Feb. 19, 1935. G. J. HAUSMAN 1,991,669

CONNECTER

Filed Sept. 28, 1931

Fig. 3.

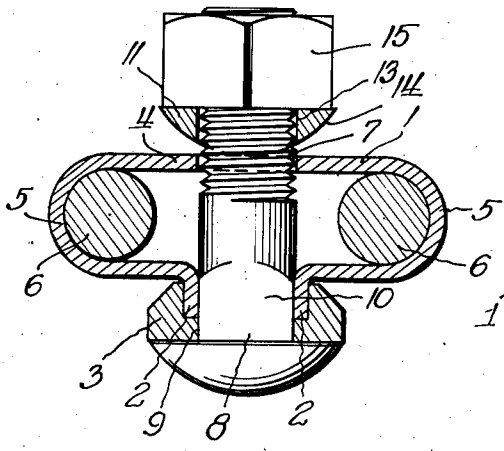


Fig. 4.

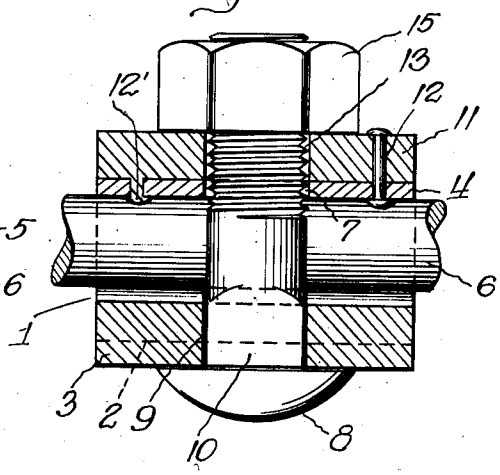


Fig. 1.

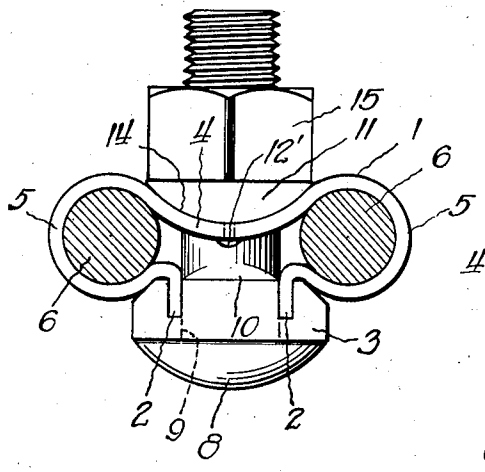
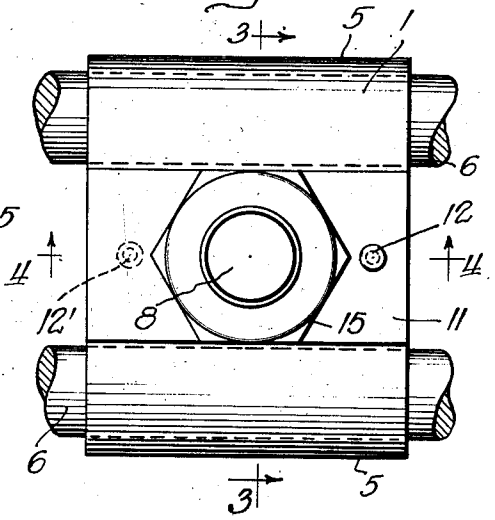


Fig. 2.



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CONNECTER

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6 Claims. (Cl. 173—263)

This invention relates to connecters suitable for establishing an electrical connection between wires and for forming mechanical strain clamps for dead ending wires, clamping guy wires, and the like.

In electrical distribution systems, wires of relatively large cross section are frequently used to carry heavy currents. My invention provides a connecter suitable for establishing an electrical connection between a lead-in wire and a main line wire of this type, a connection which can be readily established and which may be readily disconnected when it is desired to break the connection between the two lines. The improved connecter of my invention is also serviceable for connecting jumper wires from one dead ended section of the main line to another. Because of its higher mechanical holding power, this connecter when formed of suitable material, can be used as a clamp for dead ending, attaching guy wires, and wire rope and the like.

In its preferred form my improved connecter consists of a ribbonlike band of ductile metal, having its ends secured in a block of rigid metal. The ribbon is formed as a flattened tube, that is, as a long rectangle having parallel sides and rounded ends.

The block to which the ribbon is attached and the side of the ribbon opposite it are pierced with bolt holes through which a suitable bolt, such as for example a carriage bolt, is projected. A second rigid metallic plate is passed on this bolt on the outside of the ribbon, to serve as a bearing block against which the nut threaded on the bolt bears to draw the two blocks together and thus clamp the band of ductile material tightly upon the wires.

