March 19, 1963 T. E. HOSKINS 3,081,896

CLOSURES FOR ACCESS OPENINGS AND METHOD OF USING THE SAME

Filed Dec. 15, 1960 2 Sheets-Sheet 1

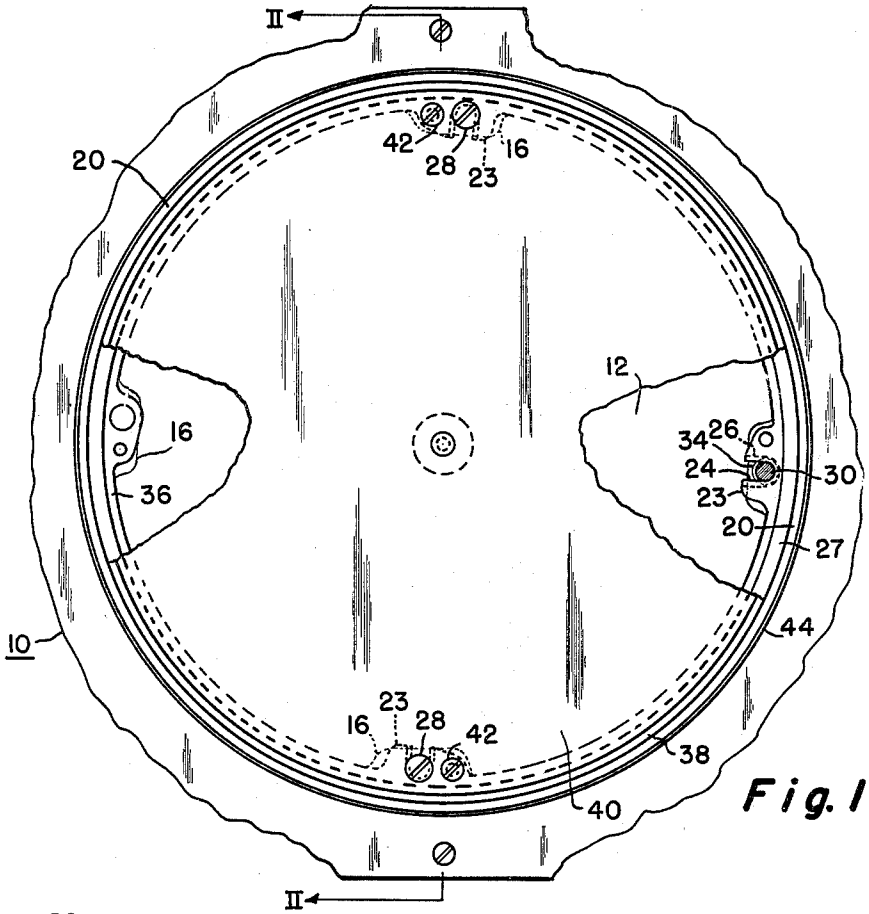


Fig. 1

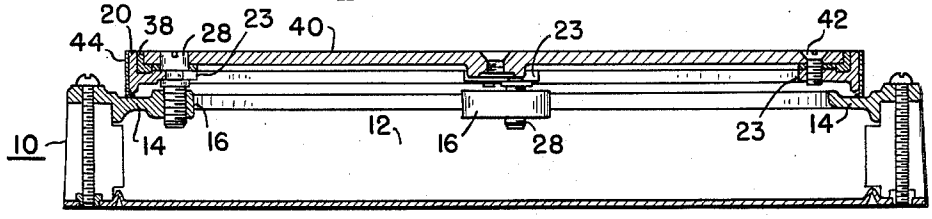


Fig. 2

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CLOSURES FOR ACCESS OPENINGS AND METHOD OF USING THE SAME

Filed Dec. 15, 1960 2 Sheets-Sheet 2

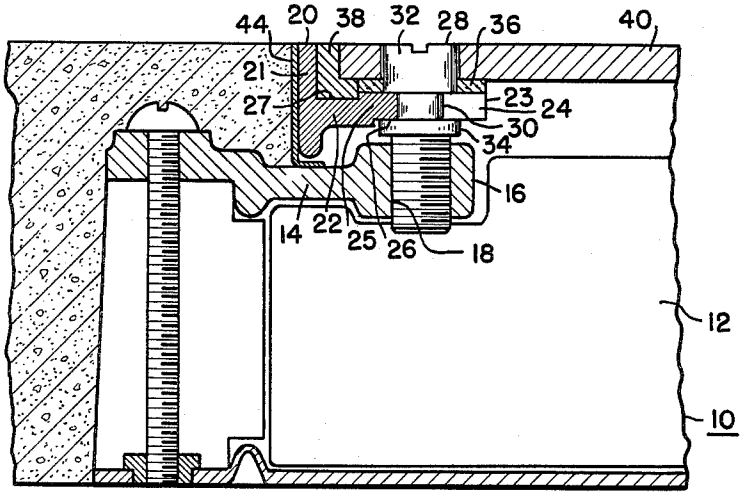


Fig. 3

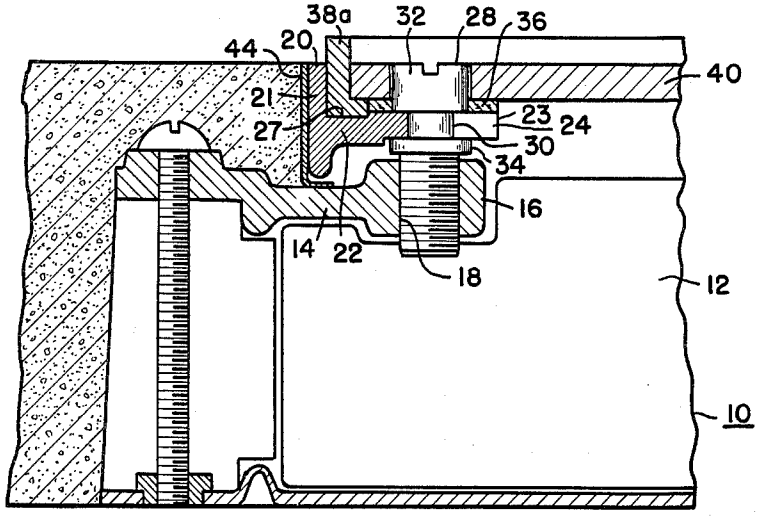


Fig. 4

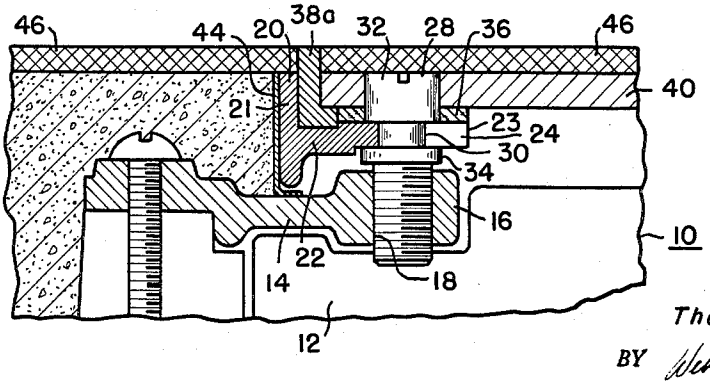


Fig. 5

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3,081,896

CLOSURES FOR ACCESS OPENINGS AND METHOD OF USING THE SAME

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Filed Dec. 15, 1960, Ser. No. 75,983
5 Claims. (Cl. 220—3.4)

This invention relates to closures for access openings and a method of using the same. More particularly it relates to closures for access openings in junction boxes and header ducts used in underfloor wire distributing systems.

In modern buildings, particularly large office buildings, the use of underfloor wiring systems is very common. Such systems protect against electrical obsolescence by providing a system whereby electrical outlets are available or can be made available at any location in the floor.

In cellular flooring structures, floor cells run parallel to each other and carry wiring. Header ducts are placed across the floor cells at right angles to the cells and act as feed systems to the cells. In more conventional types of construction in which an underfloor wiring system is supported on a poured concrete floor, junction boxes are used to receive and channel the wiring. In both systems, access openings are required.

Increasing construction costs make it imperative that both material and labor costs be minimized. My invention provides a closure for access openings of junction boxes and header ducts which requires less material than those presently used, is easy to manufacture, and, most important, can be installed and adjusted on the job in less time and with less skill than closures currently in use.

In the accompanying drawings, I have illustrated a presently preferred embodiment of my invention in conjunction with a typical junction box, wherein:

FIGURE 1 is a plan view of a junction box using my improved closure;

FIGURE 2 is a cross-sectional view taken on line II—II of FIGURE 1;

FIGURE 3 is an enlarged view of a part of the section shown in FIGURE 2 showing also the concrete floor poured around the junction box;

FIGURE 4 is a vew similar to FIGURE 3 showing an intermediate step in the installation of my closure; and

FIGURE 5 is a view similar to FIGURE 4 showing the finished floor covering in position.

