May 16, 1933. E. B. NOWOSIELSKI 1,909,306

TERMINAL CONNECTER

Filed Aug. 15, 1930

Fig. 1.

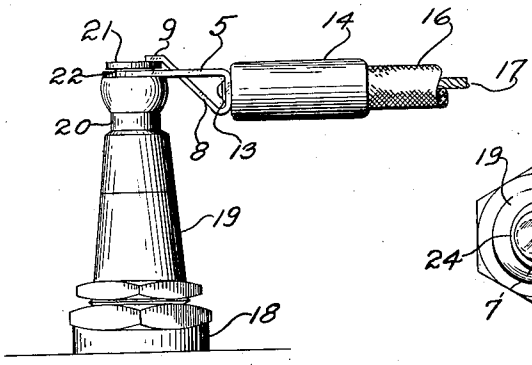


Fig. 2.

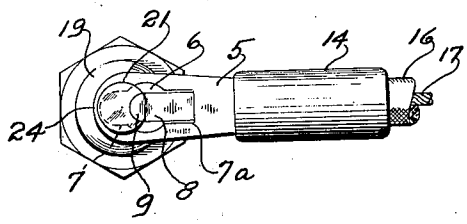


Fig. 4.

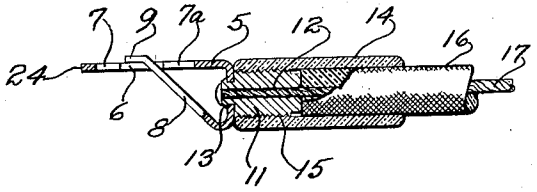


Fig. 3.

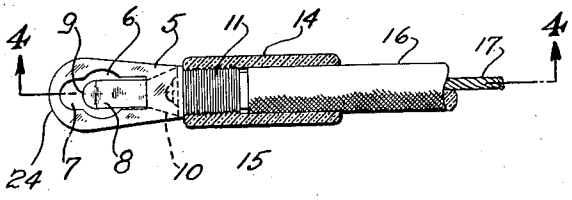
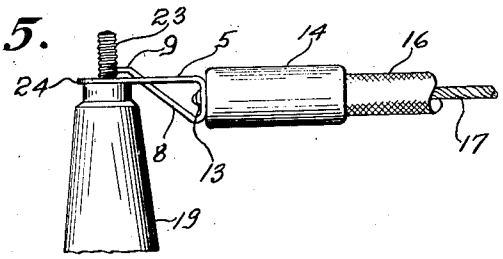


Fig. 5.



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UNITED STATES PATENT OFFICE

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TERMINAL CONNECTER

Application filed August 15, 1930. Serial No. 475,498.

The present invention relates to electrical connecting means, and more particularly to means adapted for quick engagement and disengagement with terminals of electrical devices.

One of the objects of the invention is to provide novel connecting means particularly adapted for use in connecting electrical conductors with terminals or binding posts of electrical devices or apparatus.

Another object is to provide novel connecting means for electrical conductors whereby the conductor may be easily and quickly mechanically coupled and electrically connected to a terminal or binding post.

Another object is to provide a novel and improved form of connecter whereby said connecter may be readily attached to a cable or conductor to afford an efficient electrical connection between the cable and a terminal or binding post.

A further object of the invention is to provide a novel and improved electrical connecter which is inexpensive to manufacture, simple to attach, and which is capable of withstanding severe vibrations such as are encountered in aircraft engines, for example, without breaking electrical contact with the device with which it is connected or becoming loose in any manner.

Still another object is to provide a novel and improved form of electrical connecter whereby threaded nuts and bolts and other separate elements may be dispensed with.

Other objects and advantages of the invention will be apparent more fully hereinafter from the following detailed description taken with the accompanying drawing, which illustrates one embodiment of the invention. It is to be expressly understood, however, that the drawing is for purposes of illustration only, and is not to be construed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawing, wherein like reference characters refer to like parts throughout the several views,

Fig. 1 is an elevational view showing the connecter of the invention applied to one form of spark plug and ignition cable;

Fig. 2 is a plan view of Fig. 1;

Fig. 3 is a plan view, partially in section, of the connecter;

Fig. 4 is a longitudinal section taken on line 4—4 of Fig. 3; and

Fig. 5 is an elevational view of the connecter applied to another form of terminal.

