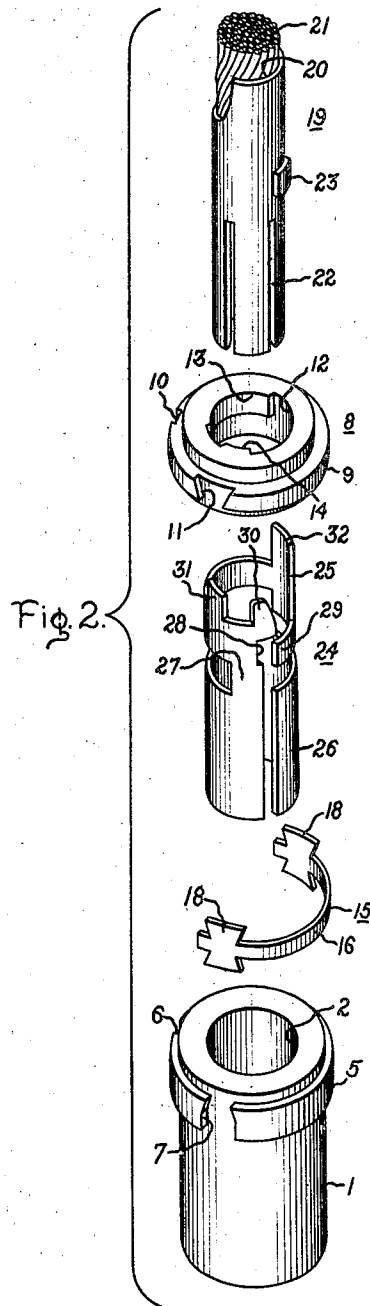
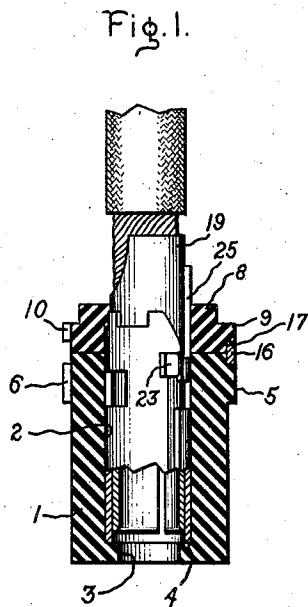


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ELECTRICAL CONNECTOR
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ELECTRICAL CONNECTOR

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4 Claims. (Cl. 173-363)

The present invention relates to electrical connectors comprising an insulating base made of plastic material such as a phenolic condensation product and contact means detachably secured to the base. More particularly the invention relates to connectors of the kind disclosed in the copending application of Stanislas Picard, Serial No. 494,218, filed July 10, 1943, and assigned to the same assignee as the present application.

The object of my invention is to provide an improved electrical connector of the type aforementioned whereby female contacts may be readily removed from the base for the purpose of soldering the contacts to the wires of electrical cables while removed from the base to avoid burning or charring of the base material.

Another object of my invention is to provide an improved bayonet type locking means for detachably securing a female contact on the base and for producing some tension on the female contact to assure firm electrical connection of the female contact with a male contact when connected thereto.

This is accomplished in accordance with my invention by the provision of a bayonet locking ring with a cylindrical slotted extension for surrounding a slotted portion of the female contact and exerting tension thereon.

For a better understanding of what I believe to be novel and my invention, attention is directed to the following description and the claims appended thereto in connection with the accompanying drawing.

In the drawing Fig. 1 illustrates a sectional view of an electrical connector embodying my invention; and Fig. 2 is an exploded perspective view of the connector in Fig. 1.

The connector comprises a cylindrical base 1 with a bore 2 and a lower opening 3 of a smaller diameter than the bore and forming a shoulder 4 therewith. An annular flange 5 is formed near the upper end of the base. This flange has an axial slot 6 and two dovetailed slots 7 located on opposite sides of the base. The base 1 is assembled with a top 8, both being made of plastic material. The top has an outer flange 9 with an axial groove 10 and two dovetailed recesses 11 located on opposite sides of the top. A central bore 12 in the top forms a continuation of the bore 2 of the base. Two circumferentially spaced ledges 13 and 14 project into the upper end of the bore 12. When assembled the top engages the upper end of the base 1 and is detachably secured thereto by means of a dovetailed clamp 15 which has a ring portion or a segment

16 fitting into a groove 17 formed between the shoulders 5 and 9 of the base and the top respectively. Dovetailed projections 18 on the segment 16 are positioned in the dovetailed slots or recesses 7 and 11 of the base and the top thus securely connecting the top to the base. When thus connected the axial grooves 6 and 10 are aligned and serve to position the base in a housing as shown and described in the aforementioned application.

The structure comprising clamp 15 for fastening together base 1 and top 8 is not claimed herein, it being claimed in my application Serial No. 615,135, filed September 8, 1945, which application is a division of my application Serial No. 480,348, filed March 24, 1943.

