July 16, 1957 V. D. KRIBS 2,799,838

DEVICE FOR ATTACHING A TUBULAR ANTENNA TO A TELEVISION RECEIVER

Filed May 5, 1955

FIG. 1

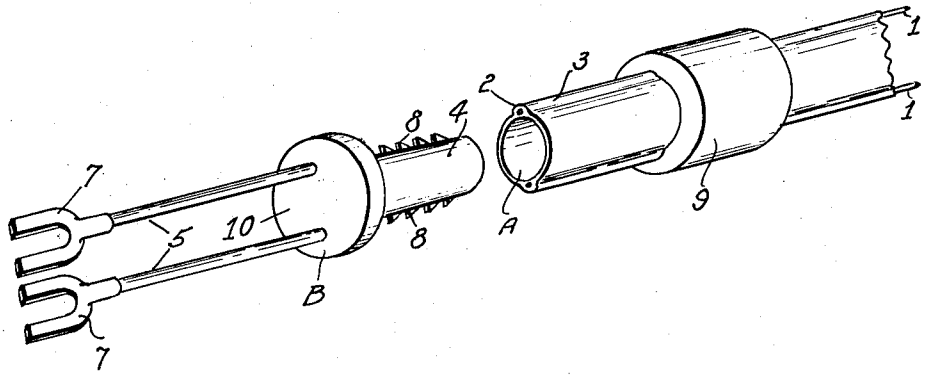
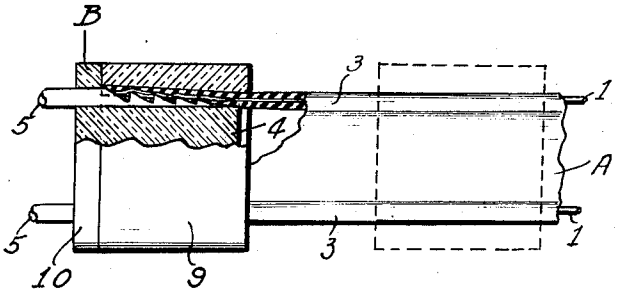


FIG. 2



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2,799,838

Patented July 16, 1957

2,799,838

DEVICE FOR ATTACHING A TUBULAR ANTENNA TO A TELEVISION RECEIVER

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Application May 5, 1955, Serial No. 506,313

5 Claims. (Cl. 339—99)

This invention relates to improvements in connectors for electrical members and more especially a device for electrically interconnecting a tubular antenna with the lead-in posts of a television receiver.

One of the objects of my invention is to provide a device for such an attachment, wherein there is no necessity for crimping wires, or for soldering or using similarly time-consuming methods for interconnecting the parts of the device together to make a good and efficient electrical connection thereat.

Another object of the invention is to so construct such a device, wherein the connection thus made will be quite strong and will avoid accidental breakage at the connection in the event that the receiver is accidentally shifted from its room position even though a temporary strain occurs at the connection.

An added object of my invention is to so construct such an attachment device that it will require no scraping of the antenna insulation that covers the lead-in conductors therein, or which will otherwise require baring of said conductors in order to make a good electrical connection.

A further object of the invention is to so construct such a device that the interengagement of the cooperating electrical elements will be held sealed against the entrance of dirt, water or other undesired matter thereinto.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art to which this invention appertains, as will be more clearly pointed out in the following specification.

To this end, my invention consists in the construction, arrangement, combination and the form of parts herein shown and described, all as will be more clearly pointed out in the following description and claims.

In the drawings, wherein like reference characters represent like or corresponding parts throughout the views,

Figure 1 is an exploded perspective view showing the various parts of the device prior to their assembly; and

Figure 2 is a longitudinal cross-sectional view, partly in elevation, showing the device after assembly.

The tubular antenna that is generally used in leading from an outside aerial to the television receiver set itself, is relatively weak and has conductors of quite small diameter. Hence, whenever strain is imposed on such conductors, as by moving the receiver about in the ordinary course of household service operations, such as in cleaning, dusting, washing, etc., it often happens that the connection between the receiver set and such antenna is broken. One of the important objects of this invention is to improve this connection so that it is strong enough to withstand greater strain than heretofore.

In the drawings, wherein I have illustrated a preferred embodiment of my invention, there is shown a common type of tubular antenna A used to lead into the house from an outside aerial, and which is intended to be connected to the lead-in posts for that purpose, on the receiver set itself. This antenna is preferably made of some moulded or otherwise suitably formed insulating material, often of a rubber or rubber-like composition, and into which a pair of electrical conductors 1—1 are embedded to extend therealong in spaced-apart parallel relation, somewhat as indicated, and in this instance, said conductors are slightly outwardly beyond the inner bounding wall of the tubular member, and the insulation covering 2 is extended in the form of longitudinally extending ribs 3—3.

Any peeling away of this insulation covering in order to bare the conductors for winding about said lead-in posts, or for soldering to the same, or even for connection with some sort of lugs or the like that are detachably connected to said posts, result in a further weakening of the tensile strength of said tubular antenna and is to be avoided wherever possible.

In my improved interconnecting device, I obtain good electrical engagement between the parts without peeling or similar baring of the conductor wires, as will now be seen.

