Dec. 20, 1960 H. O. KUEHN 2,965,870

ELECTRICAL CONNECTOR PLUG

Filed Jan. 29, 1958

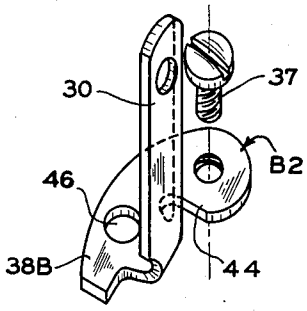


FIG. 5

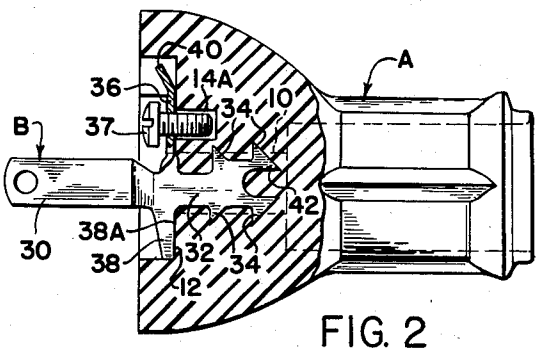


FIG. 2

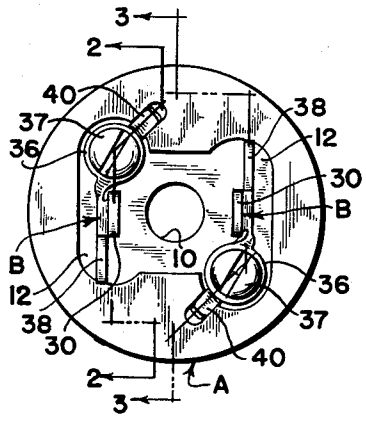


FIG. 1

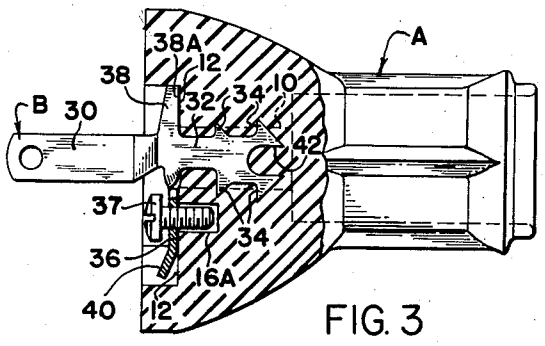


FIG. 3

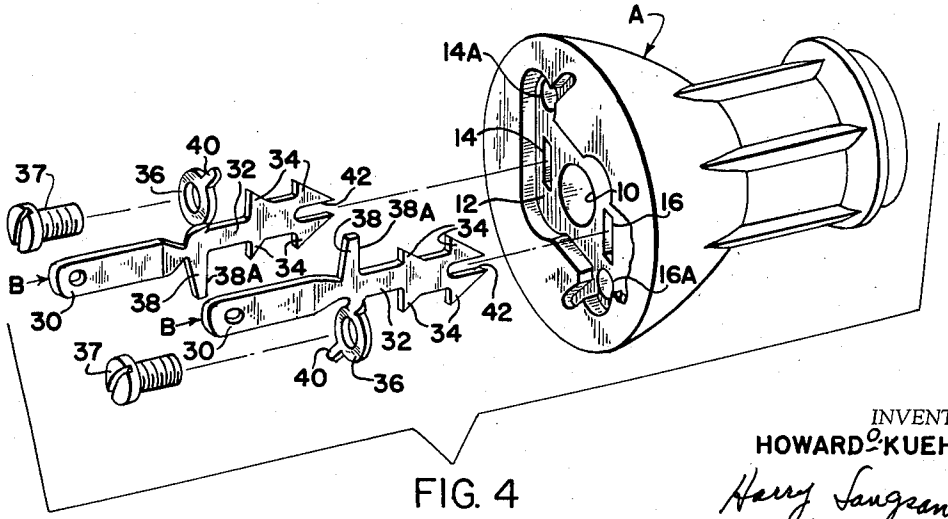


FIG. 4

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ELECTRICAL CONNECTOR PLUG

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1 Claim. (Cl. 339—62)

My invention relates to electrical connector plugs such as are used for detachable insertion in a convenience outlet, and more particularly relates to plugs having a body or casing made of soft flexible rubber-like material.

It is well known that prongs in an electrical plug which are forced-fit within cooperating recesses of a soft rubber casing have a tendency to become misaligned as a result of hard usage and rough handling which the plug necessarily encounters. Misalignment of the prongs from a vertical plane as a result of twisting or lateral movement thereof not only makes for uncertainty in proper electrical contact but also frequently makes impossible the insertion of the plug into a female receptacle. This condition in the past has occurred in both two and three prong connectors.

It is, therefore, an object of my invention to provide an electrical connector plug wherein the prongs thereof will remain in proper alignment in a vertical plane without becoming misaligned as a result of abuse.

Another object of my invention is to provide means for positively positioning prongs within a male type electrical connector having a soft rubber body.

