June 19, 1934. H. RABEZZANA 1,963,419

EXPANDING TERMINAL

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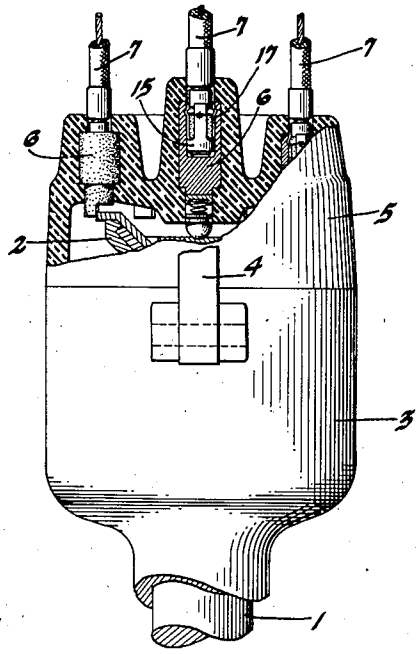

Fig. 1

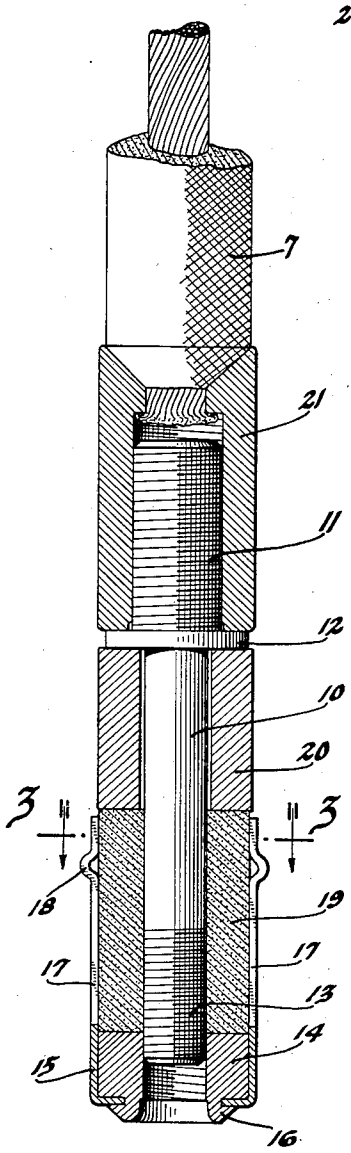

Fig. 2

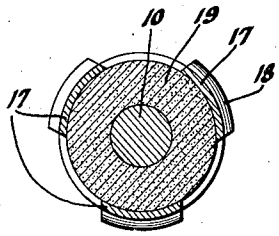

Fig. 3

Inventor

Hector Rabezzana

By Blackmore, Spencer & Hicks

Attorneys

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EXPANDING TERMINAL

Hector Rabezzana, Flint, Mich., assignor to A C Spark Plug Company, Flint, Mich., a company of Michigan

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3 Claims. (Cl. 173—269)

This invention relates to electrical apparatus and more particularly to an improved connector device.

It is one of the objects of the invention to provide a device of simple and inexpensive construction by which electrical parts may be easily and quickly connected and disconnected and one by which the maintenance of a tight electrical contact will be insured.

While its field of usefulness is not limited, the device forming the subject matter hereof may be advantageously employed in the ignition system of an internal combustion engine for connecting lead wires with the usual distributor mechanism. As ordinarily constructed the distributor housing contains a number of sockets to receive terminal connectors on the ends of several conductor cables and these connectors each consist of a cup-shaped terminal on the end of the wire having rearwardly extending spring fingers which snap into a groove in the socket to hold the parts together and make electrical contact.

Such an arrangement has been in common use for some time and has proved generally satisfactory but it cannot be depended upon as always affording a good contact for all purposes. Especially is this true when the engine is to be operated in the vicinity of apparatus for radio communication, as in the case of motor vehicles equipped with radio receiving sets. A loose connection may cause disturbance and interference to good reception. The elimination of looseness and consequently a reduction in radio interference is one of the things the present device is intended to accomplish. Various other features of advantage will become apparent during the course of the following specification, having reference to a preferred embodiment of the invention.

