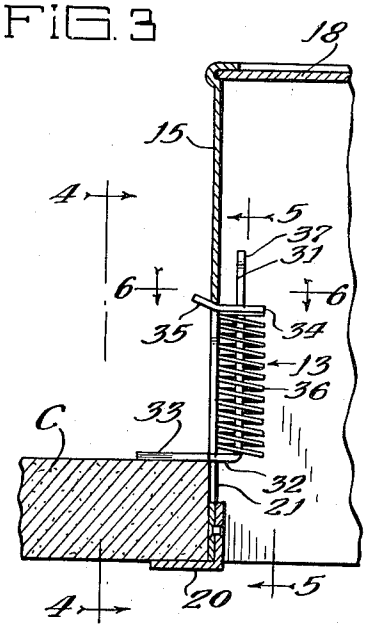


FIG. 4

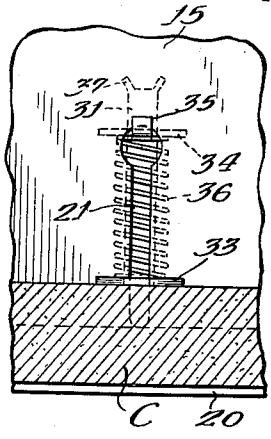


FIG. 5

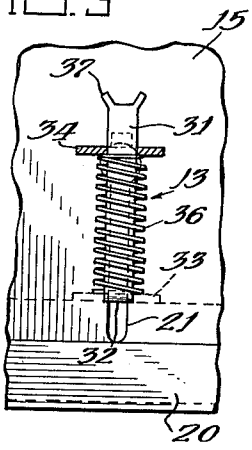


FIG. 8

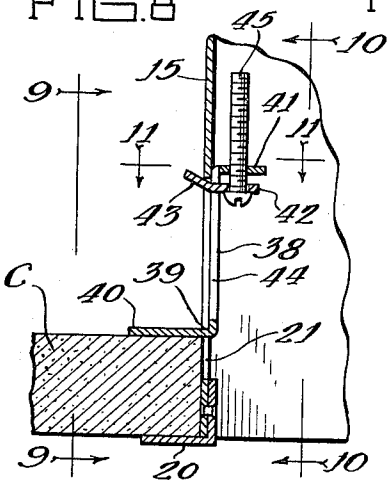


FIG. 9

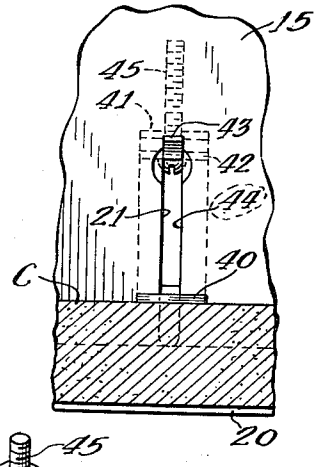


FIG. 10

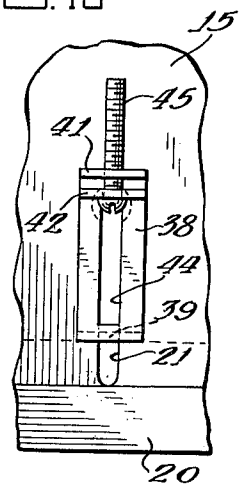


FIG. 11

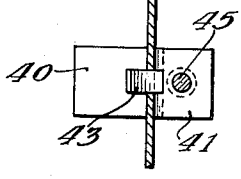
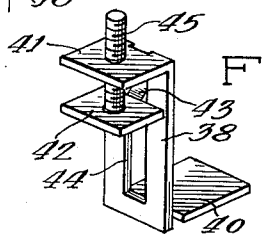


FIG. 12



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United States Patent Office 2,954,959
Patented Oct. 4, 1960

2,954,959

RECESSED LIGHT FIXTURE AND MOUNTING FASTENER THEREFOR

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Filed Apr. 1, 1959, Ser. No. 803,479

6 Claims. (Cl. 248—343)

This invention relates to a fastener, and more particularly to a removable fastener for securing a recessed light fixture housing in a pre-existing structure.

