Nov. 13, 1962 F. W. FORK 3,063,592

CLOSURE ASSEMBLY

Filed June 24, 1960

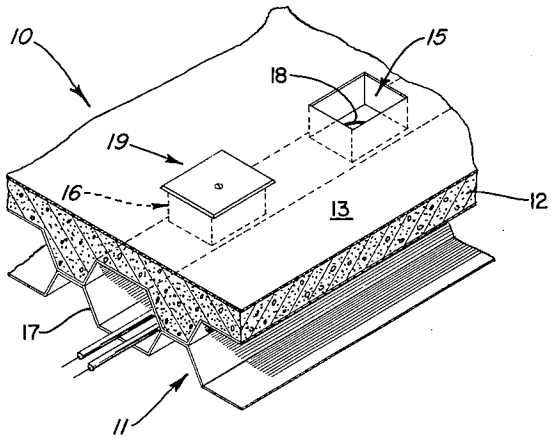


Fig. 1

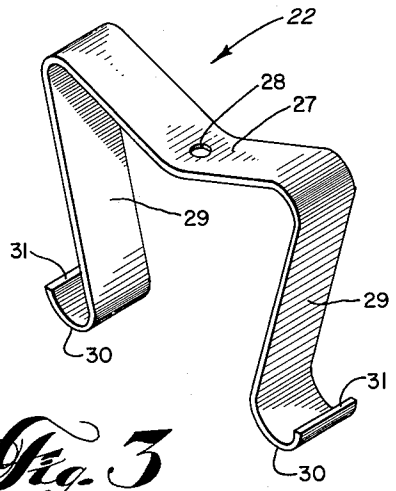


Fig. 3

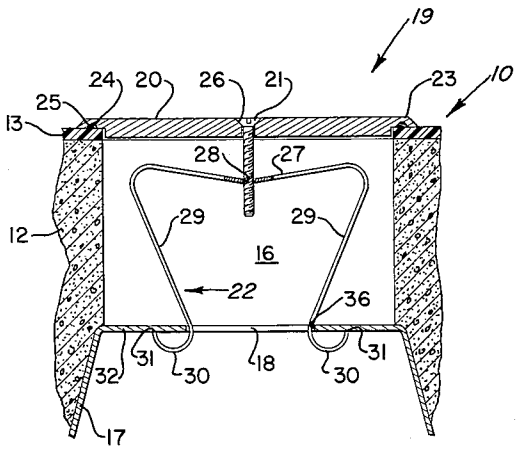


Fig. 2

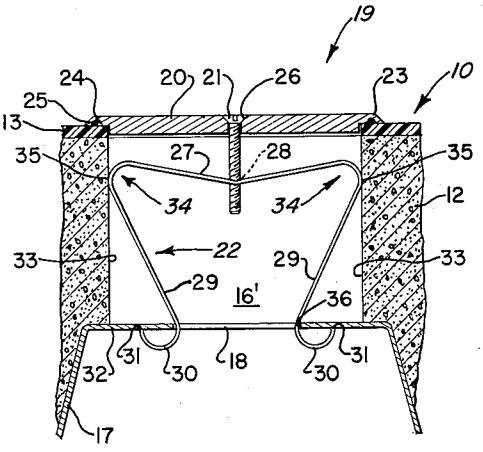


Fig. 4

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3,063,592
Patented Nov. 13, 1962

3,063,592

CLOSURE ASSEMBLY

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Filed June 24, 1960, Ser. No. 38,516
4 Claims. (Cl. 220—3.8)

This invention relates to a closure assembly for use in combination with an electrical raceway disposed beneath the floor, or wall of a building. More particularly this invention relates to a closure assembly that covers an opening for an electrical fitting in the floor or wall of a building. The present closure assembly has particular utility in covering abandoned openings from which electrical fittings have been removed.

The removal of an electrical fitting from a floor or wall incorporating electrical raceways poses the problem of how to effectively and cheaply cover the abandoned opening. Some of the enclosure assemblies presently available require a portion of the electrical fitting to be left in the opening; a closure assembly is secured to the residual portion. Others are composed of many parts; their installation is complicated and unduly time consuming.

