

# UNITED STATES PATENT OFFICE.

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## TERMINAL-CONNECTOR FOR ELECTRIC CONDUCTORS.

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Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that we, JOHN H. KLIEGL, a citizen of the United States, and ANTON T. KLIEGL, a subject of the German Emperor, both residing in the city, county, and State of New York, have invented certain new and useful Improvements in Terminal-Connectors for Electric Conductors, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

Our invention relates to terminals for electric conductors or leads, and has for its object to provide such a device which shall furnish good contact between the conductor and the terminal, protect the end of the insulation from raveling and other wear, and withal be simple and inexpensive to manufacture.

To these and other ends our invention consists of the novel features and combinations of parts hereinafter described, and more particularly set forth in the claims.

Referring now to the drawings, Figure 1 is a perspective view of the preferred form of the invention. Fig. 2 is a longitudinal section showing the conductor in place in the terminal ready for clenching. Fig. 3 is a side elevation showing the terminal secured to the conductor ready for use. Fig. 4 is an end view of the same. Figs. 5 and 6 are detail views of a modification, showing side and end elevations, respectively. Fig. 7 is a plan view of the blank from which the terminal is formed.

As shown in Fig. 1, the terminal consists of a device having a pair of wings or flaps *a b*, extending from the bottom *c*. Reaching out from the forward end of the bottom is a plate *d*, and extending from the rear part of the plate is a strip *e*, having a perforation *f* near the point of connection with the plate *d*.

In applying the device the insulation is cut away from the end of the lead, exposing a short portion of the conductor—say about the length of the body portion of the terminal. This exposed part is then thrust through the aperture *f* from the forward end of the terminal and the lead then bent backward and downward upon the strip *e* until the whole is in the position shown in Fig. 2. It will be noted that the bare conductor is disposed between the bottom of the terminal and the strip *e*, with the wings extending upward on each side. The wings are now turned down firmly upon the insulated part of the lead, as in Fig. 3, forcing the strip *e* and bare con-

ductor down upon the bottom of the terminal, thereby insuring good contact between the three parts just mentioned. At the same time the insulation extends well up into the wings and its end is completely protected from fraying or raveling. If desired, the fore corners of the wings may be bent down over the end of the insulation and the bend in the conductor, as shown in Figs. 3 and 4. The device is then ready for use and may be connected with the desired part of the electrical apparatus in any convenient way, as by a screw or bolt passing through an aperture *g* in the plate *d*.

From the foregoing it will be seen that a good contact is provided between the conductor and the terminal, the parts being in contact for the whole length of the bared portion of the conductor and on two sides of the same. If the conductor is composed of a number of strands, as is usual, they may be spread out upon the bottom of the terminal before the wings are bent down, so that the pressure of the latter will bring a large number of the strands individually into contact with the bottom *c* or strip *e*, or both. If desired, the conductor may also be soldered to the terminal; but this is usually unnecessary. At the same time the end of the insulation is incased in the tube formed by the body of the device, and is therefore fully protected. The bend of the conductor where it passes through the aperture *f* has no play and there is therefore no liability of the same breaking at that point. At the rear of the terminal the conductor is straight, as shown in Fig. 2, and whatever bending occurs there must, on account of the insulation, be on an arc too large, as shown by the dotted lines in Fig. 3, to cause the flexible conductor to break.

Instead of leaving the plate *d* flat it may be rolled into a rod or tube, as shown in Figs. 5 and 6, thereby constituting a plug for insertion in a binding post or socket.

Various methods may be employed for making the terminal; but we prefer to make the same from a single sheet of metal. This may be done by stamping out a blank of the general form shown in Fig. 7, having a body portion *h*, a narrower part *i*, and a further-reduced part *k*. The sides *l m* of the wide portion *h* are bent up to form the wings *a b*, and the part *i* is bent backward along the dotted line and flattened down upon itself to form the plate *d*. The tongue *k* may be left flat upon the bottom of the device between the