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FLUSH LINOLEUM PAN FOR HEADERDUCT OUTLET

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Fig. 1

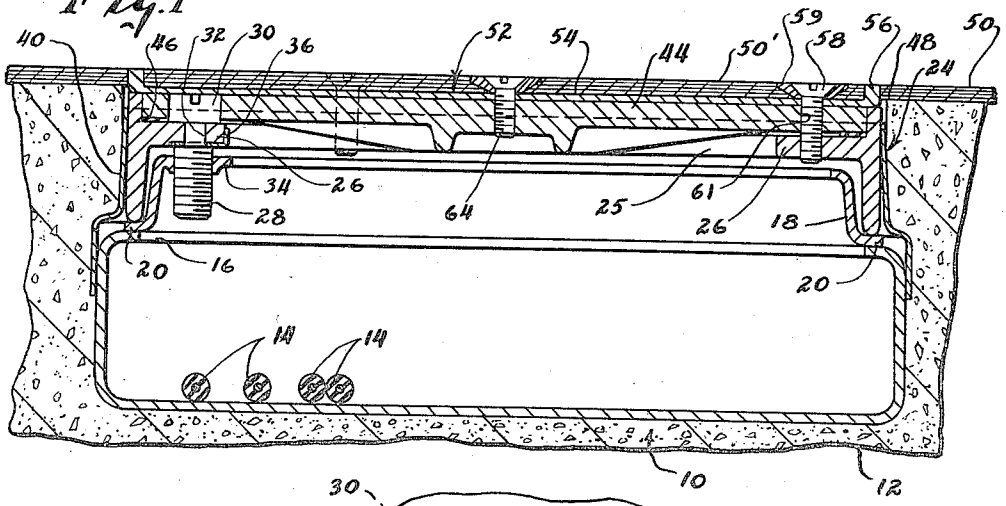
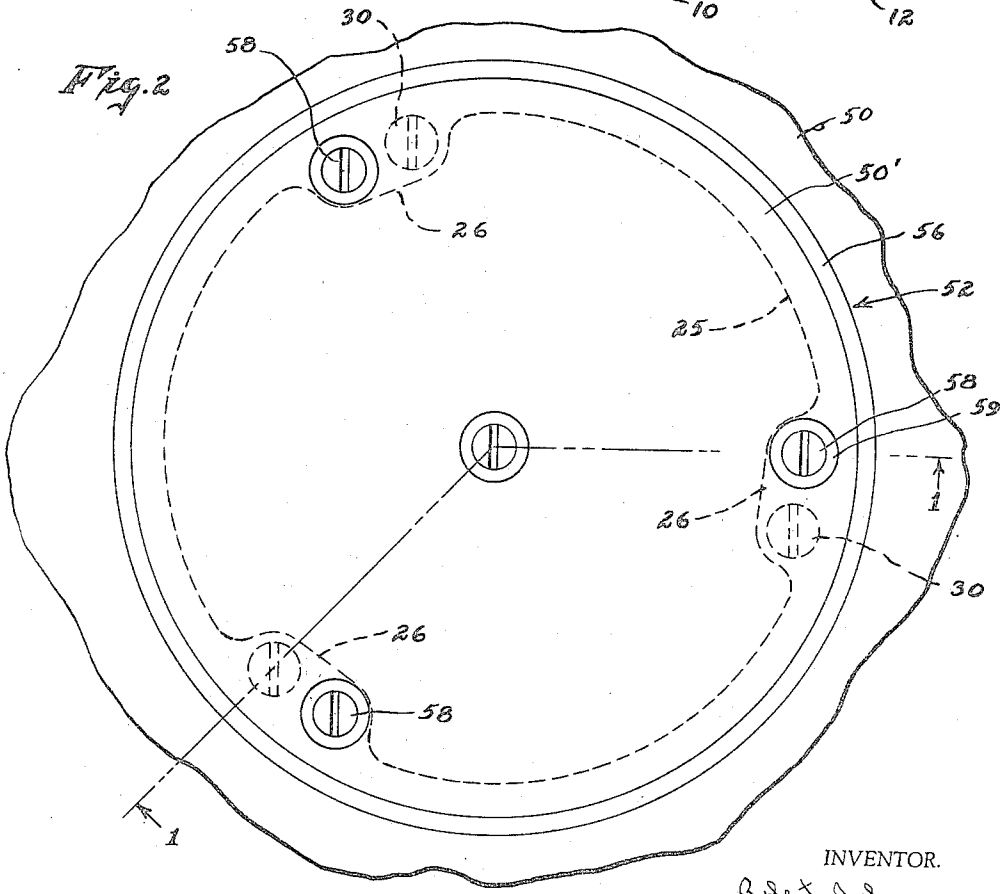


