Feb. 25, 1930. S. W. BORDEN 1,748,536

ELECTRICAL CONNECTER

Original Filed Sept. 12, 1927

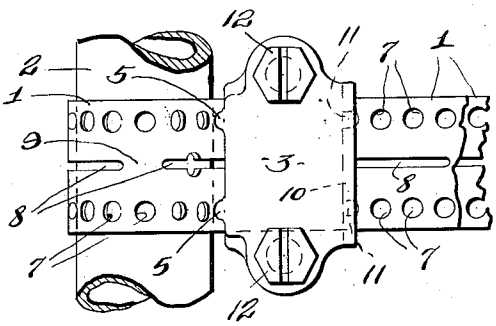


Fig. 1.

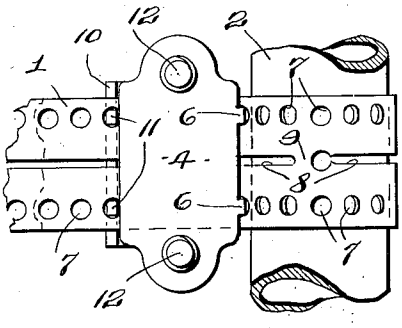


Fig. 2.

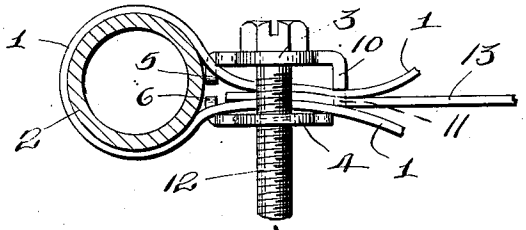


Fig. 3.

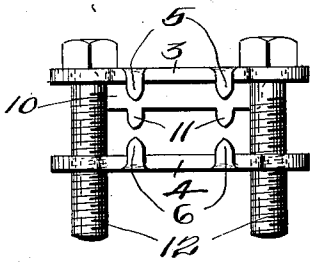


Fig. 4.

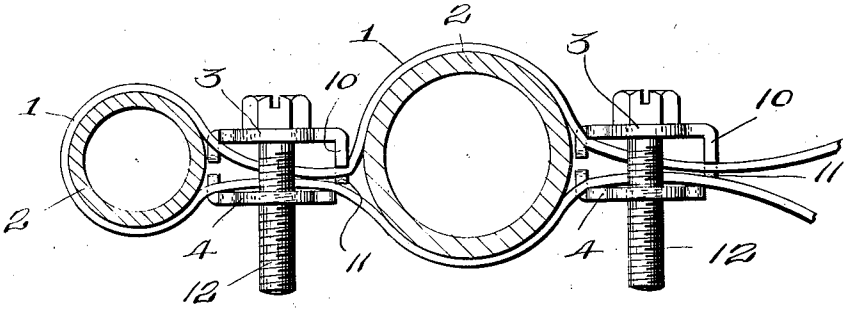


Fig. 5.

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UNITED STATES PATENT OFFICE

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ELECTRICAL CONNECTER

Application filed September 12, 1927, Serial No. 218,930. Renewed July 16, 1929.

This invention has for its object an electrical connecter and particularly a connecter for grounding purposes including a flexible conductor or metal strap adapted to be clamped around conductors as pipes and the like of various sizes, and a simple and efficient means for tightly contracting the strap around the conductor to make a good electrical and also mechanical joint.

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 drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a plan view of one embodiment of my invention, the same being shown as clamped on a conductor.

Figure 2 is an inverted plan view of parts seen in Figure 1.

Figure 3 is a side elevation, the conductor being shown in sections.

Figure 4 is an elevation of the detached clamping device.

Figure 5 is a fragmentary elevation illustrating one of the uses of this connecter.

This electrical connecter comprises generally, a flexible metal strap to be looped around a conductor with portions at the end of the loop left free, and a device acting on said portions of the loop adjacent the conductor for contracting the loop on the conductor, such device including opposing parts one or each of which is provided with means for interlocking with the strap at any point along its length in order that the device may be quickly located on the strap to form the loop of approximate minimum size before being tightened and quickly tightened after being located.

1 designates the metal strap to be looped around a conductor as 2, the strap being usually formed of copper or other good conductor and being of sufficient width to make a good electrical contact throughout the entire, inner surface of the loop on the conductor and of sufficient gage or thickness to be strong enough to make a good mechanical joint and withstand the tension applied during the tightening or clamping operation.

The device for contracting the loop as here shown includes opposing members 3, 4 which for convenience are called plates located on the outer sides of the free portions of the strap at the end of the loop and as close to the conductor as possible in order that the loop may be contracted throughout the greater part of its interior surface on the conductor and means for clamping the plates toward each other onto the strap or the portions of the strap extending between the plates, one or each plate having means for interlocking with the strap.

In the illustrated embodiment of my invention, both plates 3, 4 are provided with means for interlocking with the interposed portions of the strap at any point along the length thereof, this means consisting of prongs 5, 6 provided respectively on the plates 3, 4 usually at the edges of said plates toward the conductor. Also, preferably, but not necessarily, the strap is provided with perforations 7 along its length for receiving the prongs, these perforations being along the margins of the strap and spaced close together so that regardless of the size of the loop, some of the perforations will be located to receive the prongs with the clamping device as close to the conductor as possible. However, the perforations may be omitted and the prongs may form indentations of their own perforations as the plates are clamped toward each other. The perforations may open through the edges of the strap and form a notched, serrated, or scalloped edge. Also, in order that the strap may draw evenly around the conductor and conform to unevennesses on the surface thereof, the strap is formed with lengthwise slits 8 extending along a median line thereof, the slits being arranged end to end with small connecting pieces 9 between them so that in effect, these slits form one long slit.

