

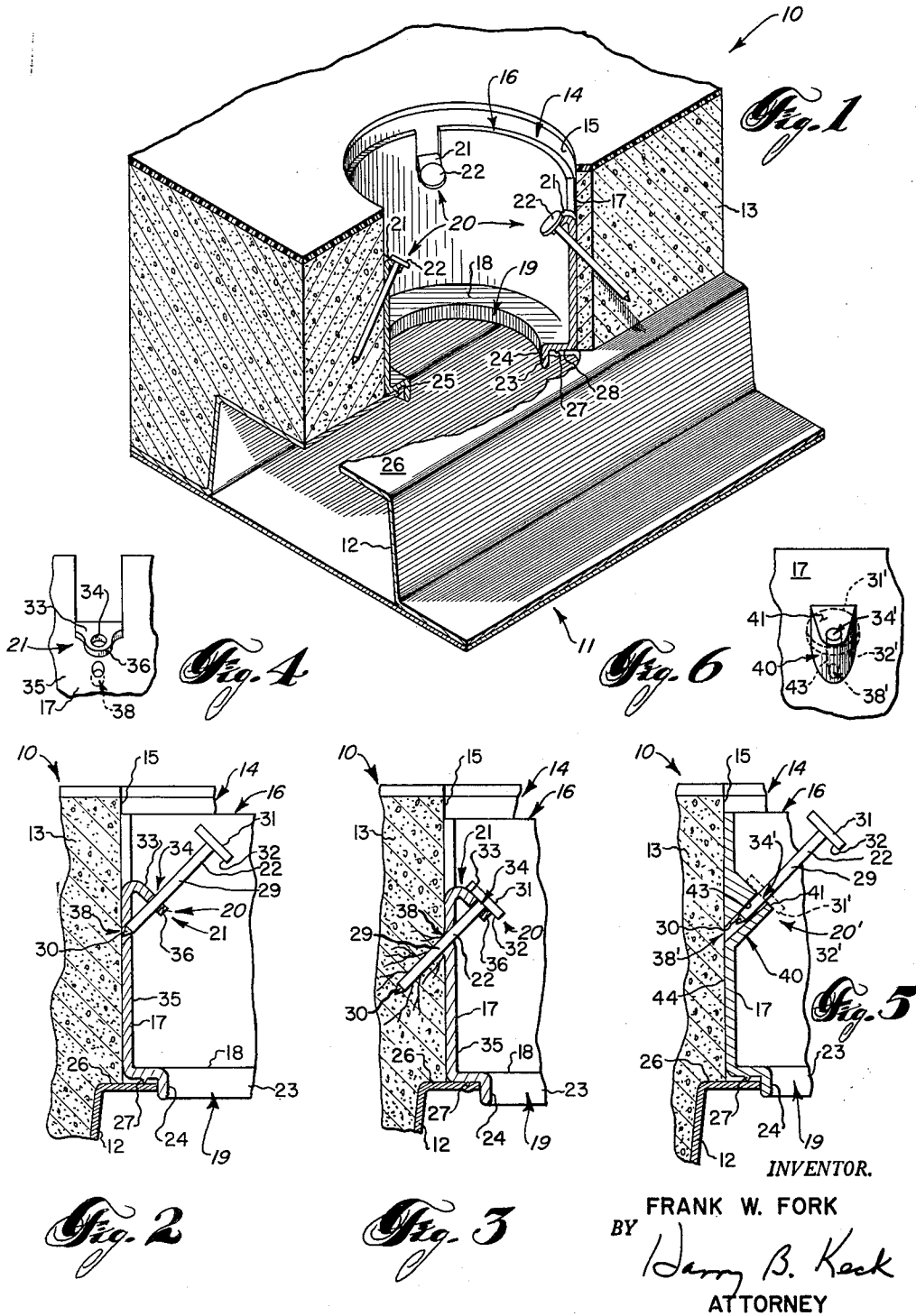
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ELECTRICAL FITTINGS BASE CUP

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ELECTRICAL FITTINGS BASE CUP

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This invention relates to an electrical fittings base cup for use in combination with an electrical raceway disposed beneath an interior flat surface of a building such as a floor or wall. More particularly this invention relates to an electrical fittings base cup having concrete, lath or plaster engaging means which secures the base cup in a fixed position.

The primary object of this invention is to provide a base cup for use with relatively large diameter electrical cables.

Another object of this invention is to provide a base cup which is electrically grounded to a metal raceway while being installed thereby eliminating the need of time-consuming auxiliary grounding methods.

A further object of this invention is to provide a base cup that is quickly installed and easily removed.

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 isometric view of a building floor having metal cellular flooring showing the installation of the present base cup and having a portion of the floor and present base cup cut away to illustrate the preferred embodiment of securing means;

FIGURE 2 is a fragmentary cross-sectional view through the present base cup illustrating a preliminary step in securing the present base cup;

FIGURE 3 is a fragmentary cross-sectional view through the present base cup illustrating the completed installation of the present base cup;

FIGURE 4 is a front elevation view of an element of the securing means of the preferred embodiment;

FIGURE 5 is a fragmentary cross-sectional view through the present base cup illustrating an alternative embodiment; and

FIGURE 6 is a front elevation view of an element of the alternative embodiment.

