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## REPAIR ADAPTER FOR THREADED ELECTRICAL TERMINALS

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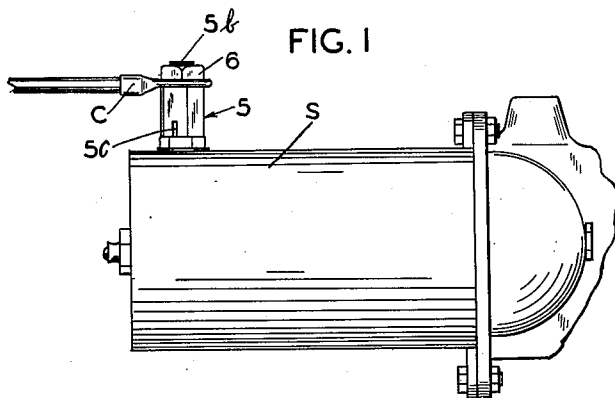


FIG. 1

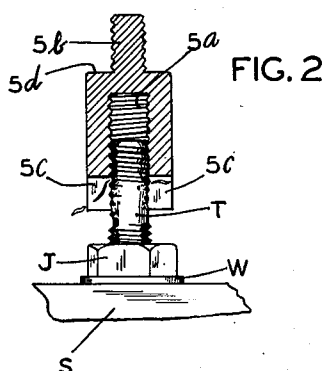


FIG. 2

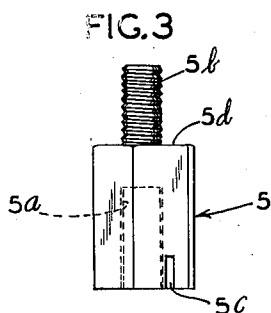


FIG. 3

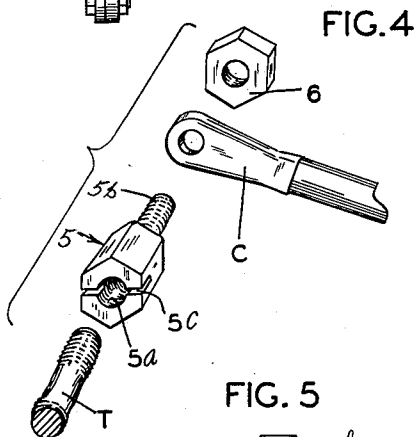


FIG. 4

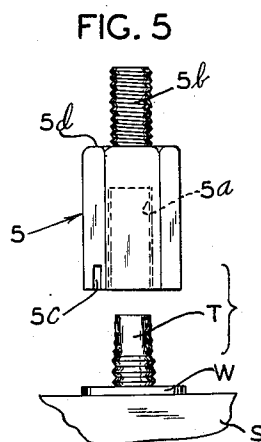


FIG. 5

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## UNITED STATES PATENT OFFICE

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## REPAIR ADAPTER FOR THREADED ELECTRICAL TERMINALS

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1 Claim. (Cl. 173—259)

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This invention relates to repair means for worn electrical terminals of the externally threaded type and particularly to a repair adaptor or fitting which may be very quickly and firmly secured to a threaded terminal and which when secured, supplies a new terminal having a good thread whereby an efficient electrical clamping connection may be made.

Binding posts and numerous other electrical terminals which employ a threaded member for receiving a clamping nut in time become worn and the portion of the thread for securing the nut becomes impaired to the extent where a tight clamping connection is impossible. It is a fact however, that the portion of the thread immediately adjacent the clamping surface and usually, the portion of the thread adjacent the extremity of the post is not impaired even after long extensive use.

It is an object of my invention to provide a simple, inexpensive repair adaptor provided with an elongated internal thread for engaging all unworn portions of the thread of the original terminal and to be rigidly secured to the original binding post and further, provided with a new externally threaded terminal and binding post by which a new and efficient electrical connection may be made by the use of the original or a new clamping nut or the like.

A further object is the provision of a repair adaptor or fitting of the class described wherein provision is made during the threaded installation of the adaptor for extruding fine metal shavings or filaments which may break loose from the deformed or worn thread, thereby preventing such filaments from jamming or interfering with the threaded interconnection of the repair parts with the original terminal or post.

More specifically, it is an object to provide a repair adaptor comprising a rigid body having an external shape for engagement and power turning with a common tool; of a well constructed, internally threaded bore of adequate length to engage and lock with all remaining, uninjured portions of the thread of the original terminal and further, provided with a new binding post, including a clamping seat and externally threaded terminal for effecting, when used with an ordinary clamping nut or the like, a firm and efficient electrical connection.

