June 20, 1933. S. W. BORDEN 1,914,554

ELECTRICAL GROUND CONNECTER

Filed July 21, 1928

Fig. 1.

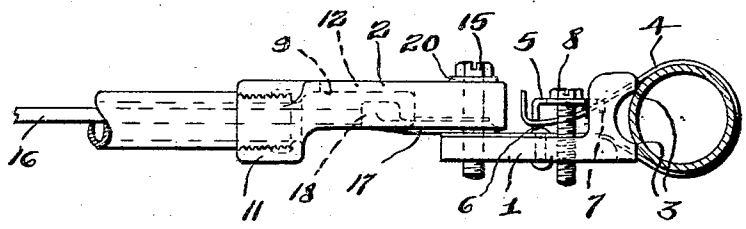


Fig. 2.

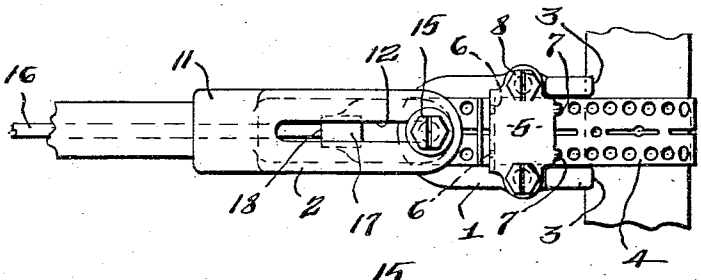


Fig. 3.

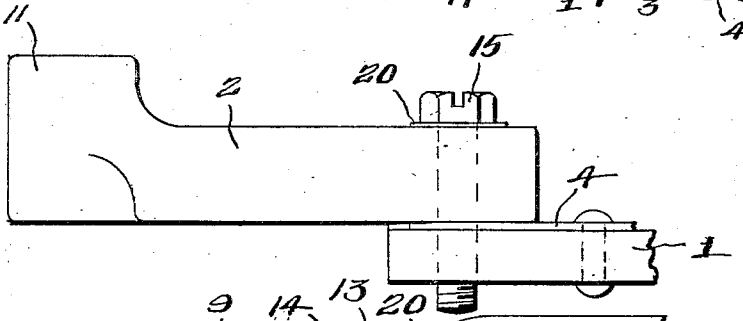


Fig. 4.

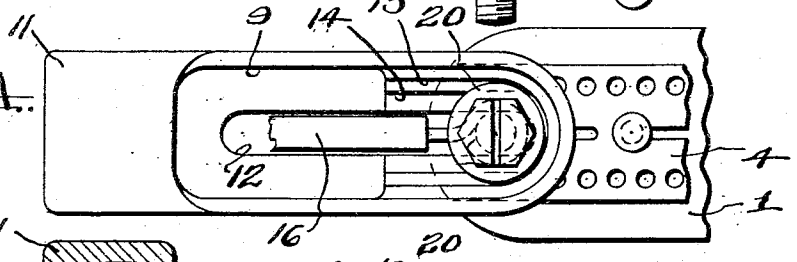


Fig. 5.

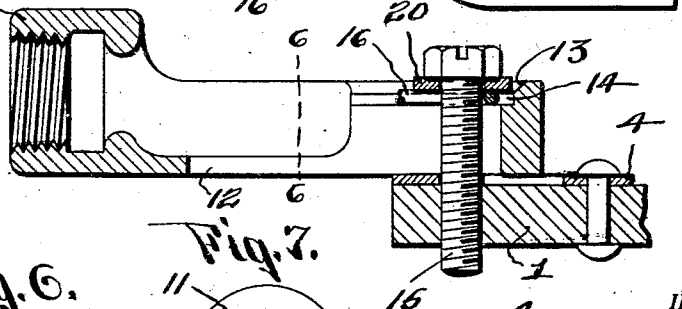


Fig. 6.

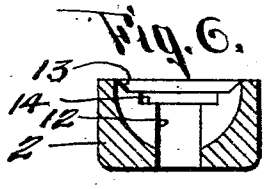
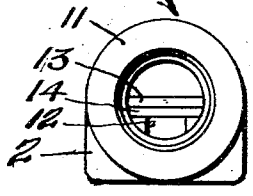


Fig. 7.