Fig. 2



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FLUSH LINOLEUM PAN FOR HEADERDUCT OUTLET

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This invention relates to header duct outlets and to linoleum pans which are used to hold floor covering over closed outlets.

It is conventional practice for underfloor electric wiring systems to have outlets located at convenient spacing along a header duct, and to provide inconspicuous closures for any outlets which are not to be used for the present. For floors which have a covering, such as linoleum, and rubber or asphalt tile, it has been the practice to use a "pan" for holding a circular piece of the floor covering immediately over the closures.

It is an object of this invention to provide an improved linoleum pan which will protect the edges of the floor covering from damage and at the same time fit within the confined height restrictions met with when using conventional duct systems. The invention will be described as applied to a linoleum pan, this term "linoleum pan" being used to designate a pan for any type of floor covering. It is another object of this invention to combine a linoleum pan with a header duct outlet in such a manner that the pan receives adequate support at the locations and to the extent necessary for keeping the floor covering flat.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views;

Figure 1 is a sectional view, taken on the line 1—1 of Figure 2, and showing a header duct embedded in a floor and equipped with an outlet cover, and linoleum pan in accordance with this invention; and

Figure 2 is a top plan view of the structure shown in Figure 1.

Figure 1 shows a header duct 10 embedded in concrete 12 of a floor in a building. The header duct 10 encloses electrical conductors 14 which extend lengthwise of the duct. At convenient spacing along the duct there are outlet openings, such as the outlet opening 16, for access to conductors in the duct, and to floor cells on top of which the duct is installed.

The header duct 10 is ordinarily made of heavy gauge sheet metal and a neck 18 is placed on top the header duct over the opening 16. This neck 18 surrounds the opening 16 and it has a bottom flange 20 which rests upon the top of the header duct 10 around the edges of the opening 16. The neck 18 is of a fixed height and since the thickness of concrete floors varies in different places, depending upon the service for which the building is intended, it is necessary to have some means for adjusting the height of the header duct outlet to accommodate the particular thickness of the floor in which the header duct is embedded.

An adjusting ring 24 fits around the neck 18 and has a bottom edge that rests on top of the flange 20 when the adjusting ring 24 is in its lowermost position. The adjusting ring 24 has an internal flange 25 with inwardly extending lugs 26 at angularly spaced regions around the flange. In the construction illustrated, there are lugs 26

spaced at angles of 120°. A screw 28 has a head 30 which rests on top of the lug 26; and the screw 28 is of reduced diameter immediately below the head and it extends through a slot 32 in the lug 26. The threaded portion of the screw 28, below the slot 32, is of larger diameter than the slot. The head 30 and the threaded portion of the screw 28, being larger than the slot 32, prevent axial movement of the screw 28 with respect to the lug 26.

The threaded portion of the screw 28 fits into threads in a lug 34 which extends inwardly from the upper part of the neck 18. Rotation of the screw 28 causes it to move up or down through the lug 34, and since the lug 26 of the adjusting ring cannot move axially with respect to the screw 28, this upward or downward movement of the screw 28 causes the adjusting ring 24 to be raised or lowered, depending upon the direction in which the screw 28 is turned. In Figure 1, the adjusting ring 28 is shown in its lowermost position, as previously explained.