The preferred embodiment of the present invention is illustrated in FIGURES 1 to 4 inclusive. Illustrative of one environment of the present invention is a building floor 10 as shown in FIGURE 1. In this instance the floor 10 comprises a metal cellular flooring 11 of which a cell 12 serves as an electrical raceway. The floor 10 further comprises a layer of concrete 13 having a cavity 14 cut therein. The cavity 14, having cavity side walls 15, is provided by means of a suitable concrete-cutting saw.

A base cup 16 of the present invention is shown disposed within the cavity 14. The base cup 16 includes cup side walls 17 abutting the cavity side walls 15 and a bottom wall 18 resting on the cell 12. The bottom wall 18 has a cable aperture 19 which provides communication between the interior of the base cup 16 and the cell 12.

The base cup 16 further includes securing means 20 associated with the cup side walls 17. The securing means 20 includes inwardly projecting elements shown here as inwardly depending tongues 21. The securing means 20 further includes pins, preferably nails 22 commonly known in the trade as concrete or cement nails. As illustrated, the nails 22 extend through the tongue 21 and through the cup side walls 17 and are embedded in the concrete 13. Thus the nails 22 secure the base cup

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16 in a fixed relation with the cell 12. The securing means 20 will be more fully described as to construction and method of securing when reference is made to FIGURES 2 to 4 inclusive.

The cable aperture 19 is provided with a peripheral downwardly depending lip 23 having a smooth inner surface 24. The lip 23 fits into a cell aperture 25 and extends below the upper wall 26 of the cell 12. The smooth inner surface 24 prevents damage to the insulation of electrical cables as they are drawn through the cable aperture 19.

The base cup 16 further includes grounding elements shown here as grounding spikes 27 which project downwardly from the lower face 28 of the bottom wall 18. When the base cup 16 is installed, the spikes 27 engage the upper wall 26 of the cell 12 and electrically ground the base cup 16 to the cell 12. Preferably one of the spikes 27 should be positioned directly below each of the securing means 20.

Attention is now directed to FIGURES 2 to 4 inclusive wherein the preferred embodiment of the securing means 20 is more fully illustrated. The nail 22 comprises a shaft 29 with a point 30 at one end and head portion 31 at the other end. The head portion 31 includes a lower surface 32.

The tongue 21 is formed solely from a portion of the cup side walls 17 and includes a flat upper surface 33 with a first opening 34 therein. The first opening 34 is positioned entirely within the inner wall 35 of the base cup 16. The tongue 21 preferably includes a bell-shaped lower edge 36.

The cup side walls 17 have a second opening 38 positioned below the first opening 34. In the preferred construction the first opening 34 has a diameter which is greater than that of the shaft 29; the second opening 38 has a diameter which is smaller than that of the shaft 29.

A preliminary step in securing the base cup 16 is illustrated in FIGURE 2. As shown the grounding spikes 27 rest on the upper wall 26 of the cell 12. The shaft 29 of the nail 22 passes through the first opening 34 and the point 30 rests in the second opening 38. Since the diameter of the shaft 29 is greater than that of the second opening 38 the shaft 29 must be forced through the second opening 38. Any suitable tool such as a hammer (not shown) may be used to drive the nail 22 through the second opening 38 and into the concrete 13.

It should be noted that the first blow of the tool causes two simultaneous actions. First the nail 22 is forced through the smaller diameter of the second opening 38. Second the base cup 16 is forced downwardly thereby causing the grounding spikes 27 to engage the upper wall 26 of the cell 12. Further blows of the tool serve to drive the nail 22 into the concrete 13 of the building floor 10.

FIGURE 3 illustrates the final configuration of the securing means 20. The shaft 29 of the nail 22 has enlarged the second opening 38 by its passage there-through and is embedded in the concrete 13 of the floor 10. Also the lower surface 32 of the head portion 31 abuts the flat upper surface 33 of the tongue 21. Thus the flat upper surface 33 serves to stop the progress of the nail 22 into the concrete 13. Further the grounding spikes 27 are engaged with the upper wall 26 of the cell 12. The base cup 16 hence is firmly secured within the cavity 14 and is electrically grounded to the cell 12.

The bell-shaped lower edge 36 exposes a portion of the lower surface 32 of the head portion 31 thereby providing a gripping area for the removal of the nail 22. To remove the base cup 16 the nails 22 are pried out by any suitable clenching or clawing tool such as a claw hammer.

