

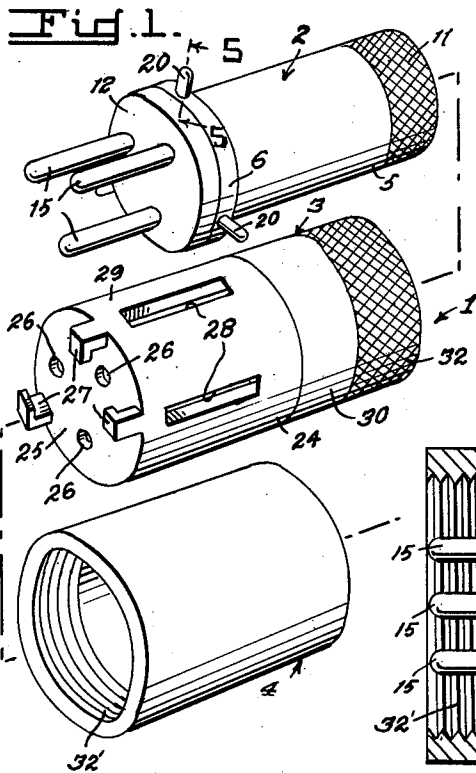
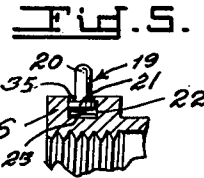
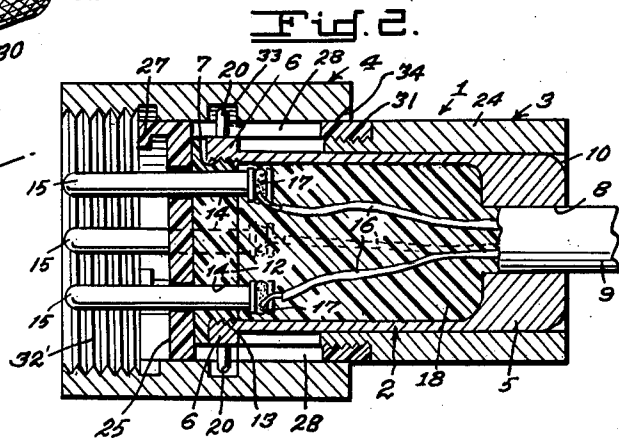
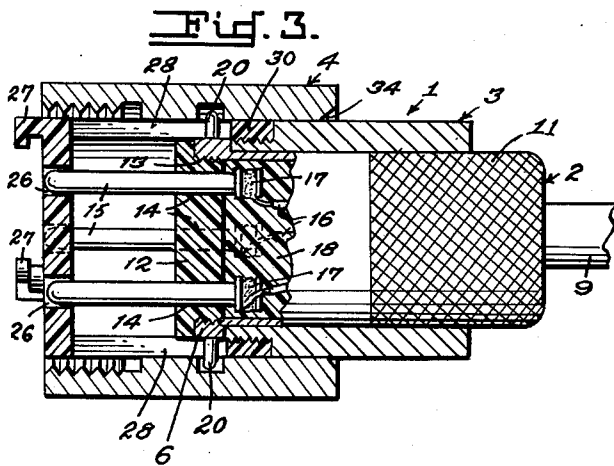
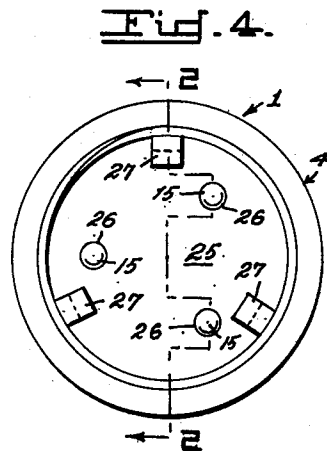
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3,124,404

ELECTRICAL MALE CONNECTOR

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ELECTRICAL MALE CONNECTOR

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3 Claims. (Cl. 339-34)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to a connector and more particularly to an electrical male connector with telescoping pins and built-in realignment.

Heretofore, the use of miniaturized connectors with small, easily bent pins, has been unsatisfactory and lacking in safety and reliability.

The mismating of the small, resilient type insert connectors has resulted in pins failing to enter their mating counterpart and puncturing of the insert.

Where weight and volume are not overriding criteria, sturdier connectors with stronger and more rigid pins could be used.

In rocketry, weight and volume must be kept to a minimum, and it is a principal object of this invention to provide a connector that permits the use of small pins without the attendant danger of bending.

It is another object to provide a connector that permits of ready inspection of its pins and which automatically realigns any bent pins found upon inspection.

A further object of the invention is to provide a connector in which the pins are inclosed during storage.

A still further object is to provide a connector that is inexpensive of manufacture and has a long lasting life.

The specific nature of the invention as well as other objects and advantages thereof, will clearly appear from a description of a preferred embodiment, as shown in the accompanying drawings in which:

FIG. 1 is an exploded perspective view of the device of the invention;

FIG. 2 is an axial sectional view taken along line 2-2 of FIG. 4 and showing the pins exposed;

FIG. 3 is a view similar to FIG. 2 showing the pins as covered for storage;

FIG. 4 is a front view of the device; and,

FIG. 5 is a sectional detail taken along line 5-5 of FIG. 1.

Referring more particularly to the drawings, reference character 1 designates generally the connector of the invention which is the male component of a connector. The female portion not being a part of this invention, is not shown, as the connector 1 may fit varied types of sockets, etc.

The connector 1 is composed primarily of three sections, the base housing assembly, indicated generally by 3, the central unit, indicated generally by 2, and the collar, indicated generally by 4.

