July 7, 1931. B. D. HORTON 1,813,448

GROUND WIRE CONNECTION

Filed May 14, 1925

Fig. 1

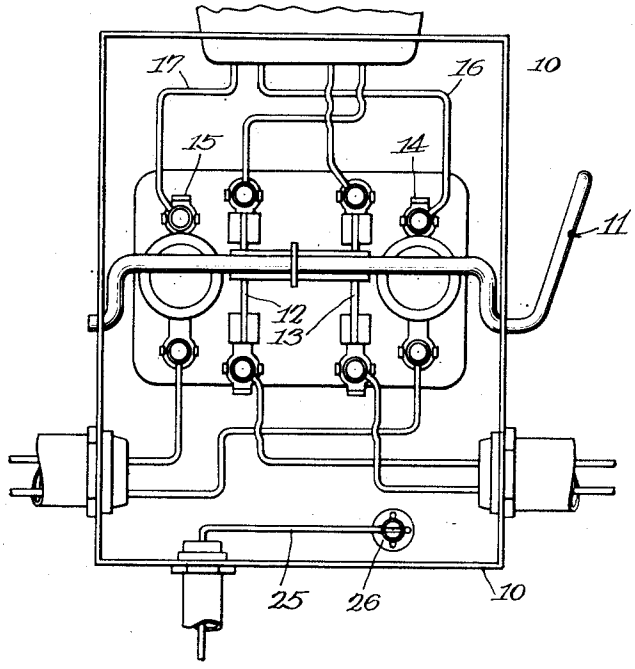


Fig. 6

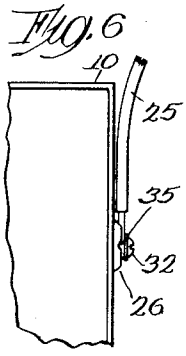


Fig. 2

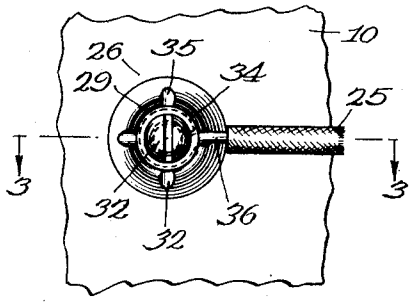


Fig. 5

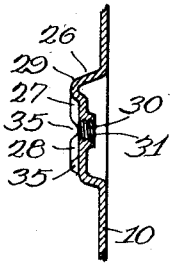


Fig. 4

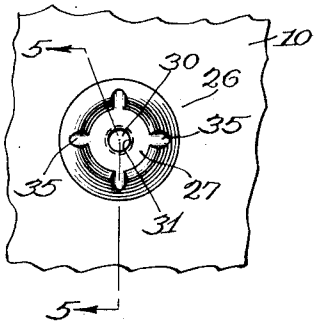
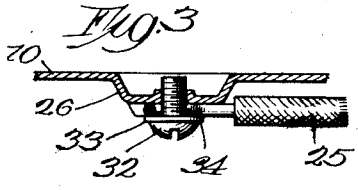


Fig. 3



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UNITED STATES PATENT OFFICE

BRYSON D. HORTON, OF DETROIT, MICHIGAN, ASSIGNOR TO SQUARE D COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

GROUND WIRE CONNECTION

Application filed May 14, 1925. Serial No. 30,162.

My invention relates to ground terminal connections.

The improvement herein described pertains to ground wire connections for use with electrical switch enclosures, or like cabinets, usually requiring such grounded connections; the primary aim being to improve upon and simplify the construction at present employed.

The national electrical code in this country requires that all service entrance switch cabinets or enclosures be suitably grounded and that such enclosures or cabinets at the point where the ground wire is connected be constructed so as to insure a good and positive electrical contact. In practice this is not always done and it is the purpose of this invention to provide an improved means permitting a positive and secure contact to be obtained in a better and more facile manner.

One of the objects of my invention, therefore, resides in the production of improved means on the back or side wall of the switch enclosing cabinet whereby a good and positive contact may be obtained and the grounding wire at the same time may be led in one of a plurality of directions from the interior of the switch box and be prevented from turning or freeing itself from the back or side wall of the cabinet.

My invention more specifically teaches the provision of a boss, preferably extending inwardly on the inside of the switch cabinet, having a depression in the face thereof for providing a seat for the end of the ground wire, and also means by which this ground wire may extend in one of a plurality of directions from the switch cabinet without turning, rotating, or becoming loose.

Other objects of the invention will be apparent from the following description when taken in connection with the accompanying drawings.

In the drawings:

Figure 1 is a front elevation of a service entrance switch enclosure with the cover open and illustrating the method of attaching the ground wire to the back wall of the enclosure.

Fig. 2 is an enlarged front elevation of the ground wire connection;

Fig. 3 is a sectional view through the ground wire connection, being taken along line 3—3 of Fig. 2;

Fig. 4 is a front elevation of the improved means provided for making the ground wire connection;

Fig. 5 is a sectional view of the same taken on line 5—5 of Fig. 4, and

Fig. 6 illustrates the same ground wire connection applied to the exterior at one side of the switch box.

A preferred form of the invention is illustrated in the drawings in which 10 represents the service entrance switch enclosure, which obviously may be of any desired type, which switch enclosure is provided with the exterior operating handle 11. A service switch consisting of blades 12 and 13 and the fuse receptacles 14 and 15 is positioned in the enclosure. The switch may be connected to the load and service circuit in any desired manner, but for the purpose of illustration in the drawings, the wires 16 and 17 represent the service wires; the wires 18, 19, 20 and 21 the meter wires; and the wires 22 and 23 the load wires.

