

June 24, 1941.

W. E. SCHWARZMANN
DISTRIBUTOR CABLE CONNECTOR

2,246,901

Filed Nov. 23, 1940

Fig. 1

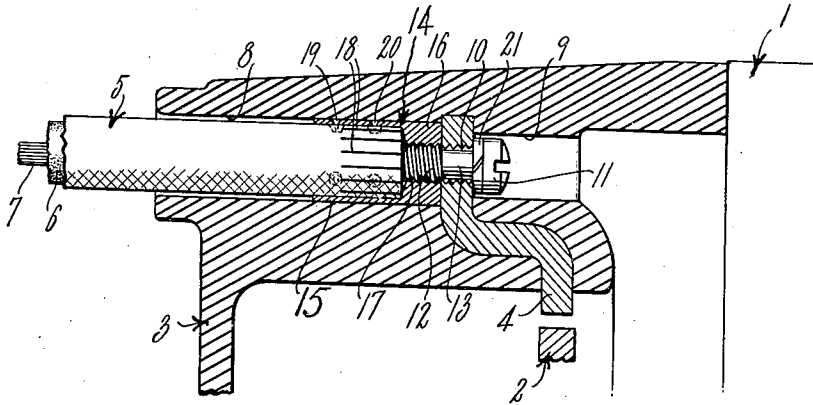


Fig. 2

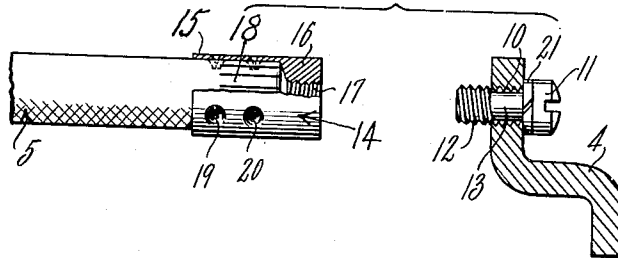


Fig. 3

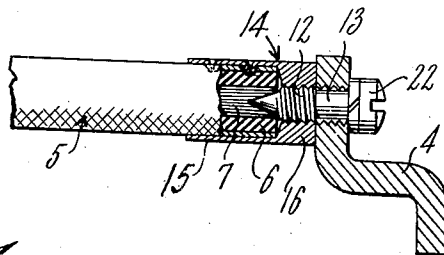
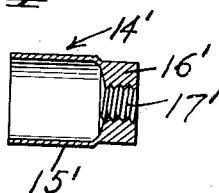


Fig. 4



INVENTOR.
Wolfgang E. Schwarzmann
BY *Don A. Renthall*
ATTORNEY

UNITED STATES PATENT OFFICE

2,246,901

DISTRIBUTOR CABLE CONNECTOR

Wolfgang E. Schwarzmann, Longmeadow, Mass.,
 assignor to American Bosch Corporation,
 Springfield, Mass., a corporation of New York

Application November 23, 1940, Serial No. 366,304

3 Claims. (Cl. 200—19)

This invention relates to distributor cable connectors for ignition generators and particularly to such connectors electrically and mechanically connecting the ends of the sparkplug cables to the electrodes of the distributor plates of high tension and low tension ignition generators such as magnetos and battery ignition timers.

The primary object of the invention is to provide a compact, simple and inexpensive connector of the kind wherein the cable is electrically connected and mechanically secured longitudinally in a through opening in the distributor plate substantially parallel to the axis of rotation of the cooperative rotor of the distributor in such manner as to permit ready disassembly and yet when assembled to provide with the distributor electrode a positive electrical and mechanical connection which is proof against vibration such as experienced on airplanes and also which is free from electrical and mechanical hazards to other parts of the ignition generator in which it is incorporated.

Other objects will appear from the following description, taken in connection with the accompanying drawing of the invention as applied, as an example, to a high-tension jump-spark distributor for a multicylinder magneto for airplanes. In the drawing—

Fig. 1 shows a fragmentary view, partly in section, of a distributor with one of the cable connectors assembled therein; Fig. 2 shows the parts of the cable connector, in elevation and section, in disassembled relation; Fig. 3 shows a modification, in elevation and section, of the cable connector in general application; and Fig. 4 shows in central section the cable terminal of both embodiments before assembly to the cable.

Referring particularly to Figs. 1 and 2, the magneto 1 has a distributor rotor 2 and a stationary high-tension distributor plate or cap 3 of insulating material with electrodes such as 4 cooperative sequentially with the rotor 2 to distribute to the sparkplugs of the engine (not shown) the ignition currents successively generated by the magneto. For each sparkplug cable 5, having a fabric or other covering and insulating material 6 as rubber surrounding a central stranded wire 7, the distributor plate 3 has a through opening arranged substantially parallel to the axis of rotation of the rotor 2 and comprising the longitudinally arranged circular bores 8 and 9 between which extends the outer end portion of the molded-in electrode 4 having an inner portion extending into a spark gap relationship with the distributor rotor 2. Centrally of the bores 8, 9,

the electrode 4 is threaded at 10 for the accommodation of a screw 11 which has a threaded end portion at 12, and also a smooth portion at 13 of a diameter less than that of the apices of the threads at 10 so as to readily pass through the electrode 4.

The cable terminal of brass in the form of a one-piece ferrule generally indicated by 14 comprises a socket 15 and a comparatively thick end portion 16 with a central screw-threaded opening at 17. The cable 5, with the bared ends of the stranded wires 7 fanned back at 18 over the outer periphery of the cable, is arranged in socket 15 as shown. To prevent the cable from pulling out or twisting around in the socket, and to provide a good electrical contact between the wire and the cable terminal, the socket is punched or depressed well into the insulation at one or more places 19, 20.

