Sept. 26, 1933.

S. N. BUCHANAN

1,928,198

FLOOR BOX

Filed July 26, 1932

FIG. 1

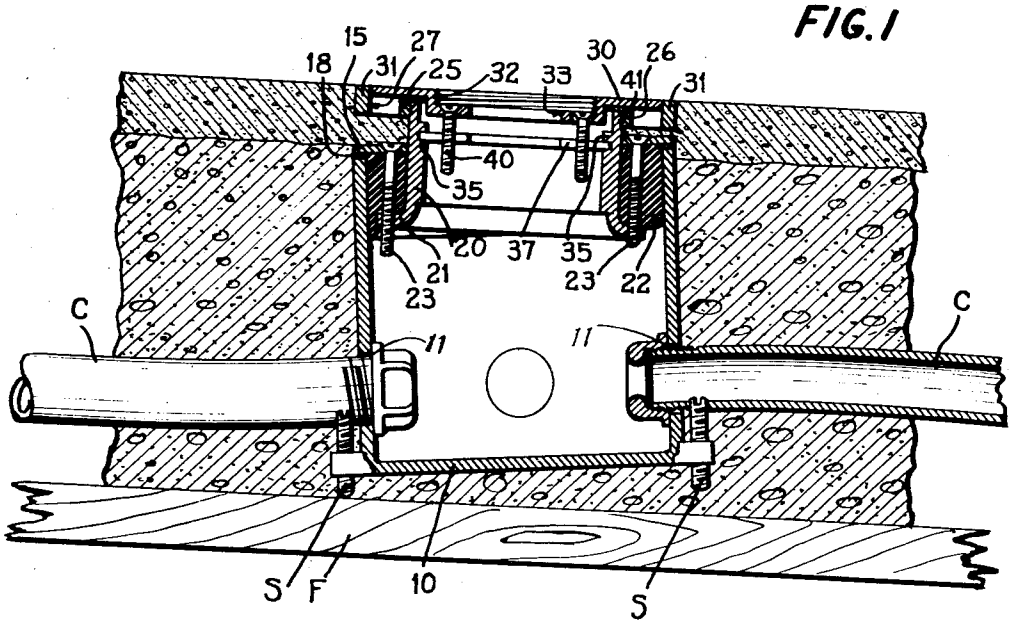


FIG. 2

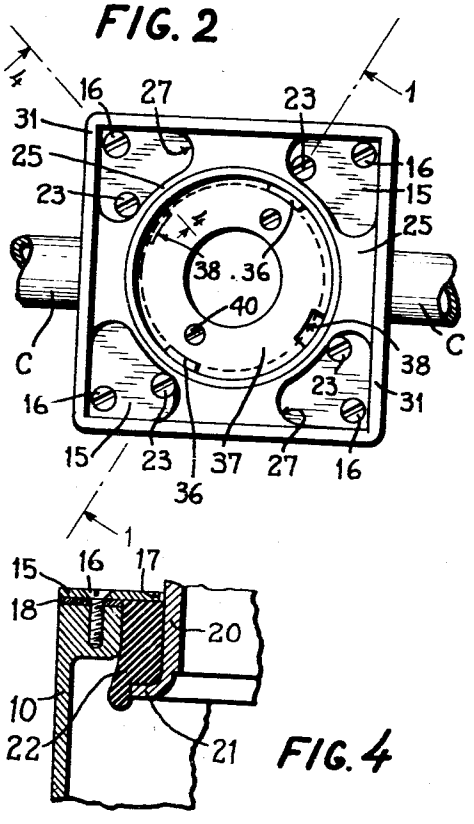


FIG. 3

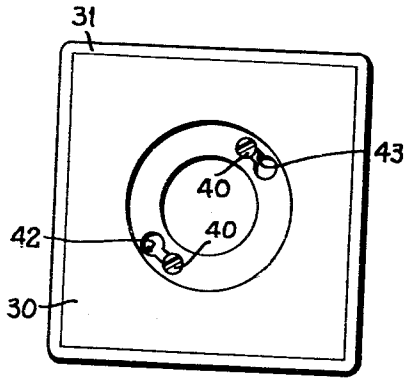


FIG. 4

INVENTOR

STEPHEN N. BUCHANAN

BY

Bohleber & Ledbetter

ATTORNEYS

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FLOOR BOX

Stephen N. Buchanan, Elizabeth, N. J., assignor to The Thomas & Betts Co., Elizabeth, N. J., a corporation of New Jersey