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Patented June 20, 1933 1,914,554

UNITED STATES PATENT OFFICE

STEPHEN W. BORDEN, OF SUMMIT, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO STEPHEN W. BORDEN, OF SUMMIT, NEW JERSEY

ELECTRICAL GROUND CONNECTER

Application filed July 21, 1928. Serial No. 294,544.

This invention relates to electrical ground connecters of the general type set forth in the Cowles Patent No. 1,491,789 issued April 29, 1924, by which a ground connection can be made between an electrical conduit system and a grounded conductor as a water pipe, and has for its object, a particularly simple, efficient and compact construction by which the connecter or a section thereof is extensible and adjustable to different radial positions and secured together by a single clamping member or screw and also by which the conductor or wire enclosed in the electric conduit to which the connecter is connected is mechanically and electrically secured to the connecter by the same single clamping member or screw.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is an elevation of a connecter embodying my invention.

Figure 2 is a plan view thereof.

Figure 3 is a fragmentary side elevation showing the section connected to the electric conduit inverted relatively to the form shown in Figure 1 and with a wire enclosed in the conduit connected to the sections by a solderless joint.

Figures 4 and 5 are respectively a plan view and a longitudinal sectional view through the section connected to the conduit and contiguous parts.

Figure 6 is a sectional view of the section connected to the conduit on line 6—6, Figure 5.

Figure 7 is an end view looking to the left in Figure 5 of the section connected to the conduit.

This electrical ground connecter is for the purpose of connecting two conductors arranged in fixed relation as for instance, a water pipe and the conduit of an electrical conduit system, said connecter comprising a body having two sections, one having means for rigid engagement with the conductor or water pipe and the other having means for rigid connection to the electric conduit and a single means for connecting the sections together and for connecting a conductor enclosed in the electric conduit to the body, either connecting the wire out directly to the body with a solderless joint or connecting to the body a wire terminal soldered or secured to the wire. The sections are also connected together to have an endwise adjustment and a radial adjustment to conform to the position of the conductor or water pipe and the electric conduit and the single clamping means holds the sections in their adjusted position as well as connects the wire or wire terminal thereto.

1 and 2 designate respectively the sections of the body, the section 1 having means as abutments 3 at one end for abutting against a grounded conductor as a water pipe and also means as a metallic strap 4 anchored at one end to the section 1 and having its other end free to be looped around the conductor, the free end portion being clamped toward the section 1 by suitable clamping means.

This clamping means may be of any suitable form, size and construction and forms no part of this invention. It includes a clamping plate 5 having down-turned lugs 6 at its edge remote from the loop for embedding into the strap 4 or projecting into perforations in the strap, and also having projections 7 at its edge adjacent the loop for entering perforations in the strap. The plate 5 is clamped toward the section 1 by screws 8 extending through opposite ends thereof and threading into the section 1. During the clamping action, the plate abuts against the contiguous faces of the abutments 3 and holds the screws upright or from lateral movement. The anchored end of the strap 4 extends lengthwise of the section 1 to the outer end thereof for a purpose to be hereinafter set forth.

The section 2 is formed with a channel 9 on its intermediate portion and is provided with a nipple 11 in line with its channel for fitting on the end of the electric conduit, the nipple usually threading on the conduit. The section 2 at one end laps the section 1 at the

extreme end of the anchored portion of the strap 4. The lapping portion of the section 1 is full or unprovided with a channel and the section 2 is formed with a lengthwise slot 12 and a bearing face or ledge 13 around the sides and one end of the slot and also with a countersink 14.

The slot 12 continues into the bottom of the channel portion of the section 2 and forms a sight opening, the purpose of which will be hereinafter set forth.

15 is a clamping screw which extends through the slot, the lapping portion of the section 2 and through the anchored end of the strap 4 and threads into the section. The slot permits an endwise and radial adjustment of the section 2 relatively to the section 1.

