

Aug. 8, 1933.

R. T. HOSKING

1,921,823

ELECTRICAL CONNECTER

Filed Oct. 25, 1929

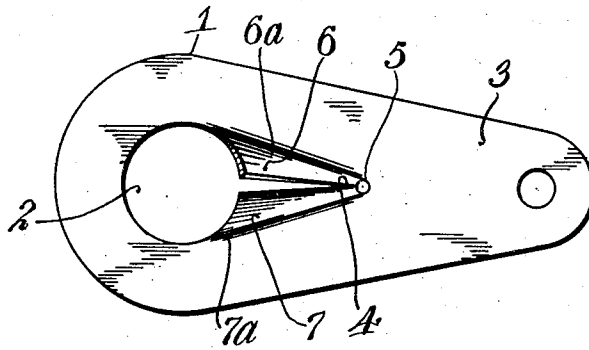


Fig. 1.

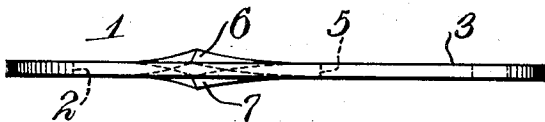


Fig. 2.

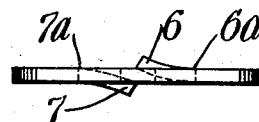


Fig. 3.

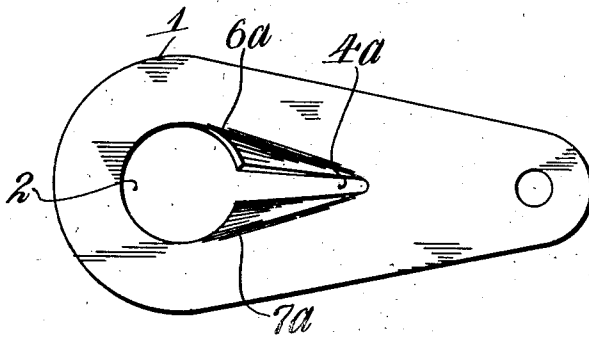


Fig. 4.

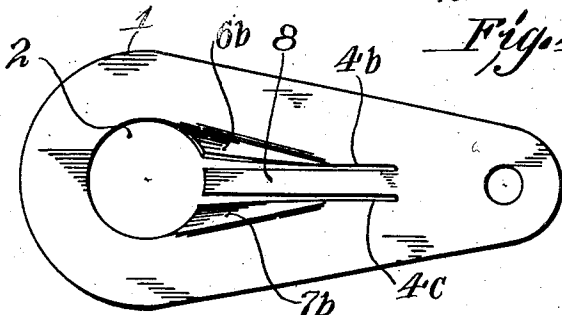


Fig. 5.

INVENTOR
RICHARD T. HOSKING
BY *George B. Wilcox*
ATTORNEY

UNITED STATES PATENT OFFICE

1,921,823

ELECTRICAL CONNECTER

Richard T. Hosking, Wilmette, Ill., assignor, by
mesne assignments, to Shakeproof Lock
Washer Company, Incorporated, Chicago, Ill.,
a Corporation of Delaware

Application October 25, 1929. Serial No. 402,517

6 Claims. (Cl. 173-269)

This invention relates to improvements in electrical connectors of the general type shown in Patent 1,697,954, issued to J. M. Gribbie, January 8, 1929. Such connectors are characterized by being made of resilient material and having a shank, an end of which is formed with an aperture and is provided with teeth. Each tooth is warped to present corners to adjacent surfaces for improving electrical contact and preventing accidental loosening of a binding screw or nut, either by rotation of the nut itself or by forces applied to the shank tending to wiggle it from side to side. Such forces are frequently brought into play by handling the electric wires which in practice are usually fixed to the end of the shank.

The present invention performs in general the same functions as the device above described, but attains the results by different means, and with a somewhat different locking effect, in that here the principle of a spring-actuated biting tooth is used, where the biting action is produced solely by frictional engagement of the warped spring teeth with the work, whereas the teeth of the device above referred to lock the work by tending to roll about their axes.

My improvement, therefore, adapts the well-known scraping-tooth action to the terminal. The inventive novelty is found in the novel shape and location of the biting teeth.

The objects are, to attain simplicity of construction, low cost of manufacture, and a degree of biting effect that has not heretofore been attained in lock washers and the like that operate on the spring scraping-tooth principle. The object is attained by a novel tooth structure that imparts relatively great stiffness to the spring-tooth edges because of the exceptionally great length of root or base given to each tooth by utilizing a considerable part of the length of the shank for the tooth structure.

With the foregoing objects in view, my invention comprises the devices described and claimed and the equivalents thereof.

