Feb. 16, 1932. R. T. HOSKING 1,845,273

ELECTRICAL CONNECTER

Filed Nov. 22, 1929

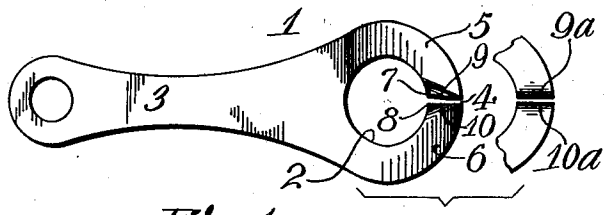


Fig. 1.

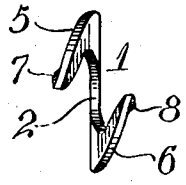


Fig. 2.

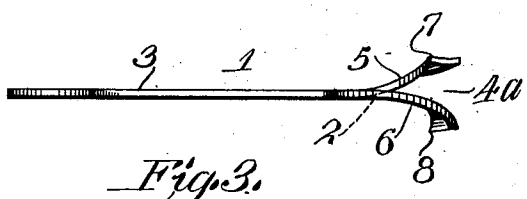


Fig. 3.

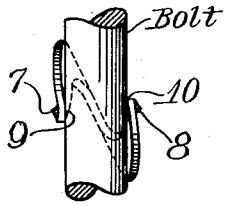


Fig. 4.

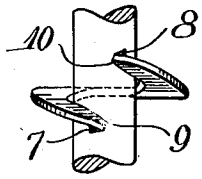


Fig. 5.

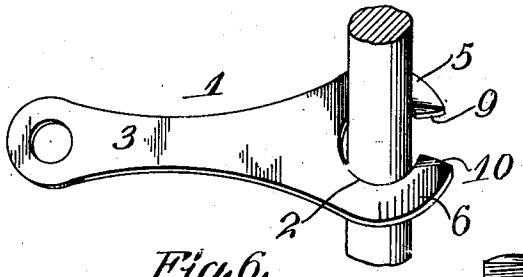


Fig. 6.

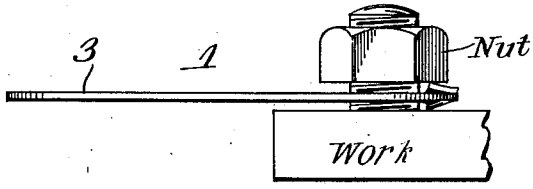


Fig. 7.

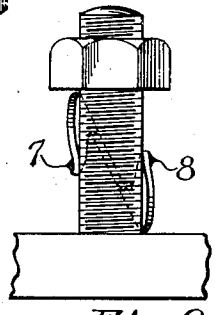


Fig. 8.

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Patented Feb. 16, 1932

1,845,273

UNITED STATES PATENT OFFICE

RICHARD T. HOSKING, OF WILMETTE, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SHAKEPROOF LOCK WASHER COMPANY, INCORPORATED, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

ELECTRICAL CONNECTER

Application filed November 22, 1929. Serial No. 409,148.

This invention relates to clips such as are used to connect electric wires to binding posts, spark plugs, bolts and the like and pertains more particularly to connecters of the general class described in patent to Gribbie, No. 1,697,954, issued January 8, 1929.

A connecter of that class is characterized by being capable of locking itself between the nut and the work in such a way that any tendency to wiggle the stem of the connecter from side to side, caused by handling the connecter wires in the ordinary use of electrical apparatus, will not tend to loosen the nut or impair the conductivity of the assembled connection.

The object of my invention is to improve and simplify the construction of prior clips of the kind adverted to and to perform the above-mentioned anti-wiggling, electric contact, and nut-locking functions, plus certain novel structural features and an improved mode of operation.

The bolt-receiving end of the connecter is arranged so that the assembler can push the connecter directly upon that part of the bolt which is exposed between the work and the nut when the nut is unscrewed. Furthermore, the bolt-embracing end of the connecter is so arranged that after it has been slipped on the bolt in the manner described its arms are made to surround the bolt merely by turning it about its longitudinal axis. Thereafter the connecter is prevented from dropping out whenever the nut is partly loosened. The arrangement prevents the assembler from putting the connecter only part way unto the bolt, thereby making a defective connection. It compels the assembler to either leave the connecter off the bolt altogether, or else to engage it with the bolt completely.

