June 8, 1948. S. L. GOOKIN 2,442,767

ELECTRIC WIRE TERMINAL

Filed June 7, 1946

Fig. 1

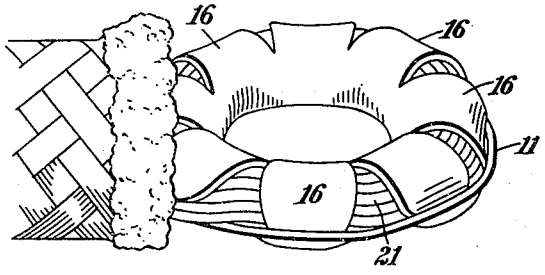


Fig. 2

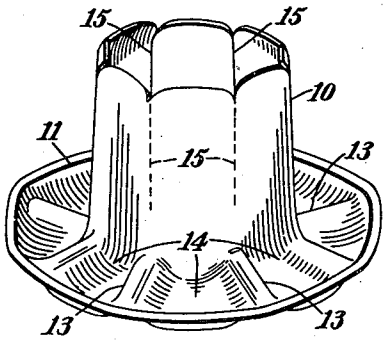


Fig. 3

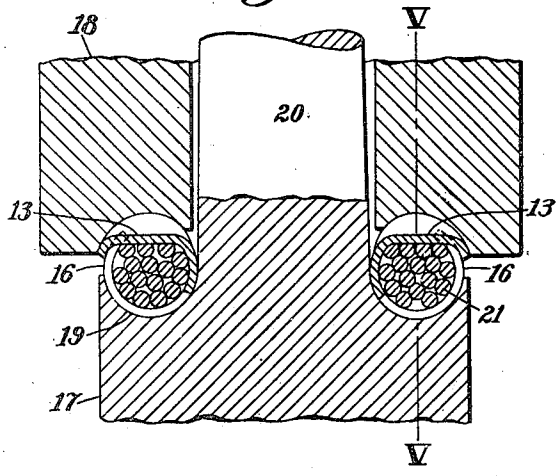


Fig. 4

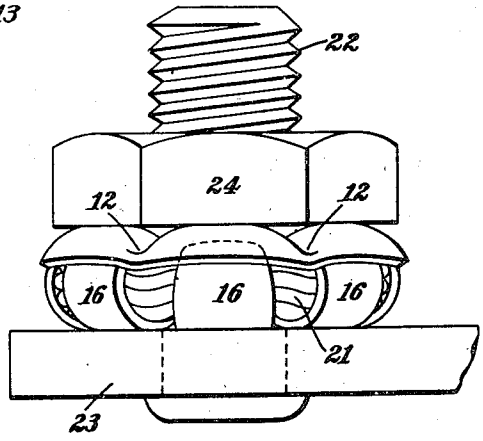
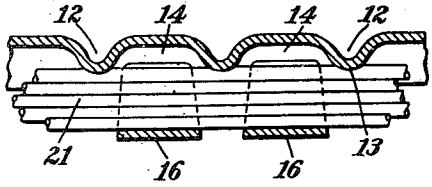


Fig. 5



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UNITED STATES PATENT OFFICE

2,442,767

ELECTRIC WIRE TERMINAL

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4 Claims. (Cl. 173—269)

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The purpose of the present invention is to provide improvements in electric wire terminals of the type comprising an eye of wire and a ductile metal eyelet installed therein. When an electric conductor is made of many strands of fine copper wire, as herein illustrated, and the terminal portion or portions thereof are bent to form eyes adapted to encircle binding posts, the eyes should be reinforced with clenched eyelets not only to strengthen their anchorage to binding posts but also to prevent one or more of the individual strands of wire in the eyes from projecting out of bounds.

In stringing such conductors in automobiles, signaling apparatus, or other situations, workmen sometimes foul them unintentionally after they have been attached to binding posts, thereby pulling the eye portions partially, if not entirely, out of the clenched eyelets. In view of that condition, the present invention provides a terminal eyelet having novel features that enable it to grip a wire with greater holding power than that of any eyelet hitherto installed in the same manner, that is, without solder.

Referring to the drawings,

Fig. 1 is a perspective view of a completed terminal made with an eyelet embodying the invention, the prong side of the terminal being uppermost;

Fig. 2 is a perspective view of an unclenched eyelet embodying the invention;

Fig. 3 is a vertical section of a terminal between cooperative eyelet-setting tools in the final stage of forming the terminal;

Fig. 4 is a side elevation of a terminal anchored to a binding post; and

Fig. 5 is a flat development in section of a segment of a terminal lying in an arc indicated by line V—V in Fig. 4.

