May 21, 1946. W. M. KOHRING 2,400,647

ATTACHMENT INSERT

Filed June 23, 1943

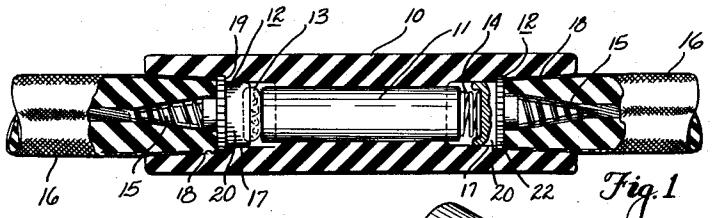


Fig. 1

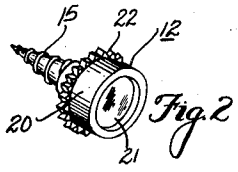


Fig. 2

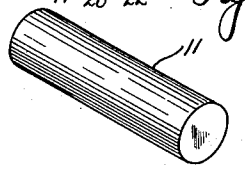


Fig. 3

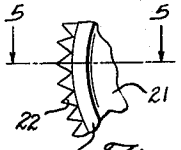


Fig. 4

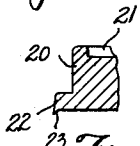


Fig. 5

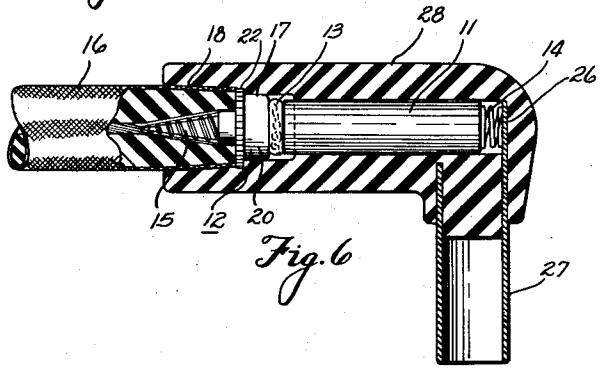


Fig. 6

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2,400,647

ATTACHMENT INSERT

Wilbur M. Kohring, Lakewood, Ohio, assignor to Continental Carbon, Inc., a corporation of Ohio

Application June 23, 1943, Serial No. 491,891

3 Claims. (Cl. 173—328)

My invention relates in general to an attachment insert and more particularly to an attachment insert adapted for anchoring a cable or making electrical contact with an electrical device such for example as an electrical resister.

An object of my invention is a provision of an abutment contact insert which may be pressed into a recess and which cannot be readily removed or pulled out when once depressed in the recess.

Another object of my invention is the provision of an attachment insert having attachment means upon which a cable may be screwed or otherwise fastened, the attachment means being connected to a cylindrical portion for stabilizing or rigidly supporting the attachment means against side play or misalignment within the recess.

Another object of my invention is the provision of an attachment insert which has outwardly extending teeth that dig into the side wall of a recess, as the insert is pressed into the recess, the said teeth having burr-like shaped points which oppose any force tending to remove the insert from the recess.

Another object of my invention is the provision of an attachment insert arranged to be depressed in a stepped recess having a shoulder therein, the attachment insert having a body which fits closely within the small bore of the stepped recess to give stability to the insert within the stepped recess, the body having outwardly extending teeth to dig into the side wall of the large bore of the recess as the insert is pressed into the recess, the pressing movement of the insert into the stepped recess being arrested upon the teeth engaging the said shoulder.

Other objects and a fuller understanding of my invention may be had by referring to the following description and claims taken in conjunction with the accompanying drawing in which:

Figure 1 illustrates a cross-sectional view of an electrical resister unit having attachment inserts for connecting cables thereto;

Figure 2 is a perspective view of the attachment insert embodying the features of my invention;

Figure 3 is a perspective view of a resister element;

Figure 4 is a fragmentary view of my attachment insert and shows particularly the outwardly extending teeth;

Figure 5 is a cross-sectional view taken along the line 5—5 of Figure 4; and

Figure 6 is a view of a modified electrical device or resister unit embodying my attachment insert.

With reference to Figure 1, I illustrate two of my attachment inserts, which are indicated by reference character 12, as being embodied in a resister unit such for example as a cable type suppressor which comprises generally a hollow insulated tube 10 having a resister element 11 disposed within the hollow tube 10. Each end of the resister element 11 is arranged to be electrically connected to the electrical cables 16. The electrical connections between each end of the resister element 11 and the electrical cables 16 are accomplished through my improved insert attachments 12 which constitute the subject matter of the present invention.

As shown in Figure 2, the attachment insert comprises a body 20 having a screw attachment means 15 extending therefrom and being integrally connected thereto. The screw attachment means 15 may be of any suitable configuration or form and is preferably of the conventional wood screw type which screws into the central portion of the cable 16. As illustrated, the cable generally consists of flexible strands of soft copper wire covered with an insulation which comprises generally soft rubber-like material. In attaching the cable to the screw attachment 15, it is only necessary to insert the end of the cable upon the point of the screw and screw the cable onto the screw while at the same time pressing the cable into the bore 18 within the hollow insulated tube 10. The rubber-like material of the cable as it is expanded by the screw 15 makes a good water-proof, tight joint between the cable and the hollow insulating tube 10. The manner in which the cable is attached to the screw 15 of my type of insert may be substantially the same as that shown in United States Patent No. 1,909,248, patented May 16, 1933, in the name of Glen F. Benkelman and assigned to the present assignee.