Referring now to the drawings, a typical junction box 10 having an access opening 12 surrounded by a shoulder 14 is shown. At four spaced positions around the shoulder, a boss 16 is formed integral with the shoulder, each boss having a threaded bore 18 through it.

A closure constructed according to my invention comprises an annular adjusting ring 20 which is dimensioned to fit around the perimeter of the opening 12. The ring is T-shaped in section and has a vertical flange 21 and a horizontal web 22. Four spaced lugs 23 extend inwardly from the horizontal web 22 of the adjusting ring. Each lug has a slot 24, the ring and the lugs being so dimensioned and positioned that the slots 24 may be aligned with the bores 18. Preferably, the lugs 23 and the outer portion of the horizontal web of the ring 21 are upset as shown at 25 providing a recess 26 on the underside of the ring and a recess 27 on the upper side of the ring.

Four threaded adjusting screws 28 engage the threaded bores 18. The heads of screws 28 have grooves 30 dimensioned to receive and hold the upset portion of the lugs from the adjusting ring whereby the adjusting ring can be raised or lowered merely by raising or lowering the adjusting screws. The upper portion 32 of the screw heads will force the adjusting ring down and the lower

portion 34 of the screw heads which engage recesses 26 will raise the adjusting ring. In this manner, the level of the entire closure assembly can be regulated by the adjusting screws as will more clearly appear later.

An annular gasket 36 rests on the upset portion of the adjusting ring. The gasket has lugs which mate with the slotted lugs of the adjusting ring. Holes through the gasket permit passage of the screw heads. An L-shaped annular flush pan 38 rests on the inner portion of the web of the adjusting ring in a recess 27. A circular cover plate 40 rests on the flush pan and the gasket. The cover plate is fastened to the adjusting ring by screws 42 which engage threaded bores (not shown) in the lugs 22. Holes are provided in the cover plate to receive the heads of adjusting screws 28. An L-shaped ring sleeve 44 rests on and is preferably cemented to the shoulder 14 of the junction box. It encircles and fits snugly around the adjusting ring so that concrete poured around the junction box cannot seep into the box or bind the adjusting ring.

Referring more specifically to FIGURES 3, 4 and 5, one of the important features of my invention is the use of two flush pans of different sizes in installing my closure on junction boxes and header ducts. The vertical leg of the L-shaped flush pan 38 originally installed is dimensioned so that the adjusting ring, cover plate and flush pan terminate in the same horizontal plane. The concrete floor may then be poured around the junction box. Any final adjustments in the height of the junction box closure can be made so that the surface of the cement and the top surface of the closure are in the same horizontal plane. The cover plate is then removed and a second L-shaped flush pan 38*a*, shown in FIGURE 4, is installed. The vertical leg of flush pan 38*a* is longer than the vertical leg of flush pan 38, which was originally used, by the thickness of a floor covering 46 to be used over the concrete. After the pan 38*a* is installed, the floor covering 46, which may be linoleum or any other conventional floor covering, is laid. A flush pan or similar filler is required during the pouring of the concrete to prevent concrete from entering the annular space between the flange of the adjusting ring and the cover plate and to support the cover in the proper horizontal plane. The larger flush pan 38*a* should not be positioned prior to the laying of the concrete floor since the flush pan is made of thin, ductile metal which can be easily bent and deformed during the concrete laying operation.

From the foregoing, it can be readily seen that a closure constructed and installed according to my invention may be readily and inexpensively manufactured and quickly and simply installed. It enables easy access to the junction box or header duct without any ungainly or offensive appearance in the finished flooring. All parts of the closure may be made from relatively inexpensive materials. Since many of the parts are annular, a minimum amount of the material is used. The closure can be installed and adjusted both before and after the concrete floor has been laid without any time-consuming measurements, a level being all that is necessary for perfect adjustment. After the finished flooring is positioned, the only visible part of the closure is the top edge of the flush pan which may be less than an eighth inch wide. Furthermore, the flush pan does not protrude above the floor covering in such a manner as to be likely to cause tripping over the edge of the pan.

While I have described the presently preferred embodiments of my invention, it is to be understood that it may be otherwise embodied within the scope of the following claims.