To install a recessed light fixture housing in a pre-existing ceiling structure, a hole of a size to receive the light fixture housing is formed in the ceiling between the spaced ceiling joists. It is necessary to mount the housing in the ceiling in a positive manner, so that it cannot fall out. As the housing is positioned between, but away from the ceiling joists, it is impractical to secure the housing to the joists. Also, as neither a dry wall nor wet plaster ceiling has much holding power for a driven or threaded fastener, the housing can not safely be secured to the ceiling with such a fastener. The most practical and economical way to secure such a fixture would be to distribute the weight of the fixture through a fastener to a portion of the top surface of the ceiling. To accomplish this the fastener must be capable of being positioned from the inside of the fixture housing after the housing is recessed in the ceiling, because once the housing is in position, there is no access to the top surface of the ceiling. For ease of maintenance, the fastener should be capable of easy removal from the inside of the fixture housing.

The primary object of this invention is to provide a new and improved fastener for mounting a recessed lighting fixture in a pre-existing ceiling.

Another object is to provide a recessed light housing fastener that is easily installed and readily accessible for removal.

A further object of this invention is to provide a clip-type fastener that can be positioned without the use of special tools.

A still further object is to provide a fastener that automatically adjusts to any normal ceiling thickness. Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention is illustrated in a preferred and an alternative embodiment in the accompanying drawings, in which:

Fig. 1 is a sectional view taken substantially as illustrated along the line 1—1 of Fig. 2, showing a fixture mounted in a typical ceiling construction by means of the preferred form of the invention;

Fig. 2 is a sectional view of the recessed light fixture taken substantially as illustrated along the line 2—2 in Fig. 1;

Fig. 3 is an enlarged fragmentary sectional view taken substantially as illustrated along the line 3—3 of Fig. 2, showing one side of the light fixture housing with a fastener in place;

Fig. 4 is a fragmentary sectional view taken substantially as illustrated along the line 4—4 of Fig. 3, showing the fastener from outside the housing;

Fig. 5 is a fragmentary section taken substantially as illustrated along the line 5—5 of Fig. 3, showing the fastener from inside the housing;

Fig. 6 is a fragmentary sectional view taken substantially as illustrated along the line 6—6 of Fig. 3;

Fig. 7 is an elevation view of the preferred fastener;

Fig. 8 is a fragmentary sectional view similar to Fig. 3, showing the alternative embodiment of the fastener in place in the side wall of the light fixture housing;

Fig. 9 is a fragmentary sectional view taken substantially as illustrated along the line 9—9 of Fig. 8, showing the alternative fastener from outside the housing;

Fig. 10 is a similar view to Fig. 9 but taken from the inside of the light fixture housing, substantially as illustrated along the line 10—10 of Fig. 8;

Fig. 11 is a fragmentary sectional view taken substantially as illustrated along the line 11—11 of Fig. 8; and

Fig. 12 is a perspective view of the alternative embodiment of the invention.

Referring now to the drawings, and particularly to Fig. 1, the preferred fastener generally shown as 13 is illustrated in a recessed light fixture generally shown as 14, mounted in a typical ceiling construction, comprising a ceiling C of either wet plaster or dry board which is attached to joists J that are spaced apart. Fixture 14 comprises two side walls 15, a front wall 16 and a back wall 17. The top 18 of fixture 14 joins all four walls and is provided with a centrally located integral reflector 19. Side walls 15 are each provided with an outwardly extending flange 20 at the lower end, an inwardly extending perforated bracket 47, and a plurality of vertical slots 21 are formed in the side walls. Fixture 14 is retained in position relative to the ceiling C by outwardly extending flanges 20 lying against the underside of the ceiling and by the fastener 13, bearing on the top surface of ceiling C. A glass diffuser plate 49 is held by clips 48 in a diffuser frame 22, and said frame has an upstanding leg 22a which is attached to the light fixture housing by means of a plurality of hairpin clips 23, which are removably engaged with the perforations of brackets 47.

