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HIGH TENSION OUTLET FITTING FOR UNDERFLOOR DUCT SYSTEMS

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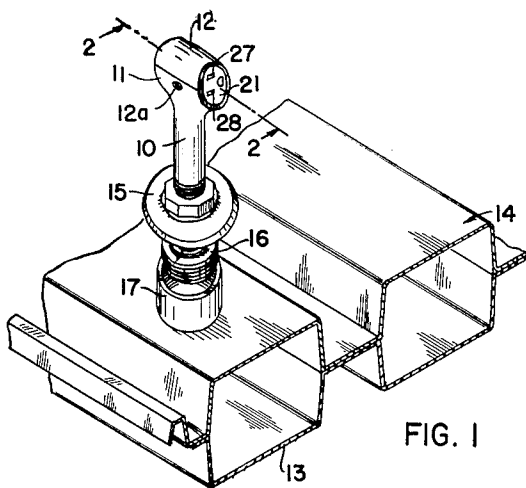


FIG. 1

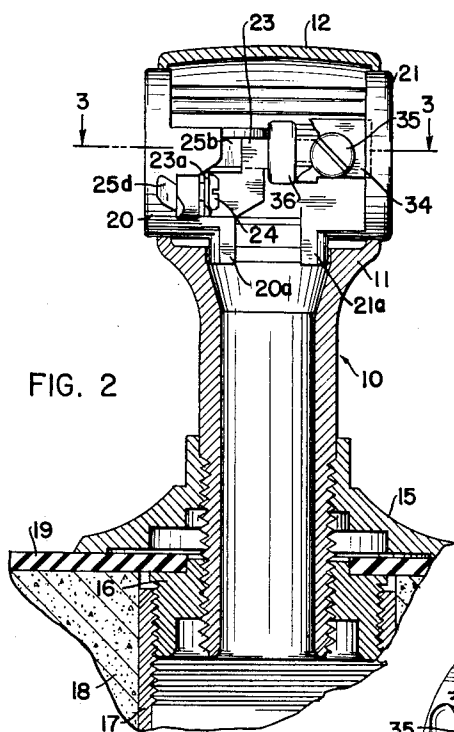


FIG. 2

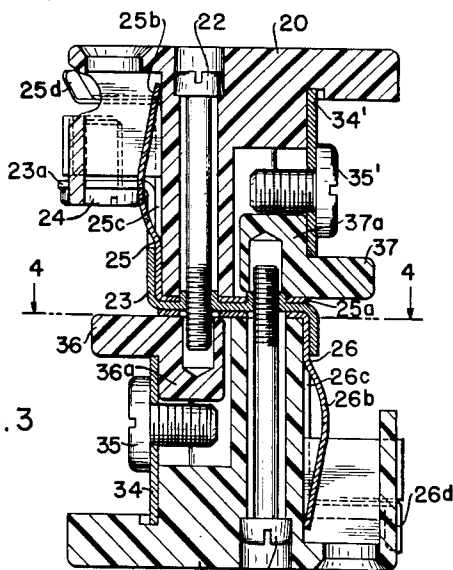


FIG. 3

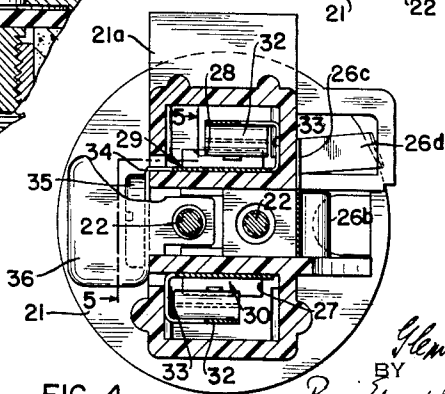


FIG. 4

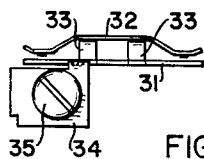


FIG. 5

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HIGH TENSION OUTLET FITTING FOR UNDERFLOOR DUCT SYSTEMS

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8 Claims. (Cl. 339—156)

This invention relates to fittings for use with floor duct systems of electrical distribution to provide outlets for service at desired locations throughout the system. More particularly, the invention is concerned with a novel service fitting for high tension use, which includes a polarized grounded receptacle having means for preventing arcing between live and grounded parts within the fitting and accidental contact with such live parts from outside the fitting. The new fitting is preferably constructed to include a duplex receptacle, that is, one having two sets of contacts, and that form of the new fitting will be illustrated and described for purposes of explanation.