There are three adjusting screws 28, one for each of the lugs 26, and these screws are independently adjustable not only to raise and lower the adjusting ring 26, but also to level it with respect to the top surface of the floor 12. The screw 28 is held against horizontal displacement in its slot 32 by a spring clip 36; but this spring clip 36 is merely representative of means for holding the screw 28 in position and no further illustration of it is necessary for a complete understanding of this invention.

There is a sleeve 40 surrounding the adjusting ring 24 and extending outwardly and downwardly over the sides of the header duct. This sleeve may be of sheet metal or fiber and it serves to prevent wet concrete from coming in under the bottom of the adjusting ring 24 when the concrete is originally poured. By using such a protecting sleeve 40, the adjusting ring 24 can be used to obtain a greater range of adjustment and can be kept free for subsequent leveling movement even after the concrete floor has been poured.

A cover 44 closes the upper end of the adjusting ring 24. This cover 44 is supported by the flange 25 and in the construction illustrated, there is a gasket 46 between the cover 44 and the flange 25. The cover 44 is designed so that when used with whatever gasket may be intended, the top surface of the cover 44 is substantially flush with the top face of the adjusting ring 24.

In the ordinary installation of a header duct and adjusting ring, of the type shown in Figure 1, the ring 24 is adjusted so that the top of the cover 44 and the top face of the ring 24 are substantially flush with the surface of the concrete floor 12. In Figure 1 this floor surface is indicated by the reference character 48, and there is a floor covering 50 on top of the concrete.

With this invention a linoleum pan 52 is located over the cover 44 and the peripheral edge portion of the linoleum pan extends outwardly over the top face of the adjusting ring 24. The linoleum pan 52 includes a thin bottom 54 and an annular side wall 56 which is of substantially greater height than the thickness of the bottom 54.

The linoleum pan 52 is of one-piece construction and is preferably made of copper, aluminum, or other malleable material. The bottom 54 is made very thin so that floor covering 50' located within the pan 52 can be flush with the surrounding floor covering 50, while the closure for the header duct outlet is still located substantially flush with the top surface of the floor. The thinner the bottom the better, since a thinner bottom saves on the adjustment range of the outlet fitting. In actual practice the thickness of the bottom is 0.040 inch, but this is given merely by way of illustration.

It is not practical, however, to have the wall 56 of the linoleum pan made of thin material because the purpose of this wall is to protect the edges of the floor covering

50', and to some extent the edges of the surrounding floor covering 50; and this protection cannot be obtained unless the wall 56 is strong enough to resist bending or other distortion when subjected to the load of furniture casters running over it, or other loads which must be expected on a building floor. In practice, the radial thickness of the wall 56 is at least one-eighth of an inch, this value being illustrative.

In the preferred construction of the linoleum pan 52, the pan is coined or forged from a disk which is slightly thicker than the desired thickness of the final bottom 54. During the coining or forging operation, the disk is squeezed to a thinner dimension over its entire area except for the peripheral portion where the wall 56 is to be formed. Metal displaced by radial flow increases the thickness of the peripheral portion of the disk and forms the wall 56. In the preferred construction, the outside of the wall 56 meets the bottom surface of the linoleum pan 52 at a curved region of juncture; the radius of curvature being about points lying in a circle in a plane substantially parallel to the plane of the bottom 54 of the linoleum pan. The working of the metal of the rim will harden some grades of material such as copper and certain aluminum compositions.

The inside depth of the linoleum pan 52 is exactly equal to the thickness of the floor covering 50 so that the same floor covering can be used in the linoleum pan as is used on the top surface of the floor 12 around the opening over the adjusting ring 24. Pans are made in different sizes for different thickness of wall covering, for example from ⅛ to 3/32, these values being illustrative. The adjusting ring 24 is brought substantially level with the top surface of the floor 12, but preferably adjusted below the top surface of the floor by the small dimension equal to the vertical thickness of the pan bottom 54.

