Aug. 29, 1961 K. VERSEN 2,998,510

CEILING MOUNTING FOR RECESSED LIGHTING FIXTURES

Original Filed Jan. 21, 1954 2 Sheets-Sheet 1

Fig. 1.

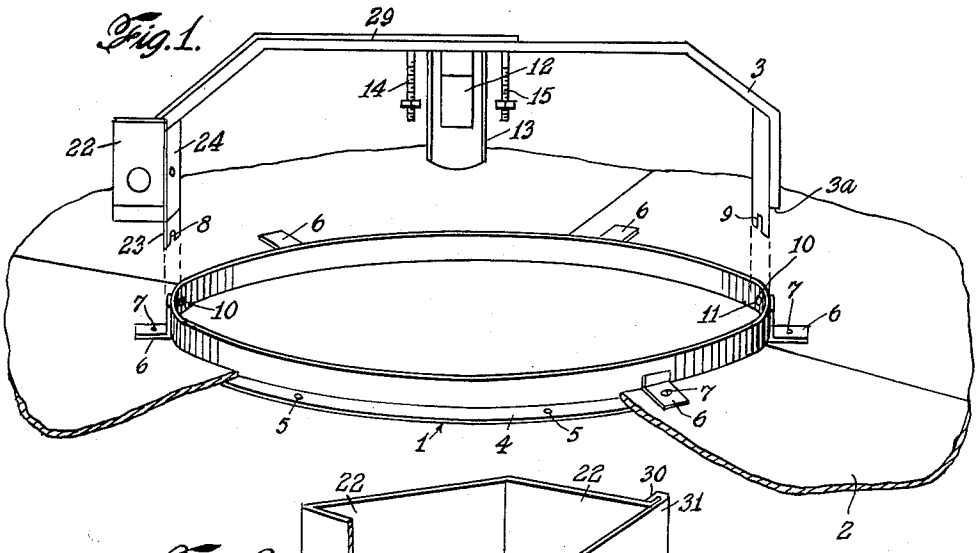
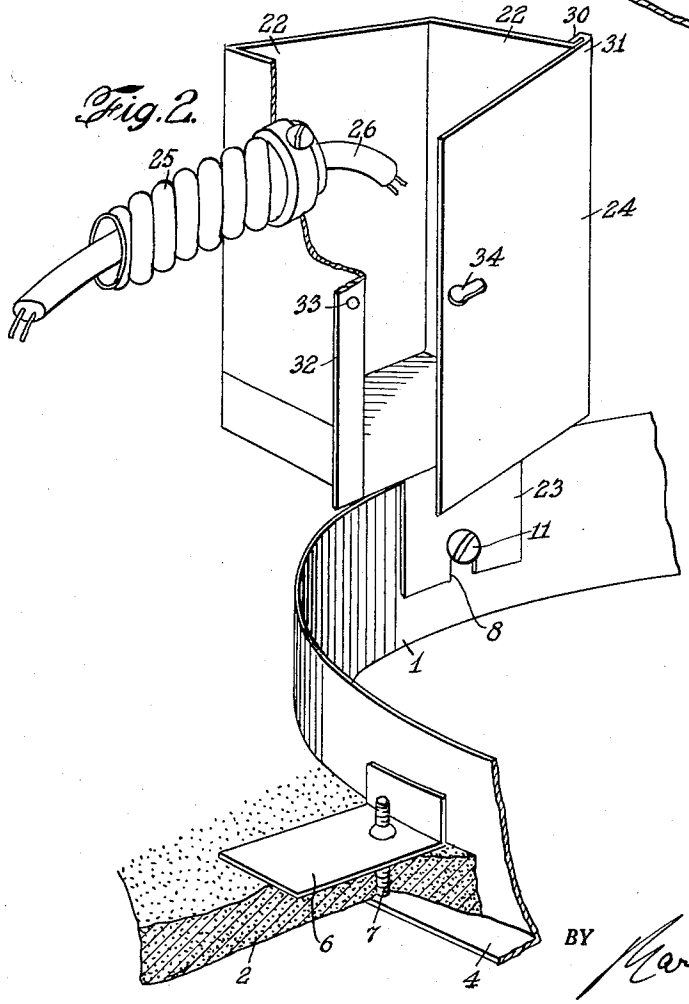


Fig. 2.