For a better understanding of the invention, reference may be made to the accompanying drawing, in which

Fig. 1 is an exploded perspective view of the fitting of the invention with part of an underfloor duct system;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view on the line 4—4 of Fig. 3; and

Fig. 5 is a sectional view on the line 5—5 of Fig. 4.

The fitting of the invention comprises a standpipe 10 externally threaded at its lower end and enlarged at its upper end to provide the lower part 11 of a housing, which is completed by a removable top 12 secured to the lower part by screws 12a. When installed in an underfloor duct system, such as one in which a cell 13 of a multicellular steel floor 14 forms one of the raceways for wiring, the lower end of the standpipe is threaded through a floor plate 15 serving as a support and into an adapter 16, which is screwed into a tubular insert 17 mounted in an opening in the top wall of the raceway. The insert extends up through the layer of concrete 18 poured upon the steel floor to complete the floor structure and the support 15 is seated upon the linoleum 19 covering the concrete and may be tightened to wedge the threads on the standpipe against those on the adapter and lock the standpipe in place.

The housing of the standpipe is elongated at right angles to the axis of the standpipe and is open at both ends. The housing encloses a duplex receptacle, which includes a pair of like blocks 20, 21 molded of insulating material and having cavities opening through their front faces. The blocks have lugs 20a, 21a extending into the upper end of the standpipe to hold the blocks in place and are secured back to back by screws 22, which extend through lengthwise bores through the blocks and are threaded into a portion of a metal connecting strip 23 lying between the opposed rear faces of the blocks.

The strip 23 extends along one side of block 20 and has an outwardly projecting end section 23a, into which is threaded a terminal screw 24 forming part of the ground connection. A metal strip 25 has a portion 25a extending along the rear face of block 20 between strip 23 and the block and another portion extending along the side of the block beneath strip 23. The outer end section 25b of strip 25 is bent out of the plane of the strip and

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lies within a cavity in block 20 to form a spring terminal engageable by the prong of a plug inserted into the cavity through the front face of the block. A metal strip 26, which is similar to strip 25, has a portion extending along the rear face of block 21 between strip 23 and the block and another portion extending along the side of the block beneath strip 23. The outer end section 26b of strip 26 is bent out of the plane of the strip and lies within a cavity in block 21 to form a spring terminal engageable by a prong of a plug inserted into the cavity through the front face of the block.

The strips 25, 26 are connected electrically by the section of strip 23 lying between them and strip 23 can be connected by its terminal screw 24 to a ground wire passing down through the standpipe and into the raceway. To provide additional grounding, the strips 25, 26 have respective extensions 25c, 26c, which lie at the side of sections 25b, 26b of the strips and terminate in ends 25d, 26d projecting through openings in the blocks in position to bear against the inner surface of the lower part 11 of the housing.

Each of the blocks 20, 21 has a pair of cavities with oblong entrance openings 27, 28 through the outer faces of the blocks. The cavities in one block are aligned with those in the other and terminal strips 29, 30 lie in the aligned pairs of cavities. Each strip includes a plate 31 having a double-ended spring power terminal 32 connected to the plate along one edge by tongues 33 and overlying the plate. In addition, each strip includes an ear 34 connected to the other edge of the plate and extending at right angles to the plane of the plate and away from the side overlain by the spring terminal 32. The ear carries a terminal screw 35 and, when the terminal strips 29, 30 are in place within the cavities in blocks 20, 21, the ear 34 with its screw 35 on one strip lies exposed at one side of the block, while the ear with its screw on the other strip lies exposed at the other side of the other block. As illustrated, the ear 34 and screw 35 on strip 29 lie at the same side of the blocks as the section 23a of the grounded strip 23 carrying the terminal screw 24, while the ear 34' and screw 35' of strip 30 lie at the other side of the blocks. Power wires led up through the standpipe are connected to the screws 35, 35', so that the terminals 32 are live.