Referring now to the drawing, the invention comprises, in the form shown therein, a member 5 which is provided with an aperture 6 for the reception of a binding post or terminal in a manner to be described hereinafter, and with a semi-circumferential recess 7 which opens into the aperture 6 and which is of smaller radius than the latter for engaging said binding post or terminal to form a mechanical coupling and an electrical connection therebetween. Said member 5 is also provided with a resilient or yielding portion 8 having a tongue 9 adapted for engagement with the terminal from the opposite side of the semi-circumferential recess 7 when said terminal is projected or extended through the aperture 6 and is positioned in the recess 7. A slot 7*a* is provided adjacent the aperture 6 and joining therewith to provide for moving of the resilient portion thereinto during the attachment of the connecter to a terminal. The yielding portion 8 may be formed by bending an extending portion of the member 5 at substantially right angles thereto, reducing said portion in width as indicated at 10 in Fig. 3, and again bending it in the same angular direction until it projects upwardly through the opening 6 as shown in Fig. 4. Thereafter, the end of the resilient portion may be bent to provide the tongue 9 hereinbefore mentioned. Said yielding portion may be heat-treated to impart spring qualities thereto.

A threaded member 11 having a longitudinal bore 12 therethrough is secured to the member 5 by means of a projection 13 on said threaded member, which serves to rivet the latter to the member 5. The remaining element of the connecter structure consists of a sleeve 14 of insulating material, such as hard rubber, bakelite, or any other suitable

insulating material, and is internally threaded at 15 through a portion of its length for engagement with the threaded member 11 and is adapted to receive an insulated ignition cable 16 from the other end for coupling said cable to the member 11. The insulating sleeve 14 also provides means whereby the connecter may be attached to a "live" terminal without causing an electrical shock to the person attaching the connecter. The conductor 17 of the cable may be connected to the member 5 by cutting away a portion of the insulation and passing said conductor through the longitudinal bore 12 of the member 11 until it projects through the riveted portion 13, at which point the conductor may then be soldered or welded or secured in any other suitable manner.

In Fig. 1 the connecter is shown attached to a spark plug 18 which is provided with the usual high potential insulation 19 and a positive electrode 20. In the form shown, electrode 20 is provided with a head 21 having a circumferential groove or slot 22. The connecter is adapted to be attached to the electrode 20 by passing the head 21 through the aperture 6, during which operation the yielding portion 8 is forced into the slot 7*a* until the member 5 is adjacent the circumferential groove or slot 22, and then the connecter is moved relative to the spark plug so that the recess 7 and the annular groove 22 coincide. The resilient portion 8 recedes from the slot 7*a* to cause the tongue 9 to engage the upper surface of the electrode.

In Fig. 5 is shown a spark plug which is provided with an electrode having a threaded terminal adapted to receive a threaded nut (not shown) thereon for connecting an ignition cable to said plug. The novel connecter of the invention is adapted for attachment to a terminal of this type by removing the threaded nut, passing the threaded terminal 23 through the aperture 6 in a manner similar to that shown in Fig. 1, causing said threaded terminal to engage the member 5 in the recess 7 which permits portion 24 of the member 5 to engage one of the threads in the member 23, and resilient portion 8 will then be forced against said terminal from the other side thereof to cause the tongue 9 to also engage a thread, thereby forming a rigid mechanical and efficient electrical connection between the terminal and the connecter.

There is thus provided a novel and improved connecter for attaching conductors or cables to any type of terminal or binding post, which consists of a minimum number of parts, thereby reducing the cost of manufacture, and which provides a rigid mechanical connection as well as an efficient electrical connection. The connecter is particularly adapted for use on aircraft, where vibrations are excessive, for insuring a rigid electrical contact, thereby reducing the hazards which may result from a broken connection.

