

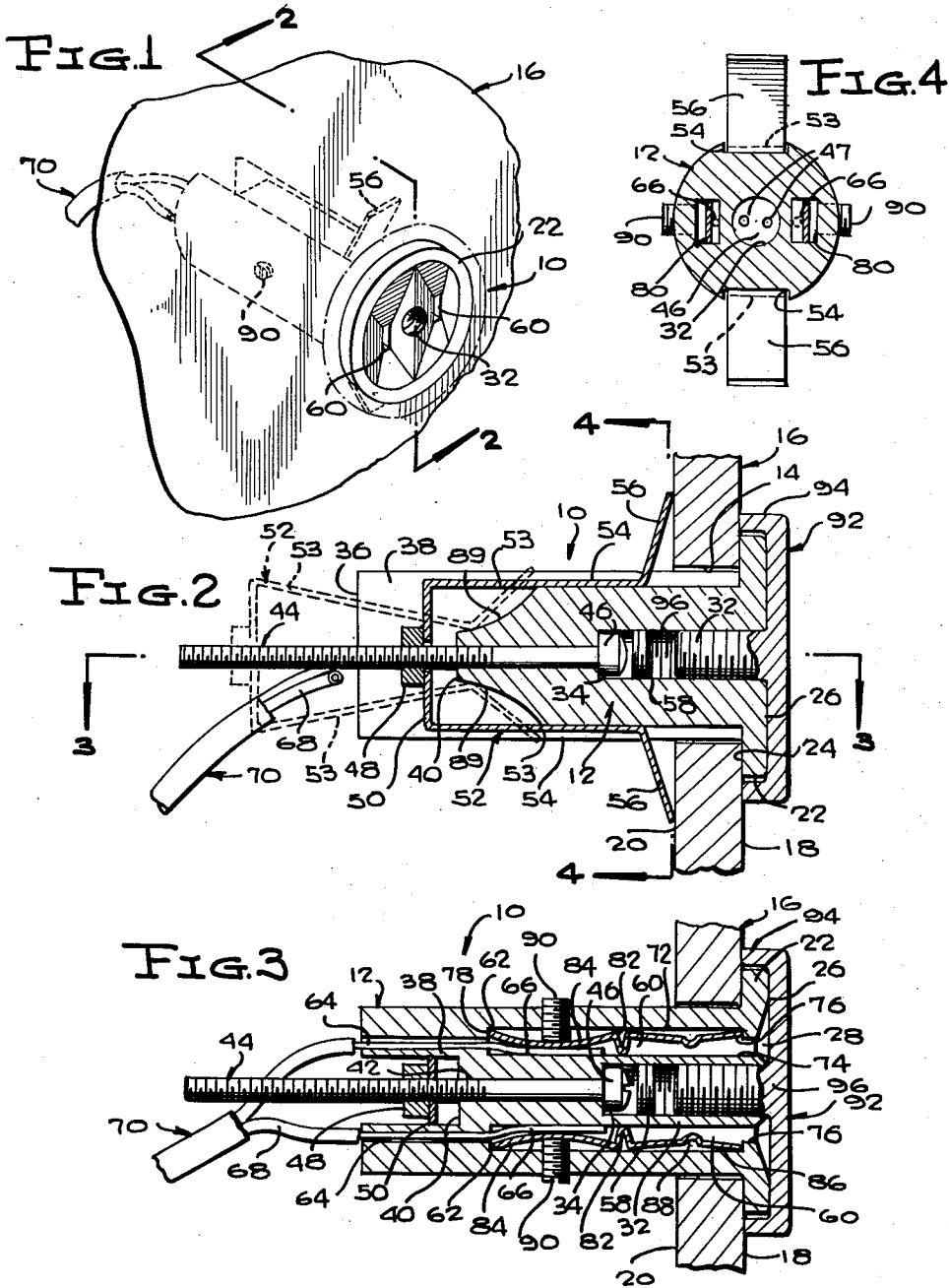
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WALL RECEPTACLE

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## WALL RECEPTACLE

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1 Claim. (Cl. 339-36)

This invention relates to improvements in electrical connectors, and more particularly to an improved single receptacle of this kind which is especially but not exclusively adapted to be used as a wall outlet receptacle.

The primary object of the invention is to provide an efficient, inexpensive and serviceable device of the character indicated which is of simplified construction, containing a small number of simple and easily assembled parts, and which can be easily and quickly installed by pushing it through a single hole bored in a support, such as a wall, from one side thereof, and secured in place by tightening the single special headed screw of a clamping member against the other side of the support, the screw being accessible from the said one side.