Another object of my invention is to provide a male electrical connector plug, having a soft rubber body, whereby prongs forced-fit therein will be secure from twisting movement without the use of rivet or screw locking means.

Another object of my invention is to provide a male connector with prongs which are capable of being applied and removed instantly from a soft rubber female electrical connector but which are rigidly maintained in position when inserted.

Other objects of my invention are to provide an improved device of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, my invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawing, in which:

Fig. 1 is a top plan view of an electrical connector plug embodying my invention.

Fig. 2 is a sectional view taken along lines 2—2 of Fig. 1.

Fig. 3 is a sectional view taken along lines 3—3 of Fig. 1.

Fig. 4 is an exploded view showing the prongs prior to insertion within the casing.

Fig. 5 is a modification of my invention wherein a projecting ear eliminates the tilting or twisting of the prong when it is riveted to the body of the quick detachable plug.

Referring now in greater detail to the drawing in which similar reference characters refer to similar parts, I show a plug-type electrical connector comprising a body, generally designated as A, made of soft, flexible, resilient, rubber-like material, and a plurality of prongs, generally designated as B, for force-fit positioning therein.

The rubber-like body A is of conventional molded construction having a central bore **10** therein through which the lead wire or cord passes. The lower portion of the body is recessed at **12** as shown and defines an interior shoulder for supporting the longitudinal positioning of the prongs B. Blind slots **14** and **16** extend parallel to the hole **10** on either side thereof substantially normal to the surface recess **12**. Adjacent each of the slots **14** and **16** is a circular hole **14***a* and **16***a* respectively for accommodating the projection of the customary lead wire screws. Each of the contact prongs B are of identical construction and only one will be described. The prong B has an outer end **30** for making electrical contact with a cooperating female receptacle terminal as is usual in the art, and a body penetrating portion **32** having lateral barbs **34** on each side thereof and coplanar therewith. Intermediate the outer and penetrating portions is an integrally formed wire receiving ring **36** which is twisted at right angles to the plane of the prong and defines a shoulder for bearing against the recessed surface **12**. Oppositely positioned from the wire receiving ring **36** and coplanar with the body of the prong is a projecting ear **38** which cooperates with the wire receiving ring **36** and the side walls of the recess **12** to prevent the prongs B from twisting after insertion within the respective slots **14** and **16**. The wire receiving ring **36** has a tapped hole for accommodating screw **37** and a lip **40** which interfits with a complementary relieved portion of the periphery of the recess **12**. It is also to be observed that a relief **42** is provided in the penetrating end **32** to enable air pressure expansion as the prongs are pressed into their respective blind slots **14** and **16**.

In assembling the plug, prongs B are positioned relative to the body A and by forcing the penetrating portion **32** into a respective blind slot, the barbs will engage snugly therein. When thus positioned the wire receiving portion will engage the shoulder surface **12** in a flat position and the combination of the wire receiving ring **36**, its lip **40**, and the projecting ear **38**, will prevent the prong from twisting within the slot because of the resistance offered by the peripheral walls of the recess **12** to the projecting ear and wire receiving portion. The prongs are thus capable of being applied and assembled almost instantly but are rigidly maintained in position when secured as described herein.

In Fig. 5 is shown a plug prong, generally designated as B2, which has a receptacle engaging prong **30** which has a body **44** that extends at right angles to the outwardly extending prong **30**. The body **44** lies upon the recessed surface **12** and an opening **46** enables a holding drive screw (not shown) to pass therethrough to enable the prong to be fastened to the body A.

A wire holding screw **37** is adapted to retain one end of a lead wire and is located at one end of the body **44** and at the other end **38B** of the body **44** is the projecting ear portion which will prevent the prong **30** from tilting or twisting. The free end **38B** and the body **44** prevent twisting of the prong in both a vertical plane or in a horizontal plane.

Although my invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

I claim:

An electrical connector plug comprising a substantially solid, resilient body, a front face on said body, a recess in said front face, a central bore extending through said body, said bore intersecting said recess at the central area thereof, said recess having a pair of oppositely disposed

pockets, each pocket being provided with an elongated extension, said extensions extending at opposite angles to each other toward the outer periphery of said body, an opening in each of said pockets, a pair of slots in said body, each of said openings being positioned between a corresponding extension and a corresponding slot, said slots being substantially parallel to each other and positioned one on one side and one on the opposite side of said bore, said slots intersecting said recess, a prong secured in each of said slots, each of said prongs having a portion extending outside of the corresponding slot and forwardly of the front face of said body, each of said prongs being provided with an internally threaded wire receiving ring extending laterally therefrom, each of said rings being twisted into an offset position relative to its

corresponding prong, the ring on one prong extending in an opposite direction from the ring on the other prong, each of said rings being positioned in a corresponding pocket in coaxial arrangement with a corresponding opening, each of said rings having a radially outwardly extending finger, each of said fingers being positioned in the extension of the corresponding pocket, and a screw engaged with each of said rings and extending into the corresponding opening.

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