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6 Claims. (Cl. 247—19)

The invention relates to boxes for electrical outlets such as are used particularly in floors made of poured concrete. The boxes are connected with electrical conduit above the concrete forms in a building under construction and placed in desired level position before the concrete is poured. The conduit and boxes then become embedded in the concrete, when it is poured, forming the floors.

It is difficult to properly anchor the boxes and conduit so that they will stay in leveled position while the concrete is being poured all around the box and conduit and probably tamped thereabout. Electrical outlet boxes, therefore, and particularly those intended to be embedded in poured concrete floors, are so constructed that a certain degree of adjustment may be made to bring some portion of the box, and particularly the floor plate or the part which carries the floor plate, into alignment with the surface of the finished floor. If such adjustment were not provided, the surface of the outlet box may well be considerably below or above the finished floor surface or one end may be below and the other end projecting above the floor surface. Such construction, of course, would not be tolerated by the trade and hence the adjustment is provided upon the boxes so that the visible top surface or floor plate is level with the surface of the floor.

It is an object of the invention to construct an outlet box which is provided with new and novel adjusting mechanism and a new and novel arrangement thereof for adjusting the floor plate or the part which carries the floor plate. The box and adjusting mechanism is of simple design, easily accessible and effective to provide a considerable degree of adjustment of the floor or cover plate to meet the extreme conditions of displacement of outlet boxes frequently encountered in poured concrete floors.

Another object is to construct an outlet box in which all parts including the floor or cover plate are positively grounded without affecting the adjustability of the adjustable parts.

Other objects of the invention will be more apparent from the following description, taken in connection with the accompanying drawing showing a preferred embodiment of the invention, in which:

Figure 1 is a cross-section through the box as it is connected with electrical conduit and embedded in a concrete floor with the floor plate adjusted level with the finished floor surface.

Figure 2 is a top view of the box with the floor plate removed to show the accessibility of the adjusting screws.

Figure 3 is a top view of the floor box with the floor or cover plate in position and with the cover off showing the screws which secure the floor plate to the frame.

Figure 4 is an enlarged partial section of the adjusting mechanism.

The outlet box of the invention consists of a minimum number of parts which are constructed to be economically manufactured and yet provide a maximum amount of adjustment. A large degree of adjustability is necessary to level the cover or floor plate of the box with the finished floor surface for those boxes which have been badly displaced. In addition, all the parts of the box, and particularly the cover or floor plate, are positively grounded to the box and conduit system so that it is not possible to have a short circuit from the electrical outlet fixture which would place an ungrounded electrical charge upon these parts and the cover plate. The latter is important in the interest of safety. The box to be described herein is so constructed that each of these essential requirements is provided.

The outlet box consists of a box 10 of any desired construction, which box has outlet openings 11 therethrough to receive electrical conduit C. The box 10 is open at the upper end thereof and carries a flange 15 at the open end, which flange may be secured to the box by means of the screws 16 preferably located in the corners of the box if the box is square. The flange 15 has an opening 17 therethrough. A gasket 18 may be used to assure a water-tight joint at this point.

A tubular member 20, which is preferably a ring, passes through the opening 17 in the flange 15. The tubular member 20 carries an outwardly extending rim 21. A compressible rubber gasket 22 is positioned around the ring 20 so that one end thereof rests upon the rim 21 and the other end is adapted to engage the flange 15. Adjusting screws 23 are carried by the flange 15 and the rim 21 and are spaced around the ring 20 at spaced points so that any side of the rim 21 may be drawn towards the flange 15. The adjusting screws preferably pass through the compressible gasket. The rubber gasket 22 compresses as the screws are tightened and permits the rim 21 to be drawn towards the flange 15. The gasket 22 retains the rim 21 in its adjusted position and will assist also in forming a water-tight joint between the ring 20 and the flange opening 17 as well as for the holes for the adjusting screw

means. The tubular member or ring 20 is, of course, adjusted with the rim 21.