With the distributor plate 3 off the magneto 1, and with the terminal 14 secured on the end of the cable 5, the connector may readily be assembled as shown in Fig. 1 and thereafter disassembled as shown in Fig. 2, without turning the connector 14 or the cable 15 in the through opening 8, 9 during the process. To disassemble it, the screw 11 is turned by a screw driver out of engagement with the end portion 16 of the cable terminal. If the cable 5 with the terminal 14 thereon was not withdrawn as the screw 11 was being backed out, the cable may be completely pulled out of the socket 8 after the screw is entirely disengaged from the terminal. In the latter case the screw may be screwed through the electrode 4 so that it and the lock washer 21 are loosely retained therein by reason of the fact that the screw-threaded portion 12, of larger outer diameter than the smooth portion 13, extends entirely beyond the screw threads of the electrode 4 at 10. Now to assemble the connector, the terminal 14 with the cable 5 secured therein is pushed into the bore 8. Either the screw 11 is backed out of the electrode 4 and the terminal 14 pushed into contact with the end portion 16 thereof, whereupon the screw is guided into screw-threaded engagement with that end portion, or else the screw, projecting loosely into the bore 8, is engaged with the end portion 16 while the ferrule is away from contact with the electrode 4. In either event, the cable terminal is finally pulled longitudinally by the screw into good electrical contact with the electrode and the parts are held fast in that position by the lock washer 21, even against such vibration as is encountered on airplanes. It will be observed that

the cable is fastened in place by a screw arranged longitudinally of it so that the assembly and disassembly may be accomplished through the bore 9 which is away from the rotor 2, and away from the inner surface of the distributor plate 3.

In Fig. 3 I show a modification which is like that of Figs. 1 and 2 except that the screw 22 is longer than screw 11 and is pointed so that upon assembly of the connector the screw 22 enters the strands of the wire 7 to make electrical contact therewith. If desired, the wires need not then be fanned over the cable 5, as at 18 in Fig. 1, and the end portions of the wires need not be bared.

It will be apparent that before assembly to the cable in either embodiment, the cable terminal 14', as shown in Fig. 4, has a socket 15' which originally is unpunched and of greater diameter than that of the relatively thick end portion 16' having the screw-threaded opening 17'. When the cables are to be attached, as for instance to the distributor plate 3 upon installation of the magneto on the engine, a cable, with or without the wire thereof bared and fanned back, is inserted in the cable terminal 14' and then by means of an appropriate tool the socket 15' is compressed in diameter tightly around the cable and pierced as shown in Figs. 1, 2 and 3 to mechanically hold the cable securely therein.

Although I have illustrated and described but one complete embodiment and one modification of a part thereof, it will be understood that many changes may be made within the broad terms of the appended claims. Furthermore, it will be understood that either form of the electrical connector, or equivalent modifications thereof, may be used in single cylinder or multiple cylinder magnetos of high or low-tension types, with brush as well as jump-spark distributors, and of rotating, oscillating or other types with stationary or rotatable generating windings; and also may be used in other forms of ignition generators as for instance battery ignition timers.

Having thus described my invention, what I claim is:

1. In an ignition generator; a distributor rotor for distributing to sparkplug cables ignition currents generated by said generator; a distributor plate having a through opening substantially parallel to the axis of rotation of said rotor, and also having an electrode which is cooperative with said rotor and which extends into said opening; and a cable connector enclosed within said opening for disengageably connecting electrically and mechanically one of said cables to said electrode comprising a cable terminal at one side of said electrode having a socket for the reception and retention of said cable and also having a screw-threaded end por-

tion, and also comprising a screw passing along said opening through said electrode from the other side thereof into threaded engagement with said end portion and in electrical connection with said cable; whereby the screw enables the cable terminal with the cable therein to be drawn longitudinally along said opening into, and secured in, mechanical and electrical connection with said electrode and to be disengaged therefrom.

2. In an ignition generator; a distributor rotor for distributing to sparkplug cables ignition currents generated by said generator; a distributor plate having a through opening substantially parallel to the axis of rotation of said rotor, and also having an electrode which is cooperative with said rotor and which is molded into said distributor plate across said opening; and a cable connector enclosed within said opening for disengageably connecting electrically and mechanically one of said cables to said electrode comprising a cable terminal at one side of said electrode having a socket for the reception and retention of said cable and also having an end portion with a centrally arranged screw thread, and also comprising a screw passing through said electrode centrally of said opening from the other side of said electrode into threaded engagement with said end portion and in electrical connection with said cable; whereby the screw enables the cable terminal with the cable therein to be drawn longitudinally along said opening into, and secured in, mechanical and electrical connection with said connector and to be disengaged therefrom.

3. In an ignition generator; a distributor rotor for distributing to sparkplug cables ignition currents generated by said generator; a distributor plate having a through opening substantially parallel to the axis of rotation of said rotor, and also having an electrode which is cooperative with said rotor and which extends into said opening; and a cable connector enclosed within said opening for disengageably connecting electrically and mechanically one of said cables to said electrode comprising a cable terminal at one side of said electrode having a socket for the reception and retention of said cable and arranged in electrical connection therewith and also having a screw-threaded end portion, and also comprising a screw passing along said opening through said electrode from the other side thereof into threaded engagement with said end portion; whereby the screw enables the cable terminal with the cable therein to be drawn longitudinally along said opening into, and secured in, mechanical and electrical connection with said electrode and to be disengaged therefrom.

WOLFGANG E. SCHWARZMANN.