The invention is embodied primarily in an eyelet of the type illustrated in Fig. 2, and finally in the terminal pictured in the other views. The eyelet, ductile and made of moderately hard brass, comprises a barrel 10, slightly tapered, and a crowned flange 11. In the process of making the eyelet equally spaced indentations 12 are impressed into its crowned side, and these indentations produce a circular series of narrow ribs 13 and intervening troughs 14 on the other side of the flange, each rib extending radially from the barrel to the outer margin of the flange, and providing a ridge on which some of the strands of a wire will be seated and thereby spaced from the bottoms of the adjacent troughs.

The barrel 10 is provided with equally spaced

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scorelines 15 to determine the number and width of the prongs into which its clenching end will be divided when it is being burst and clenched by the tools used to install the eyelet in an eye of wire. Eight scorelines are provided in the illustrated eyelet, although only four of them are apparent in Fig. 2. The number of scorelines and the number of ribs 13 are preferably equal, and, as shown, each scoreline is in register with one of the ribs. This registering relation is preferred because it enables the tip of each prong 16 to enter a trough 14 between two adjacent ribs 13 and to clear both of the latter instead of encountering a rib and being arrested or deflected thereby.

Terminals of the type herein illustrated may be made by a machine of the type set forth in my copending application Serial No. 552,591, filed September 4, 1944, issued as Patent Number 2,439,465 on April 13, 1948, for United States Letters Patent. Fig. 3 of the present application includes portions of an anvil 17 and a vertically movable eyelet-setting tool 18 similar to those illustrated in my aforesaid copending application. The anvil has an upsetting shoulder 19 of incurved section and an upstanding pilot 20 for guiding an eyelet thereto. As the scored end of an eyelet barrel traverses the shoulder 19 after passing through an eye 21 of stranded wire it is divided into prongs 16 and the latter, following the cross-sectional curve of the shoulder 19 become curled around the wire. To obtain the effects hereinafter described, the rim of the flange 11 is formed to overlap and engage the prongs (Figs. 3 and 4) when the tips of the latter are nested in the troughs 14. The surfaces of the troughs have about the same cross-sectional curvature as the upsetting shoulder 19 and are adapted to preserve the curled formation initiated in the prongs by the shoulder.

The metal of the eyelets should be harder than that of hard-drawn copper wire commonly used for stranded conductors. This condition will be provided if the eyelets are made of the usual grade of moderately hard brass. In the process of making the eyelets the ribs 13 undergo what is sometimes termed "strain hardening," that is, supplemental hardening in consequence of being pressed into shape. Consequently, when an eyelet is installed in an eye of copper wire with enough pressure to drive the tips of the prongs into the troughs 14, as illustrated, the ribs 13 will indent some of the strands of the wire, but will not, themselves, be indented by the strands. Fig. 5 shows three of the ribs partially embedded

in indentations they have made in one of the strands. Thereafter, when a terminal is fastened to a binding post with pressure of a nut, the ribs and the indented strands will be interlocked.

In Fig. 4 a terminal embodying the invention is represented as surrounding a binding post 22 riveted to a metal plate or strip 23 and provided with a nut 24. The flexibility of the prongs 16 and their freedom to creep into the troughs 14 as the nut is tightened enables the ribs 13 to obtain an exceptionally powerful grip on the eye of wire.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A wire terminal comprising an eye formed of wire, and a clenched eyelet installed therein, the eyelet having a crowned flange and a plurality of clenched prongs engaging and confining the eye of wire, the flange being provided with a circular series of wire-engaging ribs dividing its wire-engaging side into a circular series of troughs.

2. A wire terminal comprising an eye formed of relatively soft electric wire, and a clenched eyelet of harder metal installed therein, the eyelet having a crowned flange and a plurality of clenched prongs engaging and confining the eye of wire, the flange being provided with a series of indentations in its crowned side forming ribs on its wire-engaging side and these ribs extending across the wire of the eye and being partially embedded therein.

3. A wire terminal comprising an eye formed of wire, and a clenched eyelet installed therein, the eyelet having a crowned flange and a plurality of clenched prongs engaging and confining the eye of wire, the flange being provided with a series of wire-engaging ribs dividing its wire-engaging side into a series of troughs, and the tips of the prongs being located one in each of said troughs and out of contact with said ribs.

4. An eyelet for making a wire terminal, the eyelet being made of ductile metal harder than hard-drawn copper wire and having a crowned flange and a barrel provided with a plurality of scorelines for determining the number and width of prongs into which it will be divided when clenched, the flange having a circular series of indentations in its crowned side forming ribs on its trough side and dividing the latter into a series of troughs, the number of such ribs being the same as the number of said scorelines and each rib lying in radial register with one of the scorelines.

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