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RADIO SHIELDED IGNITION LEAD TERMINAL
WITH PRESSURE BARRIER
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Fig. 1.

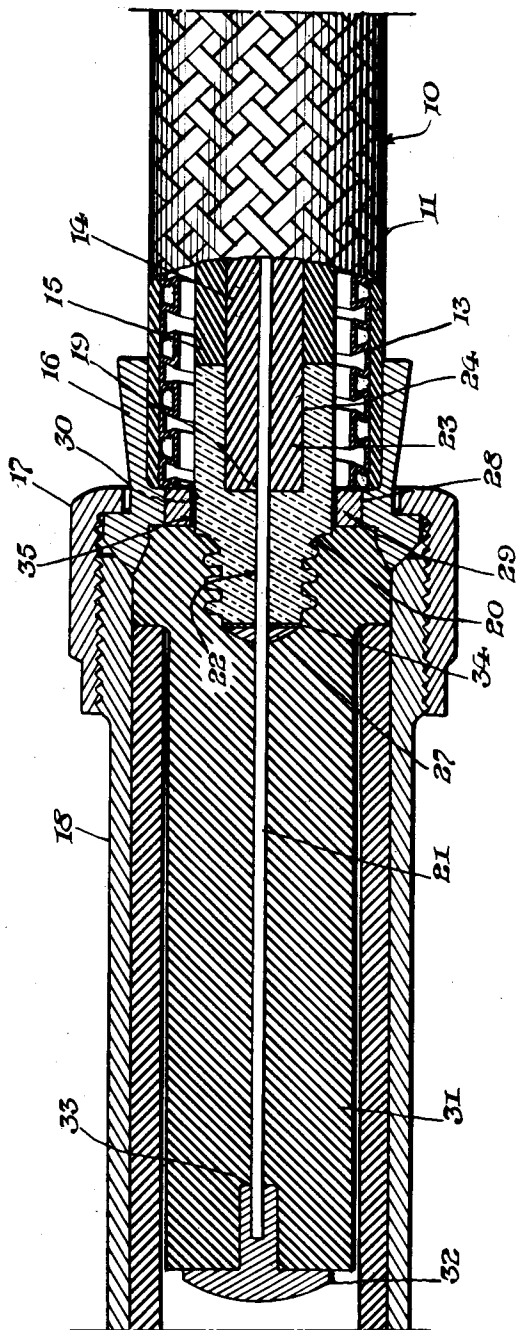


Fig. 3.

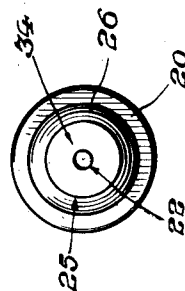
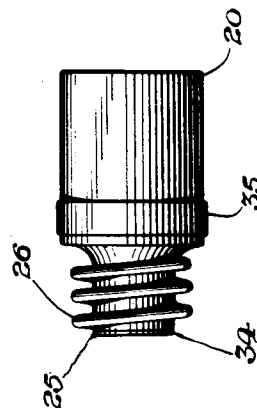


Fig. 2.



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RADIO SHIELDED IGNITION LEAD TERMINAL WITH PRESSURE BARRIER

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4 Claims. (Cl. 174—35)

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This invention relates to radio shielded lead assemblies, such as are used to connect ignition wires forming parts of a radio shielded ignition system for internal combustion engines.

When aeroplanes are flown at varying altitudes the change in pressure causes air to be either sucked into or expelled from the ignition systems, depending upon the change of atmospheric pressure. Wherever leaks are present in the conduit, moisture may be drawn into the ignition system by reason of the sudden change in altitude. This water runs along the ignition wire and into a terminal cavity, resulting in an electrical short and a breakdown of the system.

Accordingly, it is an object of this invention to provide a shielded lead for ignition systems, which will not permit liquid or gases to flow along the ignition wire.

Another object of this invention is to provide a long leakage path for the electrical potential.

A feature of this invention is its novel dielectric moisture arrestor.

A further feature of this invention is its use of a metal-coated dielectric member to support the moisture arresting members.

A feature of this invention is the novel shape of its ceramic wire-receiving member which provides an elongated electrical leakage path.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings, forming a part hereof, is illustrated one form of embodiment of the invention, in which drawings similar reference characters designate corresponding parts, and in which:

Figure 1 is a vertical section of a moisture arresting lead, made according to this invention.

Figure 2 is a side elevation of the ceramic element shown in Figure 1.

Figure 3 is a front end view of the ceramic element shown in Figure 2.

Referring to the drawings, and particularly Figure 1, 10 indicates the well known shielded ignition cable comprising an external covering of wire braid 11, said braid 11 overlying a helically wound metal tubing 13 within which is carried the ignition lead 14. The space between the lead 14 and the metal tube 13 is filled by a suitable flexible dielectric 15. A metal ferrule 16 is secured to the braid 11 as by silver solder or other suitable means. The ferrule 16 carries a nut 17 on the end thereof for engagement with a rigid outlet 18, which forms part of the shielding assembly (not shown).

The end of the ignition lead 14 is stripped, as indicated at 19, and a dielectric member 20 is slipped thereon. The ignition wire 21 passes through a small opening 22 in the dielectric member 20.

