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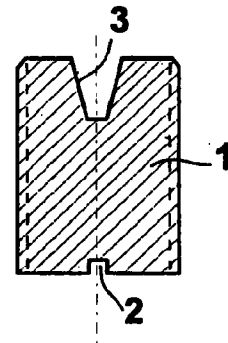
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(54) **Grub screw for a connecting terminal of an electrical cable, adapted to pierce through the insulating sheath and establish the contact**

(57) Grub screw for a connecting terminal of an electrical cable, provided with a front end designed to press against the cable, and formed as a milling cutter adapted, in the screwing down step and due to the tightening effect, to pierce through the insulating sheath of said cable and establish directly the electrical contact without requiring any previous strip off operation.

Fig. 1



**EP 0 854 538 A2**

## Description

The present invention relates to a grub screw for the connecting terminal of an electric cable, having a front end shaped as a milling cutter adapted to pierce through the insulating sheath to establish the desired electrical contact.

In the field of electrical plant engineering it is often necessary to strip off the sheath at the end portions of cables before inserting said cables into the terminal intended to effect the electrical connection. To ease this operation, special stripping cable nippers are used which, however, cannot avoid the inherent loss of time. Therefore, the need is felt of a system capable of simplifying the problem, possibly rendering the use of a special tool, such as the cable nippers or the like, unnecessary.

A thorough study of the matter has led to devise a particular configuration of the grub screw for the connecting terminal, which during the tightening step thereof strips the sheath off the cable over the extent of said screw and establishes directly the electrical contact.

This solution has been achieved by the present invention by providing a grub screw for the connecting terminal of an electrical cable, comprising a front end portion shaped as a milling cutter, i.e. provided with one or more diametrical notches of frusto-conical cross section and of suitable depth so as to form cutting edges which in the screwing-down step for being locked on the electrical cable can appropriately pierce through the insulating sheath of said electrical cable.

The accompanying drawing shows, as a non-limiting example, a basic embodiment of the screw according to the invention and some possible modifications based on the same inventive concept.

In the drawings:

Fig. 1 - is an axial sectional view, considerably enlarged, of a grub screw substantially as proposed by the invention, having a front end shaped as a milling cutter with a single diametrical frusto-conical notch;

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

Fig. 3 - is an axial sectional view similar to Fig. 1, showing a modification having a front convex end and a frusto-conical notch of higher depth;

Fig. 4 - is a plan view of Fig. 3;

Fig. 5 - is an axial sectional view similar to Figs. 1 and 3, showing a modification having two frusto-conical notches crossed to each other;

Fig. 6 - is a plan view of Fig. 5;

Fig. 7 - is an axial sectional view similar to the preceding Figures, showing a modification having a front convex end and a diametrical protrusion with a central notch;

Fig. 8 - is a plan view of Fig. 7.

As shown clearly in Figs. 1 and 2, the basic embodiment of the grub screw proposed by the invention comprises a cylindrical body 1, threaded as usual, with a rear end having a diametral slot 2 for engaging a screw-driver or other tool therein, and with a front end shaped as a milling cutter, i.e. planar and formed with a diametrical frusto-conical notch 3 having two cutting edges and a small space designed to collect the material removed from the sheath of the cable during the tightening step of the screw, when said screw is advanced and rotated to pierce through the sheath and reach the core of the cable so as to establish the desired electrical contact and, obviously, fasten the cable to the connecting terminal.

Of course, the grub screw may be made of any suitable material and may be provided, at the end designed to be engaged by a screw driver, with a normal enlarged head.

Moreover, it is to be noted that the system according to the invention, besides eliminating the usual conventional stripping off the cable ends, permits to reduce considerably, during the electrical connection step, the handling of said cables so that, even under the standpoint of security, the article according to the invention is greatly efficient and complying with the safety standards required by the law regulations in force.

As to the front end, shaped as a milling cutter, the invention provides, as shown in the further Figures, a number of modifications, some of which are described below, always with reference to said front end of the grub screw.

