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Bruels

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[54] **TERMINAL PLUG CONSTRUCTION**

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[52] **U.S. Cl.** ..... **339/196 M**, 339/107

[51] **Int. Cl.** **H01r 33/04**, H01r 33/72

[58] **Field of Search** ..... 339/63, 103 C, 107, 339/138, 141, 196, 206, 208

[56] **References Cited**

UNITED STATES PATENTS

3,375,481	3/1968	Parnell	339/196 M X
1,984,181	12/1934	French	339/196 R
3,335,395	8/1967	Smith	339/196 M X
3,636,495	1/1972	Forsyth	339/107 UX

FOREIGN PATENTS OR APPLICATIONS

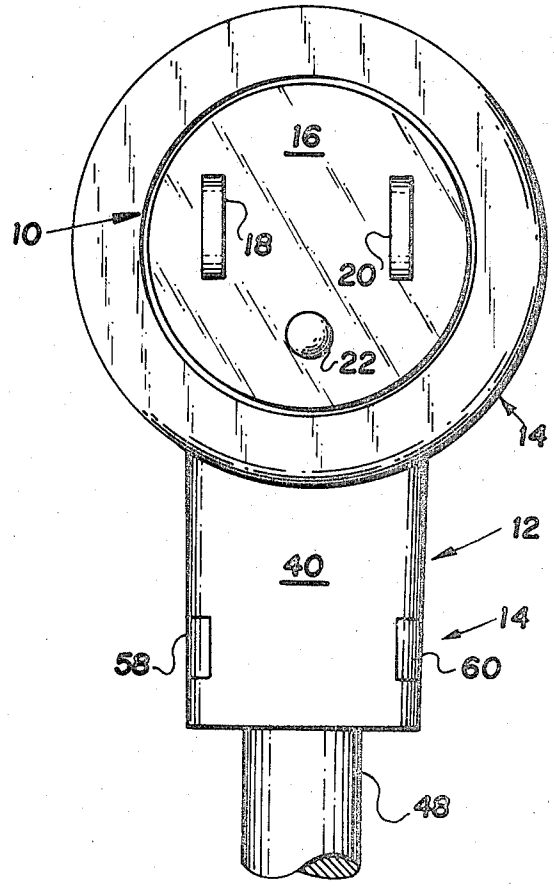
363,492	11/1922	Germany	339/196 R

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[57] **ABSTRACT**

A terminal plug construction includes a base portion having three separate terminal male contacts which project from the bottom of the base for connection to an electrical circuit and which includes an interior screw connecting post which extends upwardly from the interior of the base. The base is provided with a plurality of circumferentially spaced projections which engage with a complementary number of recesses defined around a ring portion of an intermediate member which fits over the base member. The intermediate member is shaped so it may interengage with the base member in a selected one of a plurality of orientations depending on which of the recesses are engaged over the circumferentially spaced projections on the base. The orientation of the intermediate member is chosen to affect the desired angular projection of a cable receiving trough formed as a radial extension of the circumference of the ring portion of the intermediate member. The cover member includes a cylindrical portion which overlies and covers both the intermediate member ring portion and the portion of the base and it also includes an outwardly extending portion which is oriented over the trough of the intermediate member and which provides a cover for the connecting cable. The complete assembly is held in position by a single bolt or screw which is directed through a central opening in the top member and through the threaded connection of the screw connecting post member.