Referring now to Fig. 2, a lamp socket 24 is secured to a bracket 25 on a removable closure 26 for an opening 27 in back wall 17 of the light fixture housing, and leads 28 pass from socket 24 through a wireway 29 and into a junction box 30 within which they are connected to the leads, not shown, from an outside source of electrical supply. The light fixture as just described is a standard commercially available unit, and is typical of those with which the fastener of the present invention is used.

Figs. 3 through 7, inclusive, show the preferred fastener of the present invention, and illustrate how it coacts with side walls 15 of the housing 14, a slot 21 in the side wall 15, and ceiling surface C, to hold the housing in place. The fastener 13 comprises a vertical stem 31 having at its lower end an integral, outwardly extending narrow neck 32 with an enlarged foot 33 thereon. Neck 32 is narrower than slot 21 so as to extend therethrough; and while foot 33 is illustrated as being wider than the slot, to prevent the bottom of fastener 13 from sliding back through slot 21 into the housing, this is not essential as long as some means is provided to keep the foot outside the slot 21. A separate clip 34 has a slit impaled by the stem 31 so as to be slidable on the stem, and a finger 35 which is narrower than slot 21 extends outwardly from clip 34 in the same direction as foot 33 but angled away from the foot to hook under the top of slot 21. A spiral spring 36 is coiled about stem 31, bearing on neck 32 and on the slidably mounted clip 34 to urge clip 34 away from foot 33. After spring 36 and clip 34 are placed on stem 31, the upper end of the stem is deformed or offset at 37 so as to retain clips 34 thereon.

The use of the preferred embodiment of the invention is believed clear from the foregoing description. An opening C1 of a dimension slightly greater than the outside dimension of the light fixture housing is cut through ceiling C between joists J. The light fixture housing is inserted from the underside of the ceiling through open-

ing C1 until the outwardly extending flanges 20 on housing 14 lie against the underside of the ceiling. The workman installing the light fixture can hold it in this position with one hand, and with the other hand he can take clip fastener 13 of the present invention and insert the wide portion of foot 33 through the longitudinal dimension of slot 21 until the narrow neck portion 32 is in the slot. He then rotates the fastener 90° so that stem 31 is in an upright position, the neck portion 32 within slot 21 and the wide portion of foot 33 is outside the housing wall 15 and stands on the top surface of the ceiling C. With his fingers he bears down on clip 34 of fastener 13 to depress spring 36 until finger 35 of clip 34 is below the upper end of slot 21. He then can insert finger 35 through slot 21 and release the pressure on clip 34. Spring 36 urges clip 34 away from foot 33 and moves finger 35 against the top of slot 21. The workman places other fasteners 13 in the remaining slots 21 in side walls 15 in a similar manner. The housing 14 rests on the fingered clips which are supported by their springs 36 which in turn bear on the neck 32 and foot 33. Foot 33 supports the weight of the housing on the upper surface of the ceiling C.

The alternative embodiment of the invention is shown in Figs. 8 through 12, inclusive. In this type of fastener a slotted stem or slideway 38 is connected by a narrow neck 39 to an integral outwardly extending foot 40 on one end, and has an outwardly extending flange 41 on the opposite side of the other end, which provides an offset, or deformed portion. A clip 42 with an outwardly extendnig finger 43 of width slightly less than the width of the housing slot 21, and angled upwardly with respect to foot 40, is slidably mounted on slideway 38 with finger 43 extending through slot 44 of the slideway 38. The clip 42 is mounted for movement in slideway 38 on a screw 45 which extends loosely through a hole in the clip and is threaded into flange 41.