The clamping blocks are disposed with their longitudinal axes parallel to the axis of the wire, so that when the connecter is attached to the wire, it is clamped over a relatively large surface of that wire, and therefore a good, low resistance electrical connection and strong mechanical grip between the clamp and wire are assured.

My invention will be best understood by reference to the accompanying drawing in which a preferred embodiment of it is shown by way of example, and in which:

Fig. 1 is an end view of the connecter assembled on a wire;

Fig. 2 is a plan view of the connecter;

Fig. 3 is a cross sectional view of the connecter taken along the line 3—3 of Fig. 2 looking in the direction of the arrows; and

Fig. 4 is a cross sectional view of the connecter taken along the line 4—4 of Fig. 2 looking in the direction of the arrows.

Referring now to the drawing in more detail, in its preferred form my connecter consists of a rectangular shaped ribbon or band 1 which is composed of ductile material. The ends of this band are squared and fitted into grooves 2 in a rigid metallic block 3 to securely hold them in place. Preferably, the ends of the ribbon 1 are not immovably secured in the grooves 2, and the block 3 may therefore be removed from the band, if desired, as will presently appear.

As will be seen in Figure 3, the ribbon 1 is shaped as a flattened tube, or hollow rectangle, having a straight side 4 opposite the block 3, and rounded ends 5, formed on substantially the same radius as the radius of the wires 6 to which the clamp is to be attached. The straight side 4 of the ribbon is provided with a bolt hole 7 through which a steel bolt 8 is projected. The block 3 is provided with a squared hole 9 which registers with the squared portion 10 of the bolt to prevent it from turning with respect to the block. The bolt tightly fits into this hole so that when assembled the bolt and block may be handled as a unit.

A second rigid metallic block 11, preferably composed of a high strength material, is rigidly secured to the straight side 4 of the ribbon 1, in any preferred manner such as by rivets 12, this block being provided with a hole 13 through which the bolt 8 projects. The block 11 is provided with an arcuate face 14 adjacent the ribbon 1, for a purpose which will presently appear. In certain instances the block 11 may be cast from a non-corrosive metal and the rivets cast integral with it. I have illustrated this construction by rivet 12', Figure 4.

A nut 15 threaded on the projecting end of the bolt 8 bears against the upper block surface of the block 11 to force that block and the straight side section 4 of the ribbon 1 toward the block 3.

With wires 6 threaded into the rounded ends of the ribbon, and the nut 15 tightened down in the manner shown in Fig. 1, the block 11 forces the ribbon 1 toward the block 3 and between the adjacent surfaces of the wires 6, thereby forcing those wires outwardly away from the bolt 8 and into the rounded ends 5 of the clamping band or ribbon 1. Because of the arcuate shape of the engaging face 14 of the block 11, the ribbon is shaped to engage more of the surface of the wires, so that when the clamp is tightly drawn, the ribbon engages at least two thirds of the circumferential length of that wire.

As will be seen in Fig. 1, when the clamp is tightened in place upon the wires, those wires are spread away from the bolt 8. If, for example, the wires 6 are composed of copper and the clamping band or ribbon 1 is composed of copper, the bolt 8 and clamping blocks 3 and 11 may conveniently be made of steel or other relatively cheap metal, since they do not come in direct contact with the wires 6 and therefore there is no danger of accelerating corrosion because dissimilar metals are in contact with each other and the atmosphere. Corrosion may take place at the ends of the ribbon 1 which engage the block 3, and at the junction of the ribbon and block 11; however, because of the location of these points, such corrosion will not materially affect the resistance of the contact between the two wires 6.

When the connecter is being used to establish a connection between a main line distributing wire and a lead-in wire, the former will not ordinarily be dead-ended, and the connecter must therefore be capable of being slipped over the continuous wire. This is accomplished by inserting a pointed tool, such as for example a screw driver into the crack between the block 3 and the ribbon 1, it being observed that the free edge of this block is spaced slightly from the ribbon, as shown at 16, to permit the insertion of such a tool. Preferably the slots in the block are made sufficiently large that the ends 2 of the ribbon may be slipped in and out of them easily and the block will therefore fall off of the ribbon when the unit 15 is removed and the use of tools to separate the connecter ordinarily will not be necessary. The block 3 is thus easily removed from the ribbon and the connecter may then be slipped over the line wire by passing the same between the adjacent ends of the clamping band 1. The grooves 2 in the block 3 are spaced apart a distance slightly greater than the diameter of the largest wire with which the connecter is adapted for use, so that that wire will readily pass between the adjacent ends of the clamping member when the block 3 is removed, and it will not be necessary to disform the band in order to position it upon the wire.

After the band has thus been placed over the wire, block 3 and bolt 10 are reattached to it, and the nut loosely threaded upon it. The dead end of the lead-in wire may then be slipped through the connecter, and the bolt tightened down to clamp the two wires together.

