Aug. 30, 1932. W. R. SOMMER 1,874,825

WIRE CONNECTER

Filed April 5, 1929

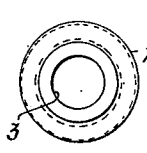


Fig. 3.

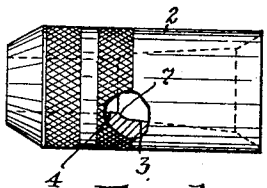


Fig. 1.

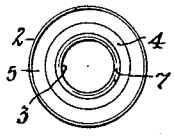


Fig. 2.

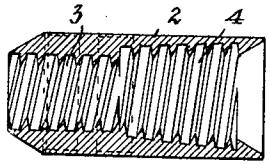


Fig. 4.

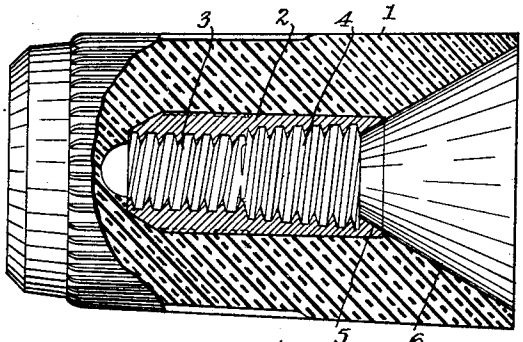


Fig. 5.

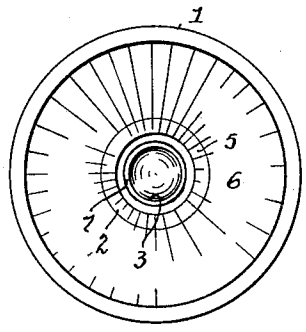


Fig. 6.

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Patented Aug. 30, 1932 1,874,825

UNITED STATES PATENT OFFICE

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WIRE CONNECTER

Application filed April 5, 1929. Serial No. 352,656.

This invention relates to wire connecters, of the type used especially in electrical insulations, in which the ends of the wires are screwed into the connecter which for that purpose has a passage threaded to form a cutter. The invention is an improvement on the device of Patent No. 1,635,293 in that whereas the latter device must be made with bores of different diameters to receive, respectively, a gang of two, three or four wires, the invention makes it possible for the same device to receive two, three or four wires, by which I mean obtain a perfectly effectual grip, and of course the good electrical contact of the wires with each other, without severing or otherwise disrupting any wire, even if one be a stranded wire.

According to this invention the improved wire connecting device comprises an insulating body having a socket or bore therein opening through one end in the form of an inwardly tapering receiving mouth, and a thread-cutting wire-holding die member embedded in the body and having a bore whose walls are provided with cutting threads, the bore of said member comprising two distinct portions of different diameters, each having said threads and the portion of larger diameter being located between and in communication with the said mouth of the insulating body and the portion of small diameter, whereby said portions are adapted to threadably receive and form screw-thread holds on wire gangs of different diameters.

The drawing shows in

Figs. 1, 2 and 3 a side elevation (partly broken away) and right and left end elevations, respectively, of the improved device before its bores are tapped to form thread-cutting surfaces;

Fig. 4 a longitudinal section thereof after tapping;

Fig. 5 the device encased in an insulating body, said device and body appearing in longitudinal section; and

Fig. 6 a right hand end elevation of what is shown in Fig. 5.

Describing in detail that form of the invention shown in the drawing by way of example, 1 is a body of insulation which encases and rigidly holds the thread-cutting member 2, which in the example is a metal sleeve.