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Fig. 3.

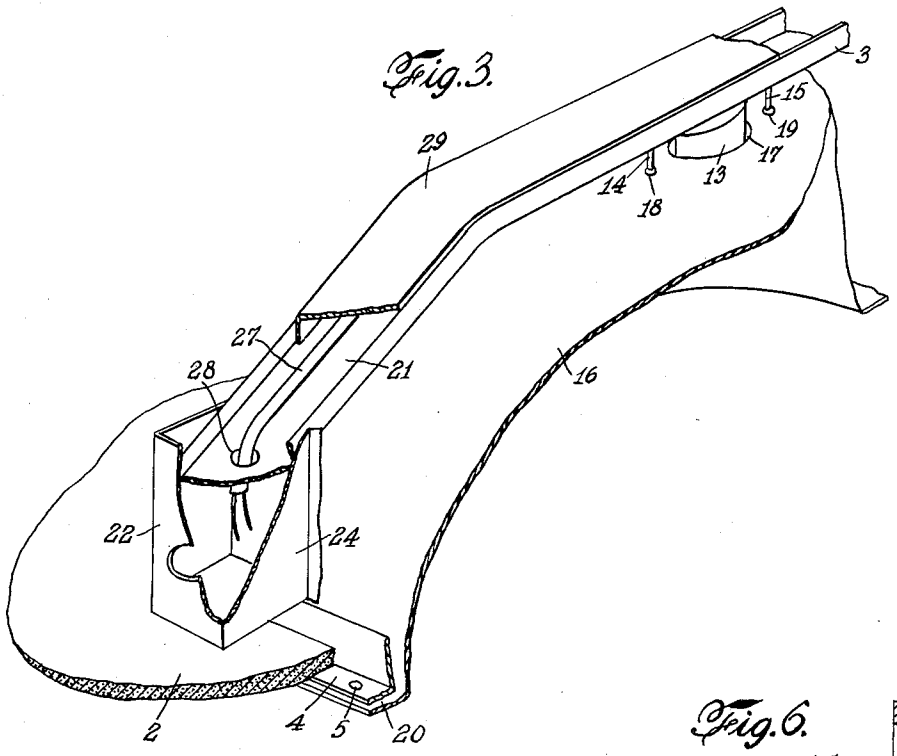


Fig. 4.

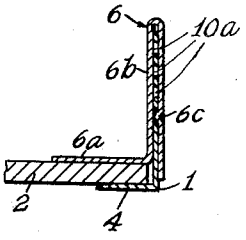


Fig. 5.

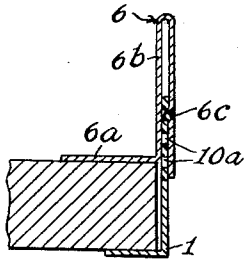


Fig. 6.

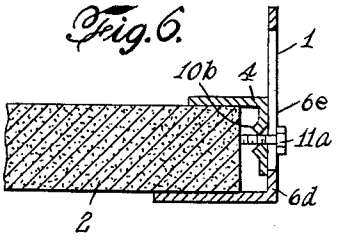
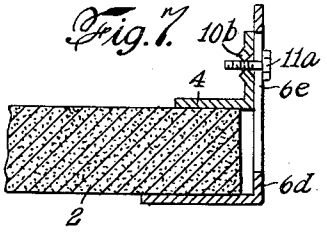


Fig. 7.



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2,998,510
CEILING MOUNTING FOR RECESSED LIGHTING FIXTURES

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Original application Jan. 21, 1954, Ser. No. 405,443, now Patent No. 2,898,074, dated Aug. 4, 1959. Divided and this application Oct. 8, 1957, Ser. No. 688,945
3 Claims. (Cl. 240—78)

The present invention deals with a ceiling mounting for recessed lighting fixtures and more particularly with a mounting readily installable or detachable from below the ceiling for assembling of maintenance purposes.

This application is a division of application Serial No. 405,443 filed January 21, 1954, now Patent No. 2,898,074.