A great deal of difficulty has been experienced in attaching or connecting the cables to the ends of a resister element in a hollow tube, and I have been able to solve this difficulty by the use of my attachment. The anchoring means for holding the attachment insert within the hollow tube is accompanied by outwardly extending teeth 22. The attachment insert is arranged to be pressed into a stepped recess having a first bore 17 into which the body 20 closely fits and a second bore 18 into which the teeth engage. The body 20 which fits closely within the first bore 17 stabilizes the attachment insert within the stepped recess.

The screw attachment 15 must be so rigidly mounted that it can withstand a considerable amount of side pressure and under test must be able to stand the heavy side pressure from a screw driver which is used as a lever against the side wall of the bore 18 with the point of the screw driver engaging the screw attachment 15. The teeth 22 have a slightly larger diameter than the inside diameter of the second bore 18 so that when the insert is pressed within the stepped recess, the teeth dig into the side wall of the second bore, the pressing movement of the insert into the recess being arrested when the teeth engage the shoulder 19 between the first and second bores 17 and 18.

As shown in Figure 5, the ends of the teeth have burr-like sharp points which dig into the side wall of the second bore 18 and oppose any force tending to remove the insert from the recess, such, for example, as tension being applied to the cable 16. In other words, as the attachment insert is pressed into the stepped recess, the teeth scratch or plow longitudinal grooves of slight depth in the side wall of the second bore, and then when a reverse movement or pull is applied to the cables which would tend to remove the inserts, the sharp burr-like points dig further into the side wall and resist the removal of the insert from the stepped recess. The combined action of the teeth 22 together with the body 20 anchors and stabilizes the attachment insert 12 within the stepped recess so that the attachment insert cannot be misaigned therein and cannot be readily removed therefrom.

The body 20 of the attachment insert is provided with a depressed portion 21 on the left-hand end of the unit as shown in Figure 1. The depressed portion 21 is arranged to partly pocket a mass of tin foil 13 for making a connection or contact between the attachment insert and the left-hand end of the resister element 11. The depressed portion 21 of the insert, located at the right-hand end of the resister 11, is arranged to receive the end of a spring 14 which presses against the end of the resistor element 11. The combination of the mass of tin foil 13 and the spring 14 provides a good electrical connection between the resistor element 11 and the attachment inserts 12.

In Figure 6 I show a modified form of a suppressor, being generally referred to in the trade as a spark plug suppressor. In this arrangement, the right end of the resistor element 11 engages the spring 14 which presses against a portion 26 of a hollow terminal 27 which is arranged to be connected to the distributor or other electrical part of the electrical ignition system. In Figure 6 only one of my attachment inserts is used and is pressed into a stepped recess of the hollow insulated tube 28 in the same manner as that described with reference to Figure 1.

In addition to being used for a cable attachment, my insert may be used for making any abutment contact whether for establishing electrical contact with a current carrying element or for making a good mechanical engagement with an adjacent part.

Although I have described my invention with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

I claim as my invention:

1. An attachment insert adapted to be pressed into a stepped recess having a first bore portion defined by internal walls and a second bore portion defined by internal walls with a shoulder therebetween, said first bore portion being smaller in diameter than the second bore portion, said insert comprising a body and cable attachment means connected to the body and extending therefrom, said body having a stabilizing plug insert portion and an anchoring portion, said stabilizing plug insert portion being adapted to closely interfit into the first bore portion and stabilize the insert in the recess, by engaging the said internal walls thereof, said anchoring portion having outwardly extending teeth which dig into the said internal side wall of the second bore portion as the insert is pressed into the stepped recess, the pressing movement of the insert into the stepped recess being arrested upon the teeth engaging the said shoulder, and interlocking means on said teeth to engage the said side wall and oppose any force tending to remove the insert from the recess.

2. An attachment insert adapted to be pressed into a stepped recess having a first bore portion defined by internal walls and a second bore portion defined by internal walls with a shoulder therebetween, said first bore portion being smaller in diameter than the second bore portion, said insert comprising a body and cable attachment means connected to the body and extending therefrom, said body having a stabilizing plug insert portion and an anchoring portion, said stabilizing plug insert portion being adapted to closely interfit into the first bore portion and stabilize the insert in the recess, said anchoring portion having outwardly extending teeth which dig into the said internal side wall of the second bore portion as the insert is pressed into the stepped recess, the pressing movement of the insert into the stepped recess being arrested upon the teeth engaging the said shoulder, said teeth having burr-like sharp points which oppose any force tending to remove the insert from the recess.

3. An attachment insert adapted to be pressed into a stepped recess having a first bore portion defined by internal walls and a second bore portion defined by internal walls with a shoulder therebetween, said first bore portion being smaller in cross-sectional area than the second bore portion, said insert comprising a body and cable attachment means, said body having a stabilizing plug insert portion adapted to interfit snugly with the said first bore portion by engaging the said internal walls thereof and stabilize the insert in the recess, and said body having an anchoring portion including means with burrs thereon, said means and burrs thereon being adapted to dig into the said internal walls of the second bore portion and oppose any force tending to remove the insert from the recess.

WILBUR M. KOHRING.