May 11, 1965 N. M. SACKS ETAL 3,183,476

CONNECTOR

Filed Aug. 26, 1960

FIG. 1

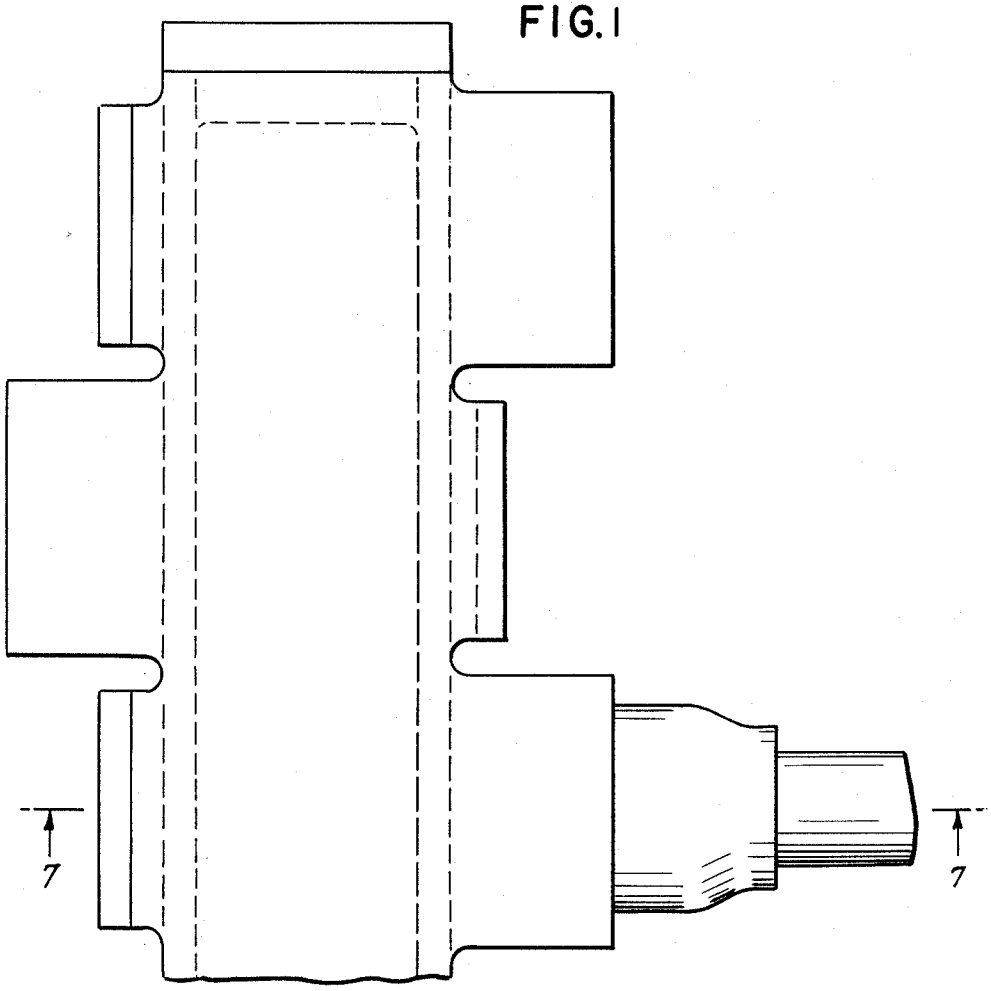
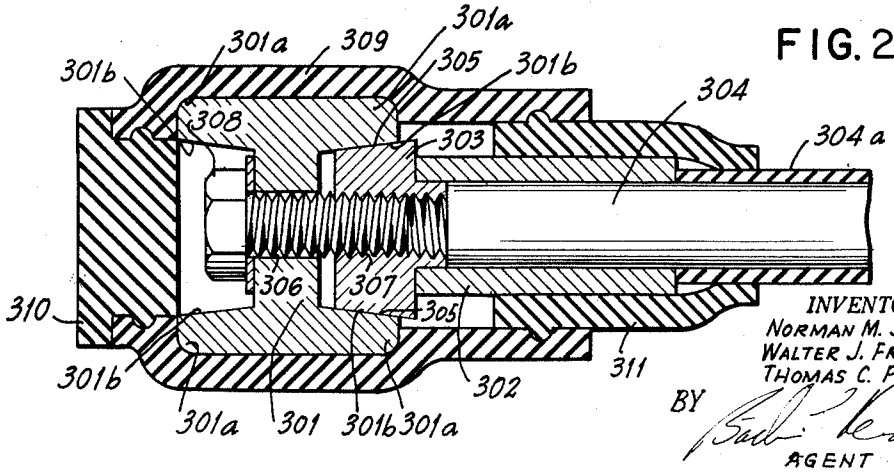


FIG. 2



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CONNECTOR

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3 Claims. (Cl. 339—242)

This invention relates to connectors, and especially to insulated electrical connectors suitable for use in underground electrical distribution systems. In underground electrical secondary distribution systems, connections to the cables must be completely insulated in a watertight manner and be resistant to the deleterious influences of oil, sewage, gases, etc. which may be found in underground manholes and vaults. A connector admirably suited to this purpose is illustrated in U.S. Patent No. 2,576,537, granted to Julian Rogoff on November 27, 1951.

