

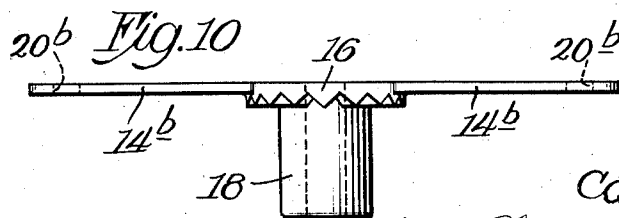
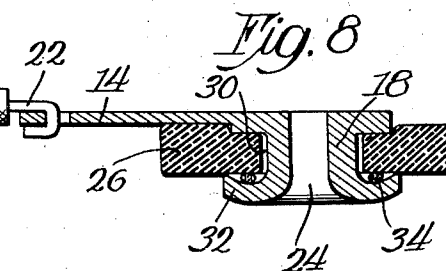
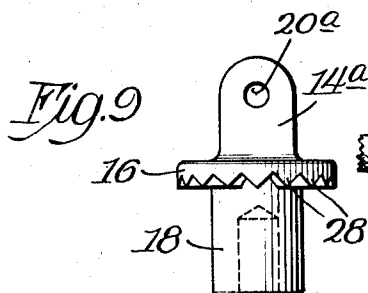
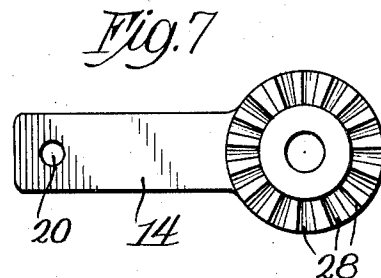
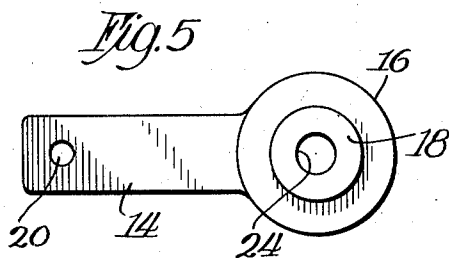
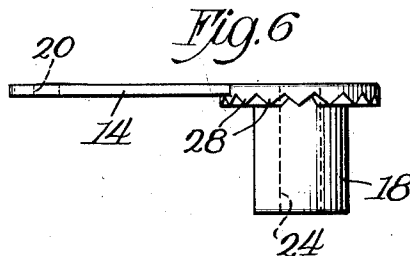
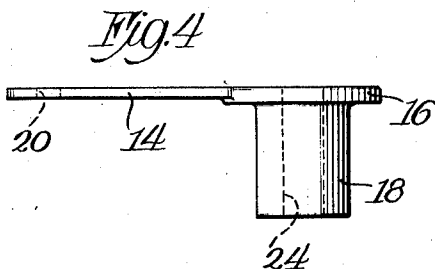
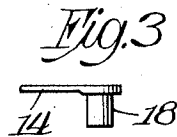
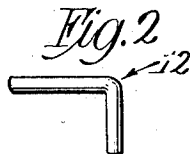
June 6, 1933.

C. G. OLSON

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METHOD OF FORMING TERMINAL RIVETS

Filed March 21, 1930



Inventor
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UNITED STATES PATENT OFFICE

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METHOD OF FORMING TERMINAL RIVETS

Application filed March 21, 1930. Serial No. 437,795.

My invention relates generally to methods of making electrical terminals and the like, more particularly to methods of forming electrical terminals of the rivet type from a single piece of stock.

It has been the practice heretofore in many instances to employ electrical terminals of the apertured type which are adapted to be secured in position upon a member, such as an insulating panel by means of a separate rivet which is inserted through the aperture of the terminal. Terminal members of the above mentioned type are disclosed in a number of my co-pending applications, for example, my application, Serial No. 413,707, filed December 13, 1929.

It is one of the primary objects of my present invention to eliminate the necessity of employing separate terminal and rivet elements, and to this end I propose to provide a device of a unitary or integral construction, in which one section thereof presents an extension or terminal portion, and another section thereof forms an integral rivet.

My invention contemplates the provision of a new and improved method of making such devices from a single piece of stock.

A still further and more specific object is to provide a method, whereby a terminal rivet may be formed from a single piece of round stock or wire by bending and upsetting said round stock in such a manner as to present a complete terminal rivet having a section thereof for receiving a conductor and another rivet section thereof for securing the device in position.

These and numerous other objects and advantages will be more apparent from the following detailed description when considered in connection with the accompanying drawing, wherein:

Figure 1 is an elevational view of a piece of round stock or wire, from which a unitary terminal rivet may be formed by practicing the method which is contemplated by my present invention;

Figure 2 discloses the step of bending the stock of Figure 1;

Figure 3 discloses the next step, which consists in shaping the bent stock of Figure 2 into

a flat type terminal section and a rivet section extending laterally thereof;

Figure 4 is an enlarged view similar to Figure 3 disclosing the next step in the formation of the article, which consists in providing a conductor receiving aperture at one extremity of the terminal section and a recess within the rivet section;

Figure 5 is a view of the underside of the device shown in Figure 4;

Figure 6 discloses the device of Figures 4 and 5 with a plurality of work engaging, locking teeth formed on the flange portion, which is positioned at one extremity of the rivet section;

Figure 7 is a view of the underside of Figure 6;

Figure 8 is a sectional view taken centrally and longitudinally of the terminal rivet, said device being shown in operative association with a sheet of insulating material, with the teeth thereof imbedded within said material;

Figure 9 is a terminal rivet of a modified form, the terminal section thereof extending longitudinally instead of laterally of the rivet section; and

Figure 10 is still another modification, wherein a pair of terminal sections are employed instead of a single terminal section as shown in the other figures.