The modified embodiment of Figs. 3 and 4, provides a convex front end with a diametrical frusto-conical notch 4 of greater depth. This embodiment may have some advantages, depending on the section of the cable, still within the same operational principle, and this is true also in the other modifications to be mentioned below.

The modification according to Figs. 5 and 6 provides a planar front end having two frusto-conical notches 5 and 6 crossed to each other, again for improving the desired milling action.

The modification according to Figs. 7 and 8 provides a convex front end having a diametrical notch located between two parallel protrusions 7 adapted to improve the efficiency in piercing through the sheath when the latter has a higher resistance.

Obviously, further variants, modifications and improvements may be provided without departing from the scope of the invention as described and shown, still within the basic principle of the invention.

## Claims

1. A grub screw for a connecting terminal of an electric cable, adapted to pierce through the insulating sheath and establish the electrical contact, comprising a conventional threaded cylindrical body (1),

with a rear slotted end (2) for engagement with a screw-driver, either formed or not with an enlarged head, characterized in that the front piercing end is formed as a milling cutter, i.e. it comprises a diametrical frusto-conical notch (3) or suitable depth and upper cutting edges to ensure a milling action. 5

2. A grub screw according to claim 1 and to a first modification, wherein the front piercing end is of convex configuration with a diametrical frusto-conical notch (4) of greater depth. 10

3. A grub screw according to claim 1 and to a second modification, wherein the front piercing end, of planar configuration, is provided with two diametrical frusto-conical notches (5 - 6) crossed to each other. 15

4. A grub screw according to claim 1 and to a third possible modification, wherein the front piercing end is of convex configuration, with a diametrical notch located between two parallel protrusions (7). 20

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Fig. 1

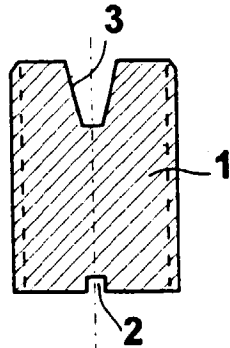


Fig. 2

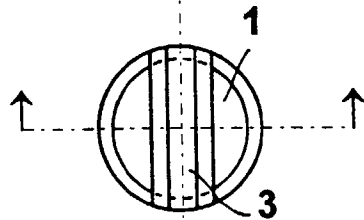


Fig. 3

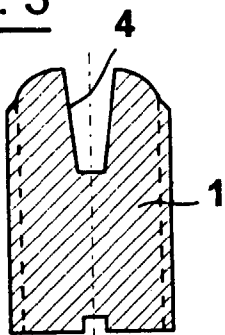


Fig. 5

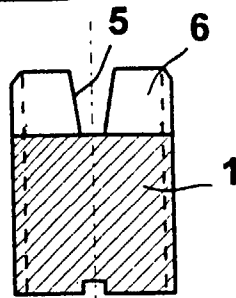


Fig. 7

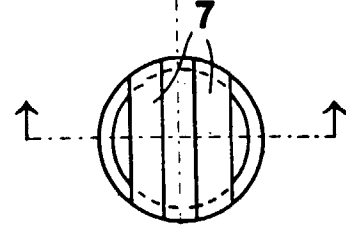
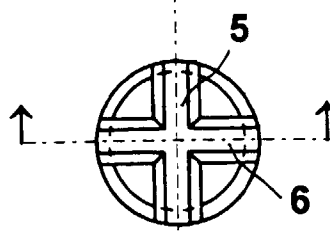
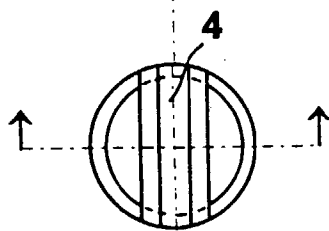
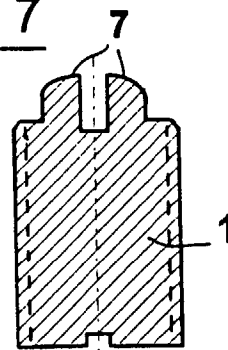


Fig. 4

Fig. 6

Fig. 8