Recessed ceiling lighting fixtures, i.e. lighting fixtures mounted within and above the ceiling rather than below the ceiling, are normally mounted on a plaster frame support, e.g. an annular plaster ring which may or may not have an overhead yoke secured thereto. The support or plaster ring is seated on or otherwise secured to the ceiling. Normally, the frame is in the form of a ring, but for rectangular fixtures it may have a rectangular shape.

The mounting of plaster rings or supports in existing plaster ceilings or in dry ceilings, i.e. ceilings of plywood, precast gypsum board or other panels, e.g. insulating or acoustical panels, is normally a tedious and difficult task. It is a usual practice to cut a hole in existing plaster ceilings, insert the plaster ring and tie it to the lath and then replaster or refinish the ceiling, whereafter the fixture is attached to the plaster ring or yoke, if any. Existing or previously hung ceilings of dry panel construction have not heretofore permitted subsequent installation of recessed fixtures from below as the fixtures heretofore required wooden or metal braces, or frames, above the hung ceiling and anchored to its supporting beam construction to obtain rigid vertical mounting surfaces for the fixtures or their supporting rings. The small ceiling openings of most recessed fixtures makes the space above hung ceilings inaccessible for such installation work subsequent to the installation of the ceiling.

It is an object of this invention to provide a novel means for more advantageously mounting a plaster frame on existing hung ceilings. It is another object of the present invention to provide a composite mounting assembly for electrical fixtures comprising a plaster frame and its entire cooperative structure including electrical circuitry, which can be readily installed from below the ceiling. It is a further object of the present invention to provide a ceiling mounting assembly for electrical fixtures which is readily accessible for maintenance purposes from below the ceiling. Other objects and advantages of the present invention will be apparent from the description hereinafter following and the drawings forming a part hereof, in which:

FIGURE 1 illustrates a partly elevational and partly cross-sectional view of a ceiling mounting assembly according to the present invention,

FIGURE 2 illustrates an enlarged perspective and partly sectional view of a portion of the assembly illustrated by FIGURE 1,

FIGURE 3 illustrates an enlarged perspective and partly sectional view of another portion of the assembly illustrated by FIGURE 1 and including in addition a ceiling reflector dome,

FIGURE 4 illustrates a cross-sectional view of a modification according to the present invention,

FIGURE 5 illustrates the modification of FIGURE 4 showing the adjustability thereof,

FIGURE 6 illustrates a cross-sectional view of another modification of the present invention, and

FIGURE 7 illustrates a cross-sectional view of still another modification.

The present invention relates to a mounting assembly for recessed lighting fixtures, especially lighting fixtures recessed in ceilings, whereby the entire mounting and electrical circuitry associated therewith is capable of being installed from below the ceiling, and whereby the electrical circuitry and mounting structure are readily accessible from below the ceiling for subsequent maintenance and servicing.

The drawings illustrate a plaster frame **1** secured to a ceiling **2** in accordance with the present invention, and a detachable yoke **3**, shown in detached position and securable to the frame **1** as illustrated by FIGURE 2.

The plaster frame **1** comprises a wall in the form of a plaster ring or any other suitable form, e.g. a rectangular form, and is provided with a flange **4**, preferably a terminal flange having a plurality of apertures **5** formed therethrough for cooperation with one form of clip hereinafter described. For cooperation with said flange in order to secure the frame **1** to the ceiling **2**, there is provided a plurality of angular clips **6** each comprising a base and a side with the base being apertured.

In application, the plaster frame is inserted into a ceiling opening with the flange **4** abutting against the outside ceiling surface and the walls of the plaster frame substantially clearing the walls of the ceiling opening. Heretofore it was necessary to bridge two adjacent ceiling support members with at least two rigid cross connections to support the mounting frame in dry ceiling panel construction. However, with the mounting frame herein contemplated and described no such secondary framing is required since the mounting of this invention is quite independent of any fixed secondary support, which enables the mounting to have a flexibility of location and which otherwise eliminates the high cost associated with such secondary framing, and which enables the mounting to be secured to a dry ceiling panel before such panel itself is installed on the ceiling. The clips **6** are positioned on the inner surface of the ceiling with the base of each clip **6** above an aperture **5** of flange **4** and the side of the clip substantially abutting the wall of the frame. Thereafter, a securing means, e.g. a screw or bolt **7**, interconnects the flange **4** and clip **6** through their respective apertures with the ceiling therebetween to provide a vise-like grip on the ceiling whereby the frame **1** is securely attached to the ceiling without requiring any additional supporting means. With this construction of flanged plaster ring **4** cooperative with the aforesaid clips **6**, the plaster ring is not only securely fastened to the ceiling, but the flange is adapted to follow the plane of the outside ceiling surface by simple adjustment of the fastening members **7** along the contour of the flange as it contacts the said ceiling surface for more accurately positioning a reflector dome member thereon as hereinafter more particularly described.