Referring now to the drawing more in detail wherein like numerals have been employed to designate similar parts throughout the various figures, it will be observed that my invention contemplates the provision of a new and improved method for making terminal rivets of the unitary type, and this method consists in selecting or severing from a strip a section such as a length of round stock or wire which I have designated generally by the numeral 12 in Figures 1 and 2. This section or length of round stock is first bent to present the structure shown in Figure 2, and this bent structure is subjected to a forming operation, such as by means of a suitable die (not shown), to present the structure shown in Figure 3. The structure of Figure 3, as well as the structure of Figure 4, includes an elongated flat terminal

section 14, one extremity of said section being formed with an annular or flange section 16. Extending laterally and centrally of said flange section is a cylindrical section 18 which might be termed a rivet section.

The outer extremity of the terminal section 14 is formed with an aperture 20 such as by punching or drawing, which is designed to receive a conductor 22, as clearly shown in Figure 8. The rivet section 18 is provided with a central elongated aperture 24 to facilitate the upsetting of the rivet section after the same has been associated with a piece of sheet material, such as the insulating material 26 shown in Figure 8. A plurality of teeth 28 are swedged or formed along one face of the flange section 16 as by means of a suitable swedging die, and these teeth are adapted to imbed themselves within the sheet of insulating material 26 to secure the terminal and rivet sections against rotative movement.

In use, the rivet section 18 is inserted within an aperture 30 provided in the sheet 26, and the portion of the rivet section extending beyond the sheet and surrounding the recess 24 may be upset or peened over to present an annular flange 32 as shown in Figure 8, which may be brought to bear against the surface of the sheet 26, and thereby cause the teeth 28 to become imbedded within the opposite surface of the sheet. If desirable, a conductor 34 may be simultaneously secured in position against the inner surface of the annular flange 32. Thus it will be apparent that my invention not only contemplates the provision of a simple and economical method of producing a terminal device or connector from a single piece of stock, but also contemplates the provision of a terminal device or connector which greatly facilitates the ease with which such devices may be secured in position upon a work piece. As stated above, it has been the practice in many instances heretofore to apply a flat type terminal member or connector in position upon a sheet of insulating material by employing a separate or independent rivet, which is inserted through an aperture provided in the connector. My improved device, as a result of its integral or unitary construction, eliminates the necessity of handling two elements, and the structure of my device is much more simple in construction than the combined independent elements which have been previously employed.

My invention is in no sense limited to a connector or terminal device having a terminal section of any specific design, and this is evidenced by the modified structures shown in Figures 9 and 10. In Figure 9 I have shown a device which is similar to the terminal devices just described in that said figure discloses the rivet section 18 extending

outwardly from the flange 16, which is provided with a plurality of work engaging teeth 28. However, the structure in Figure 9 differs from the other devices in that a terminal section 14a formed integral with the flange section 16 extends outwardly from the central portion of said flange section in a position oppositely disposed from the terminal section 18. This terminal section 14a is also provided with an aperture 20a for receiving a conductor.

In Figure 10 I have shown a plurality of terminal sections 14b which extend laterally of the rivet section 18 on opposite sides of the flange section 16. The outer extremity of these terminal sections 14b are provided with conductor receiving apertures 20b. Thus it will be apparent that my invention contemplates the provision of unitary or integral terminal devices of varying sizes and shapes.

From the foregoing it will be understood that the steps of my simple method for manufacturing terminal devices may be practiced by employing conventional types of shop machinery, and therefore said method may be practiced in a very expeditious manner. The device which is produced as a result of the practice of my improved method, has many practical applications, such for example, as in the radio industry wherein a plurality of terminals or connectors are frequently employed in connection with the panels of receiving units and the like. Terminal devices for such purposes are used in very large quantities, and therefore it is very desirable to reduce to a minimum the cost for manufacturing such devices, and also to reduce as far as possible the amount of labor in mounting such devices upon insulating panels and the like. My invention meets these requirements by providing a simple and economical method of manufacture, as well as a device, which, by reason of its simple unitary construction, may be mounted upon a panel with a minimum amount of effort and skill. By providing the teeth along one face of the terminal flange, I am able to positively secure the device against displacement. In the drawing I have shown the terminal device as being formed from a length of round stock, but obviously, lengths of stock having other cross-sectional shapes may be employed without departing from the spirit and scope of my invention.

In fact, my invention contemplates the manufacture of integral terminal rivets from any form of stock which may be conveniently subjected to forming or stamping operations. One of the important features of the invention resides in the fact that it enables the production of terminal rivets of unitary or integral form from lengths or sections of variously shaped stock.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent is:

1. The method of forming electrical terminal devices which consists in bending a length of elongated conductive material, flattening a portion of said bent length to present a terminal section and forging the other portion to present a rivet section, and then providing a recess in said rivet section, whereby said rivet section may be upset when applied to a panel.

2. The method of forming electrical terminal devices which consists in bending a length of elongated conductive material, flattening one of the resulting sections into an elongated terminal section, and upsetting the other section to present a rivet section extending laterally of said flattened terminal section.

3. The method of forming electrical terminal devices which consists in bending a length of elongated conductive material, flattening one of the resulting sections into an elongated terminal section, and upsetting the other section to present a rivet section extending laterally of said terminal section and to present a flange having work engaging teeth surrounding said rivet section.

4. The method of forming electrical terminal devices which consists in bending a length of elongated conductive material, forming one of the resulting sections into an elongated terminal section, upsetting the other section to present a rivet section extending laterally of said terminal section and to present a flange having work engaging teeth surrounding said rivet section, and providing a recess in the rivet section, whereby said section may be upset for securing the device in position upon a work piece.

In witness whereof, I have hereunto subscribed my name.

CARL G. OLSON.