As illustrated in Fig. 1, the ground wire 25 is connected to the back wall of the enclosure or cabinet. This wire can readily be positioned in any desired place and is preferably seated against the back wall of the cabinet in a boss 26 struck up from the back of the cabinet.

Referring particularly to Figs. 3 and 5, this boss 26 is formed on the back wall so as to extend inwardly in the cabinet, and is furnished with a central depression 27 forming a seat 28 for the end of the ground wire 25. When forming the depression 27, an outer ridge 29 is, of course, provided about the seat 28. A central tap 30 is formed through the wall of the seat 28, this wall being slightly enlarged about the opening as indicated at 31. A bolt 32 may thread into the opening 30 for holding the end of the ground wire 25 securely against the seat 28. Bolt 32 may have a washer 33 formed at its head so as to provide a bearing surface for engaging against the ground wire as indicated in Fig. 3. It is customary, when securing the ground wire

25, to cut back the insulation a suitable distance and to turn the end of the bare wire in the form of an eye 34. It is this eye 34 which seats in the depression 27 and is held under the washer 33 of bolt 32. The head of the bolt 32 may, of course, be made large enough so as to eliminate the necessity of the use of a washer, the purpose of the enlargement being merely to cover over the eye 34 of ground wire 25 a distance sufficient to prevent the ground wire from slipping out from under the bolt.

A plurality of depressions or channels 35 may be formed in the ridge 29 to receive the portion 36 of the bare wire and prevent the ground wire 25 from turning or rotating. A further advantage of these channels is that the ground wire 25 may be led away from the switch enclosure 10 in more than one direction. Consequently this ground connection may be more easily made by the use of the present construction, because the ground wire is not limited to one position with respect to the switch box, but may lead away from the box in one of a plurality of ways, permitting the attachment to be more readily attained.

It will be now evident that according to the teachings of this invention, the ground wire 25, when placed in position on the service switch cabinet or enclosure, is held in this position in the seat 28, and that good electrical contact will be obtained with the eye 34 of the ground wire seating in the depression 27 of the boss, and that the ground wire is securely held by the bolt 32. Also, by the use of the channels 35 in the ridge 29, the ground wire 25 is securely held against turning or rotating and these channels assist in holding the wire securely attached, because the rotating of the wire is apt to turn the bolt and loosen the connection. The depression or seat may be made just large enough to receive the eye 34, so that the periphery of this eye will be in contact with the side of the ridge 29. The channels 35 may also be made just large enough to receive the bare portion of the wire, all of which tend to hold the ground wire tightly seated in the boss 26.

It will be noted in Fig. 6 that the same ground wire connection may be applied to the exterior of the switch box, by forming the boss 26 outwardly, instead of inwardly, and leading the ground wire away from the box on the outside. Substantially the same construction is used. The boss 26 is formed outwardly and has the channels 35 for receiving the wire in one of a plurality of directions. The screw 32 will serve to hold the eye 34 of the wire tightly seated, while the channels will serve to prevent turning of the wire and consequently any tendency of this wire to become loosened.

Obviously, the invention is not limited to the specific embodiments illustrated and described herein, but is capable of many variations and other applications within the spirit and scope of the invention as set out in the following claims.

I claim:

1. Means for securing a conductor to a metallic surface of unlimited size, comprising a sheet-metal member to a surface of which a conductor is to be secured, said member including an integral portion formed into a substantially annular raised boss having at least one transverse depression therein, and said member also including a thickened integral portion disposed within said annular boss substantially centrally thereof and having an internally screw-threaded hole therethrough for the reception of a securing screw or the like.

2. Means for securing a conductor to a metallic surface of unlimited size, comprising a sheet-metal member to a surface of which a conductor is to be secured, said member including an integral portion formed into a substantially annular raised boss having at least one transverse depression therein, and said member having an internally screw-threaded hole therethrough within said annular boss portion and substantially centrally disposed with respect thereto for the reception of a conductor-securing screw or the like.

3. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having a plurality of substantially radially disposed depressions therein.

4. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having a plurality of substantially radially disposed depressions therein, the bottoms of which depressions lie in substantially the same plane as the outer surface of said disk-shaped portion.

5. Mean for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral

portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having a plurality of substantially radially disposed depressions therein, and said member having a hole therethrough substantially at the center of said disk-shaped portion for the reception of a conductor-securing screw or the like.

6. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having at least one transverse depression therein, the bottoms of which depressions lie in substantially the same plane as the outer surface of said disk-shaped portion, and said member having a hole therethrough substantially at the center of said disk-shaped portion for the reception of a conductor-securing screw or the like.

7. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having at least one transverse depression therein, and said member having a thickened portion with an internally screw-threaded hole therethrough substantially at the center of said disk-shaped portion for the reception of a conductor-securing screw or the like.

8. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having at least one transverse depression therein, the bottoms of which depressions lie in substantially the same plane as the outer surface of said disk-shaped portion, and said member having a thickened portion with an internally screw-threaded hole therethrough substantially at the center of said disk-shaped portion for the reception of a conductor-securing screw or the like.

9. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having at least one transverse depression therein.

10. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having at least one transverse depression therein, the bottom of which depression lies in substantially the same plane as the outer surface of said disk-shaped portion.

11. Means for securing a conductor to a metallic surface, comprising a sheet-metal member to a surface of which a conductor is to be secured, a substantially disk-shaped integral portion of said member being raised above the said surface of said member to which a conductor is to be secured, a substantially annular integral portion of said member being raised above said disk-shaped portion and immediately surrounding the same, said annular portion having at least one transverse depression therein, and said member having a hole therethrough substantially at the center of said disk-shaped portion for the reception of a conductor-securing screw or the like.

In witness whereof, I have hereunto subscribed my name.

BRYSON D. HORTON.