Another object of the invention is to provide a device of the character indicated above which has minimum projection beyond the outer side of the support or wall at the outlet side or end of the device, and which includes an anti-tampering member rendering the screw difficult of access, thereby protecting the device from unauthorized removal, and which further includes a removable protective cover or cap which can be installed on the device to prevent insertion of a connector plug in the device, when desired, and accumulation of dust or debris in the device when not in use, the cover being designed to be colored or job-painted to match the outer side of the support, if desired, so as to be inconspicuous.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a specific form of the invention is set forth in detail.

In the drawings:

FIGURE 1 is a fragmentary perspective view showing a device of the invention installed through such as a plastic wall, portions of the device and of conductors thereto being shown in phantom lines;

FIGURE 2 is an enlarged vertical longitudinal section taken on the line 2-2 of FIGURE 1;

FIGURE 3 is a horizontal section taken on the line 3-3 of FIGURE 2; and

FIGURE 4 is a vertical transverse section taken on the line 4-4 of FIGURE 2.

Referring in detail to the drawings, wherein like numerals designate like parts throughout the several views, the illustrated device, generally designated 10, comprises an elongated dielectric body 12, of generally cylindrical cross section, only slightly smaller in diameter than a drilled hole 14 in a support, such as a plaster wall 16, through which the device is installed. The wall 16 has outer or front and rear sides 18 and 20, respectively, for the purposes of the present description.

The body 12 is substantially longer than the thickness of the wall 16, and has on its forward end a preferably integral and circular disc head 22 extending concentrically beyond the sides of the body 12 and having an annular rear surface 24 to bear against the outer side 18 of the wall 16, around the hole 14. The head 22 is preferably flat and relatively thin, and has a forward side 26 which is centrally recessed, as indicated at 28. A threaded axial bore 32 extends rearwardly about halfway into the body 12 and has a closed rear end 34.

The body 12 has a squared rear end 36 in which is formed a vertical diametrical slot 38 having a forward bottom wall 40. A reduced diameter smooth axial bore

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42, smaller in diameter than the threaded bore 32, opens at opposite ends through the slot bottom wall 40 and the bore end 34, and passes a clamping screw 44 having an enlarged special tool head 46 on its forward end which fits rotatably in the threaded bore 32 to bear against the rear end 34 of the bore 32, in its clamping position. The screw head 46 is devoid of a conventional screwdriver blade kerf, and instead is provided with such as a pair of sockets 47 to receive pins on a special tool (not shown) so as to reduce the likelihood of unauthorized loosening of the screw 44 and possible theft of the receptacle. The clamping screw 44 is long enough to reach a substantial distance rearwardly beyond the rear end 36 of the body 12, in its operated position, as is clear from FIGURES 2 and 3, and thread through a nut 48 fixed on the rear of the bight portion 50 of a U-shaped clamping spring 52 of flat material. The bight portion 50 is wide enough to fit non-rotatably within the vertical slot 38 in the rear end of the body 12, and long enough to put its parallel legs 53 against and along the bottoms of diametrically opposed longitudinal grooves 54 provided in top and bottom of the body 12 and opening at their rear ends into the vertical slot 38, as shown in FIGURE 2.

The clamping spring legs 53 terminate at their forward ends, at points spaced rearwardly from the head 46, in divergent terminals 56, whose free ends are arranged to bear, with spring tension, against the rear side 20 of the wall 16, so as to hold the device 10 in place, when the screw 44 is tightened by means of a special tool inserted into the forward end of the bore 32 and engaged with the screw head 46 in the forward end of the screw 44.

An unslotted screw plug 58 is provided to be screwed, with a special tool, into the bore 32, after the screw 44 has been tightened, for the purposes of rendering the screw head 46 inconspicuous, of preventing accumulation of dust and debris in the bore 32 while the device 10 is not in use, and of precluding unauthorized access to the screw head 46.

A pair of spring contact blade chambers 60 extend longitudinally inwardly from the forward side of the body head 22, at diametrically opposite sides of and at locations spaced laterally from the bore 32, and reach to points 62 spaced forwardly from and near to the vertical slot bottom 40, as shown in FIGURE 3, where the rear ends of the chambers are entered by reduced diameter longitudinal wire passages 64 which open through the rear end 36 of the body 12. Wire 66 with insulation 68 removed, and leading from a supply conduit 70, are passed forwardly through the passage 64 and into and forwardly along the chambers 60, as also shown in FIGURE 3, to make contact with blades in the chambers 60.

