June 17, 1924. 1,497,944

T. C. RUSSELL

PROCESS FOR MAKING ELECTRIC TERMINALS

Filed Aug. 8, 1923

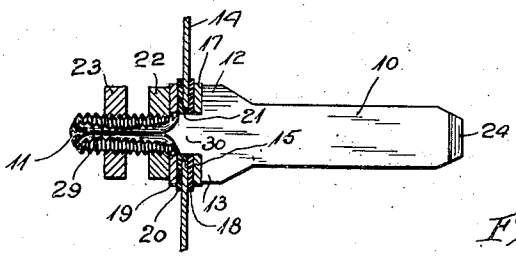


Fig. 1.

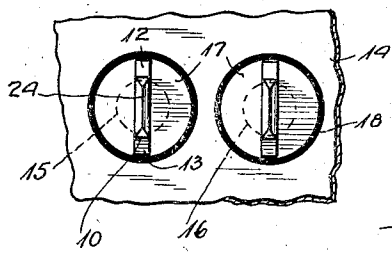


Fig. 2.

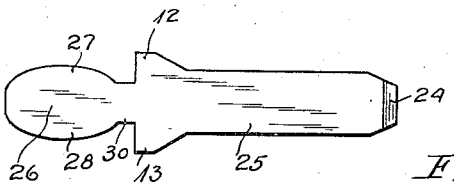


Fig. 3.

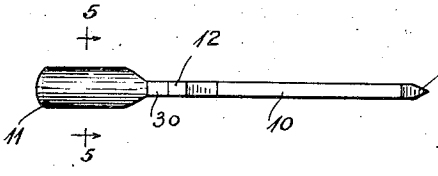


Fig. 4.

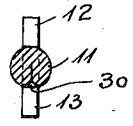


Fig. 5.

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UNITED STATES PATENT OFFICE.

THOMAS C. RUSSELL, OF CHICAGO, ILLINOIS.

PROCESS FOR MAKING ELECTRIC TERMINALS.

Application filed August 6, 1923. Serial No. 656,339.

To all whom it may concern:

Be it known that I, THOMAS C. RUSSELL, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes for Making Electric Terminals, of which the following is a specification.

My invention relates to electric terminals and process for making same. The terminals to which my invention particularly applies are provided on electric heating devices from which they project to be received by terminal jaws in connecting plugs. Terminals in the form of a cylindrical pin, and flat blades have been used, and each terminal is usually provided with a threaded shank by means of which the terminals may be secured to a support and which shank also receives clamping nuts for electrically connecting with the terminals the ends of the resistance wire or element of the electric heating device. The diameter of the shanks is usually much greater than the thickness of the blades and heretofore it has required considerable labor and expense to manufacture such blade terminals they having been usually formed and finished from stock which has originally the thickness of the shank diameter.

The main object of my invention is to make the blade terminals from a single piece of thin sheet metal and to provide improved precedure for transforming the originally flat shank portion into a cylindrical shank of the proper diameter. In accordance with my invention I stamp the blank for a terminal from sheet metal, the blank comprising the plug receiving blade section and the flat shank section, and then in a suitable die, I transversely curl or bend the flat shank section and compress it to substantially cylindrical form, there being enough metal left in the blank along the edges of the flat shank section so that in the finished cylindrical shank there will be sufficient metal to bring it to the desired diameter. The shank section can be threaded after formation, or threads can be applied simultaneously with the forming operation.

My invention will be clearly understood by reference to the accompanying drawing, in which

Fig. 1 is a side elevational view of a finished terminal, and the parts, in section, for indicating how the terminal is used in practice,

Fig. 2 is an end view of a section of the wall of an electric heating device showing the terminals in end view,

Fig. 3 is a plan view of the blank from which the terminal is eventually made,

Fig. 4 is a side elevational view of the terminal after formation of the shank section, and

Fig. 5 is a sectional view on plane 5—5, Fig. 4.

Referring to Fig. 1 the finished terminal comprises the rectangular blade section 10, the substantially cylindrical shank section 11, and the extensions 12 and 13 at the base of the blade section forming abutments or seating shoulders for the terminal. 14 represents a section of the wall of an electric heating device and has the openings 15 and 16 through which the shanks of the terminals extend, there being two terminals placed side by side as shown in Fig. 2 for receiving the terminal jaws of a connecting plug. On the outside of the wall 14 a metallic washer 17 receives the shank just below the shoulders 12 and 13, the shank at this point being flat and rectangular. Between this washer and the wall 14 is inserted a washer 18 of insulating material. Receiving the shank on the inside of the wall is the metallic washer 19 between which and the wall is inserted a washer 20 of insulating material which has the extension 21 which engages in the opening 15. A nut 22 threads on to the shank and against the washer 19 and the terminal is thus rigidly secured to the wall 14. Between the nut 22 and the nut 23 is secured one of the terminals of the electric heating wire or element forming part of the electric heating device. The outer end 24 of the blade is beveled off in order that the terminal may more readily receive the plug jaw.

Fig. 3 shows the flat blank stamped from sheet metal and this blank comprises the blade section 25, and the flat shank section 26, the blade section being the same as the blade 10 of the finished terminal when the beveled end 24 has been formed thereon. When the blank is stamped extra metal 27 and 28 is left along the edges so that there will be sufficient metal to form the finished shank to the proper diameter. After the blank has thus been formed it is subjected

to another die operation in which the shank section is bent or curled transversely and compressed to substantially cylindrical form as shown in the cross section of Fig. 5 the two halves of the blade being each formed to substantially semi-cylindrical form and brought together to form the finished shank. The extra metal 27 and 28 will bring the shank to the proper diameter and the threading 29 can be applied thereto by the same die that forms the shank, or the shank can be threaded by machine or by tools after it has been formed.

Although the shank when formed in the die does not quite form a complete cylinder, it is sufficiently close to cylindrical form to be sufficiently threaded to securely hold nuts thereon. The section 30 of the shank just below the shoulders 12 and 13 remains flat and this section receives the abutment washer 17 as shown in Fig. 1.

I thus produce a simple, inexpensive terminal which can be constructed by simple die operations from stock sheet metal which may be brass, iron, steel or any other suitable metal.

Having described my invention, I claim as follows:

1. The process of forming an electrical terminal of the class described which consists in stamping from a flat piece of sheet metal a blank comprising a blade section and a shank section extending therefrom, and then transversely upsetting said shank section to substantially cylindrical form and of a diameter greater than the thickness of the blade section.

2. The process of making an electrical terminal of the class described which consists in stamping from a flat piece of sheet metal a blank comprising a blade section and a shank section extending therefrom, then transversely upsetting and curling over the shank section to substantially cylindrical form and of a diameter greater than the thickness of the blade section, and providing threading on said shank section.

3. The process of forming an electrical terminal of the class described which consists in stamping of a flat piece of sheet metal a blank comprising a blade section and an embryo shank section extending therefrom, then bending the sides of the shank section toward each other along a median line and compressing them to form the substantially cylindrical finished shank, and threading such shank.

In witness whereof, I hereunto subscribe my name this 11th day of July, A. D., 1923.

THOMAS C. RUSSELL.