In order to provide for the hereinabove mentioned accessibility to the mounting components and the electrical circuitry associated therewith, the yoke **3**, which diametrically bridges the plaster frame **4** is provided with an appropriate seat **3***a* such as cut-away side walls of a U-shaped yoke or other seating or abutment means on both legs of the yoke and spaced from the ends thereof, and the yoke has its frame contacting end portions either slotted with terminal slots **8** and **9**, or apertured or otherwise formed for detachably connecting said yoke to the plaster frame. In this respect, the walls of the frame **1**

are provided with at least a pair of apertures **10**, e.g. apertures located diametrically of each other and receptive to an immobilizing means, e.g. yoke immobilizing screws **11**, which are preferably initially partly advanced through the apertures **10** to serve as a guide for slots **8** and **9**.

Thereafter, the screws **11** are tightened to immobilize the yoke **3** with respect to the frame **1**.

It is apparent that the yoke rendered detachable by means of the screws **11**, may be removed from the plaster frame by removing the screws and then passing the yoke endwise through the ceiling opening.

The yoke itself is the sole supporting means for all other mounting components and electrical circuitry associated therewith so that removal of the yoke from the frame **1** results in the removal of all the embodiments mounted thereon from the ceiling if so desired for maintenance, etc.

Regarding FIGURES 4 and 5, the clips **6** are shown as modified to eliminate any necessity for passing a securing means through the ceiling **2** for the connection of the flange **4** with the clips **6**. In the modification the angular clip is provided from a resilient strip of metal, e.g. steel spring leaf, having a base **6***a* and a side **6***b* bent upon itself outwardly of the base **6***a* in U-shaped form with the outwardly bent portion having a projection **6***c* on its inner surface. Cooperating therewith, the frame **1** is provided with a plurality of vertically aligned apertures **10***a* each receptive to the projection **6***c*. In application, the modified clip is pressed down over the upper edge of the frame **1** with the frame being embraced by the U-shaped side **6***b* whereupon the base **6***a* contacts the upper face of the ceiling and the projection **6***c* engages an appropriate aperture **10***a* depending on the thickness of the ceiling and whereupon the flange **4** is caused to contact the lower face of the ceiling. With this clip construction the frame **1** can be very speedily installed.

Regarding FIGURES 6 and 7, I may reverse the frame **1** so that the flange **4** contacts the inner surface of the ceiling **2**. However, in order to so position the frame **1**, I cut a pair of diametrical notches in the ceiling of sufficient depth to allow the flange **4** to pass through the ceiling from below. Thereafter, the frame **1** may be positioned so that the side walls thereof are directed either downwardly (FIGURE 6) or upwardly (FIGURE 7). Thereafter, I provide a plurality of angular clips **6***d* each having a slot **6***e* formed longitudinally through one leg thereof and by means of a retainer **11***a* passing through said slot and engaging aperture **10***b* securely joining the clip to the frame in any desired adjustable position depending upon the thickness of the ceiling and the length of the said slot.

Substantially centrally located on the yoke bridging the frame **1**, as particularly illustrated by FIGURE 1 and FIGURE 3, is a lamp socket **12** encased by a husk **13** on both sides of which and spaced therefrom are a pair of pull up members **14** and **15**, e.g. a pair of screws or a pair of bolts, which operate to support a centrally apertured reflector dome **16**, in assembly, after substantially all other mounting members have been secured, the dome is inserted into the ceiling opening defined by the plaster frame **1**, whereupon the socket **12** and/or the husk **13** passes through the central dome aperture **17** and the pull up members **14** and **15** pass through a cooperating pair of apertures **18** and **19** to secure the dome to the yoke **3**.

