

J. H. & A. T. KLIEGL.
TERMINAL CONNECTOR FOR ELECTRICAL CONDUCTORS.
APPLICATION FILED DEC. 8, 1904.

Fig.1

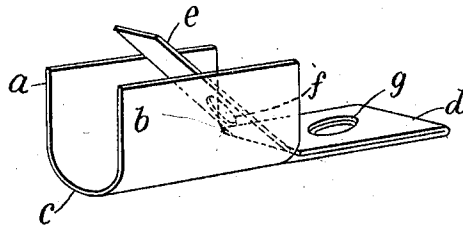


Fig.2

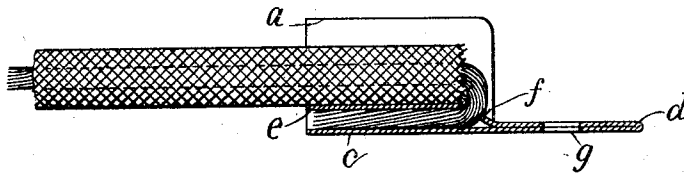


Fig.3

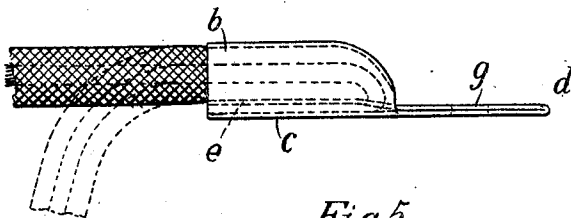


Fig.4

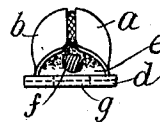


Fig.5

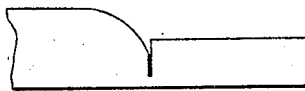
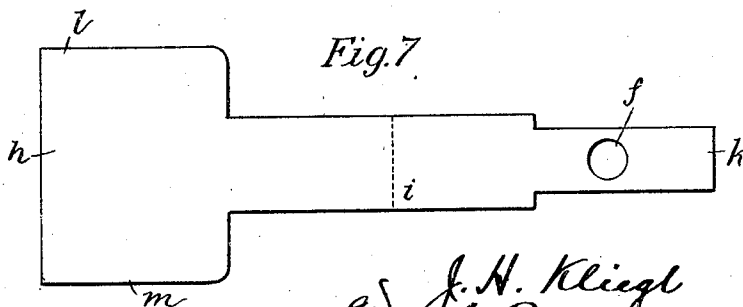


Fig.6



Fig.7



Witnesses
Thos J. Byrnes
S. S. Dunham,

and J. H. Kliegl
A. T. Kliegl Inventors,
By their Attorneys
Kerr, Page & Cooper

UNITED STATES PATENT OFFICE.

JOHN H. KLIEGL AND ANTON T. KLIEGL, OF NEW YORK, N. Y.

TERMINAL-CONNECTOR FOR ELECTRIC CONDUCTORS.

No. 802,994.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed December 8, 1904. Serial No. 235,949.

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 turped 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

wings and not bent upward in position for insertion of the conductor until the device is to be applied, or the tongue may be bent at once, leaving the device as shown in Fig. 1. Of course, if desired, the tongue or strip *e* may be given at this stage an additional rearward bend just above the aperture *f*. The article will then have the form shown in Fig. 2. These operations in making the device may be performed by hand or machine. The bending of the wings in applying the device to the lead may be done by means of a hammer, pliers, or other tool, as is convenient.

A considerable advantage flows from the fact that no solder is needed to make good contact, especially when the terminal is used in connection with apparatus which becomes heated—as, for example, an arc-lamp. In such uses solder not infrequently melts, releasing the conductor, with consequent liability of injury to the operator and danger of fire from short circuits. This defect is avoided in our device, which, as before explained, provides close, positive, and strong engagement between the conductor and the terminal.

It will of course be understood that the form herein specifically described is merely the preferred embodiment of the invention, which may be embodied in various forms without departure from its proper scope.

What we claim is—

1. In a terminal for electric conductors, the combination of a body portion, a device extending therefrom for connection with electrical apparatus, a tongue or strip extending from the said device in the direction of the body portion, said tongue or strip being adapt-

ed to receive the conductor between the body portion and the tongue or strip, and means for compressing the tongue or strip upon the conductor, whereby the latter is held firmly against the tongue and the said body portion, as set forth.

2. In a terminal for electric conductors, the combination of a body portion having upstanding wings, a device extending from a point between the wings, for connection with electrical apparatus, and a tongue or strip extending backward from the said device, in the direction of the wings and body portion, said tongue or strip having means for receiving a conductor between the body portion and the tongue or strip, as set forth.

3. The combination of a terminal body portion having a pair of wings, a device extending from between the wings for connection with electrical apparatus, a tongue or strip extending backward between the wings from the said device, and a conductor extending between the tongue or strip and the bottom of the body portion, through the tongue or strip, and backward between the tongue or strip and the wings, as set forth.

4. The combination of a body portion, having upstanding wings, a perforated plate extending from the body portion, a tongue or strip extending between the wings from the said plate and having a perforation near said plate, as set forth.

JOHN H. KLIEGL.
ANTON T. KLIEGL.

Witnesses:

DAVID R. TABER,
O. C. BENNET.