As shown in FIGURE 3, the contact blade chambers have flat lineal opposed outer and inner walls 72 and 74 and have forward and rear stops 76 and 78, respectively, at their ends.

Similar longitudinally elongated conductor spring contact blades 80 are severally positioned in and confined in the chambers 60 and have forward and rear ends in stop engagement with the stops 76 and 78. At approximately midway of the lengths of the blades 80 are V-shaped laterally inwardly extending abutments 82 which bear against the inner chamber walls 74. Behind the abutments 82 the blades have rear longitudinally and laterally inwardly bowed wire-engaging portions 84 and have forwardly of the abutments 82 longitudinally and laterally inwardly bowed forward contact portions 86, for engagement by the blades of a connector plug (not shown) inserted rearwardly into the forward ends of the chambers 60. At points intermediate their ends the forward blade contact portions 86 are formed with laterally inwardly directed contact bosses 88 which are spaced from the inner chamber walls 74 at distances less than the thickness of

connector plug blades so as to assure good mechanical and electrical contacts between the connector plug blades and the receptacle blade portions 86.

As shown in FIGURE 2, the rear end part of the body 12 is provided with ramps at the top and bottom thereof, as indicated at 89, for spreading the initially convergent legs 53 of the clamping spring 52 whose convergent condition enables the spring 52 to be passed through the opening 14 in a wall before tightening the screw 44. Tightening of the screw 44 moves the spring forwardly and the ramps 89 spread the legs 53 and engage the legs 53 on the slots 54 with the terminals 56 tensioned against the wall surface 20.

For producing good and releasably electrical and mechanical connections between the bare wires 66, which are interposed between the inner chamber walls 74 and the adjacent sides of the rear contact blade portions 84, set screws 90 are threaded through opposite sides of the body 12 and bear against the laterally outward sides of the rear blade portions 84, at midlength points thereof, so that the bare wires are clamped between the blade portions 84 and the inner chamber walls 74, as shown in FIGURE 3.

A flat protective cover or cap generally designated 92, which is pan-shaped and circular, is employed to enclose the head 22 of the device 10 and has a flange 94 to bear against the front side 18 of the wall 16, so as to conceal the device when not in use, and protect the bore 32, the chambers 60 and the plug 58 from accumulations of dirt, and tampering, as by small children using hairpins or scissors, and has on its rearward side an axial threaded stem 96 which threads into the bore 32. The cover or cap 92 can be painted or otherwise colored to match the surrounding surface of the wall 16 so as to render the device inconspicuous, if desired.

Although there has been shown and described herein a preferred form of the invention, it is to be understood that the invention is not necessarily confined thereto, and that any change or changes in the structure of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the claim appended hereto.

What is claimed is:

An outlet receptacle comprising a cylindrical dielectric body having forward and rear ends, an axial bore extending through said body comprising an enlarged diameter forward portion opening to said forward end and a reduced diameter rear portion opening to said rear end, the meeting of said bore portions defining an end wall at the rear end of the forward bore portion, a screw extending rearwardly through said reduced bore portion

and having a threaded rear end portion extending rearwardly beyond the rear end of the body, an enlarged head on said screw positioned in said enlarged bore portion and bearing against said end wall, said body having longitudinal grooves in opposite sides thereof, and said rear end of the body having a diametrical slot therein opening at opposite ends thereof to related longitudinal grooves, rearwardly converging ramps on the body formed in the bottom of said diametrical slot, said ramps being inclined to and entering the rear ends of said longitudinal slots, and a U-shaped resilient clamping member having a bight portion and forwardly extending legs, said bight portion being positioned in said slot and threaded on the rear end portion of the screw, said legs terminating at their forward ends in divergent wall-engaging terminals, said terminals being initially engaged with related ones of said ramps with the legs in convergent relation to each other, rotation of said screw in one direction serving to advance said clamping member forwardly relative to the body wherein the divergent terminals climb the ramps and spread the legs away from each other and dispose the legs in the longitudinal grooves with their terminals extending laterally beyond opposite sides of the body for engaging a wall, said body having a fixed enlarged head on its forward end for engaging the side of a wall opposite that engaged by said terminals, a cap having a web and a peripheral lateral flange, said flange being engaged around said enlarged head with said web bearing against the outer side of the head and with its flange bearing against said one side of the wall, and a stem on and extending rearwardly from said web and threaded in said forward bore portion.

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