A frame 25 is carried upon the tubular member or ring 20 outside of or above the box 10 and is secured to the ring 20 preferably by means of threads 26. The frame 25 has openings 27 therein to give access to the adjusting screws 23 and the screws 16 which secure the flange 15 to the box 10.

A floor or cover plate 30 is carried within a border 31 upon the frame 25 and forms the finished floor plate to lend an attractive appearance to the end of the box which appears level with the surface of the floor. The floor or cover plate 30 carries a threaded recess 32 as well as an opening 33 therethrough through which the electrical outlet to be carried by the box 10 is accessible. The cover plate 30 also covers the apertures 27 in the frame 25 so that the plate must be removed in order to adjust the frame with respect to the box 10.

The tubular member or ring 20 carries outwardly extending lugs or a shoulder 35 upon its inner circumference and spaced therefrom are lugs 36. At least two such lugs are disposed around the inner dimension of the tubular member 20. A fixture holder 37 has recesses 38 in its outer periphery which are adapted to pass over the lugs 36 until the holder engages the shoulder 35 whereupon the holder is rotated so that the recesses are spaced from the lugs and the holder is retained in position within the ring 20. Screws 40 are then threaded into the fixture holder 37 and pass through screw holes provided in the recessed portion of the floor plate 30. Upon tightening the screws 40, the floor or cover plate 30 and the fixture holder 37 are clamped in position with the holder bearing tightly against the lugs 35. The floor or cover plate 30 is clamped against a gasket 41 which makes the joint between the floor plate and ring 20 water-tight. It will be observed, therefore, that the cover plate 30 is positively electrically grounded through the screws 40, the fixture holder 37, lug 36 and the ring 20, and then through the adjusting screws 23, flange 15, screw 16 to the box 10 and electrical conduits C.

In order to enable the floor or cover plate 30 to be quickly removed, a large sized opening 42 is provided for each screw 40 through which the head of the screw will pass. This large opening 42 communicates by a passage 43 with the smaller opening for the screw 40. In order to remove the cover plate 30 then, the screws 40 are unloosened and the screws turned with the outlet holder 37 so that the screws pass through the passage 43 to the large sized opening 42. The cover plate 30 may then be removed and the screws 40 remain threaded in the outlet holder. The cover plate 30 is assembled in position by the reverse of the steps enumerated.

The fixture holder 37 is adapted to receive and retain an electrical outlet (not shown) within the box 10 whereby electrical connection may be made to any desired point. A wire outlet or cover, either plain or of any other form, may be threaded into the recess 32, which cover conceals the outlet.

In using the box, the box 10 is connected with its respective conduits C and leveled in position upon the concrete forms F in which position the box is desired to be set within the concrete. The leveling screws S assist in leveling the box as it rests upon the concrete forms F. This is done before the concrete is poured. The concrete is then poured around the box and as a result of which the box will frequently shift and usually out of its level position. The frame 25 may then be levelled with the finished floor surface by tightening or loosening the screws 23 to draw the ring 21 either nearer to the flange 15 or away therefrom. This raising or lowering of the rim 21 raises or lowers the tubular member or ring 20 and the frame 25. It is clear that any one or more of the adjusting screws 23 may be rotated in order to level the frame 25 with the finished floor surface, irrespective of what the position of the box 10 may be. It may well occur that the right hand side of the frame 25 may be almost in contact with the flange 15 of the box, whereas the left hand side of the frame 25 may be spaced considerably from the flange 15 when the leveling of the frame has been completed.

Various modifications will occur to those skilled in the art in the configuration, composition and disposition of the component elements going to make up the invention as a whole, as well as in the selective combination or application of the respective elements, and no limitation is intended by the phraseology of the foregoing description or illustrations in the accompanying drawing, except as indicated in the appended claims.