A member B made of some suitable relatively hard insulating material, such as a plastic or the like that may be cast or moulded into its desired shape, is used, and has a rearwardly projecting lug portion 4 in the form of an elongated pin, preferably gradually tapered in transverse cross-sectional shape toward its terminal end so as to more readily be insertable into an adjacent end of the tubular antenna as indicated in Fig. 1, the length of this lug being as found most suitable in performing its intended function.

A pair of lead-in wires 5—5 of much heavier diameter and strength than those conductors in the antenna, and relatively rigid and self-supporting, are arranged in spaced-apart parallel relation, the spacing being substantially equal to the spacing apart of the pair of conductors, the forwardly projecting portions of said wires 5—5 being of any suitable length and if desired, may have hooks 7—7 thereat for attachment to the posts of the receiver set (not shown).

These wires 5—5 are firmly secured in the member B, and the rearwardly extending portion of each wire is provided with laterally outwardly directed teeth or prongs 8 spaced longitudinally therealong, and the series of teeth on each wire may be of gradually reduced height or length as they approach the terminal end of the pin, somewhat as indicated. It might be mentioned here that the pairs of series of teeth are so spaced apart that when the member B is actuated relatively toward the adjacent open end of the tubular antenna, and the pin portion enters the latter, the teeth, or at least the tallest teeth, will cut through the insulation covering said conductors and will make electrical contact with the latter.

To further insure good electrical contact between the conductors and the lead-in wires, a sleeve 9 is slidably mounted on the tubular antenna A, with separate channels receiving the ribs 3—3, and the bore through said sleeve may be slightly tapered from end to end if desired, somewhat as indicated.

Now, after the forward end of the tubular antenna member has received the rear end of the pin and the teeth on the latter, to cover substantially all of said teeth, said sleeve is shifted so as to encircle said toothed portion of the pin, and this shifting of the sleeve acts to compress said end of the antenna to cause said teeth to bite through the insulation of the latter and make an especially good interlocked and electrical engagement between the parts.

In order to limit longitudinal movement in one direction between said antenna member and the member B, I have arranged an abutment 10 to extend radially outwardly from said pin adjacent the inner end of the pin and preferably spaced slightly longitudinally from the

series of teeth of the latter, and in addition this radially extending abutment will serve as a stop for the sleeve, and inasmuch as the latter can engage the abutment, the space therebetween will be sealed against the entry of moisture, dirt, etc. therethrough and which might be deleterious to the efficiency of the electrical connections between the wires and conductors.

In an attachment device as hereinbefore described, there is no need of removing any of the covering or insulation from the conductors, and additional support is given to the antenna conductors so as to improve their strain-resisting characteristics.

I claim:

1. In a device for the attachment of a tubular antenna member of substantially uniform bore to the antenna lead-in posts of a television receiver, said member provided with a pair of electrical conductors embedded within the insulation of said member and extending along the latter in spaced-apart parallel relation, an insulating-material plug having a portion insertible into an open end of said antenna member and of a size to laterally expand the latter to frictionally maintain said plug and member together as a unit, and a pair of relatively rigid strong lead-in wires carried by said plug and each of said wires having one end projecting forwardly for attachment to said posts and their other end anchored in said plug and provided with transversely outwardly extending teeth of a length to cut through the inner wall of said tubular member to make contact with said conductors upon insertion of the plug into said open end of said antenna member.

2. A device as set forth in claim 1, but further characterized in that said plug is decreasingly tapered in cross-section toward its terminal end to be smaller than the antenna member bore for ready insertion of the plug into said antenna member uniformly-bored open end.

3. A device as set forth in claim 1, but further characterized in that the forward end of said plug is provided with a radially outwardly projecting abutment to engage the adjacent open end of the tubular antenna member to limit further insertion of said plug thereinto.

4. In a device for attaching a tubular antenna member of substantially uniform bore to the antenna lead-in posts of a television receiver, said tubular member having a pair of spaced-apart electrical conductors embedded therein and extending therealong, a plug made of insulating material and having a portion slidably insertible into an open end of said tubular member, said portion being sufficiently larger than said bore to radially expand the antenna member to frictionally maintain said plug and antenna member together as a unit, and a pair of lead-in wires carried by said plug and each having a forwardly extending portion for attachment to one of the lead-in posts and with a series of teeth on the portion that extends rearwardly, said pairs of series of teeth being spaced apart a distance substantially equal to the spacing apart of said conductors and with at least some of said teeth being sufficiently long so that insertion of the plug into said tubular member will cause said teeth to cut through the inner wall of the latter to contact said conductors.

5. In a device for attaching a tubular antenna member of substantially uniform bore to the lead-in posts of a television receiver, said member having a pair of spaced-apart conductors embedded therein and in parallel relation with one another, said member being made of compressible insulating material, a plug insertible into an open end of said tubular member, and a pair of spaced-apart lead-in wires carried by said plug and having one of their ends provided with radially outwardly projecting teeth, the teeth on the pair of wires being spaced apart approximately the distance of the spacing apart of said conductors, and a sleeve encircling said tubular member and movable therealong to compress the insulating material of said member onto said teeth to interlock the latter into contact with said conductors and prevent accidental withdrawal of said plug from said tubular member.

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