16 is a conductor which extends into the conduit to which the nipple 11 is connected, this conductor being a wire and in some instances, including a wire terminal 17 soldered at 18 to the end of the wire, this wire terminal bearing on the face 13 and when this wire terminal is used, the section 2 is arranged so that the bearing face 13 is toward the section 1 and the terminal 17 is interposed between the section 2 and the section 1 or the interposed part of the strap 4. Hence, during the clamping of the screw 15 which also extends through a hole in the wire terminal all the parts are rigidly clamped together with a good electrical contact between the wire terminal and the section 2 and section 1 or interposed strap 4.

When this wire terminal 17 is used and hence, the bottom of the channel of the section 2 presented upwardly, the soldered joint between the terminal 17 and the wire is visible through the sight opening. However, in order to provide for a solderless connection between the wire enclosed by the electric conduit, as a solderless joint is preferable if it can be made to conform to the rigid requirements of the board of underwriters, the countersink 14 is provided for holding the end of the wire looped around the screw 15 beneath the head thereof to form a terminal. When a solderless joint is used, the loop of the wire 16, 15 used as a wire terminal, the section 2 is arranged with the open side of the channel up, and the end of the wire looped around the screw 15, the loop being seated in the countersink.

A washer 20 is preferably used beneath the head of the screw 15 and this bears on the terminal loop of the wire so that upon tightening of the screw to tighten all parts together, the wire can not be displaced laterally but is so confined that it must be clamped between the washer and the bottom of the countersink, thus providing a good mechanical connection and a good electrical connection satisfying the rigid requirements of the Board of Fire Underwriters. The countersink and washer constitute means for holding the wire terminal from spreading or from displacement.

This ground connecter is particularly advantageous in that the sections thereof are held in both radial and endwise adjustment by a single clamping member which also makes electrical connection with the wire enclosed by the electric conduit whether the wire is provided with a terminal soldered thereto or is looped to form a terminal and further, in that when a solderless coupling is used, the wire terminal can not become displaced.

What I claim is:

1. An electrical ground connecter for connecting two conductors arranged in fixed relation, said connecter comprising a body having two sections, one section having a looped strap for rigid engagement with one conductor, one end of the strap lapping said section, and the other section having means for rigid connection to the other conductor, the latter conductor being an electric conduit, the sections lapping each other and said end of the strap means which extends between the lapping portions of the sections, a conductor enclosed by the electric conduit having an end thereof lapping the lapping portions of the sections, and a single clamping member extending through the lapping portion of said conductor, the sections, and the said end of the strap and separate means for securing the other end of the strap.

2. An electrical ground connecter for connecting two conductors arranged in fixed relation and comprising a body having two sections, one section having means for rigid engagement with one conductor, and the other section having means for rigid connection to the other conductor, the latter being an electric conduit, the sections having lapping portions and the section connected to the electric conduit being provided with a lengthwise slot permitting endwise and radial adjustment thereof relatively to the first section, the section which is connected to the electric conduit having an intermediate channel portion and a lapping end portion being formed with a bearing face around the contiguous part of the slot and with a countersink, a conductor enclosed by said conduit and extending into the adjacent section and said section being disposable in one position with its bearing face opposed to the first section to clamp a wire terminal between it and the first section and reversible with the bearing face presented upwardly for receiving a wire end in said countersink, and a clamping screw extending through the lapping portions of the sections and through the slot.

3. An electrical ground connecter for connecting two conductors comprising a body having two sections, one section having

means for rigid engagement with one conductor, and the other section having means for rigid connection to the other conductor, the latter being an electric conduit, the sections having lapping portions and a clamping member extending through the lapping portions for clamping them together, a conductor enclosed by the electric conduit having a terminal piece, the section connected to the conduit being disposable in one position to clamp the terminal piece between the sections and being reversible and having means for receiving the wire terminal; the clamping member and said section having coacting parts to confine the wire terminal when said section, which is connected to the conduit, is reversed.

In testimony whereof, I have hereunto signed my name at Newark, in the county of Essex and State of New Jersey, this 18th day of July, 1928.

STEPHEN W. BORDEN.