The locking teeth of the connecter are so arranged that they can not catch on the sides of the bolt when the connecter is being slipped on or off, thus materially shortening the time required for assembling, especially in radio and similar work where speed is essential for mass production.

With the foregoing and certain other objects in view, which will appear later in the specification, the invention comprises the devices described and claimed and the equivalents thereof.

In the drawings Fig. 1 is a plan view of a connecter embodying my invention, showing two kinds of locking teeth.

Fig. 2 is an end view.

Fig. 3 is a longitudinal edge view.

Fig. 4 is an end view showing the manner of applying the connecter to a bolt.

Fig. 5 is an end view showing the connecter after it has been turned about its longitudinal axis to completely surround the bolt.

Fig. 6 is a top perspective view of the connecter and the bolt.

Fig. 7 is an edge view of the connecter applied to a piece of work, the nut positioned for tightening.

Fig. 8 is an end view showing a mode of removing the connecter from a bolt without removing the nut.

As shown in the drawings, the general shape and size and configuration of the connecter may be that of any of the conventional or convenient forms consisting of a piece 1 of sheet metal or other suitable spring material formed with a bolt-receiving aperture 2 and having a shank 3 to which an electric conduit, not shown, can be conveniently attached in known manner.

Around the bolt-receiving aperture the piece is shaped to present the general form of an annular ring which has a radial slit 4, or is otherwise severed, at a place on its periphery opposite the shank 3, thereby presenting two annular arms 5 and 6 whose extremities are bent respectively upward and downward out of the plane of the connecter body to constitute oppositely projecting

spring biting teeth or prongs 7, 8. These prongs are then spread apart on opposite sides of the plane of the connecter by bending arms 5 and 6 far enough apart to leave a space 4*a* between them of sufficient width to receive the bolt; that is, the space 4*a* between the prongs is approximately the diameter of the bolt.

When the connecter is presented to the bolt, the plane of the connecter body being held approximately parallel with the axis of the bolt, it can be slipped on the bolt by merely pushing it forward until the spring arms 5 and 6 have straddled and slid past the bolt on opposite sides thereof. The bolt is thus received in the aperture 2 of the connecter. The connecter is then turned so its plane is perpendicular to the axis of the bolt, and the nut is screwed down to clamp the spring prongs 7 and 8 between the work and the nut. The prongs act as a lock washer, preventing the nut from unscrewing and serving to prevent any sidewise wiggling movement of the connecter.

The inner edges of the upwardly bent prongs 7 and downwardly bent prongs 8 are kept from catching on the bolt while the connecter is being slipped thereon by bending the prongs so their inner faces are parallel with the sides of the bolt, as shown in Fig. 4. The prongs may be formed as shown in Fig. 1 at 9 and 10, that is, bent cornerwise, or they may be bent straight across, as at 9*a* and 10*a*.

This device makes it almost impossible for a fast working assembler to produce a defective joint, because the curved arms 5, 6 must be pushed completely past the bolt or else the connecter will not remain in place. Proper positioning of the connecter on the bolt is thereby assured. The nut can be then rapidly run into place with a quick running nut-tightening tool in the usual way, producing a mechanically strong and electrically efficient joint.

In the foregoing disclosure the connecter has been shown and described in its preferred application. It may also be used in a somewhat modified manner, as follows:

It may be assembled on the bolt in the manner of the ordinary closed connecter, by removing the nut and sliding the connecter down over the end of the bolt. In this case the connecter is made normally flat, that is to say, the bends by which arms 5 and 6 are offset from each other, as in Figs. 2 and 3, are omitted. The terminal may be removed from the bolt without removing the nut, by simply giving the connecter a twisting movement about its longitudinal axis. The ends of arms 5 and 6 are thus sprung apart sufficiently to slip past the sides of the bolt when the connecter is pulled away, as indicated in Fig. 8.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

A connecter comprising in one piece a shank and two annular spring arms whose inner ends are in one plane, their outer ends being normally bent with their planes spaced apart a distance substantially equal to the diameter of the bolt opening defined by said arms, the ends of the arms being positioned to substantially abut when the arms are sprung into the same plane, said arms having biting prongs formed at their ends.

In testimony whereof, I affix my signature.

RICHARD T. HOSKING.