April 4, 1939. H. A. DOUGLAS 2,153,176

ELECTRICAL CONNECTION MEANS

Filed Aug. 23, 1935

Fig. 1

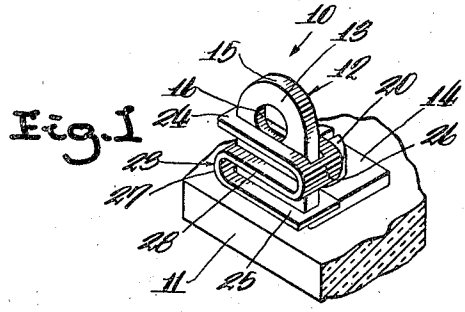


Fig. 3

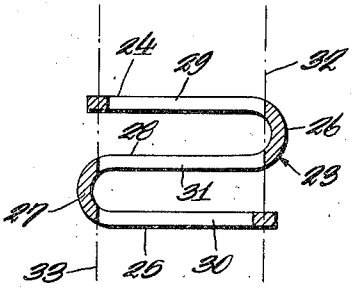


Fig. 2

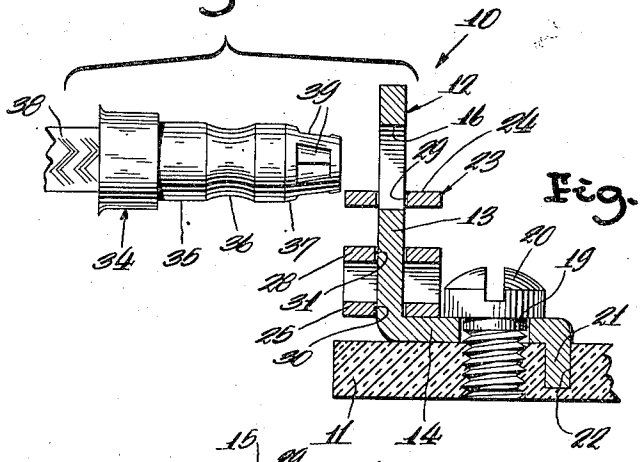


Fig. 4

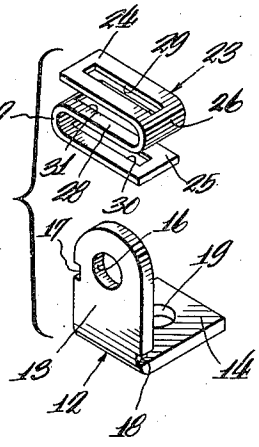
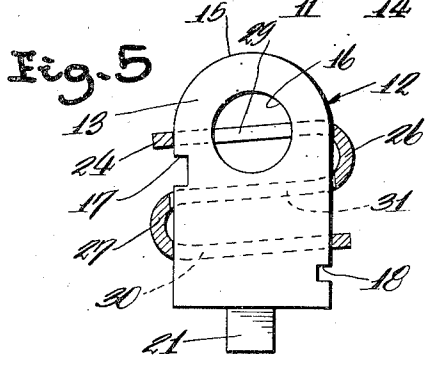


Fig. 5



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ELECTRICAL CONNECTION MEANS

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11 Claims. (Cl. 173—328)

My invention relates to electrical connection means, and more particularly to means for receiving conductor terminals of the snap type, and the principal object of my invention is to provide new and improved electrical connection means of these types.

In the drawing accompanying this specification and forming a part of this application, I have shown, for purposes of illustration, one form which my invention may assume, and in this drawing:

Figure 1 is a perspective view illustrating an embodiment of my invention,

Figure 2 is an enlaged longitudinal sectional view of the embodiment shown in Figure 1, and including, in addition, a plug conductor terminal adapted to cooperate therewith,

Figure 3 is a longitudinal sectional view taken through the biasing means,

Figure 4 is a perspective view illustrating the parts of the embodiment in disassembled relation, and

Figure 5 is an elevational view of the embodiment, the biasing means being shown in section and partially assembled with the body portion.

