Jan. 16, 1934. J. R. KEARNEY 1,943,677

ELECTRICAL CONNECTER

Filed Aug. 18, 1930

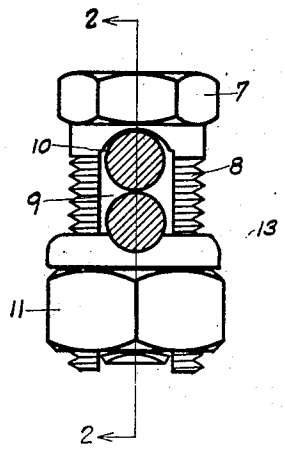


FIG. 1

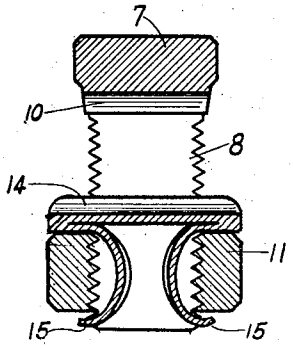


FIG. 2

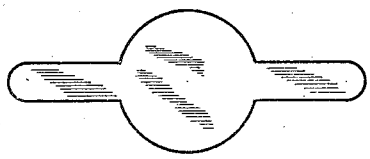


FIG. 4

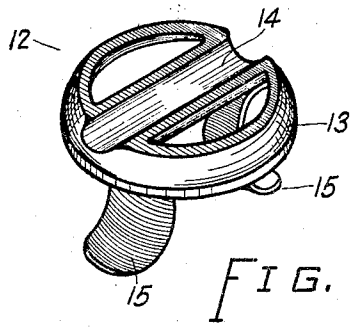


FIG. 3

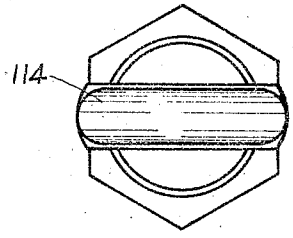


FIG. 5



FIG. 6

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ELECTRICAL CONNECTER

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2 Claims. (Cl. 173—263)

This invention relates to improvements in electrical connecters, and more particularly to certain improvements upon the type of connecter shown and described in Letters Patent No. 1,677,783, issued to James R. Kearney, July 17, 1928.

An object of this invention is to provide a device of the class noted which possesses certain advantages in use and manufacture, as compared to kindred devices now afforded to the trade.

A further object is to provide an electrical connecter which consists of a minimum number of detachably related parts, and of such construction that one of the wire engaging elements may be semi-permanently associated with a clamping nut, whereby to minimize the number of separate parts to be cared for and manipulated in effecting a clamping connection between two or more wires, to be secured together by the device.

A further object consists in certain improvements in a spacer member preferably of stamped, sheet metal construction, and which serves to keep in predetermined distance relation the bolt legs or furcations of a connecter of split-bolt type, so that the furcations are prevented from bending inwardly to a degree sufficient to release a clamping nut employed therewith.

Further objects and advantages of the invention will appear from the ensuing description, considered in connection with the accompanying drawing of certain presently preferred embodiments, and in which:

Fig. 1 is a side elevation of a device constructed in accordance with the present invention, as employed for connecting a pair of laterally adjacent conductors; Fig. 2 is a section along line 2—2 of Fig. 1; Fig. 3 is an elevation in perspective of a spacer member; Fig. 4 is a plan view of a metal punching suitable for bending to form a spacer member, such as appears in Fig. 3; Fig. 5 is a plan view of a modified form of spacer member, shown in connection with a clamping nut, and Fig. 6 is a plan view of a metal punching suitable for bending to form a spacer member of the modified form appearing in Fig. 5.

Referring now by characters of reference to the drawing, 7 indicates a bolt head which may be of hexagonal form, and from which extends a threaded bolt shank or member 8, provided with a longitudinally disposed slot 9, this slot preferably extending substantially the full length of the shank portion of the bolt, and terminating in a concave wire seat 10, shown as extending transversely of the inside surface of the head 7. At 11 is shown a nut which may be of hexagonal variety, interiorly threaded for engagement with the exterior surface of the shank 8. As thus far described, the present connecter may be constructed substantially the same as the corresponding parts appearing in the Kearney patent, referred to above.