In the present example the base has only a single bore and serves to support a single female contact 19. An upper portion of the contact has an opening 20 for receiving a wire or cable 21 which may be securely connected to the contact by solder. The contact is of large diameter, requiring a substantial amount of solder for connection to the cable 21. This connection therefore has to be made while the contact is removed from the base to preclude charring thereof by the heat dissipated during the soldering operation. The lower portion of the female contact is in the form of a hollow cylinder with a plurality of circumferentially spaced axial slots 22. The inner diameter of the slotted cylinder part is usually slightly smaller than the diameter of the male pin to be assembled therewith to assure a firm electrical connection. An intermediate portion of the contact has a lateral projection 23. The contact is connected to the base and top by means of a combined locking and tension device 24 detachably secured to the base and top and forming a self-locking bayonet connection with the female contact. The locking and tension device 24 comprises an upper split ring or bayonet connecting and locking means 25 and a lower split cylinder or tension means 26 integrally connected with the split ring by an extension 27 at the upper end of the split cylinder.

The device is made from suitable sheet metal by a forming and punching process. The ring 25 has a bayonet slot 28 formed in a vertical edge adjacent the split. The other edge 29 adjacent the split projects towards and slightly into the bayonet slot 28. The upper edge of the ring 25 is provided with three projections 30, 31 and 32, of which the latter extends axially beyond the others and substantially above the top when assembled therewith. The projections 30 and 31

serve to locate the device 24 circumferentially in the top. They are located on opposite sides of the ledge 14. In other words, the ledge 14 fits in the recess defined between adjacent edges of projections 30 and 31. The extension 31 forms a snug fit with the recess formed between the ledges 13 and 14. When assembled the shoulders formed at the inner ends of the ledges 13 and 14 engage the upper cylindrical edge of the ring between the extensions 30, 31 and 32.

During assembly the device 24 is inserted into the base 1. Thereupon the top 8 is inserted into the upper end of the device 24 and the device 24 is rotated in the base until the dovetailed recesses 7 and 11 are in alignment, whereupon the top is locked to the base by means of the clamp 15. In order to assemble the female contact 19 on the base and the device 24 the contact is inserted into the bore of the device 25 with the projection 23 located between the projections 30 and 25. The projection 30 has a slanted edge 33 facing an axial edge of the projection 32. Upon axial pressure on the contact the lateral projection 23 thereof forces the end portion of the ring with the edge 29 downward towards the split cylinder 26, thus permitting the projection 23 to enter the bayonet slot 28. The contact after having been forced into the device 24 is rotated into the bayonet slot 28 and as the projection 23 moves towards its end position in the slot 28 the other end portion of the ring with the edge 29 snaps back and the edge portion 29 locks the projection 23 in the slot 28. In order to remove the contact from the base the locking edge 29 must first be forced downward towards the split cylinder 26 to open the entrance and exit of the bayonet slot 28. This is accomplished by forcing the extension 32 axially downward towards the cylinder 26 by means of a suitable tool such as a screw-driver. The split cylinder 26 or tension means has an inner diameter smaller than the outer diameter of the female contact, thus exerting a spring pressure or tension on the slotted cylindrical portion of the latter. Such tension is transmitted to the male contact when inserted into the female contact, thereby producing a firm electrical connection between the contacts.

Having described the method of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, I desire to have it understood that the apparatus shown is only illustrative and that the invention may be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An electrical connector comprising an insulating base having an opening, a locking device detachably secured to the opening and having a bayonet slot, a tubular, axially split cylindrical contact having a lateral projection located in the slot and forming a bayonet connection therewith, and an axially extending split cylinder forming an extension of the locking device and having an internal diameter less than that of said contact for applying tension to said contact.

2. An electrical connector comprising an insulating base having an opening, a locking device detachably secured to the base in said opening and having a bayonet slot, a cylindrical female contact having a lateral projection located in the slot and forming a bayonet connection therewith, means on said device for locking the projections in the slots, the female contact having a cylindrical portion with a plurality of axial slots, and means for applying tension to the slotted portion of the contact comprising a split cylinder integrally united with the locking device.

3. An electrical connector comprising an insulating base having an opening, a locking device secured to the opening and having a bayonet slot, a female contact having a lateral projection located in the slot and forming a bayonet connection therewith, means on said device for locking the projection in the slot, other means on the device for actuating the locking means to permit assembly and dismantling of the contact and the device, said contact having a cylindrical slotted end portion, and means for applying tension to the slotted end portion consisting of a split cylinder connected at one end to the locking device.

4. A device for forming a bayonet connection with a cylindrical member having a lateral projection and for applying lateral tension to a slotted hollow portion of such member comprising a split ring having an upper and lower spaced vertical edge portions, a bayonet slot having an entrance through one of the vertical edge portions, the other vertical edge portion being closely spaced with said entrance, an axial projection formed on the upper edge portion for forcing the last mentioned vertical edge portion away from the entrance, and a split cylinder constituting a tension means integrally united with the lower edge portion.

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