The central unit 2 comprises a tubular member 5, open at its forward end. The forward end is provided with a peripheral flange 6 which is internally threaded as at 7. The rearward end of central unit 2 is pierced by a central bore 8 for introducing an electric cable 9. The outer surface of tubular member 5 is rounded as at 10 and knurled as at 11 for firm gripping by the user.

The forward open end of central unit 2 is closed by a wafer disc 12 which has a reduced, externally threaded portion 13 threaded onto the central unit. Wafer disc 12 is provided with a series of bores 14 to receive contact pins 15.

Leads 16 in cable 9 are soldered as at 17 to pins 15 and the tubular member 5 is filled with a potting compound 18.

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A series of spring loaded detents generally indicated by 19 are housed in flange 6 and, as shown in FIG. 5. Each of these detents consists of a pin 20 having a base 21 which is slidable in a recess 22 and is biased outwardly by a spring 23.

The recess 22 may be staked as at 35 to retain head 21 in recess 22.

The base housing 3 consists of a tubular member 24, closed at its forward end by an integral wall 25 and the wall 25 is provided with bores 26 for receiving pins 15 in assembled position.

Integral locking lugs 27 are provided on the forward end of wall 25.

A series of longitudinal slots 28 are provided in the outer wall of central unit 3 for allowing pins 20 to protrude there through.

The member 3 is divided into a forward section 29 which is screwed to the rearward section 30 by threads 31 for assembly purposes.

Member 3 is knurled as at 32 at its rearward portion for gripping by the user.

Sleeve 4 consists of an open ended tubular sleeve having an internally threaded portion 32' at its forward end for threadable engagement with a connector, not shown, that mates with member 1.

An annular groove 33 is provided in the inner wall of sleeve 4 to receive detents 20.

The rearward end of sleeve 4 is beveled as at 34 to compress pins 20 when assembling the unit.

In assembly, the central unit 2 is assembled by slipping cable 9 through bore 8. The contact pins 15 are inserted through wafer disc 12 and leads 16 are soldered to pins 15 as at 17. The tubular member 5 is then filled with the potting compound 18 and the disc 12 is screwed onto tubular member 5.

Base housing 3 is now assembled by placing the forward section 29 of unit 3 over the assembled tubular member 2 and wafer disc 12 until the detents 20 are snapped into slots 28 and the rearward section 30 is screwed onto forward section 29 over tubular member 5.

The collar 4 is now pushed over the central unit 3, detents 20 being compressed by beveled edge 34 and the sleeve is moved rearwardly until the detents 20 snap outwardly into annular groove 33. The assembly is now complete.

To couple the connector 1 to a female counterpart (not shown) the connector 1, being in its retracted position as in FIG. 3, is connected by locking lugs 27 to its counterpart and turned. Next the collar 4 is moved forward so that contact pins 15 enter sockets in the counterpart and the collar 4 is screwed onto the counterpart to make a rigid connection.

It will be apparent from the foregoing, that the connector of this invention affords its own protection against damage as well as bending of its contact pins by confining them internally during packaging, shipping, storage, testing and handling and protects them also during the mating operation.

Variations and modifications may be effected without departing from the scope of the novel concept of the present invention as set forth in the appended claims.

What is claimed is:

1. An electrical male connector comprising a tubular central unit having an open forward end, a wafer disc threadably engaging the open end of said central unit, a series of electrical contact pins supported by and extending forwardly of said wafer disc, electrical leads connected to the rearward ends of said contact pins, a base housing assembly having a closed frontal wall and a series of longitudinal grooves in its side wall thereof there being a series of bores in said frontal wall, said base housing being slidably and non-rotatably mounted on said

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central unit, said bores receiving the forwardly extending contact pins slidably therein, a collar rotatably mounted on said base housing, there being an annular groove on the inner peripheral wall of said collar, and means carried by said central unit and coacting with said groove to limit the sliding movement of said central unit on said base housing whereby when said base housing is moved rearwardly said contact pins are realigned by said bores in said closed frontal wall and housed in said base housing and when said base housing assembly is moved forwardly, said contact pins are exposed.

2. A device as set forth in claim 1 wherein the means carried by said tubular central unit comprises a series of radially extending, spring loaded detents housed in the outer peripheral wall of said tubular central unit, said detents extending through said longitudinal grooves and into the annular groove in said collar.

3. An electrical male connector comprising in combination, a tubular central unit having an opening forward end, an integral annular flange on the forward edge thereof, there being a series of internal threads along the inner peripheral surface of the forward edge of said tubular central unit, a wafer disc having an externally threaded reduced portion for threadable engagement with said central unit, a series of electrical contact pins secured in said wafer and extending forwardly therefrom, electrical conducting leads in said tubular unit, said leads connected to the rearward ends of said contact pins, a base housing comprising a tubular sleeve slidably mount-

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ed on said tubular central unit, said sleeve being open at its rearward end and having a forward wall, there being a series of bores in said forward wall receiving said contact pins slidably therein, said sleeve having a plurality of longitudinal, circumferentially spaced slots in its side wall, a collar slidably mounted on said base housing and means for limiting the longitudinal movement of said central unit on said base housing comprising an annular groove in the inner peripheral wall of said collar, and a plurality of radially disposed, spring biased detents housed in said flange on said base housing, said detents extending through the slots in the base housing and into said annular groove in said collar whereby said central unit may be moved rearwardly to realign said pins by said bores in said forward wall and to enclose said contact pins in said base housing and forwardly to expose said contact pins.

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