The spacer member, formed according to present preference, is indicated generally at 12, and includes an annular rim 13, preferably formed of exteriorly convex section. Extending diametrally of the rim 12 is a wire seat 14. As will appear from Fig. 4, the spacer 12 is preferably formed of a single element, preferably a punching of sheet metal. It will further appear from Fig. 3 that the diametrally formed portion, constituting a wire seat in the finished device, is extended at each end and beyond the rim, into legs 15. Upon forming the spacer 12, the legs 15 are initially doubled back over the diametral portion 14 for a short distance and then curved throughout their remaining length, away from the body and rim of the spacer, as will best appear in Fig. 2, from which it is seen that the legs are by preference curved substantially throughout their effective length. The legs are also, by preference, curved to a slight degree transversely, (Fig. 3), thus providing a relatively rigid structure. The transverse curvature of the legs serves substantially to reinforce or stiffen these members after the manner of corrugations provided in sheet metal members of a number of varieties. The curvature of the legs 15 over their length, accordingly increases the effective surface presented at the lateral edge of the legs, for a purpose hereinafter appearing.

In the assembly, as will appear from Fig. 1, the rim portion 13 of the spacer 12 is disposed nearest the head portion of the split bolt, with the legs 15 extending by preference within and through the nut 11, and with the outer or terminal portions swedged oppositely to each other and into position to overlie the outer face of the nut, so that the nut and spacer together become a unitary assembly applicable to the split bolt by a single operation and with ease by one hand of the operator or lineman.

As will appear from the drawing, the transverse dimension of each of the curved legs 15 is substantially equal to the width of the longitudinal slot 9 in the bolt. The spacer thus fits snugly in the slot, effectively preventing any inwardly bending movement of the bolt legs, and

still permitting the spacer to move freely along the slot of the bolt, as the nut is taken up.

The application and use of the device described will be apparent from the preceding description of parts, but may be briefly reviewed for sake of completeness. Assuming that one of the wires shown in section in Fig. 1, is a terminal or main line wire, and it is desired electrically to connect the other wire thereto, the nut and spacer assembly are removed from the split bolt, so that the bolt presents on open ended slot adapted to receive the main line wire, with the end of the tap wire disposed adjacent thereto. After the two wires are thus seated within the split bolt, the nut and spacer assembly is threaded up on the bolt with the rim portion 13 and the wire seat 14 disposed nearest the wires and head portion of the bolt. The nut 11 is then taken up as far as conditions will permit, clamping the two wires tightly together.

It will appear obvious that the device presently described may be employed not merely as a floating connection for tapping main line wires, but may be used as a binding post, in which case the bolt would be provided with a threaded stud (not shown) on the opposite side of the head. In any event, if it is desired to connect in spaced relation a pair or any desired number of different wires, a split bolt may be provided, of a length suitable to the number of wires to be connected, and a plurality of nut and spacer assemblies may be disposed in superposed relation on the shank of the bolt, with the several wires disposed in intervening relation.

In Fig. 5 I have shown a modified form of nut and spacer assembly, in which construction the split bolt, the nut, the curved legs 15 and the diametral wire seat remain substantially the same as in the construction described, but in which, instead of providing an annular rim, such as appears in Fig. 3, the inner face of the nut serves to engage merely the pair of endwise extensions of the diametral portion 114. The modification possesses the advantage of requiring less metal in its construction, since it omits the annular portion of the principal showing. However, the area of electrical and reinforcing contact between the spacer and nut is substantially less in the modified form, besides failing to offer the structural advantage of externally embracing or enclosing the split bolt as accomplished by the annular rim of the principal showing.

It will appear from the foregoing description that the illustrated embodiments of the invention are admirably adapted for use as electrical connecters for telephone wire taps, electric power taps, switchboard use, fixed or floating connecters, etc., as well as for establishing either temporary or permanent connections of a great variety.

The foregoing description has been directed in great detail to only a pair of the numerous possible embodiments of the invention, and is for this reason to be understood solely in an illustrative, and not in a limiting sense. Obviously, a number of changes may be made in the arrangement and design of parts without departing from the spirit and full intended scope of the invention as defined by the appended claims.

I claim as my invention:

1. In a wire connecter of split-bolt type including a bolt and nut, a washer member of unitary sheet metal construction comprising an annular rim having a longitudinally grooved rib extending diametrally thereof, the outer peripheral margin of said rim being turned downwardly to provide an annular flange or skirt, legs connected to said skirt near opposite ends of said rib, each of said legs extending inwardly, for a part of its length, along said rib, the lower surface of such leg part lying substantially flush with the lower edge of said skirt, the remaining portion of each leg curving outwardly away from said rim.

2. In a wire connecter of split-bolt type, including a nut and bolt, a washer member formed from a circular, sheet metal blank having a pair of aligned, radial projections at opposite sides thereof, said washer member comprising an annular rim of externally convex, arcuate section having a diametral, longitudinally grooved, wire-receiving rib, said rim and rib being formed from the circular portion of said blank; legs connected to the rim near the opposite ends of the rib, a portion of each leg projecting inwardly from its connected end, along the rib, such portion being disposed entirely within said rim; the remaining portion of each leg curving outwardly away from said rim, said leg portions being formed from the radially projecting portions of said blank.

JAMES R. KEARNEY.