The installation procedure with this fastener is similar to that described for the previous embodiment. The workman holds the fixture 14 in place with one hand and with the other hand inserts foot 40 of this fastener through slot 21 in side wall 15 of the housing until the neck portion 39 of foot 40 is in line with slot 21. The workman then rotates the fastener 90° bringing slideway 38 to an upright position, where it is locked from withdrawal by the wide dimension of foot 40. The threaded connector 45 is then advanced with a screwdriver bringing clip 42 toward flange 41 and moving finger 43 against the top of slot 21 in side wall 15 of the light fixture housing 14. The weight of the light fixture housing bears on clip 42 and thus on the top surface of the ceiling; while the outwardly extending flanges 20 on the lower ends of side walls 15 bear against the underside of the ceiling.

This invention provides an economical fastener of simple construction which can be used to secure a recessed light fixture in a pre-existing ceiling construction. The fasteners can be readily installed by one workman, and can be removed just as easily. The preferred form of fastener may be installed without the use of any tools; while the alternative form may be installed with only a screwdriver. It is a fastener that is hidden from view when the fixture is in place, and is located away from the light bulb so as not to cause objectionable shadows. A further advantage is that the same fastener can be used for different ceiling thicknesses, as the distance between the clip and the foot is automatically adjusted for differences in the ceiling thickness.

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. In a ceiling recessed light fixture, in combination: a housing having side walls with upwardly extending slots and an external flange below the slots; and a fastener comprising a stem having an outwardly extending foot, said foot extending through said slot and adapted to stand on the top surface of a ceiling, a clip slidably mounted on said stem, said clip having an outwardly extending finger, said finger extending through the slot, means at the upper end of the stem to retain said clip on the stem, and means operatively engaging the clip to move said finger against the top of said slot, whereby the housing may be supported on the ceiling on a plurality of said fasteners with the external flange against the underside of the ceiling.

2. In a ceiling recessed light fixture, in combination: a housing having side walls with upwardly extending slots and an external flange below the slots; and a fastener comprising a stem having an outwardly extending foot, said foot extending through said slot and adapted to stand on the top surface of a ceiling, a clip slidably mounted on said stem, said clip having an outwardly extending finger, said finger extending through the slot, means at the upper end of the stem to retain said clip on the stem, and spring means urging said clip away from said foot and urging the finger against the end of said slot, whereby the housing may be supported on the ceiling on a plurality of said fasteners with the external flange against the underside of the ceiling.

3. In a ceiling recessed light fixture, in combination: a housing having side walls with upwardly extending slots and an external flange below the slots; and a fastener comprising a stem having an outwardly extending foot, said foot extending through said slot and adapted to stand on the top surface of a ceiling, a flange at the upper end of said stem extending outwardly in an opposite direction from said foot, a clip slidably mounted on said stem, said clip having a finger extending through the slot, and a threaded connector operatively engaging the clip and said flange on the stem to move it toward said flange and thus move the finger against the top of said slot, whereby the housing may be supported on the ceiling on a plurality of said fasteners with the external flange against the underside of the ceiling.

4. In a ceiling recessed light fixture, in combination: a housing with side walls each having upwardly extending slots and an external flange below the slots; and a fastener comprising a stem having an integral outwardly extending foot, said foot having a width greater than the width of each of said slots and a neck portion of less width than the width of the slot, so that said stem remains within said housing with said neck portion extending through the slot with the foot standing on the top surface of the ceiling outside the housing, a clip slidably mounted on the stem, said clip having a finger extending outwardly through the slot and angled upwardly relative to the foot, there being an offset portion at the upper end of the stem to retain the clip on the stem, and means operatively engaging the clip to move said finger against the top of said slot, whereby the housing may be supported on a plurality of said fasteners with said external flange of the housing against the underside of the ceiling.

5. The device of claim 4 in which the means operatively engaging the clip is a spring coiled about said stem urging the clip away from said foot and urging said finger against the end of the slot.

6. The device of claim 4 in which the offset portion at the upper end of the stem is provided with a threaded hole, and the means operatively engaging the clip is a threaded connector operatively engaged with said threaded hole and having a head at its lower end on which the clip rests.

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