In the accompanying drawing:

Figure 1 is a side elevation, partly in section, of a conventional distributor having lead wires attached, each by means of the terminal connector forming the subject matter hereof.

Figure 2 is an enlarged detailed sectional view of the connector terminal, and

Figure 3 is a transverse section taken on line 3—3 of Figure 2.

Referring to the drawing, the reference numeral 1 indicates a driving shaft for the rotor 2 enclosed within the distributor housing 3 which has removably secured thereover, as by means of clips 4, a cap 5 carrying a series of sockets 6 for co-operation with the rotor 2, all constructed and arranged in the usual fashion. No modification of the existing distributor construction is necessary for the use of the present device in connecting the customary cables 7 with the sockets 6.

The connector device may be of the type illustrated in the detailed view, Figure 2, wherein there is shown a stud 10 having an enlarged screw threaded outer end 11, an annular flange or shoulder part 12 intermediate its ends, and a screw threaded inner end portion 13. Adjustably screw threaded on the lower end 13 of the stud is a nut 14 carrying a cup-shaped stamping 15 whose inturned lower wall portion may be secured in an annular groove in the nut 14, preferably formed by providing the nut with a reduced skirt on one side for projection through an opening in the bottom wall of the cup 15 and the subsequent outward bending of the skirt over the bottom wall, as at 16. The wall of the cup is shown as being slitted or cut away to provide a plurality of flexible spring tongues or fingers 17, each having near its free end a crimp or boss 18 which may be snapped into the customary groove provided in the wall of the receiving socket of the distributor. Within the flexible fingers 17 and surrounding the stud 10 there is shown a sleeve 19 which is preferably of rubber or other elastic deformable material and which is interposed between the nut 14 and a collar or washer 20 loosely sleeved on the stem of the stud 10 and bearing against the underside of the flange or shoulder 12. With the parts arranged as thus described, the spring fingers 17 may be easily spread apart by expanding or bulging the rubber sleeve 19 upon relative movement of the nut 14 and the washer 20, as can be readily accomplished by rotating the stud to thread it into the nut 14, thereby drawing together the nut and the annular flange 12 on the stud against which the collar 20 bears. It will be obvious, therefore, that when the terminal is inserted in the socket that the contact members may be caused to move into positive and tight contact with the walls of the socket by simply rotating the stud and that they will thereafter be maintained in good contact and that the terminal will be prevented from accidental disengagement. Rotation of the stud in the opposite direction will permit retraction of the spring fingers and removal from the socket.

If it is desired the terminal connector may be first inserted in the socket and the cable 7 subsequently secured to the upper screw threaded end 11 as by means of the nut 21, but it will be readily understood that the particular connection between the stud and cable may take any one of a number of forms and in some

instances be in the nature of a permanent connection, in which case the stud could be rotated by rotating the cable to effect attachment or removal.

I claim:

1. A terminal to electrically connect two parts, one of which is socketed to receive the terminal, including circumferentially arranged spring fingers, a nut carrying said fingers, a sleeve of elastic deformable material within the fingers, and a stud extending through the sleeve into threaded engagement with said nut for adjustment therewith to deform said sleeve and thereby spread the fingers.

2. A terminal connector for insertion in a socket, including a screw stud provided with a shoulder intermediate its ends, a collar loosely surrounding the stud and abutting said shoulder, a sleeve of elastic deformable material on the stud beneath said collar, a nut beyond the sleeve adjustably threaded on the end of the stud and a series of flexible contact fingers carried by the nut for engagement by the sleeve, whereby relative adjustment of the stud and nut controls deformation of the sleeve to move the fingers.

3. An electrical connector device for insertion within a recess, including a pair of axially spaced pressure applying members adjustable toward and from each other, a body of elastic deformable material between said members bulgable upon relative axial adjustment of the members and outwardly movable latch means controlled by said body for locking engagement within the recess.

HECTOR RABEZZANA.