Sept. 12, 1933. H. C. MOHR 1,926,163

CABLE TERMINAL

Filed Dec. 14, 1928

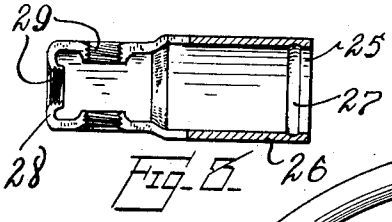


Fig. 8.

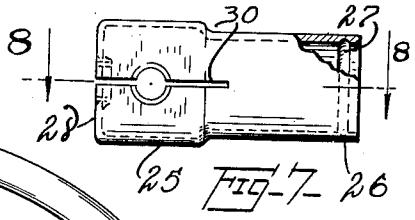


Fig. 7.

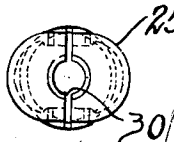


Fig. 9.

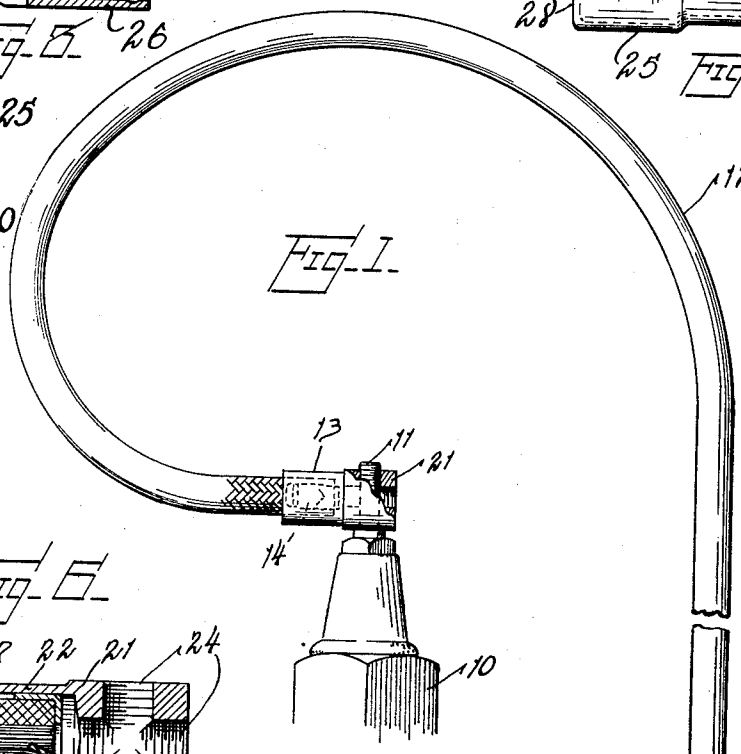


Fig. 1.

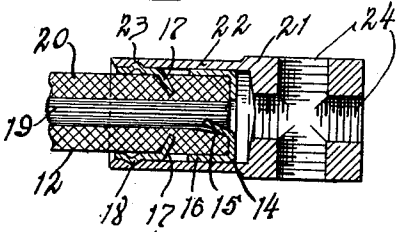


Fig. 6.

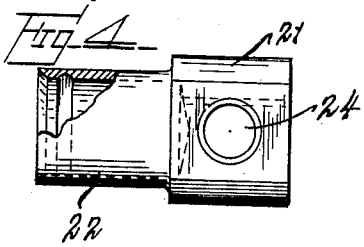


Fig. 4.

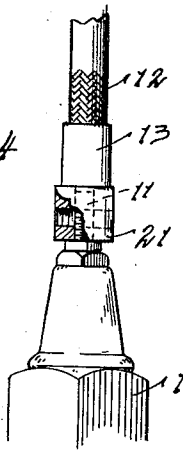


Fig. 2.

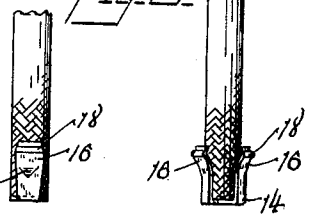


Fig. 3.

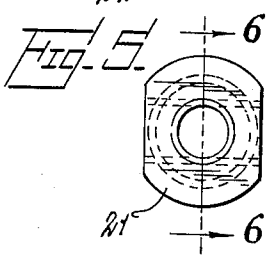


Fig. 5.

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1,926,163

CABLE TERMINAL

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Application December 14, 1928
Serial No. 326,032

3 Claims. (Cl. 173—269)

This invention relates to cable terminals for conveniently connecting high tension ignition cables with the spark plugs of an internal combustion engine.

The high tension cables of an internal combustion engine are subject to rapid deterioration, as to their insulating qualities and, in order to maintain the full efficiency of the engine, it is desirable to replace these cables occasionally. As is well known different makes of automobiles have ignition systems differently arranged. Some are arranged so that the spark plug cables must be connected with the axis of the cable in alignment with the axis of the spark plug, while in other systems the cables are connected with the axis of the cables at right angles to the axis of the spark plug. Since these different systems and arrangements require cables of different lengths, it has been necessary for dealers, handling replacement cables with factory-attached terminals, to stock a great variety of cable lengths. To permit dealers to carry a relatively small stock of cables, and yet be prepared to meet the requirements of any case of replacement that may arise, it has been found desirable for the dealers to stock replacement sets consisting of loose terminals and pieces of cable of a length suitable for a variety of ignition systems and arrangements, and it is the object of this invention to provide a terminal adapted to be conveniently attached to a piece of cable, by the person making the installation, whereby said cable may be easily prepared for connecting to a contact member.

