Dec. 31, 1935. R. A. BELL 2,026,490

CONNECTER

Filed Oct. 14, 1933

Fig. 1

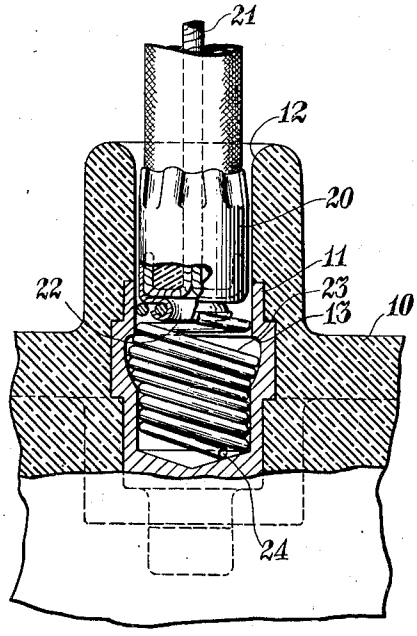


Fig. 2

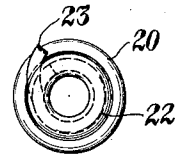


Fig. 3

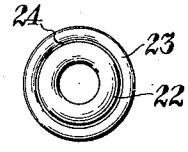


Fig. 4

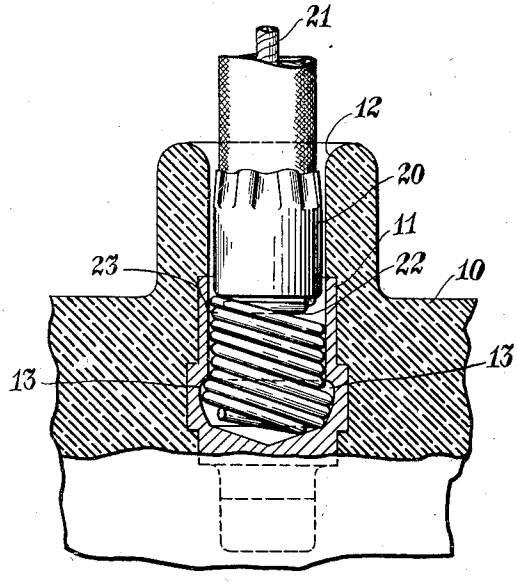
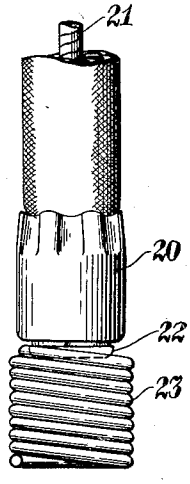


Fig. 5



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UNITED STATES PATENT OFFICE

2,026,490

CONNECTER

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Application October 14, 1933, Serial No. 693,574

2 Claims. (Cl. 173—269)

This invention relates to a connecter terminal for electrical conductors. The connecter of this invention is particularly adapted for use with female terminals, such for example as are common on the high tension distributor of automotive ignition systems. More particularly, the invention relates to a spring connecter adapted to accommodate itself to a variety of female connecters of various sizes and proportions, and to form with any a satisfactory tight electrical connection.

In a Patent No. 1,933,304 I disclose a spring terminal formed of an open helix of spring wire, i. e., having the turns thereof spaced apart, the helix being slightly flattened from cylindrical shape. The open helix and the flattening thereof were used in that case in order to permit the turns of the helix better to engage in grooves in the female terminal so as to secure the spring connecter in position within the female terminal. The flattening of the helix, moreover, was found to be important, because upon inserting the male spring into the female terminal, the pressure tended to close the turns of the helix together, and thereby to expand it radially. With the flattened helix, additional pressure permitted the expanded helix to be forced into the female terminal by forcing the spring back into a circular form, whereas, upon being released, the spring returned to its elliptical form, and made secure contact in the female terminal.

I have now found that it is not necessary to use the flattened terminal, and that the expense of the flattening operation may be eliminated if the spring helix is made tight, i. e., with its turns close together. Whereas it had been supposed that the spring would have to be capable of resilient deformation when axially pushed into the female terminal to permit its insertion, and to cause one or more turns of the helix to engage in the groove of the female terminal, I have now found that a tight spiral spring may be made to fit into the female terminal and be securely held therein if it is twisted upon insertion so as to wind up the spring. The effect of this is to attenuate the spring to a smaller diameter, and thus to permit its insertion into the female terminal. Upon release, the spring again expands and forms an even more secure contact than in the case of the open helix, even when flattened as described in my prior Patent No. 1,933,304. The terminal is thus possessed of all of the advantages of that described and claimed in my prior application, but to a greater degree, and furthermore, may be made more cheaply.

A preferred embodiment of my invention is shown in the accompanying drawing, in which

Fig. 1 is a vertical section showing a terminal embodying my invention inserted in the female terminal in the top of a distributor cap;

Fig. 2 is a bottom view of the terminal embodying my invention, e. g., as illustrated in Fig. 1, with a part of the coil spring broken away to show the method of attaching the spring terminal to the ferrule:

Fig. 3 is an end view of the male terminal shown in Fig. 1; and

Fig. 4 is a view similar to Fig. 1, showing a differently proportioned female terminal.

Fig. 5 shows the terminal in relaxed condition.

In Fig. 1 is shown a portion of a distributor cap **10**, into which is molded a female terminal **11** open at the top through a throat **12** in the distributor cap. A recess **13** in the terminal **11** is provided to serve as a latch for holding the connecter against accidental separation from the terminal.

The connecter in this case consists of a ferrule **20** crimped at its upper edge about an insulated conductor **21**. The ends of the conductor are bared and bent back over the insulation so as to contact with the inside of the ferrule **20**. The end of the ferrule is constricted and bent over, as shown at **22**, to secure one end of the spring **23** to the ferrule. The opposite end of the spring may be left free as shown at **24** on the drawing.

The upper edge of the ferrule **20** is crimped so as to form spaced folds which are pressed into the insulation on the cable and form a secure engagement therewith, whereby the cable and terminal may be twisted together for the insertion of the spring into the female terminal, as already described above. This crimping, or some equivalent method of securing the spring to the insulator cable so that it may be twisted without slippage between the terminal and the cable, and without injury to the cable, is extremely important when the tight spiral terminal is used as shown and described above.

It is to be understood that many changes and modifications other than those specifically discussed above may be made within the scope of my invention.

What I claim is:

1. A terminal connecter comprising a female terminal cup-shaped and having an electrically conductive portion at its inner surface adapted to contact with a male terminal inserted therein as hereinafter specified, a male terminal com-

prising an electrically conductive coil spring of normal diameter slightly greater than the corresponding inside dimension of the female terminal and the turns of which coil spring are substantially touching one another, an insulated conductor electrically connected to said spring, and means mechanically connecting the outside of the insulated conductor to the end of said spring which when the terminals are connected is outermost from the bottom of the cup-shaped terminal whereby an axial pull tends to elongate the spring, said connecting means being adapted to transmit a twisting torque to said spring for insertion of the male terminal into said female terminal and an axial pull thereto for removal of the male terminal from the female terminal.

2. A terminal connecter as defined in claim 1 in which the coil is substantially circular in cross section.

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