3 Claims, 4 Drawing Figures



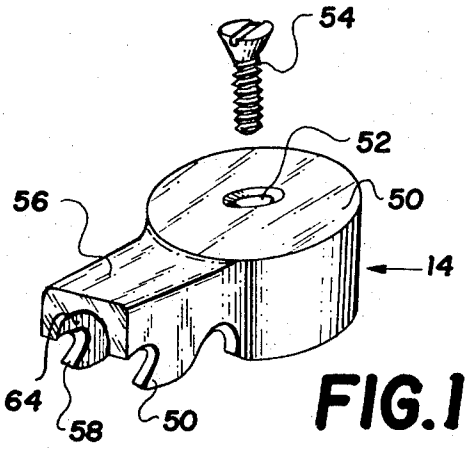


FIG. 1

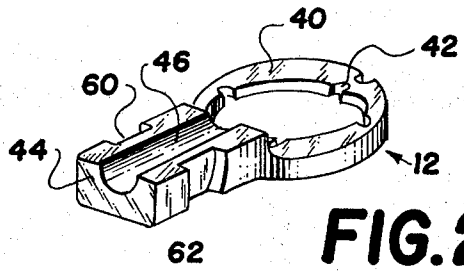


FIG. 2

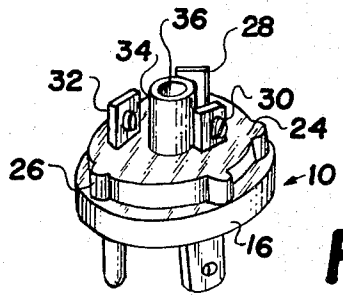


FIG. 3

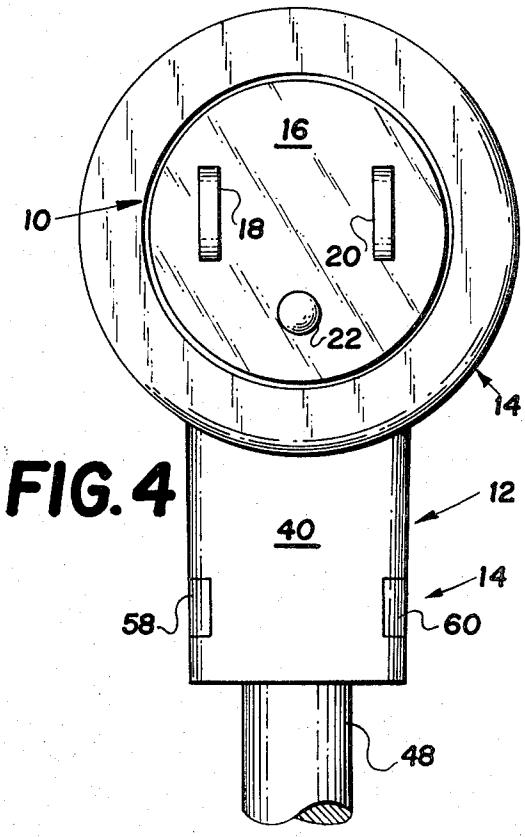


FIG. 4

TERMINAL PLUG CONSTRUCTION

SUMMARY OF THE INVENTION

This invention relates in general to electrical connectors and in particular to a new and useful terminal plug made up of three easily assembled parts which may be oriented in a plurality of selected orientations for the purpose of positioning a connecting cable which is adapted to be connected to the terminal post P located at the interior of a base part.

The present invention is an improvement over the prior art, particularly in respect to the position of a three terminal male connecting plug for electrical circuitry which is made up of three inter-connectable housing parts which may be oriented in a selected manner in order to provide for a desired lead-in angle for the connecting cable. The feature of the invention is the construction of three interengageable plug terminal parts which may be held together in a desired orientation by a single threaded securement member or bolt. The invention provides in a simple manner an inexpensive terminal plug which includes an outwardly extending covered passage for the lead-in cable which may be oriented in a plurality of selected angular locations in respect to the center of the plug in order to provide for a desired orientation of the cable in respect to the plug.

In the preferred embodiment of the invention the terminal plug includes a base member having a plurality of terminal posts defined at an upstanding flat interior base portion which are connected to a similar number of projecting male terminals which extend from the bottom of the base portion. The base portion includes a raised terminal post platform which includes a plurality of circumferentially spaced radially extending projections which are adapted to engage with a corresponding number of recesses defined in a ring-shaped portion of an intermediate part and which also includes a radially outwardly extending cable receiving trough for the lead-in cable. The lead-in cable may be positioned at a plurality of selected angular locations in respect to the base member and the recesses engaged over the projections of the platform portion. In the preferred embodiment at least four separate angular locations of the lead-in cable may be effected, which, for example, may be 90° from each other. The complete assembly is closed at the top by a cover member which includes a radially extending portion which overlies the cable receiving trough and which has a cylindrical portion which engages over the ring and the base portion, and the entire assembly is secured by a single screw which penetrates the top cover and engages into a central threaded receiving portion of the base.

Accordingly, it is an object of the invention to provide an improved connector for electrical cables having a base portion with a plurality of lead-in wire connecting posts and an intermediate member which defines a radially extending cable receiving trough for guiding the connecting cable which may be oriented at a plurality of selected locations in respect to the base member and interengaged with the base member; and which further includes a cover member which includes a radially extending portion which overlies and covers the receiving trough for the cable and the central portion for the intermediate member and the base and which is held in position by a single holding screw.

A further object of the invention is to provide a male terminal plug connector having a base with a raised cylindrical portion with a plurality of angularly spaced radially projections which engage with a complementary number of recesses on an intermediate member which is locked over the base member at a desired angualr orientation and which carries a radially extending cable receiving trough for orienting a cable to be connected at a selected angle in respect to the plug.

A further object of the invention is to provide an electrical terminal construction which is simple in design , rugged in construction, and economical to manufacture.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference should be had to the accompanying drawing and descriptive matter in which there is illustrated a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a front perspective view of a top cover portion of a terminal connector constructed in accordance with the invention;

FIG. 2 is a view similar to FIG. 1 of the intermediate portion of the terminal connector;

FIG. 3 is a view similar to FIG. 1 of the bottom portion of the terminal connector; and

FIG. 4 is an enlarged bottom plan view of a terminal connector having a cable connected thereto.

GENERAL DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings in particular, the invention embodied therein comprises a terminal connector which includes a base portion generally designated **10**, an intermediate portion generally designated **12**, and a top portion or cover generally designated **14**.