These and other objects and advantages of my invention will be more apparent from the following description made in connection with the accompanying drawings, wherein like reference

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characters refer to similar parts throughout the several views and in which:

Fig. 1 is a side elevation showing an embodiment of my invention applied to the main electrical terminal for an electrical starter for motor vehicles;

Fig. 2 is a vertical section taken longitudinally of the adaptor showing the same in the process of being threadedly attached to the damaged or used electrical terminal;

Fig. 3 is a side elevation of the adaptor, detached;

Fig. 4 is an exploded perspective view showing the several parts including the lead connector element and clamping screw which are employed in making the electrical connection; and

Fig. 5 is a side elevation showing the procedure in attaching my repair adaptor where the worn terminal or post is treated in a somewhat different manner.

In the accompanying drawings, an embodiment of my repair adaptor is illustrated as employed on the worn, threaded terminal T of a conventional type of automotive starter S. The terminal T, in conventional manner is provided at its base with an insulated washer W and with a jamb nut J, the outer end of which acts as a binding surface. The thread of the terminal is badly worn at its medial portions in typical fashion, but it will be noted has one or two convolutions of thread in good condition just above the jamb nut and most of the thread adjacent its outer end in good condition.

I provide an adaptor or fitting indicated as an entirety, by the numeral 5 which as shown, is of polygonal cross sectional shape for accommodation of a wrench or pliers to facilitate turning and which has axially tapped therein from the lower end, an internal thread 5a of the same pitch, type and size of that of the terminal T to be repaired. At the upper end of adaptor 5, a preferably integrally formed terminal or post 5b is provided which may extend axially or at an angle to adaptor 5 and which is of similar diameter and similarly threaded to the original binding post or terminal to be repaired.

The lower end of adaptor 5 is provided with a pair of diametrically disposed extrusion slots 5c extending upwardly from the lower end for a distance of, say  $\frac{1}{8}$  of an inch.

In use of the device, the clamping nut is removed from the original terminal T and the adaptor 5 screwed thereon, the internal threads 5a of the adaptor engaging all remaining good

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portions of the thread of the terminal and acting to reform some of the deformed threads during the installation upon the terminal. In reforming the worn threads of terminal T by screw action small filaments and chippings are loosened which are extruded through the lateral slots 5c as shown in Fig. 2. The fitting 5 is screw threaded upon the post until the lower end thereof is firmly clamped against the jamb nut J. Thus, the adaptor 5 is very rigidly and firmly installed upon the worn terminal and provides at its outer end, a new, externally threaded post 5b for receiving the connector member C of a lead cable. A new clamping nut 6 may then be utilized to secure complete and efficient electrical connection, clamping the inner surface of the wire or connector C tightly against a smooth binding shoulder 5d which surrounds the inner end of the new terminal 5b.

The extrusion of particles and filaments during the installation of the coupling through the lateral slots 5c prevents accumulation of material in the threads which would sometimes prevent rigid anchoring of the adaptor to the worn terminal.

From the foregoing description, it will be seen that I have provided a very simple, inexpensive and very quickly applied repair adaptor for renewing a worn, electrical binding post of the threaded type.

It will of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of my invention.

In Fig. 5, a somewhat different application of my adaptor to a badly worn threaded terminal is shown. Here, the jamb nut J has been removed from the terminal, thereby exposing a minimum of two or three good convolutions of the thread. The insulating washer W is of course left, but the post is preferably shortened by sawing off the upper portion. The coupling 5 is then screw applied in the usual manner, thereby taking the place of the jamb nut, to properly center the terminal and thereafter the electrical connector member C may be applied over the new terminal 5b supplied by the coupling and a clamp-

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ing nut 6 secured. This practice is recommended where the type of connector previously used is so thin that substantially no unworn thread is available above the jamb nut or other binding shoulder.

What I claim is:

A repair device and adaptor for worn, threaded, electrical terminals comprising an elongated, rigid fitting having an axial terminal-accommodating passage extending from the inner end thereof for the greater portion of its length, the wall defining said passage being internally threaded throughout substantially its length starting at the inner extremity of said fitting and being of hard material whereby said threads constitute a die to reform the worn threads of a terminal and to cut new threads when necessary, said fitting having an integrally formed closed outer end providing a binding shoulder for engagement with an electrical connector and having an integrally formed externally threaded terminal post rigidly protruding from said closed outer end and adapted to receive a clamping nut, said fitting having formed radially through the inner end portion thereof a filament-extrusion slot communicating with the axial passage of said fitting to receive and discharge filaments produced in the reforming of worn threads of the worn electrical terminal, said slot however, not affecting the rigidity of the inner end of said fitting.

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