The member 2 is bored through axially, for a part of its length so that it has a main and preferably cylindrical bore 3 and for the remainder thereof so that it has a tapering bore 4 which affords the entrance for the wires to the member and whose smaller end adjoins and communicates with bore 3. The larger end of bore 4 may be and preferably is counter-bored in a bevel or conically, as at 5 and this beveled surface forms a continuation of the conical passage 6 formed in the body 1 and leading to the larger end of the bore 4. The surfaces of both bores 3 and 4 are screwed-threaded and form thread-cutting surfaces or dies of the same hand. Each thread or cutting element, is preferably V-shaped and formed with its volutes spaced at their bases (Figs. 4 and 5), so that it is actually a cutting element, as in my Patent No. 1,736,379, and not a mere deforming element. In accordance with the preferred practice in forming the bore 4 that end thereof which adjoins the bore 3 is of somewhat greater diameter than the diameter of bore 3 and their surfaces merge in a shoulder 7 which tapers toward the latter bore. The cutting of the thread in each bore is effected so that the resulting thread reaches substantially to the other bore, so that this tapering shoulder 7 will remain in the finished device. As will appear, while it is preferable that the end of the bore 4 adjoining the bore 3 be somewhat larger in diameter than the latter, an important matter is that the two bores shall merge together in a taper converging toward the bore 3.

The single device, so formed, is adapted to admit and effectually grip and connect two, three or four wires (or even one wire having its end rebent and thus the equivalent of two), assuming of course that the gage of each wire where three or four are introduced is the same as that of each of the two wires. The admission and holding of a gang of two wires is effected by screwing them into the threaded bore 3. When a gang of three or four wires are to be connected by the device they are screwed into the threaded bore 4 and the

screwing-in operation continued until more or less of the tip of such gang becomes screwed also into the bore 3. In this operation they begin to be gripped by the thread of bore 4 as soon as their combined diameter reaches the corresponding diameter of the taper of bore 4, and later they are additionally gripped at the tip of the gang by the thread of bore 3, this latter being permitted by the taper at 7 and accompanied by a deeper thread-cutting in the bore 3 of the (mere tips of the) wires than in the case where only two wires are screwed into bore 3, as described. So far as the bore 3 alone is concerned these four wires are not of course held as firmly as two wires alone in bore 3, driven in to greater extent, would be, but the supplemental grip on the four wires by the thread in bore 4 makes the hold on the four wires substantially equal to that effected on the two, and in any event it is sufficient so that no wire can be pulled out. This grip is moreover invariably attainable by not exerting screwing-in force so as to distort or disrupt any wire or unduly twist the same.

If the two portions of the bore which are formed with wire-cutting threads were portions of a single cone then if the pitch of the cone is steep enough to admit wire-gangs of different diameters the tapping of threads therein will only affect the mere tips of the wires, with consequently inferior gripping thereof by the device; and if the pitch of such cone is reduced so that there will be a tapping of threads in a wire-gang therein introduced for an extent well back of its free end then such cone, in order to admit wire-gangs of different diameters must be very long, i. e., several times longer than is permissible of these devices in practice. Wherefore, instead of said portions of the bore being portions of a single cone, I as explained form the portion 4 of larger diameter adjoining the portion 3 than the latter, involving production of the shoulder 7, which as indicated is preferably beveled; each portion may then very closely approach the cylindrical so that when a wire-gang, whatever its diameter, is entered into the device it may be screwed in and thereupon and thereby gripped not simply at its tip but for a distance more or less back of its tip, without moreover increasing the length of the device beyond that practically permissible.

Having thus fully described my invention, what I claim is:

1. A wire connecting device comprising an insulating body having a socket opening through one end and in such end formed with an inwardly tapering mouth, and a metal thread cutting member embedded in the socket inward of the mouth and having a bore opening into the inner end of said mouth said bore having portions of different diameters, each provided with die threads for cutting wires screwed into the bores and the portion of the bore of larger diameter being interposed between said tapering mouth and the portion of smaller diameter.

2. A wire connecting device comprising an insulating body having a socket opening through one end and in such end formed with an inwardly tapering mouth, and a metal thread cutting member embedded in the socket inward of the mouth and having a bore opening into the inner end of said mouth, said bore having portions of different diameters that are in communication and form at their juncture an internal shoulder, each of said portions having individual die threads for cutting wires screwed into the bores and the portion of the bore of larger diameter being interposed between said tapering mouth and the portion of smaller diameter.

In testimony whereof I affix my signature.

WILLIAM R. SOMMER.