Referring to the drawing, the embodiment herein disclosed comprises a terminal post 10, mounted on a base 11, the base being fragmentarily shown. The terminal post 10 comprises a body portion 12 formed of a single piece of sheet metal bent into a generally right angular formation. The body portion 12 comprises a generally vertical plane wall 13 and a generally horizontal plane wall 14, the latter extending at right angles from the lower end of the vertical wall 13, and serving as a foot for the terminal post 10.

The top margin of the vertical wall 13 is rounded, as shown at 15, and intermediate the top margin and the lower end, the vertical wall 13 is provided with an aperture 16, here shown to be circular.

The opposite vertical margins of the vertical wall 13 are provided with recesses 17 and 18, the recess 17, as shown in Figures 4 and 5, being vertically spaced from the recess 18, and formed in the left hand margin of the vertical wall 13 adjacent the circular aperture 16. The recess 18 is formed in the right hand margin of the vertical wall 13 and extends upwardly from a plane including the upper surface of the horizontal wall 14. As clearly shown in Figure 5, the recess 17 is greater in vertical extent than the recess 18, for a purpose hereinafter made apparent.

The horizontal wall 14 is formed with an aperture 19 through which a screw 20 or any other suitable fastening means may be disposed to fasten the terminal post 10 to the base 11. In order to prevent the wall or foot 14 from turning about the fastening means 20, the wall 14 may have a portion 21 struck downwardly therefrom and fitting into a recess 22 formed in the upper face of the base 11.

Biasing means are provided to cooperate with the body portion 12, and in this instance, the biasing means comprise a resilient member 23, here shown to be a leaf-like spring member, generally S-shaped in longitudinal section, and of a transverse width greater than the thickness of the vertical wall 13, so that when the resilient member 23 is in operative position with respect to the body portion 12, parts thereof will be disposed on opposite sides of the vertical wall 13. The resilient member 23 comprises legs 24 and 25, substantially plane and horizontally disposed when in operative position with respect to the body portion 12. The legs 24 and 25 are connected by loops 26 and 27, and an intermediate portion 28, the portion 28 being spaced from and substantially parallel with the legs 24 and 25. The legs 24 and 25, and the intermediate portion 28 are provided with relatively narrow slots 29, 30, and 31 respectively.

As best seen in Figure 3, the slot 31 extends from the loop 26 to the loop 27. The slot 29 extends from the loop 26 to a point spaced from the free end of the leg 24, the part of the slot 29 adjacent the loop 26 lying in the same vertical plane as the adjacent part of the slot 31, as illustrated by the broken line 32. The slot 30 extends from the loop 27 to a point spaced from the free end of the leg 25, the part of the slot 30 adjacent the loop 27 lying in the vertical plane including the adjacent part of the slot 31, as illustrated by the broken line 33. The end of the slot 29 adjacent the free end of the leg 24 is out of alignment with respect to the vertical plane illustrated by the broken line 33 and, as shown in Figure 3, is spaced to the right of this plane. The end of the slot 30 adjacent the free end of the leg 25 is out of alignment with respect to the vertical plane illustrated by the broken line 32 and is spaced to the left of this plane.

The resilient member 23 may be assembled with the body portion 12 by inserting the vertical wall 13 into the slots 30, 31, and 29 respectively, the rounded top margin 15 of the vertical wall 13 facilitating this insertion. The initial insertion of the vertical wall through the slots 30, 31, and 29 causes the resilient member 23 to assume a tilted position, as shown in Figure 5, because

of the staggered disposition of the slots. The leg 25 of the resilient member 23 is then pressed downwardly until the portion adjacent the free end thereof snaps into the recess 18, the recess in this instance being formed to closely accommodate the thickness of the leg 25. The leg 24 is then pressed downwardly until the portion adjacent the free end thereof snaps into the recess 17, the recess being formed to loosely accommodate the thickness of the leg 24 to provide for movement of the leg 24 and flexing of the resilient member 23. With the free ends of the legs 24 and 25 accommodated respectively in the recesses 17 and 18, the lower surface of the leg 25 rests on the upper surface of the horizontal wall, and the leg 24 forms a chord across the circular aperture 16 to form a plug conductor receiving recess.

