Feb. 8, 1949. R. H. BENTLEY 2,461,135

ELECTRIC WIRE TERMINAL

Filed Jan. 6, 1947

Fig. 1.

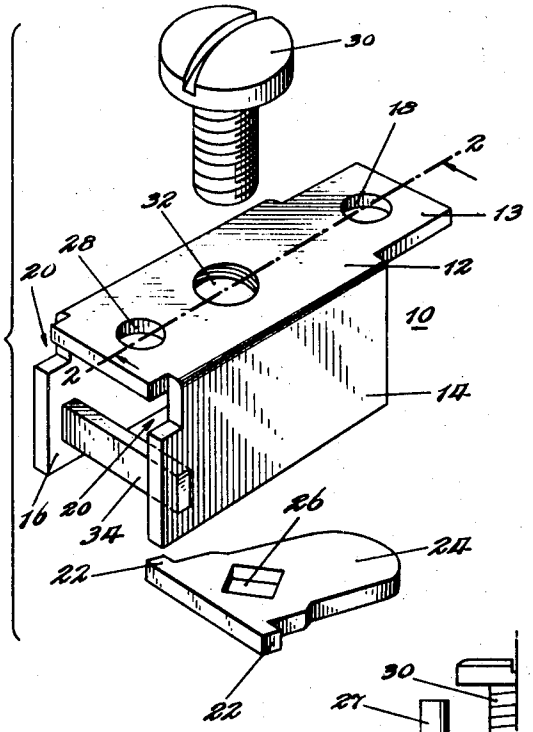
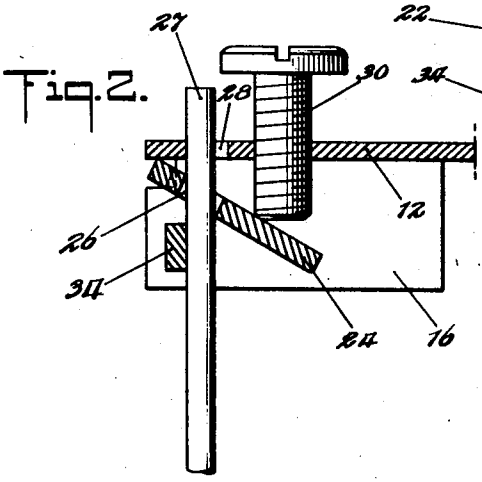


Fig. 2.



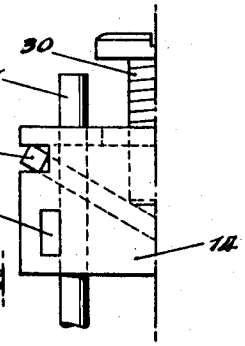


Fig. 3.

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ELECTRIC WIRE TERMINAL

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7 Claims. (Cl. 173—259)

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This invention relates to electric wire terminals for use with electrical devices of all sorts.

It is an object of the invention to provide a terminal construction in which the bared, straight, unbent end of an electric wire may be inserted into the wire terminal and may be there secured more effectively than by mere clamping action. A related object is to accomplish the securing by means of a screw bolt without bending the wire around the screw shank and without causing bending or bowing the wire as the bolt is screwed down.

Another object of the invention is to provide a terminal connection of the foregoing type wherein the wire may or may not have to pass through a passage in the insulating body but wherein there is no need for the wire end to engage the insulating body or any adjacent part of the electrical device other than the terminal itself in order to accomplish firm gripping.

Another object of the invention is to provide an improved wire terminal structure of the foregoing type which may be inexpensively manufactured and assembled and which in use will reduce the cost of connecting wires to electric devices.

Other objects and advantages of the invention will become apparent as it is described in the accompanying drawing.

In the drawing, Figure 1, is an exploded perspective view of the invention.

Figure 2 is a transverse section view taken along line 2—2 of Figure 1.

Figure 3 is a fragmentary side elevation view of the left end of the invention as illustrated in Figure 1.

Referring to this drawing, the conductive parts of the terminal comprise a stamped sheet metal terminal member 10 of substantially U-shape having a central portion 12 from the sides of which parallel side plates 14 and 16 are bent down. There is an extension 13 from the central portion, having formed therein a crew threaded aperture 18, which is adapted to receive a screw bolt (not shown) by means of which the terminal may be secured in customary fashion to an insulating block or to any electrical device.

Adjacent the juncture of the side plates 14 and 16 with the central portion 12, the side plates are notched as at 20 at directly opposite corners to receive square sectioned trunnions 22 extending laterally from a flat plate jaw member 24 which is pivotally mounted between the side plates 14 and 16 and pivots upon the trunnions as they seat within the recesses 20. To receive the