It is apparent that the dome **16** may be simply connected to or disconnected from the yoke and consequently removed from the ceiling opening by the mere operation of the pull up members **14** and **15**, which operate not only to support the reflector dome, but to adjustably so support the dome by providing any desirable upward pull to cause the dome flange **20** to engage the ceiling with a desirable fitness.

In order to provide for accurate fitness of the dome flange **20** to the ceiling, it is imperative that the flange **4** of the plaster frame **1** does not interfere with the dome flange **20**, such, for example, as inaccurate contacting of the frame flange **4** with the outer ceiling surface. This condition is, of course, remedied by the adjustment of the frame securing means **7** interconnecting the flange **4** with the clips **6** and hereinbefore specified.

The yoke **3** comprises a combination of yoke, splice box and wireaway in order that the electrical circuitry associated therewith may be easily accessible and, in fact, removable from the ceiling opening together with the detachable yoke since the housing for the electrical circuit are components of the yoke itself.

The yoke is formed of a substantially U-shaped member having a substantially U-shaped cross-section to provide channel **21** serving as a wireway hereinafter more particularly described. One leg of the U-shaped yoke is in the form of a housing or outlet box **22**. The housing **22** may be mechanically secured to the yoke to form a leg thereof, or it may be integrally formed with the said yoke. Preferably, the bottom portion of the outlet box **22** is provided with a downwardly depending lip **23** having the aforesaid slot **8** formed therein so that the detachable yoke structure is thereby formed as a composite of outlet box and wireway forming a substantial portion of the yoke bridge. A side of the splice box **22** comprises a movable cover **24** making the wiring inside the splice box accessible.

Referring to FIGURES 2 and 3, an electrical conduit means **25** is attached to and passes through another side of the splice box in known manner for positioning conductor members **26**, which is connected to a source of current, within the splice box. From the said splice box another pair of conductor members **27**, covered with heat resistant material, passes out of the outlet box through an upper portion thereof and, preferably, through the bottom wall of the channel **21** by means of the aperture **28**, and along the channel or wireway **21** to the socket **12**. A protective cover member **29** is preferably provided over the length of the yoke or wireway which is associated with the conductor **27** so that all electrical conductor means are adequately encased for maximum protection thereto.

Although the detachable yoke above described may be removed from the ceiling entirely, it may not be necessary to so entirely remove the yoke in cases requiring minor adjustments to the wiring within the splice box **22**. For such adjustments, the cover **24** is particularly adapted to be removed and secured with minimum effort. To this extent a side of the splice box or housing **22** is provided with an extending lip or flange **30** longitudinally thereof, and the cover **24** is provided with a longitudinal end **31** bent upon itself for cooperation to grip the said flange **30** in frictional contact upon movement over said flange **30**, whereby the said cover **24** may be adequately secured to close the housing. However, for further securing the cover, a second similar flange **32** is provided as a second lip having an aperture **33** therethrough. The cover, at a location in alignment with the aperture **33** is provided with a key shaped aperture **34**, whereby the cover may be further secured by a securing means, e.g. a screw or bolt passing through both apertures **33** and **34**. With the key shaped aperture, it is possible to remove the cover without completely removing the securing means associated with the apertures **33** and **34**.

Consequently, it is apparent that by simply removing the reflector dome **16** the entire mounting and electrical circuitry is easily accessible or removable from the ceiling opening.

The scope of the invention is not to be construed as limited to the dome type reflector above described since it is apparent the cylindrical or other types of reflectors may be utilized.

What I claim is:

1. A mounting for recessed lighting fixtures comprising

a frame, a substantially U-shaped yoke bridging said frame, the legs of said yoke being connected to opposite sides of said frame, a housing mounted on one of said legs and extending outwardly of the yoke, a socket means mounted on said yoke between said legs and extending inwardly of the yoke, and electrical conductor means leading from said housing to said socket along the outer surface of the yoke.

2. A mounting according to claim 1, wherein said yoke comprises said housing as one leg thereof.

3. A mounting according to claim 1, wherein the yoke

is of substantially U-shaped cross-section forming a U-shaped channel along the outer surface of the yoke, said electrical conductor means being positioned in said channel between said housing and said socket.

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