In accordance with the invention, the base portion includes a maximum diameter lower portion **16** with two straight bar connector or male plugs **18** and **20** and one cylindrical connector or plug **22** all of which extend downwardly from the exterior bottom side thereof. A cylindrical platform portion **24** extends upwardly from the top side and it includes a plurality of radially extending and angularly spaced partial cylindrical projections **26**. In the embodiment illustrated there are four separate cylindrical projections **26** which are oriented to extend with their axes at **90°** from each other. Mounted on the raised cylindrical platform **24** are the bus-bars **28** and **30** for the bar terminals **18** and **20**, and **32** for the cylindrical terminal **22**. A central cylindrical bus or sleeve **34** provides a centering post for orienting and connecting the top cover **14** and for this purpose it is internally threaded as at **36**, in order to provide a receiving bore for a screw to hold the parts in the assembled condition.

A feature of the invention is the construction of the intermediate part which includes a ring-shaped end **40** having a number of recesses **42** corresponding in size and angular spacing with the projections **26** on a platform portion **24** of the base **10**. The ring part may be engaged over the platform portion **24** and selected ones of the recesses **42** may be oriented to engage with selected projections **26** in order to orient a radially extending cable receiving trough portion **44** at a desired

angle in respect to the base **10.** The cable receiving trough **44** includes a receiving recess **46** along which a cable **48,** which is to be connected, is directed. The lead-in cable may be oriented at any desired angular position in accordance with the orientation of the ring part **40** with the raised platform portion **24.** In the embodiment shown in FIG. **4** separate positions are possible at which the cable receiving trough **44** may be oriented at any one of four **90°** quadrant position. Naturally, a larger or smaller number of interengaging projection and recess means **26** and **42** may be provided as design conditions warrant.

After the intermediate part **12** is oriented at a selected orientation in respect to the base part **10,** the cover part **14** is engaged with its cylindrical cover portion **50** over the cylindrical bottom **16** of the base **10** and a cup opening **32** is oriented to align the opening with the threaded receiving bore **36** of the centering post **34.** A single securing screw or bolt **54** may be passed through the opening **52** and threaded into the receiving bore **36** to hold all of the parts in the assembled condition.

The cover part **14** includes a radially extending part **56** which overlies the trough **44** and it includes downwardly extending tabs or legs **58** and **60** which engage into corresponding recesses **60** and **62** of the intermediate part **12.** The interior of the cover part is provided with a curved wall **64** overlying the cable receiving recess **46** which bears against the top of the connecting cable **48** in the assembled condition.

Thus the invention provides a simple terminal plug construction in which all of the parts may be interconnected and held in a desired orientation by means of a single engagement bolt. In addition, the lead-in cable may be fixed at a desired orientation in respect to the base portion by a simple selection of the orientation of an intermediate part with the base portion and the application of the cover over the intermediate part, after the connecting cable is first led in on guide way defined by the intermediate part and connected to the terminals carried on the base part.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. An electrical terminal plug for connecting a lead-in cable, comprising a base part having a bottom with a plurality of terminal contacts projecting outwardly therefrom which are adapted to be electrically connected, a terminal post for each contact being carried on the interior of said base part for connection to the lead-in cable, an intermediate part including a tubular end portion engageable over a portion of said base part and having a cable guiding section extending radially outwardly from said tubular end for orienting a lead-in cable in a selected radial orientation in respect to said base part, said tubular end and said base part having complementary inter-engageable projection and recess portions, a cover having a cylindrical portion overlying and covering said base part and having a radially extending portion overlying said cable guiding section of said intermediate part, and securement means holding all of said parts together, said cable guiding section including a radially outwardly extending trough defining a receiving recess for the cable and a recess defined in an edge of said cable guiding section, said cover part including a radially outwardly extending portion overlying said trough and a downwardly extending projection accommodated by said recess in said edge of said cable guiding section for interlocking said two parts in a selective orientation together.

2. An electrical terminal plug according to claim **1,** wherein said cover part includes a central opening therein, said base part having a raised cylindrical boss forming a centering post for said cover part, said securement means comprising a threaded bolt extending through the opening of said cover and threaded into said raised boss of said base part.

3. An electrical terminal plug for connecting a lead-in cable, comprising a base part having a substantially cylindrical bottom with a plurality of terminal contacts projecting outwardly therefrom which are adapted to be electrically connected, a terminal post for each contact carried on the interior of said base part and projecting upwardly therefrom, the interior of said base part including a raised cylindrical platform having projections extending radially outwardly therefrom at a plurality of circumferentially spaced locations, an intermediate part including a tubular end engageable over said raised platform portion and having recesses corresponding in number to the projections of said raised platform portions and interengaged with said projections, a cable guiding trough connected radially into said tubular end of said intermediate part, said tubular end being selectively engageable with said raised platform portion of said base part in a plurality of angular positions so as to orient the cable guiding trough in one of a selective number of orientations, a cover having a cylindrical portion overlying the cylindrical portion of said base part and covering said base part and a radially extended portion overlying said trough of said intermediate part, and a bolt extending through the top of said cylindrical portion of said top part and threaded into said bottom part, said intermediate part trough portion including a receiving recess on each side and said cover part radially extended portion including a downwardly extending projection on each side engageable into the receiving recess on each side of said trough portion.

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