In the drawing Figs. 1, 2 and 3 are respectively a plan view, a longitudinal edge view and an end view of a terminal embodying my invention.

Fig. 4 is a plan view of modified form in which the width of the slot is approximately equal to the thickness of the material.

Fig. 5 is a plan view of a modified form employing two slots.

The terminal comprises an elongated piece 1 of spring material formed with a bolt-receiving aperture 2 near an end thereof and having an

elongated shank 3. The shank is formed with a slot 4, which, as shown in Fig. 1, may be simply a cut, or, as illustrated in Fig. 4, it may be a slot 4a of width approximately equal to the thickness of the material. The latter is the preferred form because the two edges can not touch and stick together in the operation of the device. The slot extends along the longitudinal center line of the shank from the aperture 2 a distance substantially equal to the diameter of the aperture, and terminates in a smaller hole 5, so as to permit the teeth to be formed and operated without binding, or cracking the material at the end of the slot.

Two triangular portions 6, 7 of the shank are thus defined by the intersecting edges of the slot 4 and bolt-receiving aperture 2. These portions 6, 7 are formed by bending or swaging so as to project oppositely beyond the faces of the material and to present two biting teeth, one above and one below the main part or body of the connector. The bases of the teeth, 6a, 7a, extend from the smaller hole 5 to the edge of the aperture 2 along lines that are substantially tangent to the aperture.

In the service usually required of electrical connectors the device above described is applied to the work in the known manner, described in the patent above referred to. Its locking effectiveness is greatly improved over the scraping-tooth lock washers, adverted to, because of the great strength imparted to the teeth by the long bases 6a, 7a.

With this device a sufficient locking effect is produced for all practical purposes and intimate electrical contact between the work and the connector is established and is maintained even though the nut is not screwed clear down tight upon the body of the connector. This last-mentioned advantage is attained because of the relatively large size of the teeth 6, 7, and that size is made possible by utilizing the material of the elongated shank 3 for the teeth, as herein shown, described and claimed.

In the modified form of Fig. 5 two slots, 4b and 4c, are shown spaced apart, leaving between them a tongue of metal 8. Here the teeth 6b and 7b are separated by the width of the two slots and the tongue, but are adapted to perform the same functions as the teeth 6a and 7a previously described.

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

1. A terminal comprising a piece of spring sheet metal having a bolt-receiving aperture near

- an end thereof, an elongated shank having a slot of width approximately equal to the thickness of the material and extending lengthwise the shank from the aperture a distance substantially equal to the diameter of the aperture, a hole in which said slot terminates, the two triangular portions of the shank defined by the intersecting edges of the slot and the marginal edge of the bolt-receiving aperture being offset and projecting beyond the opposite faces of the terminal, thereby presenting two biting teeth whose bases extend substantially lengthwise the shank from said hole to the edge of said bolt-receiving aperture in lines substantially tangent to the aperture, for the purposes set forth.
2. A terminal comprising a piece of spring material having a bolt-receiving aperture near an end thereof and an elongated shank having a slit therein extending lengthwise the shank, the two triangular portions of the shank defined by the intersecting edges of the slit and the margin of the bolt-receiving aperture projecting oppositely beyond the faces of the terminal presenting two biting teeth, the bases of said teeth extending tangentially from said hole to the end of the slit, for the purposes set forth.
3. A locking terminal having a bolt-receiving aperture and an elongated shank having a slit extending lengthwise thereof terminating at one end in said aperture, the corners defined by said slit and said aperture being deflected sidewise and projecting respectively above and below the plane of the terminal, presenting biting teeth whose bases extend substantially lengthwise the shank.
4. A terminal comprising a piece of spring metal having a bolt-receiving aperture near an end thereof and an elongated shank having a slit extending from the aperture lengthwise of the shank, said aperture and slit defining between them two triangular portions of the shank having their free ends offset oppositely beyond the faces of the terminal and presenting two pointed biting teeth with elongated bases on the shank portion of the terminal.
5. A terminal comprising a piece of spring material, a bolt-receiving aperture near an end thereof and an elongated shank with a slot that extends from the aperture lengthwise of the shank, the two portions of the shank that are between the edges of the slot and the marginal edges of the aperture being flanged along lines substantially tangent to the aperture and offset oppositely beyond the faces of the terminal, for the purposes set forth.
6. A terminal comprising a piece of spring material having a bolt-receiving aperture and an elongated shank, two slots in the shank spaced apart and extending from the aperture lengthwise of the shank, the two triangular portions of the shank defined by the intersecting edges of the respective slots and the marginal edges of the bolt-receiving aperture being offset and projecting oppositely beyond the faces of terminal.

RICHARD T. HOSKING.

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