Other objects of the invention and the features of novelty will be apparent from the following description taken in connection with the accompanying drawing, of which:

Fig. 1 is an elevational view, with parts broken away, showing a spark plug and a cable connected thereto by a terminal embodying my invention;

Fig. 2 is an elevational view, with parts broken away, showing another manner of connecting the cable terminal to a spark plug;

Fig. 3 is an elevational view of one end of the cable shown in Fig. 1;

Fig. 4 is an elevational view of the extension member, on an enlarged scale and with parts broken away;

Fig. 5 is an end elevation of the terminal on an enlarged scale;

Fig. 6 is a sectional view taken on line 6—6 of Fig. 5, showing the manner of connecting the terminal to the cable;

Fig. 7 is a side elevational view showing another form of extension member;

Fig. 8 is a sectional view taken on line 8—8 of Fig. 7; and

Fig. 9 is an end view of the extension member shown in Fig. 7.

Referring now to the drawing, in detail, 10 indicates a spark plug of a common type having a vertically extending screw-threaded contact member 11, to which cable 12 is attached by means of terminal 13. For attachment to each end of cable 12, clips 14 are provided. These clips comprise a bottom portion having a tang 15, and resilient side members 16 each having a tang 17 and a ridged portion 18. The clip is applied to the cable end so that tang 15 is pressed in among conductors 19, while tangs 17 are pressed inwardly to engage the cable covering 20 and thus retain the clip on the cable end. The clip itself serves as a suitable terminal for connecting one end of cable 12 to the distributor cap (not shown), but at the other end of the cable, I provide the extension member 21 which cooperates with clip 14 to form a terminal for connecting the cable to the spark plug. The extension member 21 is preferably formed with a recessed or sleeve-like portion 22 at one end adapted to receive and encompass clip 14. In the inner wall of the sleeve-like portion 22 an annular groove 23 is provided in which the ridged portions 18, formed on resilient side members 16 of clip 14, removably engage when the end of cable 12 is inserted in extension member 21. The end of extension member 21, opposite the sleeve-like portion 22, is flattened to adapt it to be gripped for turning, and is provided with threaded openings 24. These threaded openings are arranged with their axes intersecting so that the terminal may be applied to the contact member 11, of spark plug 10, with the axis of the terminal in alignment with the axis of the contact member, as shown in Fig. 2, or with the axis of the terminal intersecting the axis of the contact member, as shown in Fig. 1.

In the spark plugs in use at the present time, the diameter of the threaded contact member 11 will be found to be different in the product of different manufacturers. It will also be found that while the diameter of contact member 11 is not standard for all plugs, practically all threaded contact members have threads of the same pitch, that is to say, practically all contact members are provided with the same number of threads per inch. To avoid the necessity of stocking many extension members having threaded open-

ings of various sizes, it may be desirable to use a different form of extension member such as I have shown in Figs. 7, 8 and 9, and designated 25.

This extension member 25 is preferably tubular in form having a sleeve-like portion 26, provided with a groove 27 adjacent one end, in which ridge 18 of the clip 14 engages when the end of cable 12 is inserted. At its opposite end, the member is flattened for a portion of its length to adapt it to be gripped for turning, as is clearly shown in Figs. 8 and 9, and is closed by the end wall 28. Openings 29 are punched and tapped in the end wall 28, and in the walls of the flattened portion. These openings are formed with inturned edges so as to provide the maximum number of threads obtainable. The openings 29 are of the diameter of the smallest size contact member expected to be encountered, and to adapt it for use with contact members having the same number of threads per inch but of larger diameter, I provide a slit 30, which extends longitudinally of the member and cuts through the openings 29. This slit divides the flattened portion into two parts, and extends into the sleeve portion 26 for a short distance, thereby providing a certain amount of resiliency, which permits the parts of the flattened portion to separate when a contact member of larger diameter is screwed into one of the openings 29.

By means of the terminals, which I have shown and described, consisting of the clip 14 and an extension member 21, or the clip 14 and an extension member 25, it will be readily seen that replacement cables may be easily and quickly prepared for immediate use in any of the various ignition systems and arrangements to be encountered, by simply cutting the cable to proper length and attaching a clip 14 to each end thereof. The extension member 21 or the extension member 25, if that form is preferred, is screwed on the spark plug 10, with contact member 11 of the plug engaging in one or the other of the threaded openings, depending upon whether the cable is to be connected with its axis in alignment with the axis of the plug, as shown in Fig. 2, or with its axis at right angles to the axis of the plug, as shown in Fig. 1. The cable 12 is then connected in place by inserting one end thereof, bearing a clip 14, into the sleeve-like recess of the extension member, and inserting the other end, bearing a clip 14, into the proper distributor cap recess. The clips 14 serve as a means for detachably holding the cable ends in the recesses, and to establish good electrical connection with the cable end.

While I have shown and described a preferred form of the device embodying my invention, it will be understood that various changes and alterations may be made therein without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, I claim:

1. In a cable terminal, the combination of a clip attached to the end of a cable, and an extension member provided with a tubular portion in which said clip removably engages and having intersecting threaded openings formed therein for connecting said extension member to a contact member in different selective positions with respect to the axis of the contact member.

2. In a cable terminal, the combination of a clip attached to the end of a cable, and an extension member provided with a tubular portion in which said clip removably engages and having a plurality of expansible threaded openings to adapt it to be connected to various sized contact members in selective position.

3. A terminal for an insulated conductor, comprising an expansible member having integral means for securing the same to the insulation of said conductor and making electrical contact with the latter, an extension member provided with a tubular portion in which the first mentioned member removably engages, and means normally preventing separation of said members comprising a groove in one of said members and a bead on the other of said members engaging in said groove, said extension member having two intersecting threaded openings therein for connecting the terminal to a contact member in different selective positions with respect to the axis of said contact member.

HUBERT C. MOHR.