Attention is now directed to FIGURES 5 and 6 wherein

an alternative embodiment of the securing means is illustrated and is herein designated by the numeral 20'. Corresponding numerals are employed to identify corresponding elements heretofore described. In this embodiment of the securing means 20' the inwardly projecting elements are pyramidal-shaped boss members 40 projecting inwardly from the cup side wall 17. The boss member 40 includes a sloping flat upper surface 41 having a substantially V-shaped periphery. The boss member 40 further includes a tapered bore 43 extending downwardly from the flat upper surface 41 to the outer surface 44 of the cup side walls 17. The tapered bore 43 has a first opening 34' in the flat upper surface 41 and a second opening 38' in the outer surface 44. The bore 43 preferably is tapered such that the first opening 34' has a diameter which is greater than that of the shaft 29 and the second opening 38' has a diameter which is smaller than that of the shaft 29 of the nail 22.

As in the preferred embodiment, the shaft 29 enlarges the second opening 38' by passage therethrough. Simultaneously the base cup 16 is forced downwardly and the grounding spikes 27 engage the upper wall 26 of the cell 12. Although not illustrated, the shaft 29 extends through the bore 43 and is embedded in the concrete 13 of the building floor 10. The head portion 31 of the nail 22 is illustrated in phantom outline in its final position and is designated by the numeral 31'. The lower surface 32' of the head portion 31' abuts the flat upper surface 41. Thus the flat upper surface 41 serves to stop the progress of the nail 22 into the concrete 13. The final position of the base cup 16 and the nail 22 of this embodiment corresponds with that of the preferred embodiment as illustrated in FIGURE 3.

The lower surface 32' of the head portion 31' extends beyond the periphery of the flat upper surface 41 thereby providing a gripping area for the removal of the nail 22. To remove the base cup 16 the nails 22 are pried out by any suitable clenching or clawing tool such as a claw hammer.

The base cup 16 may be made of metals, for example, cast iron or steel. The base cup 16 has been illustrated as being circular but it should be evident that the base cup 16 instead could have other shapes without departing from the present invention.

Where the base cup 16 is removed or where it is not being used, the cavity 14 may be covered by the closure assembly described in my copending application Serial Number 38,516 filed June 24, 1960, assigned to the assignee of the present invention.

From the foregoing description it should be apparent that the present invention provides a base cup which is electrically grounded during installation; the base cup is quickly installed and easily removed.

By securing the base cup 16 through the cup side walls 17, the cable aperture 19 may be larger than heretofore provided.

Thus, without increasing the size of the cavity in a building floor, the present base cup will accommodate larger or more electrical cables than prior base cups.

Various electrical fittings, such as high tension or low tension floor outlets, may be secured to the present base cup by providing a suitable connecting means on the cup side walls 17.

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 combination with an interior flat surface of a building having an electrical raceway disposed therebeneath and having a cavity therein including cavity side

walls, a unitary base cup positioned within the said cavity including cup side walls adjacent to the said cavity side walls, said cup side walls terminating at a point below the level of the said flat surface, a bottom wall engaged with the upper wall of said electrical raceway, a relatively large cable aperture in said bottom wall providing communication between the interiors of said base cup and said electrical raceway, and means for securing the said base cup comprising a plurality of inwardly projecting elements each including an upper face which slopes downwardly from said cup side walls, each said inwardly projecting element being contiguous with the said cup side walls, a first opening in the said upper surface positioned entirely within the inner wall of said cup side walls, a second opening in the said cup side walls one said second opening beneath each said first opening, and pins extending interiorly of said base cup through the said first opening and through the said second opening and into the said cavity side walls, said pins being guided by the said first opening and the said second opening for angular entry into the said cavity side walls.

2. The combination of claim 1 including grounding elements on the lower face of said bottom wall engaged in the upper wall of the said electrical raceway.

3. The combination of claim 1 wherein the said first opening is of greater diameter than said pins and said second opening is enlarged by the passage of said pins therethrough whereby the said base cup is urged downwardly thereby forcing the said grounding elements into electrically grounding engagement with the said electrical raceway.

4. The combination of claim 1 wherein each of the said inwardly projecting elements comprises an inwardly depending tongue formed solely from a portion of said cup side walls, said tongue including a flat upper surface having said first opening therein, said cup side walls having said second opening therein below said first opening, said first opening and said second opening being adapted to receive one of said pins.

5. The combination of claim 1 wherein each of the said inwardly projecting elements comprises a pyramidal-shaped boss member projecting inwardly from the said cup side walls, said boss member including a sloping flat upper surface and a tapered pin-receiving bore extending from the said flat upper surface to the outer surface of the said cup side walls, said bore having a first opening in the said flat surface and a second opening in the said outer surface of the said cup side walls below the said first opening.

6. The combination of claim 3 wherein one of the said grounding elements is positioned directly below each of the said inwardly projecting elements.

7. The combination of claim 4 wherein the said pins are nails including a head portion at one end, said head portion including a lower surface abutting the said flat upper surface of the said tongue, said tongue having a bell-shaped lower edge which exposes a part of the said lower surface of the said head portion which part may be grasped for removal of said nails.

8. The combination of claim 5 wherein the said pins comprise nails including a head portion at one end, said flat upper surface of said boss member being substantially V-shaped, said head portion including a lower surface abutting the said flat upper surface and extending beyond the lower edge of the said flat upper surface whereby a part of said head portion is exposed which part may be grasped for removal of said nails.

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