The floor covering 50 is held in the pan 52 by cement, as desired; but it can be held in place by screws 58 which hold the linoleum pan 52 on the cover 54, and hold the cover 54 on the adjusting ring 24. These screws are shown passing through escutcheons 59 which are preferably seperate from the pan so that the inside surface of the wall 56 is cylindrical. The screws 58 pass through unthreaded openings 61 in the cover 44 and thread into the lugs 26 of the adjusting ring flange 25. The thin bottom wall 54 of the linoleum pan 52 rests on the cover 44 and the cover provides the strength necessary to prevent the pan from bending when loads are placed on the floor covering above it.

In the preferred construction there is also a center escutcheon 59 and a center screw 62. The screw 62 threads into a center opening 64 in the cover 44, and it provides an additional connection between the pan 52 and the cover 44. The more important purpose of the screw 62 and the opening 64, however, is to provide a center opening in the pan, when the screw 62 is removed, for receiving a tool for lifting the pan from the cover 44 whenever the cover is to be removed from access to the duct.

The head 30 of the screw 28 is located in a hole through the cover 44 and the top of the screw head 30 is flat and exactly flush with the top surface 44 of the cover. With this construction, the adjusting ring 24 can be raised and lowered, and can be leveled, when the cover 44 is in place.

The preferred embodiment of the invention has been illustrated and described as applied to a header duct, but it will be understood that it can be used also for junction boxes and outlets of underfloor duct systems and electric underfloor distribution systems generally. Changes and modifications can be made in the system illustrated, and some features can be used in different combinations without departing from the invention as defined in the claims.

What is claimed is:

1. In an under floor electric wiring system of the class wherein a header duct embedded in a floor has an outlet opening with a neck extending upwardly therefrom and for only a part of the distance from the duct to the top of the floor in which the duct is embedded, an adjusting ring surrounding the neck and having an annular top face substantially level with the top surface of the floor, supporting means extending inwardly from the neck, and a cover on the supporting means with a top surface substantially flush with said annular top face, the combination with said cover of a linoleum pan having a thin bottom wall supported on the cover, and a pan wall surrounding the periphery of the thin bottom wall and of a height and radial width, both of which are substantially greater than the thickness of the bottom, said pan wall extending upwardly from the bottom and terminating at a height above the pan bottom substantially equal to the thickness of floor covering with which the invention is intended to be used, said pan wall being of one-piece construction with the bottom wall and located over the annular top face of the adjusting ring with the outer circumferential side edge of the pan wall in position immediately adjacent to and confronting the edge face of the floor covering around the pan, and the inner circumferential side edge of the pan wall closely surrounding a floor covering insert carried by the pan.

2. The under floor system with a header duct as described in claim 1 and in which there are a plurality of screws at angularly spaced locations around the linoleum pan near its peripheral portion, and each of the screws extends through the pan and cover and threads into the cover support for securing the pan to the cover and the cover to the adjusting ring.

3. The under floor system with a header duct as described in claim 1 and in which the pan is made from malleable metal and said pan wall is of a thickness equal to approximately three times the thickness of the bottom of the pan and said pan wall consists at least partially of metal flowed outwardly from the bottom of the pan.

4. The under floor system having a header duct as described in claim 1 and in which there is a shield surrounding the adjusting ring and extending downwardly over at least the upper part of the sides of the header duct.

5. An under floor header duct structure including in combination a header duct with an opening having an upwardly extending neck, and adjusting ring around the neck and movable toward and from the duct, a cover closing the upper end of the adjusting ring, lugs extending indwardly from the sides of the adjusting ring immediately below the cover, screws extending through said lugs and held against axial movement with respect to said lugs, each of the screws having a head that extends through the cover and the upper surface of which is substantially flush with the top surface of the cover, lugs extending inwardly from the neck of the header duct with threads into which the screws fit whereby rotation of the screws in one direction or the other raises or lowers the screw and adjusting ring with respect to the header duct, and a linoleum pan attached to the cover and overlying the screws, the linoleum pan having a very thin bottom wall supported by the cover and having a peripheral wall of a height and radial width each of which is several times as great as the thickness of the bottom of the linoleum pan, and means detachably connecting the pan to the cover including screws extending through the bottom of the linoleum pan, through the cover and threading into the lugs of the adjusting ring.

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