The dielectric member 20 is preferably made of ceramic, but may be formed from any electrically non-conductive material upon which a coating of metal film may be hermetically bonded. As shown in Figure 2, the member 20 is provided with a somewhat reduced portion 25 at the forward end thereof, and a plurality of fins 26 are provided therearound. The fins 26 may be parallel flanges extending from the side of the reduced portion 25, or they may be in the form of a helix such as is shown in Figure 2.

After a coating of metallic film has been hermetically bonded upon the front ceramic member 20, as indicated at 34, and in a thin strip around the enlarged portion, as at 35, in any of the well known ways, and the ignition lead 21 drawn through it, as shown in Figure 1, a globule of solder 27 is placed upon the front of the said ceramic member 20 and around the ignition wire 21. The solder 27 is thus securely fastened to both the lead wire 21 and the metallic coating 34 on the member 20. The inwardly extending flange 28, integral with the ferrule member 16, may be soldered to the large diameter of the metal 35 coated on the member 20, or a metal collar 29, having therein an inside opening 30, equal in size to the outside diameter of the large portion of the ceramic member 20, may be slipped over the said member 20, and soldered to both the metal 35 coated on the member 20, and the ferrule flange 28.

A dielectric terminal extension 31 is molded around the end of the ignition wire 21 which extends beyond the metal globule 27 and a contact button 32, secured to the end of the ignition wire 21, as indicated at 33, is provided at the end of the said dielectric 31 in the usual manner.

From an examination of the above-described structure, it will be seen that moisture which may enter the cable structure 10, by reason of breaks therein, and the sucking action brought about by sudden changes in atmospheric pressure, will travel down the ignition wire 21 until it strikes the globule of metal 27. Said moisture will not be able to go any further, and will be prevented from moving into the terminal cavity. Moisture which travels down the insulation of the ignition lead 14 is substantially stopped when it reaches the ferrule 16 and the collar 29, which have been soldered to the metal coated ceramic

member 20. The combined member 20, its globule of solder 27, and collar 29, comprise a transverse pressure proof barrier or moisture arresting member within the conduit.

The fins 26, provided on the reduced portion 25 of the ceramic member 20, form an elongated electrical leakage path from the ignition wire 21 to the outside of the shield. This lengthened leakage path prevents electrical shorts. Without the provision of the fins 26 it would be necessary to extend the ceramic member 20 beyond the limits of the protective metal ferrule 16, and its nut 17, and into the flexible dielectric member 31, thereby resulting in a possible breakage of the ceramic member 20, or a consequent loss of flexibility of the member 31.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States, is:

1. A radio shielded ignition lead terminal assembly comprising a shielded ignition cable, a transverse pressure proof barrier carried within said cable, said barrier being ceramic and provided with a central bore to receive the ignition wire therethrough, a hermetically bonded coating of metal upon the barrier where the ignition wire leaves the said barrier, said wire and metal coating being soldered together to provide a liquid tight connection, a second hermetically bonded coating of metal upon the outside surface of the barrier, a metal collar soldered to the second metallic coating to provide a liquid tight connection and an electrical contact member secured to the end of the ignition wire.

2. A radio shielded ignition lead terminal assembly comprising an insulated ignition wire, a metallic covering therearound, a ferrule and nut secured to and carried upon the metallic coating, a ceramic member centrally bored to receive therethrough the ignition wire, said ceramic member being provided with a reduced portion on the front thereof and a plurality of transverse fins therearound, a hermetically bonded metal coating upon the front of said ceramic member, means comprising a spot of solder to secure the ignition wire to the metal coating, a hermetically bonded second metal coating upon the larger outside diameter of the ceramic and means comprising solder to secure the ferrule to the second metallic coating and an electrical contact member secured to the end of the ignition wire.

3. A radio shielded ignition lead terminal assembly comprising an insulated ignition wire, a metallic covering therearound, a ferrule and nut

secured to and carried upon the metallic coating, a ceramic member centrally bored to receive therethrough the ignition wire and having a larger bore therein adapted to embrace the dielectric of the ignition wire, said ceramic member being provided with a reduced portion on the front thereof and a plurality of transverse fins therearound, a hermetically bonded metal coating upon the front of said ceramic member, means comprising a spot of solder to secure the ignition wire to the metal coating, a hermetically bonded second metal coating upon the larger outside diameter of the ceramic and means comprising solder to secure the ferrule to the second metallic coating and an electrical contact member secured to the end of the ignition wire.

4. A radio shielded ignition lead terminal assembly comprising an insulated ignition wire, a metallic covering therearound, a ferrule and nut secured to and carried upon the metallic covering, a ceramic member centrally bored to receive therethrough the ignition wire, said ceramic member being provided with a reduced portion on the front thereof and a plurality of transverse fins therearound, a hermetically bonded metal coating upon the front of said ceramic member, means comprising a spot of solder to secure the ignition wire to the metal coating, a hermetically bonded second metal coating upon the larger outside diameter of the ceramic, a collar intermediate the ceramic member and the ferrule and means comprising solder to secure both the collar and the ferrule to the second metallic coating and an electrical contact member secured to the end of the ignition wire.

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