As the block 11 is drawn towards the block 3 the distance between the rounded end sections 5 of the connecting band will be shortened and the wires 6 will therefore be drawn toward the bolt 8; however, because of the shape of the block 3 and the block 11, the wires will never actually come into contact with the bolt, as explained above.

The tightening up of the bolt causes the block 11 to depress the central portion of the band and at the same time to pull the block 3 inwardly. The effect of this is to wrap the band more closely around the conductors 6—6. As the tightening action proceeds, the central parts of the band are brought towards each other until such time as the block 11 on the one side and the block 3 on the other side wedge between the two conductors with the thickness of the band interposed as shown in Fig. 1. By this action a tight wrapping of the band about the conductors 6—6 is secured, and the tendency of the ends 2—2 to slip out of the slots is greatly reduced because of the bearing which the sides of the block 3 have against the portion of the band which lies between the block 3 and the conductors 6—6. In other words, after the block 3 and block 11 have begun to wedge between the conductors 6—6, such pressure tends to keep the free ends of the band from escaping out of the block 3. This principle may be applied in other ways than the particular one which I have shown. The ends, such as 2—2, may be given a slight hook or reverse bend if desired, or they may be coupled together otherwise to permit the aforesaid action of the wedging of the block on opposite sides to occur.

The materials hereinbefore specified have been given by way of example only and are subject to variation to meet the particular purposes for which the clamp connecter is used. In one embodiment, used to electrically connect copper wires, the band or ribbon 1 is composed of soft drawn copper, the bolt of a non-corrosive metal, the nut is brass and the blocks 3 and 11 are cast of non-corrosive metal. In another embodiment used for mechanically connecting two wires, such as guy wires for example, the parts of the connecter are all composed of non-corrosive metal, although steel might equally well be used in this instance. It will be seen that the materials of which the parts are composed is not of the essence of my invention.

My improved connecter is of simple design, and can be manufactured at low cost. It contains a minimum number of parts, and can therefore be readily attached to a line wire without the use of special and complicated tools.

While I have chosen to show my invention by illustrating a preferred embodiment of it, I have done so by way of example only as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of my invention.

What I consider new and desire to have protected by Letters Patent is pointed out in the appended claims.

What is claimed is:

1. A clamp connecter comprising a band of ductile metal formed as a hollow rectangle having rounded ends, the end sections of said band being spaced apart and disposed in planes normal to the longitudinal axis of the rectangle and opposite to its long side, a rigid rectangular block having slots for registering with the end sections of said band, and means engaging the band and block for clamping the band upon a pair of wires.

2. A clamp connecter comprising a band of ductile metal formed as a hollow rectangle having rounded ends, the end sections of said band being spaced apart and disposed in planes normal to the longitudinal axis of the rectangle and opposite to its long side, a rigid rectangular block having slots into which the end sections of said band loosely fit, and means engaging the band and block for clamping the band upon a pair of wires.

3. A connecter comprising, a rectangular metallic block having a pair of parallel longitudinal slots and a square hole located centrally in it between said slots, a ribbon of semi-flexible metal disposed with its ends embedded in said slots, said ribbon being shaped as a flattened tube and its long face opposite said slots, said long face being provided with a bolt hole, a rigid block attached to said ribbon adjacent said bolt hole, said block having an arcuate face engaging the ribbon and a bolt extending through said blocks and ribbon for drawing the blocks together.

4. A connecter comprising a band of ductile

material having a plurality of holes, a block resting on said band, projections formed integral with said block and extending through certain ones of the holes in said band, the ends of said projections being peened over to rigidly attach the block to the band, a second block having grooves into which the ends of said band are fitted and having a square opening between said grooves, a bolt projecting through said blocks and band and tightly fitted into said square hole, and a nut threaded on said bolt and bearing against said first block to draw the blocks together and thereby tighten the clamp on wires engaged by the band.

5. A connecter comprising a band of soft drawn copper having a plurality of holes, a block of non-corrosive metal having rivets cast in it and projected through certain ones of said holes, said projections being peened over to rigidly attach the block to the band, a second block having grooves into which the ends of said band are loosely fitted and having a square opening between said grooves, a non-corrosive metal bolt projected through said blocks and band and tightly fitted into said square hole, and a brass nut threaded on said bolt and bearing against said first block to draw the blocks together and thereby tighten the clamp on wires engaged by the band.

6. The combination with a pair of spaced conductors, of means for effecting a connection therebetween comprising a ductile metallic band encircling said conductors and having its ends terminating below and between said conductors, means engaging said ends for holding them in position with respect to said conductors, and means extending between said conductors for drawing said band tightly against said conductors, said last named means also wedging said band between said conductors.

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