When the blocks carrying their associated parts are assembled in back to back relation as illustrated in Fig. 3, it will be apparent that the ears 34, 34' on strips 29, 30 are separated only a short distance from the grounded strips 23, 25 and 26, so that arcing between the live parts of the receptacle and the ground connection might occur, particularly, if the electrician making the installation were careless and left too much wire connected to one of the terminal screws of the receptacle. Also, the ears 34, 34' with their screws 35, 35' lie in alignment with the entrance openings through the faces of the blocks leading to the grounding terminals 25, 26, so that, if nothing were done to prevent, a metal implement might be inserted into such an entrance opening far enough to make contact with live parts of the receptacle.

To avoid such accidental arcing described above, the blocks 20, 21 are provided with barrier members 36, 37 of insulating material. The barrier members have lugs 36a, 37a and the lugs are receivable in the cavities in the blocks, into which the terminal screws 35, 35' extend, and lie behind the ears 34, 34' on the terminal strips 29, 30, when the strips are in position. Each lug 36a, 37a has a cavity for the end of one of the screws 22 securing the blocks together. When the lugs on the barrier members are in place as described, the members project outwardly from the sides of the blocks in position to prevent carelessly installed wiring attached to live terminals from making contact with the ground connection and to

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arrest the inward movement of an implement through one of the entrance openings leading to the grounding terminals, before the implement can strike a live part of the receptacle.

I claim:

1. An outlet fitting comprising a standpipe having a housing at its upper end, the housing being open at its ends, and a duplex receptacle mounted in the housing and including a pair of blocks of insulating material secured back to back with their front faces exposed at the ends of the housing, a pair of power terminals in each block accessible through openings in the front face of the block, connections between like power terminals, each such connection including a connecting screw, the screws lying at opposite sides of the blocks, a grounding terminal in each block accessible through an opening in the front face of the block, means for connecting the grounding terminals, said means including a connecting screw within the housing lying at one side of the blocks, and a pair of barrier members supported at opposite sides of the blocks, each barrier member lying between a power terminal connection and the means for connecting the grounding terminals.

2. The fitting of claim 1, in which the barrier members are supported by portions entering cavities in the respective blocks.

3. The fitting of claim 1, in which one barrier member lies between the connecting screw of a power terminal connection and the connecting screw of the means connecting the grounding terminals.

4. The fitting of claim 1, in which the grounding terminals lie in lengthwise openings through the blocks, the connecting screws of the respective power terminal connections lie aligned with the openings, and the barrier members lie between the inner end of each opening and the aligned connecting screw.

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5. A duplex receptacle for use in a housing, which comprises a pair of blocks of insulating material secured back to back, a pair of power terminals in each block accessible through openings in the front face of the block, connections between like power terminals, each such connection including a connecting screw, the screws lying at opposite sides of the blocks, a grounding terminal in each block accessible through an opening in the front face of the block, means for connecting the grounding terminals, said means including a connecting screw at one side of the blocks, and a pair of barrier members at opposite sides of the blocks, each barrier member lying between a power terminal connection and the means for connecting the grounding terminals.

6. The receptacle of claim 5, in which the barrier members are supported by portions entering cavities in the respective blocks.

7. The receptacle of claim 5, in which one barrier member lies between the connecting screw of a power terminal connection and the connecting screw of the means connecting the grounding terminals.

8. The receptacle of claim 5, in which the grounding terminals lie in lengthwise openings through the blocks, the connecting screws of the respective power terminal connections lie aligned with the openings, and the barrier members lie between the inner end of each opening and the aligned connecting screw.

References Cited in the file of this patent

UNITED STATES PATENTS

1,774,740	Walker	Sept. 2, 1930
1,954,375	Blinn	Apr. 10, 1934
1,967,091	Kempton	July 17, 1934