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bare end 27 of an electric wire a square hole 26 is formed in the central portion of the jaw member 24. This hole 26 is in partial register with a round hole 28 formed in the central portion 12 of the terminal member. When the conductor 27 has been inserted through the apertures 26 and 28, as illustrated in Figures 2 and 3, it may be clamped there by the action of a terminal screw or bolt 30 which threads through an internally threaded hole 32 in the mid portion of the terminal. As the bolt 30 is screwed down its end engages with the jaw member 24 near the free end thereof and causes it to pivot about trunnions 22. In the course of this movement, diagonally opposite sharp edges of the aperture 26 will engage opposite sides of the wire 27 at points spaced slightly apart along the length of the wire 27. The sharp edges bite into and firmly hold the wire. The bite into the wire and the firm holding thereof are considerably improved by the square or rectangular shape of the aperture 26 and by so locating the aperture that its diagonal axes are perpendicular and parallel, respectively, to the side plates 14 and 16. The hole 26 need not be square. It may be of any other shape having sharp straight sides at an angle to each other so that they will bite into the conductor 27. The action of the binding screw 30 tends to cause the wire 27 to bow slightly to the left, as the invention is viewed in Figure 2. To overcome this tendency and to more firmly hold the conductor, I have provided a cross-bar or strut 34 which is preferably rectangular in cross section and passes between the side plates 14 and 16 transversely, having its ends entering into rectangular apertures provided in the side plates 14 and 16, said ends being peened over in order to secure the strut in position. Preferably, the strut will be located with its inside surface perpendicular to the walls of the terminal and in substantial alignment with the wall of the aperture 28 through which the end of the wire 27 extends. In other words, the said inside surface of the strut 34 will have its plane tangential to the aperture 28 at a point on the periphery of the aperture furthest removed from the axis of the bolt 30. It is also desirable to have the strut so located that force exerted by the bottom edges of the square aperture 26 in the jaw member 24 will be transmitted through the conductor 27 directly against the strut 34 in order that any tendency to bow the conductor may be resisted by the strut. The terminal is thus self-contained and no assistance is required of any part of the insulating body or other supporting structure on which the terminal may be mounted,

to accomplish firm securement of the wire to the terminal.

It has been found that a wire terminal constructed as illustrated and above described makes possible the attachment of a wire or conductor to the terminal with the greatest facility while at the same time providing an extremely firm and permanent grip upon the conductor defying all attempts of the conductor to pull away from the terminal. Notwithstanding these advantages the invention may be constructed economically from sheet metal parts which may be stamped in ordinary stamping machines at a high rate of production.

Many modifications within the scope of my invention will occur to those skilled in the art. Therefore, I do not limit the invention to the specific form of the parts as illustrated in the drawings.

This invention is an improvement upon the invention described and claimed in my co-pending application, issued as Patent 2,451,466, October 19, 1948, entitled "Electric wire terminal."

I claim:

1. An electric wire terminal connection comprising a plate portion having a screw-threaded aperture and a second aperture adapted to receive the bared end of a wire conductor, side portions bent out of the plane of said plate portion having recesses, a jaw member having trunnion portions entering said recesses providing a pivotal mounting for said jaw member, said jaw member having a hole in partial register with said second aperture and through which said bared wire end may be inserted, and a screw bolt in said threaded aperture bearing upon said jaw member to cause opposite edges of said jaw hole to grip said wire on opposite sides, and a strut supported transversely between said side portions, said strut supporting said wire and resisting a tendency of the wire to bow as the bolt is screwed down.

2. A wire terminal as claimed in claim 1 wherein said trunnion recesses are open to facilitate assembly of the terminal.

3. A wire terminal as claimed in claim 1 wherein the hole in the jaw has substantially straight intersecting sharp edges to increase the biting action thereof into the wire.

4. A wire terminal as claimed in claim 1 wherein said strut has a flat surface, the plane of which is tangential to said second aperture, that surface acting to support said wire for resisting a tendency of said jaw to bow said wire, and said trunnion recesses being open to facilitate assembly of the terminal.

5. A wire terminal as claimed in claim 1 wherein the hole in the jaw has substantially straight

intersecting sharp edges to increase the biting action thereof into the wire, and the strut has a flat surface the plane of which is tangential to said second aperture, that surface acting to support said wire for resisting a tendency of said jaw to bow said wire.

6. An electric wire terminal connection comprising a plate portion having a screw-threaded aperture and a second aperture adapted to receive the bared end of a wire conductor, side portions bent out of the plane of said plate portion having recesses, a jaw member having trunnion portions entering said recesses providing a pivotal mounting for said jaw member, said jaw member having a hole in partial register with said second aperture and through which said bared wire end may be inserted, and a screw bolt in said threaded aperture bearing upon said jaw member to cause opposite edges of said jaw hole to grip said wire on opposite sides, said jaw hole having substantially straight intersecting sharp edges to increase the biting action thereof into the wire.

7. An electric wire terminal connection comprising a plate portion having a screw-threaded aperture and a second aperture adapted to receive the bared end of a wire conductor, side portions bent out of the plane of said plate portion having recesses, a jaw member having trunnion portions entering said recesses providing a pivotal mounting for said jaw member, said jaw member having a hole in partial register with said second aperture and through which said bared wire end may be inserted, and a screw bolt in said threaded aperture bearing upon said jaw member to cause opposite edges of said jaw hole to grip said wire on opposite sides, a strut supported transversely between said side portions, said strut having a flat surface the plane of which is tangential to said second aperture, said surface acting to support said wire for resisting a tendency of said jaw to bow said wire.

ROBERT H. BENTLEY.

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