Also, preferably one of the plates as the plate 3 is formed with an angular spacing projection for coacting with the underlying portion of the strap for holding the plate 3 spaced apart from the strap, this projection being in the form of an angular flange 10

located at the edge of the plate remote from the conductor. This spacing flange 10 facilitates the clamping together of the plates to the last degree and causes the plate 3 to have a sort of leverage action about the edge of the flange as a fulcrum during the clamping action.

The flange 10 is also usually provided with prongs or projections 11 for entering perforations 7 in the underlying portion of the strap.

The plates are clamped toward each other preferably by means of two screws 12 extending through ears at opposite ends of the plates, the screws passing on opposite side edges of the strap. These screws 12 usually pass through one plate as the plate 3 and thread into the other plate instead of into a nut. By using two screws located as described, cutting away and weakening of the metal of the strap to form a large perforation or a wide slot in the strap for receiving a single screw is avoided. Although it will be understood that I do not limit my invention to the use of two screws located at opposite edges of the slot and that one screw passing througs one slot located along the median line of the strap, may be used without departing from the spirit of my invention.

As seen in Figure 3, the strap may be extended, that is, an extension strap 13 may be spliced thereto by inserting one end of the extension strap 13 between the plates, and preferably between the ends of the loop, the prongs 11 of the clamping plate 3 also extending into perforations in the extension strap.

In Figure 5, one of the many uses of this connecter is shown wherein several conductors or conduits are shown as electrically connected or grounded with this device and it will be noted that the same size of strap and the same clamping device is used to connect the strap to conductors of different sizes.

This strap and clamping device is particularly suited for connecting two or more pipes, rods or conductors which are spaced a considerable distance apart measured in feet and yards rather than inches and sometimes located above the ground and sometimes buried in the ground where joints or splices are prohibited or undesirable. Numerous other uses will be apparent to the electrician.

In operation, the strap is looped around a conductor or pipe, the clamping plates located on the outer sides of the portions of the strap at the ends of the loop as close to the pipe as possible and the clamping screws tightened, and owing to the fact that the plates interlock with the strap at any point, the plates can be operated or clamped toward each other without slipping relatively to the strap and hence, the strap or straps can be contracted tightly and to a maximum extent around the conductor.

This connecter is also particularly advantageous in that it can be readily and quickly applied to the conductor and adapted to the conditions as the size of the conductor and the location etc.

What I claim is:

1. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the end of the loop left free and a device for contracting the loop on the conductor, said device including parts arranged on the outer sides of said portions and having means for interlocking with said portions of the strap at any point along its length, and means for clamping said parts toward each other onto the end portions of the strap.

2. An electrical connecter comprising a flexible metallic strap to be looped around and clamped on a conductor with the ends of the loop portion left free, and a device for clamping the free end portions of the loop toward each other and thereby contracting the loop around the conductor comprising opposing plates having means for interlocking with the free ends of the loop at any point along their length, and means for clamping the plates toward each other on the interposed end portions of the strap.

3. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the end of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free end portions extend and means for clamping the plates toward each other, both of the plates having angular projections for interlocking with the strap.

4. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the end of the loop left free, a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions extend and means for clamping the plates toward each other, both of the plates having angular projections for interlocking with the strap, and one of the plates also having means for holding it spaced apart from the strap during the clamping action.

5. An electrical connecter comprising a flexible metal strap to be looped around and clamped around a conductor with the portions at the ends of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions extend

and means for clamping the plates toward each other, one of the plates having an angular spacing projection for engaging the contiguous portion of the strap and one of the plates also having means for interlocking with the strap.

6. An electrical connecter comprising a flexible metal strap to be looped around and clamped around a conductor with the portions at the ends of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions extend and means for clamping the plates toward each other, one of the plates having an angular spacing projection for engaging the contiguous portion of the strap and also having an additional angular projection for interlocking with the strap.

7. An electrical connecter comprising a flexible metal strap to be looped around and clamped around a conductor with the portions at the end of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions extend and means for clamping the plates toward each other, one of the plates having an angular projection for engaging the contiguous portion of the strap and also having an additional angular projection for interlocking with the strap, the other plate also having a projection for interlocking with the strap.

8. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the end of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions of the strap extend and means for clamping the plates toward each other, one of the plates being formed with an angular flange arranged so that its edge bears on the strap and the flange being formed with prongs at its edge for interlocking with the strap.

9. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the ends of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions of the strap extend and means for clamping the plates toward each other, one of the plates being formed with an angular flange arranged so that its edge bears on the strap and the flange being formed with prongs at its edge for interlocking with the strap, said plate also having additional prongs for interlocking with the conductor.

10. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the ends of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions of the strap extend and means for clamping the plates toward each other, one of the plates being formed with an angular flange arranged so that its edge bears on the strap and the flange being formed with prongs for interlocking with the strap, the other plate also having angular prongs for interlocking with the strap.

11. An electrical connecter comprising a flexible metal strap to be looped around and clamped on a conductor with the portions at the end of the loop left free, and a device acting on the free portions for contracting the loop on the conductor, said device comprising oppositely arranged clamping plates between which the free portions of the strap extend and means for clamping the plates toward each other, one of the plates being formed with an angular flange arranged so that its edge bears on the strap and the flange being formed with prongs for interlocking with the strap, said plate also having additional prongs for interlocking with the conductor, the other plate being also provided with prongs for interlocking with the strap.

In testimony whereof, I have hereunto signed my name at Syracuse, in the county of Onondaga and State of New York, this 8th day of September, 1927.

STEPHEN W. BORDEN.