Although only one embodiment of the invention has been described and illustrated in the drawing as applied to the terminal of a spark plug, various changes and modifications will now be apparent to those skilled in the art and may be made without departing from the scope of the invention. It is also obvious that the connecter may be adapted for use with other terminals and binding posts than those illustrated. Reference will therefore be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A terminal connecter comprising, in combination with a current conducting cable and an electrode, a member for connecting said cable and electrode, said member having a portion provided with an opening through which said electrode is adapted to extend, and a yielding portion projecting upwardly through said opening and engaging the upper surface of said electrode.

2. The combination with a current conducting cable and an electrode of a member for connecting said cable and said electrode, said member having a portion provided with an opening through which said electrode is adapted to extend, and a yielding portion integral with said first named portion and projecting through said opening and engaging said electrode.

3. The combination with a current conductor and an electrode of means for connecting said conductor and said electrode, said means comprising a member having a portion provided with an aperture through which said electrode is adapted to extend and with a recess joining said aperture whereby said member is adapted to engage said electrode from one side thereof, and a yielding portion integral with said first named portion and projecting through said aperture and engaging said electrode from the opposite side to hold the electrode in said recess.

4. A terminal connecter comprising a member having an aperture through which a terminal may be extended and a yielding portion disposed at an oblique angle to the apertured portion of said member and projecting through said aperture and adapted to engage a terminal when the latter is inserted into said aperture, and means for connecting a conductor to said member.

5. A terminal connecter comprising a member having an aperture through which a terminal may be extended for engagement with said member and a recess formed with said aperture which is adapted to receive the terminal therein when the latter is inserted into said aperture, a yielding portion disposed at an oblique angle to the apertured portion of said member and projecting through said aperture and adapted to en-

gage the terminal and hold it in said recess, and means for electrically connecting a conductor to said member.

6. A terminal connecter comprising a member having an aperture through which a terminal may be extended and a recess formed with said aperture which is adapted to receive the terminal therein when the latter is inserted into said aperture whereby said member is caused to engage the terminal from one side thereof, a yielding resilient portion disposed at an angle to the apertured portion of said member and projecting through said aperture adapted to engage the terminal from the other side and hold it in said recess, said member also having a slot formed with the aperture on a side thereof opposite the recess whereby said resilient portion is caused to move from the aperture to afford passage of the terminal thereinto, and means for electrically connecting a conductor to said member.

7. A terminal connecter comprising a member having an aperture through which a terminal may be extended for engagement with said member, and a yielding portion disposed at an angle to the apertured portion of said member and projecting through said aperture and adapted to engage the terminal when the latter is inserted therein, means secured to said member and adapted to receive a cable conductor for electrical connection thereto, and means for coupling a cable containing said conductor to said last mentioned means.

8. A terminal connecter comprising a member having an aperture through which a terminal may be extended for engagement with said member and a recess formed with said aperture which is adapted to receive the terminal when the latter is inserted into said aperture, a yielding resilient portion disposed at an angle to the apertured portion of said member and projecting through said aperture and adapted to engage the terminal when the latter is inserted therein, means secured to said member and adapted to receive a cable conductor for electrical connection thereto, and an insulating sleeve for coupling a cable containing said conductor to said last mentioned means and for providing means whereby the connecter may be attached to a live terminal without causing electrical shock.

9. A terminal connecter comprising a member having an aperture through which a terminal may be extended and a recess formed with said aperture which is adapted to receive the terminal therein when the latter is inserted into said aperture whereby said member is caused to engage the terminal from one side thereof, a yielding resilient portion integral with said member and projecting through said aperture for engaging the terminal from the other side and for holding it in said recess, said member also having a slot formed with the aperture on a side thereof opposite the recess whereby said resilient portion is caused to move from the aperture to afford passage of the terminal thereinto, a threaded member secured to said first mentioned member and having a bore therethrough for receiving a cable conductor for electrical connection to said first mentioned member, and an insulating sleeve threaded internally at one end thereof for engagement with said threaded member whereby a cable containing said conductor may be coupled to the connecter and for providing means whereby the connecter may be attached to a live terminal without causing electrical shock.

In testimony whereof I have signed this specification.

EDWARD B. NOWOSIELSKI.