The terminal post 10 may be disassembled by springing the free ends of the legs 24 and 25 out of the recesses 17 and 18 respectively, causing the resilient member to again assume the tilted position shown in Figure 5, and slipping the resilient member 23 from the vertical wall 13.

In Figure 2 is shown a plug conductor terminal 34 adapted to cooperate with the terminal post 10, and comprising a generally cylindrical portion 35 provided with an annular furrow 36, the plug conductor terminal 34 having a frustro-conical end 37. A conductor 38, disposed within the plug conductor terminal 34, may be fastened thereto, as by swedging, indicated by the swedge indentations 39 in the frustro-conical end 37.

To move the plug conductor terminal 34 into operative position with respect to the terminal post 10, the frustro-conical end 37 is inserted into the aperture 16, initial movement causing the tapered surfaces of the frustro-conical end 37 to abut the adjacent surfaces of the aperture 16 and the leg 24, and cam the leg 24 downwardly, flexing or compressing the resilient member 23. When the annular furrow 36 is brought into alignment with the marginal walls of the aperture 16, the resilient member snaps back into substantially normal position and forces the surface of the annular furrow 36 into engagement with the adjacent portion of the marginal walls of the recess 16. If it is desired to remove the plug conductor terminal 34, withdrawal movement causes the curved surface of the annular furrow 36 to cam the leg 24 of the resilient member 23 downwardly to provide for the removal of the plug conductor terminal 34 from operative position.

From the foregoing it will be apparent to those skilled in the art that the illustrated embodiment of my invention provides a new and improved electrical contact and connection means, economical in construction and assembly, and accordingly, accomplishes at least the principal object of my invention. It further will be obvious to those skilled in the art that the illustrated embodiment of my invention may be variously changed and modified without departing from the spirit of my invention, or sacrificing all of the advantages thereof, and that accordingly, the disclosure herein is illustrative only, and my invention is not limited thereto.

I claim:

1. Receptacle means, comprising: a body portion, having a wall provided with an aperture for receiving a conductor terminal, and also having spaced recesses formed therein, one of said recesses being of a greater size than the other recess; and biasing means, having slotted portions substantially uniform in thickness and connected by loop means, so that in assembling, said biasing means may be slipped over said body wall, said biasing means being constructed and arranged when assembled with the body portion so that a part of the margins of the slot in one portion closely interengages with the margins of the smaller recess to prevent relative movement of the portion with respect to said body portion, and a part adjacent the slot in the other biasing means portion loosely fitting within the larger recess and being adapted to abut the margins of the larger recess so as to limit movement of said other biasing means portion, this latter portion cooperating with said body portion aperture to yieldably engage and hold a conductor terminal disposed in said aperture.

2. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also spaced abutments formed within the confines of said wall; and biasing means, comprising a plurality of overlying connected portions, said portions being slotted to straddle said wall, and being movable relative to each other in a plane including said wall; one of said portions having limited movement between said spaced abutments formed on said wall, and having a part constructed and arranged to yieldably engage a conductor terminal disposed in said aperture.

3. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also recesses formed in its margin, one of said recesses being of a greater size than the other; and biasing means, comprising a strip of sheet metal bent upon itself to provide legs, each of the legs of said biasing means being provided with slots stopping short of the extremity of said legs, and said legs straddling said wall; the extremity of one of said legs closely fitting within the smaller sized recess to hold this leg against movement with respect to said wall, and the extremity of the other of said legs fitting into the larger sized recess and having limited movement with respect to the marginal surface of this recess, said other leg having a portion constructed and arranged to yieldably engage a conductor terminal disposed in said wall aperture.

4. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also spaced sets of abutment means formed within the confines of said wall, one set being spaced-apart a lesser distance than the other; and biasing means, assemblable with said wall solely by relative movement, and having spaced portions positioning between respective sets of abutment means when said biasing means is moved to predetermined assembled relation with said wall, to hold said biasing means against displacement from said wall, one of said portions being held against movement within said one set of abutment means, and the other of said portions having limited movement within said other set of abutment means, and being constructed and arranged to yieldably engage a conductor terminal disposed in said aperture.

5. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also spaced sets of abutment means formed within the confines of said wall, one set being spaced-apart a lesser distance than the other; and biasing means, comprising a sheet-metal strip bent to form legs, said legs being slotted to slidably fit said wall, one leg having

a part closely fitting between said one set of abutment means to be held against movement, and the other leg having a part having limited movement within the other set of abutment means, and being constructed and arranged to yieldably engage a conductor terminal disposed within said aperture.

6. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also recesses in its margins; and biasing means, comprising a sheet-metal strip constructed and arranged to provide a plurality of overlying and connected slotted portions straddling said wall, the slot in the intermediate portion being somewhat greater than the width of said wall, and the slots in the end portions being substantially equal to the width of said wall but out of alignment with each other, a part of each end portion fitting within a respective recess, and one end portion being positioned to yieldably hold a conductor terminal disposed within said aperture.

7. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also recesses of unequal sizes in its margins; and biasing means, comprising a sheet-metal strip constructed and arranged to provide a plurality of overlying and connected slotted portions straddling said wall, the slot in the intermediate portion being somewhat greater than the width of said wall, and the slots in the end portions being substantially equal to the width of said wall but out of alignment with each other, a part of one end portion closely fitting within the smaller sized recess to hold said one end portion against movement with respect to said wall, and a part of the other end portion fitting within the larger sized recess, and having limited movement between marginal surfaces of this recess, said other end being constructed and arranged to yieldably engage a conductor terminal disposed within said aperture.

8. Receptacle means, comprising: a body portion, having a wall provided with an aperture for receiving a conductor terminal, and having also spaced recesses formed therein adjacent the opposite edges of the wall, one of said recesses being of a greater size than the other recess and located thereabove; and biasing means, having slotted portions substantially uniform in thickness and connected by loop means, so that in assembling, said biasing means may be slipped over said body wall, said biasing means being constructed and arranged when assembled with the body portion so that a part of the margins of the slot in one portion closely interengages with the margins of the smaller recess to prevent relative movement of the portion with respect to said body portion, and a part adjacent the slot in the other biasing means portion loosely fitting within the larger recess and being adapted to abut the margins of the larger recess so as to limit movement of said other biasing means portion, this latter portion cooperating with said body portion aperture to yieldably engage and hold a conductor terminal disposed in said aperture.

9. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also spaced apart recesses formed in its margin, one of said recesses being of a greater size than the other and located thereabove; and biasing means, comprising a rectangular strip of sheet metal bent upon itself to provide three legs, the legs of said biasing means being provided with slots stopping short of the extremities of said legs, and said legs straddling said wall; the extremity of one of said legs, closely fitting within the smaller sized recess to hold this leg against movement with respect to said wall, and the extremity of one of the other of said legs fitting into the larger sized recess and having limited movement with respect to the marginal surface of this recess, and one of said legs having a portion constructed and arranged to yieldably engage a conductor terminal disposed in said terminal receiving aperture.

10. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also spaced apart recesses in its margins; and biasing means, comprising a sheet metal rectangular strip constructed and arranged to provide a plurality of overlying and connected slotted elongated portions straddling and encircling said wall, the slot in the intermediate portion extending longitudinally of the portion and being somewhat greater than the width of said wall, and the slots in the end portions being substantially equal to the width of said wall but out of alignment with each other, a part of one end portion fitting and locked within one recess, and one end portion being positioned for limited movement within the other recess to yieldably hold a conductor terminal disposed within said aperture.

11. Receptacle means, comprising: a wall, having an aperture for receiving a conductor terminal, and having also a pair of spaced apart seats; biasing means, comprising a metal strip constructed and arranged to provide a plurality of overlying and connected slotted portions and a detent adjacent each extremity of the strip, whereby said biasing means may be slipped over said wall to straddle the same in a predetermined position permitting the detents to snap into said seats to lock the biasing means and the wall together with one of said slotted portions positioned to intersect said conductor terminal receiving aperture to retain a terminal disposed therein.

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