What is claimed is:

1. An outlet box comprising a box, an inwardly directed flange fixedly carried by the box at its upper end and having an opening therein, a tubular member passing through the opening in the flange, a rim extending outwardly from the tubular member, a compressible gasket around the outside of the tubular member, the gasket resting upon the rim and engaging the flange, adjusting screw means carried by the rim and flange at spaced points around the tubular member to move at least one side of the rim and tubular member relatively to the flange thereby compressing the gasket, a cover plate above the box carried by and adjustable with the tubular member, and means to secure an electrical outlet to the tubular member.

2. An outlet box comprising a box having an open end, an inwardly directed flange member fixedly secured to the open end of the box and having an opening therein, a tubular member passing through the opening in the flange member, a rim extending outwardly from the tubular member, a compressible gasket around the outside of the tubular member, the gasket resting upon the rim and engaging the flange member, adjusting screw means carried by the rim and flange member at spaced points around the tubular member to move at least one side of the rim and tubular member relatively to the flange and box thereby compressing the gasket, a cover plate above the box carried by and adjustable with the tubular member, and means to secure an electrical outlet to the tubular member.

3. An outlet box comprising a box having an open end, a flange member fixedly secured to the open end of the box and having an opening therein forming an inwardly directed flange, a ring passing through the opening in the flange member, a rim extending outwardly from the ring, a compressible gasket around the outside of the ring, the gasket resting upon the rim and engaging the flange member, adjusting screw means carried by the rim and flange member at spaced points around the ring to move at least one side of the rim and ring relatively to the box and flange member thereby compressing the

gasket, a cover plate above the box carried by and adjustable with the ring, and means to secure an electrical outlet to the ring.

4. An outlet box comprising a box, an inwardly directed flange carried by the box at its upper end and having an opening therein, a tubular member passing through the opening in the flange, a rim extending outwardly from the tubular member, a compressible gasket around the tubular member, the gasket resting upon the rim and engaging the flange, adjusting screw means carried by the rim and flange at spaced points around the tubular member to move at least one side of the rim and ring relatively to the flange thereby compressing the gasket, a frame above the box carried by and adjustable with the tubular member, the frame having openings therethrough for access to the adjusting screw means, a cover plate carried upon the frame and covering the openings therein, and means to secure an electrical outlet to the tubular member.

5. An outlet box comprising a box having an open end, a flange member fixedly secured to the open end of the box and having an opening therein forming an inwardly directed flange, a ring passing through the opening in the flange member, a rim extending outwardly from the ring, a compressible gasket around the outside of the ring, the gasket resting upon the rim and engaging the flange member, adjusting screw means carried by the rim and flange at spaced points around the ring to move at least one side of the rim and ring relatively to the flange member thereby compressing the gasket, a frame carried by and adjustable with the ring, the frame having openings therethrough for access to the adjusting screw means, a cover plate carried upon the frame and covering the openings therein, and means to secure an electrical outlet to the ring.

6. An outlet box comprising a box having an open end, a flange member secured to the open end of the box and having an opening therein forming an inwardly directed flange, a ring passing through the opening in the flange member, a rim extending outwardly from the ring, a compressible gasket around the ring, the gasket resting upon the rim and engaging the flange member, adjusting screw means carried by the rim and flange at spaced points around the ring to move at least one side of the rim and ring relatively to the flange member thereby compressing the gasket, a frame carried by and adjustable with the ring, the frame having openings therethrough for access to the adjusting screw means, a cover plate carried upon the frame and covering the openings therein, means to secure an electrical outlet to the ring, lugs projecting inwardly within the ring, an outlet holder having a diameter substantially that of the inside of the ring and insertable into the ring, the outlet holder having recesses in the side thereof whereby the holder will pass below the lugs and rotation of the outlet holder will enable the holder to engage the lugs, and screws in the cover plate and threaded into the holder to pull the latter against the lugs to clamp the cover plate and holder in position and ground the former to the ring and box.

STEPHEN N. BUCHANAN.