I claim:

1. An adjustable closure for access openings into underfloor wiring systems wherein openings in the tops of junc-

tion boxes and header ducts provide access to the system, the periphery of the opening having a plurality of spaced bosses, each boss having a threaded bore, said closure comprising an annular adjusting ring fitting around the periphery of the opening, said ring having a vertical flange and a horizontal web; a plurality of spaced lugs extending inwardly from the horizontal web of the ring, each lug having a slot positioned above a threaded bore of a boss on the periphery of the opening; a plurality of adjusting screws which engage the threaded bores in the bosses on the periphery of the opening, the adjusting screws each having a groove dimensioned to receive the slotted portion of a lug of the horizontal web of the adjusting ring, whereby movement of the adjusting screw is imparted to the adjusting ring; a replaceable annular L-shaped flush pan resting on the web of the adjusting ring, the vertical leg of the replaceable flush pan terminating in the same horizontal plane as the flange of the ring; a permanent L-shaped flush pan, the vertical leg of the permanent flush pan being longer than the vertical leg of the replaceable pan; and a cover plate resting on a flush pan and fastened to the adjusting ring.

2. An adjustable closure for access openings into underfloor wiring systems wherein openings in the tops of junction boxes and header ducts provide access to the system, the periphery of the opening having a plurality of spaced bosses, each boss having a threaded bore, said closure comprising a T-shaped annular adjusting ring fitting around the periphery of the opening, said ring having a vertical flange and a horizontal web; a plurality of spaced lugs extending inwardly from the horizontal web of the ring, each lug having a slot positioned above a threaded bore of a boss on the periphery of the opening; an L-shaped ring sleeve resting on the periphery of the opening, the horizontal leg of the sleeve extending under the adjusting ring and the vertical leg of the sleeve encircling the vertical section of the adjusting ring; a plurality of adjusting screws which engage the threaded bores in the bosses on the periphery of the opening, the head of each adjusting screw having a groove dimensioned to receive the slotted portion of a lug of the horizontal web of the adjusting ring, whereby movement of the adjusting screw is imparted to the adjusting ring; a replaceable annular L-shaped flush pan resting on the web of the adjusting ring; a cover plate resting on a flush pan and fastened to the adjustable ring, the vertical leg of the replaceable flush pan terminating in the same horizontal plane as the flange of the ring and the top of the cover plate; and a permanent L-shaped flush pan, the vertical leg of the permanent flush pan being longer than the vertical leg of the replaceable pan.

3. A method of installing closures for access openings in underfloor wiring systems in which openings in the tops of junction boxes and header ducts are used for access to said system, said method comprising the steps of installing a vertically adjustable and horizontally extending support within the opening and adjacent the periphery thereof, positioning a temporary, replaceable pan on the horizontally extending support, positioning a cover plate on said pan, pouring a concrete floor around the support; removing the cover plate and the replaceable pan, inserting a permanent pan of the desired height and replacing the cover plate.

4. A method of installing closures for access openings in underfloor wiring systems in which openings in the tops of junction boxes and header ducts are used for access to said system, the periphery of the opening having threaded lugs, said method comprising the steps of fastening to the lugs an adjusting ring having a vertical flange and a horizontal web, positioning an L-shaped flush pan on the web of the adjusting ring, fastening a cover plate to the adjusting ring, the vertical leg of the flush pan, the top of the cover plate and the flange of the ring terminating in the same horizontal plane, pouring concrete around the closure; removing the cover plate and the flush pan, inserting a second L-shaped flush pan, the vertical leg of the second pan being longer than the vertical leg of the first pan by an amount equal to the thickness of the floor covering, replacing the cover plate and laying the floor covering.

5. An adjustable closure for access openings into underfloor wiring systems wherein openings in the tops of junction boxes and header ducts provide access to the system and wherein a floor covering material is positioned over the closure, the periphery of the opening having a plurality of spaced bosses, each boss having a threaded bore, said closure comprising an annular adjusting ring fitting around the periphery of the opening, said ring having a vertical flange and a horizontal web; a plurality of spaced lugs extending inwardly from the horizontal web of the ring, each lug having a slot positioned above a threaded bore of a boss on the periphery of the opening; an L-shaped ring sleeve resting on the periphery of the opening, the horizontal leg of the sleeve extending under the adjusting ring and being cemented to the periphery of the opening and the vertical leg of the sleeve encircling the vertical section of the adjusting ring; a plurality of adjusting screws which engage the threaded bores in the bosses on the periphery of the opening, the adjusting screws having a groove dimensioned to receive the slotted portion of a lug of the horizontal web of the adjusting ring, whereby movement of the adjusting screw is imparted to the adjusting ring; an annular L-shaped flush pan resting on the web of the adjusting ring, said flush pan being dimensioned so that the vertical leg extends above the vertical flange of the adjusting ring a distance equal to the thickness of the floor covering; and a cover plate resting on the flush pan and fastened to the adjusting ring.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,081,896 March 19, 1963

Thomas E. Hoskins

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 46, for "adjustable" read -- adjusting --.

Signed and sealed this 1st day of October 1963.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents