

[72] Inventor **Alexander R. Brishka**
Mamaroneck, N.Y.
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[73] Assignee **Sealectro Corporation**
Mamaroneck, N.Y.

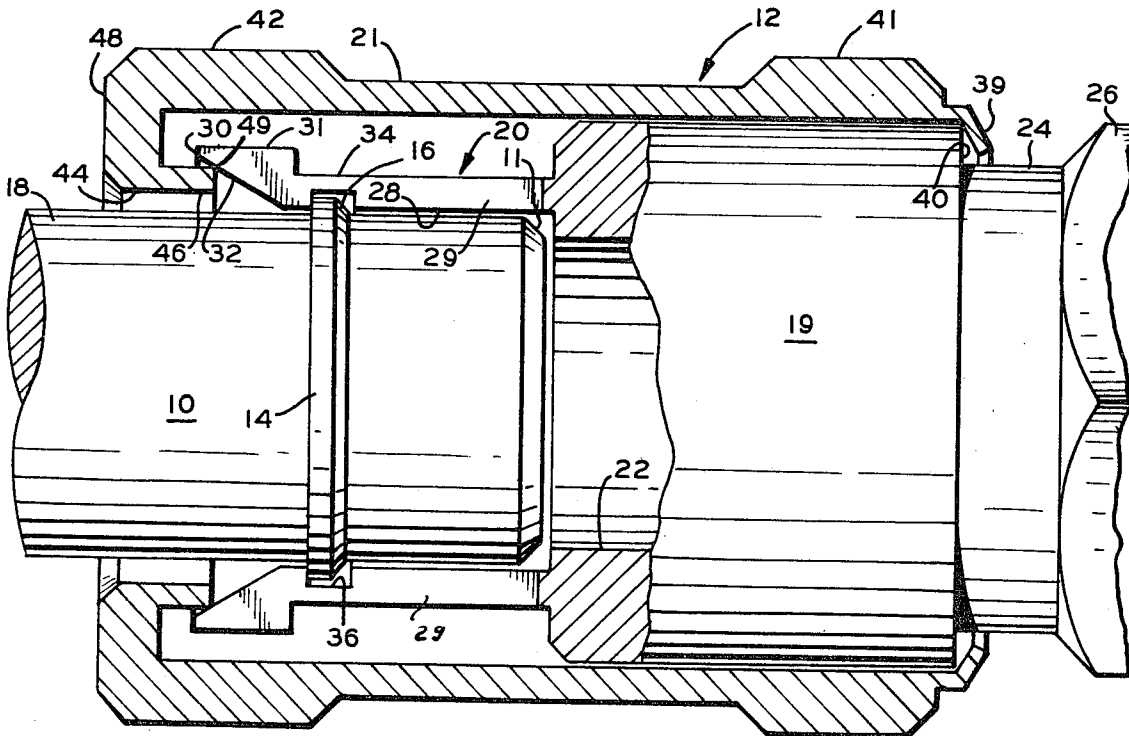
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Primary Examiner—Marvin A. Champion
Assistant Examiner—Joseph H. McGlynn
Attorney—John P. Chandler

[54] **COAXIAL CONNECTOR WITH AXIAL INTERLOCK**
8 Claims, 4 Drawing Figs.

[52] U.S. Cl..... 339/74,
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[51] Int. Cl..... **H01r 13/62**
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24/110, 211, 230; 287/119; 285/315, 316, 319,
321

ABSTRACT: An electrical connector with a male member, a female member with a bore, and slots forming spring jaws in said female member to form an electrical connection between the members, and means are provided to lock the mated parts against axial displacement. The outer end of the bore is flared diagonally outwardly and a tubular member slidable on the female member contacts the diagonally flared outer end of the bore and cams the jaws outwardly to release the parts.



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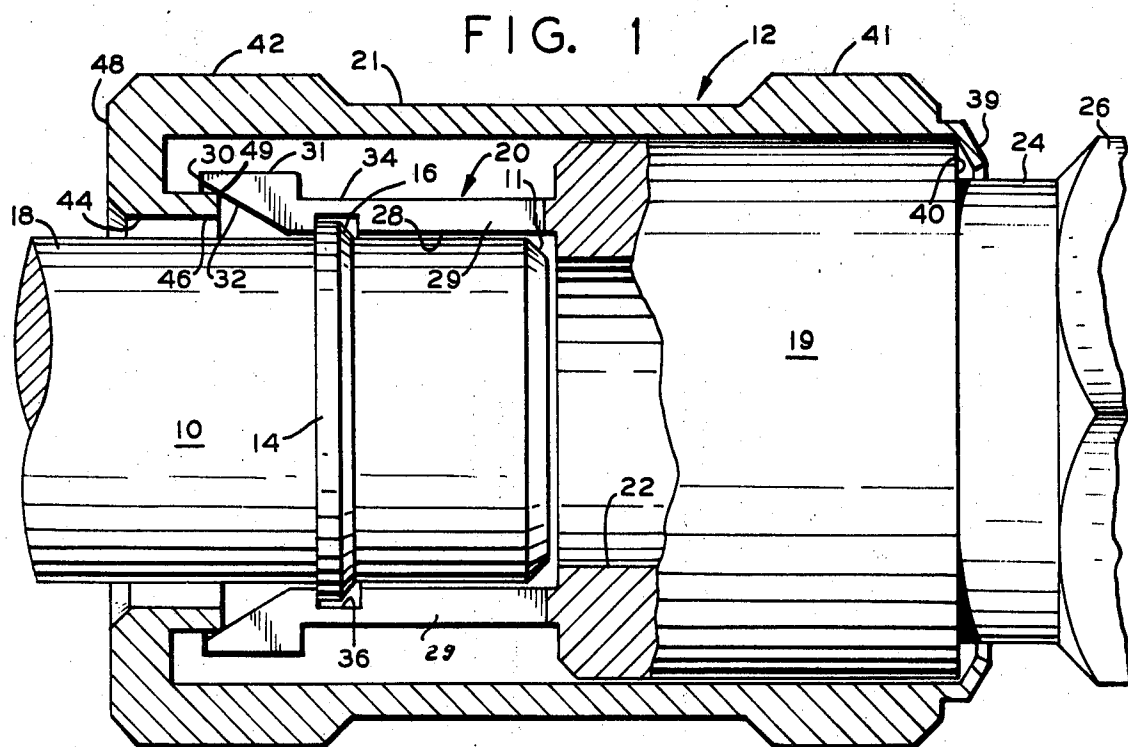
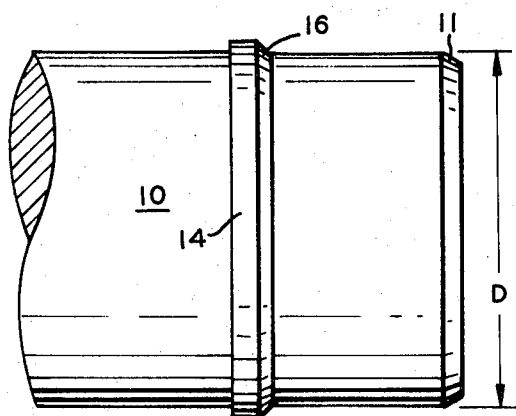
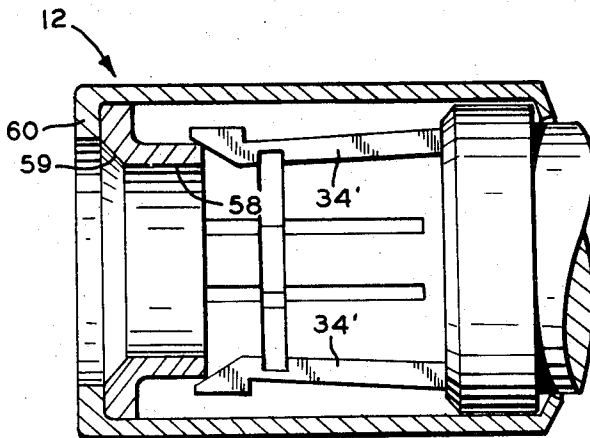
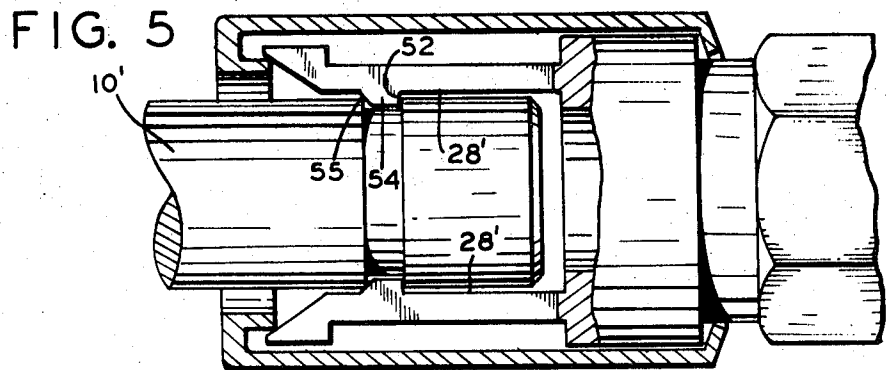
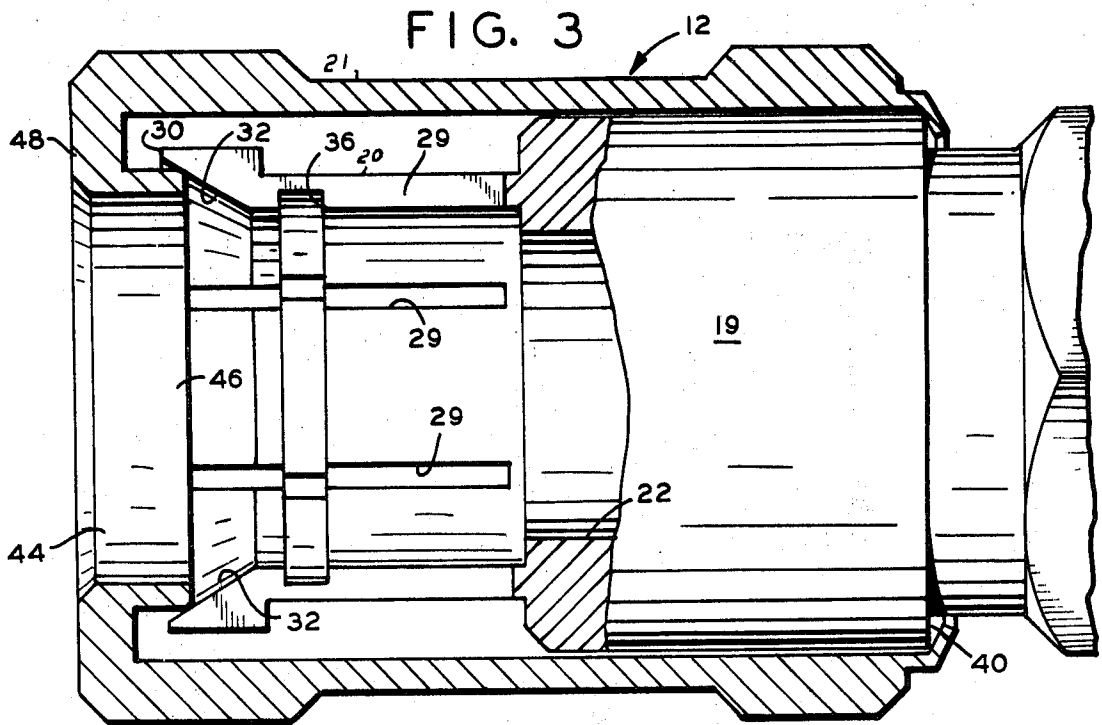


FIG. 2



INVENTOR.
ALEXANDER R. BRISHKA
BY:
JOHN P. CHANDLER
HIS ATTORNEY.



INVENTOR.
ALEXANDER R. BRISHKA
BY: JOHN P. CHANDLER
HIS ATTORNEY.

COAXIAL CONNECTOR WITH AXIAL INTERLOCK

This invention relates to coaxial and multiconductor cylindrical connectors. The principal object of the invention is to provide a pair of connectors with quick connect and disconnect features with a positive interlock to retain the parts in locked relation. The mating and unmating of the connectors is accomplished by relative movement of the parts in a strictly axial line and requires no rotational movement between the parts whatsoever. This positive locking feature prevents accidental unmating as a result of applying tension to the connector cables.

The female component of the connector is a sleeve with longitudinal slots forming jaws which can be inwardly set to effect a good electrical connection on the male connectors. An annular rib in one of the members is received in an annular slot in the other and a wall at one end of the rib forms the interlock with the rib. Sliding a novel tubular member enclosing the slotted sleeve moves the jaws outwardly a sufficient distance to permit unmating of the parts

In the drawings:

FIG. 1 is an exploded view showing the male and female connectors of the present invention in fully mated condition;

FIG. 2 is a side elevation of the male connector;

FIG. 3 shows the parts in fully mated relation;

FIG. 4 shows a modification in the construction of the slidable sleeve wherein it is formed in two pieces; and

FIG. 5 shows a modification in the locking feature.

The male connector 10 has a chamfered forward end 11 to facilitate entry into the female connector 12. The male connector has a constant outer diameter D extending rearwardly from the chamfer except that about midway between its ends there is formed a short section 14 of increased diameter with an annular chamfer 16 at the forward end of the larger diameter section. The rear end 18 may be formed in any desired fashion to accept a cable terminal or panel.

The female connector 12 of the pair consists essentially of two parts, an inner member 19 having a forward tubular section 20, and a slidable sleeve 21. The inner member 19 has an axial bore 22 and a reduced diameter section 24 leading to a rear end 26 with means to accept the cable. The forward tubular section 20 has an axial bore 28 of a diameter to readily receive the male connector 10 and it has a plurality of longitudinal slots 29 which extend from the forward end 30 of the inner member 19 almost the full length of tubular section 20 and this forward end has an external section 31 of increased diameter. The bore has a chamfered or outwardly flared forward end 32. The slots 29 form jaws 34 which may be set inwardly by bending the same so that the inner diameter of the bore 28 at its outer end is less than the diameter D of the male connector 10. This bore also has an inner annular groove 36 closer to its outer end which receives the short enlarged diameter section 14 of the male connector. The jaws 34 are forced outwardly by the chamfer 16 to admit the larger diameter section 14 into the annular groove. It will be seen that once larger section 14 snaps into the groove the shoulder 38 prevents withdrawal.

The sleeve 21 has a rear annular flange 39 which is formed over and engages a shoulder 40 formed by the reduced diameter section 24. It also has a larger diameter section 41 at its rear end and a larger diameter section 42 at its forward end which has a central bore 44 of a diameter to freely admit enlarged portion 14 of the male connector. An interior tubular section 46 extends rearwardly of the front wall 48 of the

sleeve.

Once the enlarged section 14 of the male connector has been snapped into place in annular groove 36, it can be removed only by moving jaws 34 outwardly which is accomplished by moving the sleeve to the right when viewed, as in FIG. 1, so that when the annular corner section 49 formed at the inner end of internal tubular section 46 contacts the flared surfaces 32 at the outer ends of the jaws, the jaws are cammed outwardly to permit disassembly.

FIG. 4 shows a modification wherein the slidable tubular member 12' is formed in two pieces. The internal sleeve 58 is separately formed and has a chamfer 59 along its forward end. The forward end of the tubular member is also rolled or otherwise formed inwardly to provide a flange 60 limiting outward movement of the internal sleeve. This view also shows in somewhat exaggerated form how the jaws can be set inwardly to grip the male connector more firmly and improve the electrical conductivity of the connector assembly. Actually, the distance the jaws can be bent inwardly to accomplish this result can be very small.

In the modification of FIG. 5, the annular slot 52 is formed on the outer surface of the male member 10' and the rib 54 is formed in the inner face of the bore 28' of the sleeve 20. The rib may have a chamfer 55 at its forward end to facilitate entry of the male member. The other parts are identical with those shown in FIGS. 1 and 3.

I claim:

1. A connector formed with mating male and female members with means at their outer ends for connection with cable terminals, the female member having a bore and longitudinal slots extending from its inner end, the slots forming jaws, the inner faces of said bore and the outer face of the male member being of such proportions as to effect an electrical connection when the parts are mated, one of said faces having an annular slot and the other being provided with an annular rib received in said slot to lock the members against axial displacement, the outer end of said bore being flared diagonally outwardly and means for spreading the jaws outwardly to permit disengagement and comprising a tubular member slidable on and enclosing the female member and having at its forward end an internal sleeve which contacts the diagonally flared outer ends of the bore upon being moved longitudinally and cams the jaws outwardly.

2. The structure described in claim 1 wherein the jaws are set inwardly a sufficient distance to exert a constrictive action on the male member and improve the electrical conductivity of the connector.

3. The structure described in claim 1 wherein the internal sleeve is formed in the same piece with the tubular member.

4. The structure described in claim 1 wherein the internal sleeve is separately formed and the inner end of the tubular member is rolled inwardly to form a flange limiting outward movement of the internal sleeve.

5. The structure described in claim 1 wherein the annular slot is on the inner annular face of the bore and the rib is on the outer annular face of the male member.

6. The structure described in claim 5 wherein the rib has a chamfer on its outer end.

7. The structure described in claim 1 wherein the annular slot is on the outer face of the male member and the rib is on the inner annular face of the bore.

8. The structure described in claim 7 wherein the rib has a chamfer at its forward end.