In the Rogoff connector the conductors are inserted into bores in a bus bar and secured by pressure screws. This produces an excellent initial connection. However, due to the effects of temperature cycles and metal creepage, the contact pressure provided by the screw may lessen and the contact resistance may increase.

It is, therefore, an object of this invention to provide a resilient connection means which will maintain a uniform and adequate contact pressure on the inserted conductor over a long period of time and adverse temperature cycling.

A feature of this invention is a connector having a conductor receiving channel adapted to resiliently engage a conductor or termination inserted therein.

This and other objects and features of this invention will become more apparent by reference to the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a top view of a connector illustrating preferred a embodiment of this invention; and

FIG. 2 is a front view in section of the connector of FIG. 1 taken along line 7—7 of FIG. 1.

FIGS. 1 and 2 illustrate an electrical bus connector in accordance with this invention. The connector includes a bus bar **301** having a substantially I cross-section which may be seen to further include resilient flanges **301***a*. The inner surfaces **301***b* are slightly inclined towards each other to provide a continuous V socket. A tubular connector lug **302** having an end plug **303** secured, as by brazing, to one end, has a conductor **304** provided with insulation **304***a* secured to its other end, as by crimping. The plug **303** is provided with a pair of angled flats **305**. The angle of the flats **305** is identical to that of the inner flange surfaces **301***b*. A hole **306** is provided in the web of bus bar **301**, and a threaded hole **307** is provided in plug **303** to receive a draw-bolt **308**. A flexible dielectric cover **309**, dielectric plugs **310**, and supplemental dielectric socket tubes **311** may be provided to fully seal and electrically insulate the connector against adjoining conductors and environmental conditions. Thus dielectric plugs **310** and socket tubes **311** are formed to tightly engage as by snap fitting the dielectric cover **309** to form a watertight seal therewith. Further, in the absence of a conductor in any draw-bolt position, a dielectric plug (not shown), similar to plug **310**, may be inserted in place of the hollow socket tube **311** to maintain the seal integrity of the connector cover.

In use, plug **303** and associated conductor **304** may be engaged with bus bar **301**; and may be secured thereto by bolt **308**. As bolt **308** is tightened, pulling the plug in towards the bus bar, the flat surfaces **305** wipe the surfaces **301***b* of the flange, providing very clean contact surfaces. The plug **303** also deforms the flanges by its wedge action. Again, although the relative dimensions of the assembly may change, and the bolt **308** may tend to relax its tension on the plug, the resilient flanges **301***a* will be biased against the plug, maintaining the desired contact pressure.

The invention has thus been described but it is desired to be understood that it is not confined to the particular forms or usages shown and described. The same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of the invention, and therefore, the right is broadly claimed to employ all equivalent instrumentalities coming within the scope of the appendant claims, and by means of which objects of this invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to obtain these objects and accomplish these results.

We claim:

1. An electrical bus connector for interconnecting a plurality of wire conductors through a common conductive body, comprising:

an elongate conductive body member including a longitudinally extending termination-receiving channel portion having a base and a pair of oppositely disposed, resiliently spreadable contact surfaces;

a plurality of termination securing bores disposed in parallel side-by-side relationship on said base, said bores being positioned in a plane substantially intermediate said contact surfaces;

a plurality of conductor termination members each characterized by a longitudinal dimension not greater than one half the distance between adjacent securing bores;

said termination members each having a first end portion including a pair of oppositely facing side surfaces for insertion into said channel along the axis of one of said bores, and a second end portion having means for electrically and mechanically securing a wire conductor thereto;

a plurality of tensile force applying means separately extending through said securing bores and engaging both said termination members and said body member, operable to advance said first end portion of each of said termination members into said channel;

said side surfaces on said first end portion being disposed in tapered wedge relationship for engaging and spreading said resiliently spreadable contact surfaces to maintain constant contact pressure therewith upon advancement of said end portion into said channel under control of said tensile force applying means.

2. An electrical connector in accordance with claim 1 wherein each said termination member first end portion includes a threaded bore adapted to be aligned with one of said securing bores, and each said tensile force applying means includes a threaded rod adapted to engage said threaded bore and an annular shoulder of diameter greater than said securing bore for engaging said body member circumjacent said bore.

3. The electrical connector of claim 1 further including a plurality of resilient biasing means each opposing engagement of one of said securing means with said body member to resiliently urge the termination member tapered surfaces into contact with the body member contact surfaces.

References Cited by the Examiner

UNITED STATES PATENTS

1,172,078 2/16 Vaughn et al. ---------- 238—14.4

(Other references on following page)

3

UNITED STATES PATENTS

2,087,384	7/37	Lee	339—270
2,499,985	3/50	Cafiero	339—272
2,576,537	11/51	Rogoff	174—145
2,635,132	4/53	Rogoff	174—87
2,709,795	5/55	Williams	339—270
2,764,749	9/56	Aberle	339—270
2,771,591	11/56	Vordtriede	339—265
2,779,930	1/57	Archer	339—270

4

2,952,830	9/60	Sperzel et al.	339—94
2,984,816	5/61	Wallace	339—94
3,002,173	9/61	Allen	339—270

FOREIGN PATENTS

713,146	11/41	Germany.
1,014,190	8/57	Germany.

JOSEPH D. SEERS, *Primary Examiner.*