The primary object of this invention is to provide a closure assembly which is a complete unit, i.e., one that does not use any portion of the removed electrical fitting. Another object of this invention is to provide a closure assembly that is adaptable to a variety of abandoned opening shapes.

Still another object of this invention is to provide a closure assembly having a minimum number of components which simplifies and facilitates installation.

These and other objects and advantages of the present invention will become apparent from the following detailed description by reference to the accompanying drawings in which:

FIGURE 1 is a fragmentary perspective view of a building floor having metal cellular flooring to illustrate the environment of the present closure assembly;

FIGURE 2 is a cross-sectional view illustrating an installation of the present closure assembly in a building floor having metal cellular flooring;

FIGURE 3 is a perspective view of a tension member in its relaxed position; and

FIGURE 4 is a cross-sectional view similar to FIGURE 2 showing a special installation of the present closure assembly in a narrow opening.

Illustrated in FIGURE 1 is a building floor 10 comprising a cellular metal flooring 11, a layer of concrete 12 and a decorative floor covering 13. The cavities 15 and 16 are illustrative of abandoned electrical fitting openings in the floor 10. A cell 17 of the cellular metal flooring 11 is used as an electrical raceway and communicates with each of the cavities 15, 16 by way of a cell aperture 18. The present closure assembly, indicated by the numeral 19, is shown installed in the cavity 16.

Referring to FIGURES 2 and 3, the closure assembly 19 includes a cover plate 20 overlying the cavity 16 and a threaded fastener 21, shown here as a self-tapping screw, extending through the cover plate 20. The closure assembly 19 also includes a substantially M-shaped spring 22, disposed within the cavity 16. The bottom of the spring 22 engages the cell 17 through the cell aperture 18 while the fastener 21 is threadedly engaged into the top of the spring 22.

The cover plate 20 has a peripheral flange 23 adapted to rest on the floor 10. The bottom surface of the flange 23 includes a continuous groove 24 which receives a suitable sealant material 25 such as putty or rubber gaskets to provide a watertight peripheral seal. The cover plate 20 further includes a central countersunk aperture 26 which receives the screw 21.

The M-shaped spring 22, which is illustrated in its undeformed state in FIGURE 3, comprises a troughed top 27 with a central aperture 28 and inclined legs 29. Each of the legs 29 has an outwardly flanged lower end 30, shown here having a hook shape. The extreme edge 31 of each flanged end 30 resiliently engages the inner surface 32 of the cell 17 through the cell aperture 18.

The spring 22 is formed from flat spring steel. The legs 29 spring outwardly to engage the rim 36 of the cell aperture 18 and thereby maintain the spring 22 in a substantially vertical position. Hence the countersunk aperture 26 and the central aperture 28 may be aligned closely enough so that the screw 21 may be easily inserted.

As illustrated in FIGURE 2, the troughed top 27 is deformed upwardly at its central portion thereby causing the flange 23 of the cover plate 20 to be pulled into uniform surface contact with the floor covering 13. Also the sealant material 25 is compressed and provides a watertight seal.

Although the closure assembly 19 has been illustrated with a rectangular cover plate 20, it should be evident that the cover plate 20 instead could have other shapes. The closure assembly 19 is therefore adaptable to a variety of cavity shapes merely by using an appropriately shaped cover plate. The cover plate 20 may be made from suitable decorative materials such as brass, aluminum, steel, stainless steel or suitable plastic materials.

To install the closure assembly 19, the spring 22 is inserted into the cavity 16 and engaged with the cell 17 by squeezing the legs 29. The sealant material 25 is applied to the groove 24 and the cover plate 20 is positioned over the cavity 16. The screw 21 is then inserted in the countersunk aperture 26 and threadedly engaged in the aperture 28 of the spring 22. The screw 21 is turned until the cover plate 20 is immovable.

Attention is now directed to FIGURE 4 wherein the closure assembly 19 is shown installed in a narrow cavity 16' having side walls 33. When the screw 21 is threaded into the aperture 28, the troughed top 27 is deformed upwardly at its central portion. This deformation spreads the upper portion of the spring 22 until each of the corner portions 34 engages the side walls 33 at the points 35. Continued turning of the screw 21 serves to increase the horizontal force exerted at the points 35 thereby firmly retaining the spring 22. The cover plate 20 is pulled into uniform surface contact with the floor covering 13 while the sealant material 25 is compressed to provide a watertight peripheral seal.

To install the closure assembly of FIGURE 4, the spring 22 is inserted into the cavity 16' and engaged with the cell 17 by squeezing the legs 29. The sealant material 25 is applied to the groove 24 and the cover plate 20 is positioned over the cavity 16'. The screw 21 is then inserted in the countersunk aperture 26 and threadedly engaged in the aperture 28 of the spring 22. The screw 21 is then turned until considerable resistance is met. At this point the closure assembly 19 has the configuration illustrated in FIGURE 4.

From the foregoing description it should be apparent that the present invention provides a closure assembly that is a complete unit, i.e., the abandoned electrical fitting is removed in its entirety. The present invention further provides a closure assembly that is adaptable to a variety of abandoned opening shapes and which is watertight when installed. Also the present invention provides a closure assembly that is quickly and easily installed and which has a minimum number of parts. It should also be apparent that the flanges of the tension member do not project far enough into the cross-section of the electrical raceway to prevent continuing use of the raceway as an electrical conduit. Further the closure assembly of the present invention may be used to cover a cavity in any in-

terior flat surface of a building, such as a wall or ceiling, having an electrical raceway disposed below the flat surface.

According to the provisions of the patent statutes, I have explained the principle, preferred embodiment and mode of operation of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. In an interior flat surface of a building having an electrical raceway disposed therebeneath, a cavity in the said interior flat surface, a cable aperture in the said electrical raceway which provides communication between the said cavity and the said electrical raceway, and a closure assembly for sealing the said cavity, the improvement in the said closure assembly comprising: a cover plate overlying the said cavity and engaged with said interior flat surface peripherally of the said cavity; a substantially M-shaped spring member disposed beneath and said cover plate including a troughed top and a pair of legs each terminating in an outwardly directed flange, said legs extending through the said cable aperture with the said outwardly directed flanges abutting the inner surface of the said electrical raceway; and a threaded fastener extending through the said cover plate and threadedly engaged with the said troughed top, said troughed top being deformed by means of the said threaded fastener whereby the said cover plate is drawn into uniform surface contact with the said interior flat surface.

2. The closure assembly of claim 1 wherein the said outwardly directed flange of each of the said legs comprises a hook-shaped flange, said legs extending through the said cable aperture, the said legs abutting the rim of the said cable aperture and each said hooked end abutting the inner surface of the said electrical raceway whereby the said M-shaped spring is maintained in a substantially vertical position.

3. The closure assembly of claim 1 wherein the said troughed top is deformed upwardly at its central portion by means of the said fastener, the said legs being pressed outwardly whereby the upper corner portion of each of the said legs engages the side walls of the said cavity thereby retaining the said M-shaped spring in a fixed position.

4. In an exposed surface having a first aperture therein and a subjacent surface thereunder having a second aperture therein, said subjacent surface being spaced from the said exposed surface with the said first and second apertures substantially coaxially aligned, said second aperture having a smaller cross-sectional area than the said first aperture, and a closure assembly for said first aperture, the improvement in said closure assembly comprising: a cover plate overlying the said first aperture and engaged with the said exposed surface peripherally of the said first aperture, said first aperture being sealed over thereby; a spring member disposed beneath the said cover plate comprising a strip of spring-like metal material including a resilient top and legs which extend through the said second aperture each terminating in an outwardly directed flange which abuts the lower face of the said subjacent surface; and fastener means extending through the said cover plate and engaged in the said resilient top for deforming the said resilient top whereby the said cover plate is drawn into uniform surface contact with the said exposed surface.

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