

L. S. LACHMAN.
METHOD OF UNITING METAL PARTS.
APPLICATION FILED JUNE 21, 1918.

1,292,812.

Patented Jan. 28, 1919.

Fig. 1.

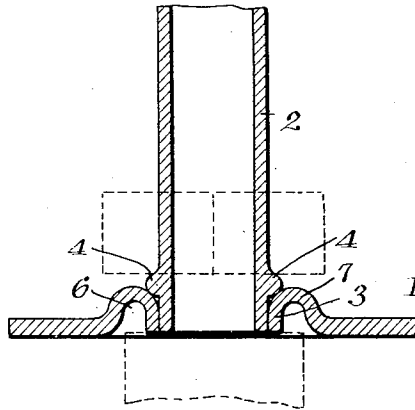


Fig. 2.

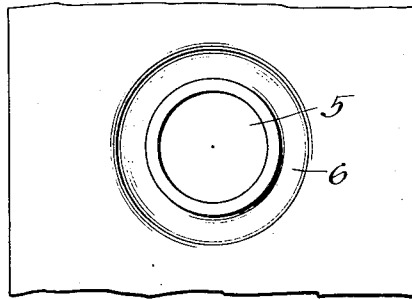
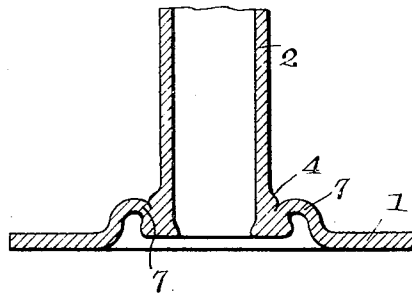


Fig. 3.



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METHOD OF UNITING METAL PARTS.

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Specification of Letters Patent.

Patented Jan. 28, 1919.

Original application filed February 8, 1918, Serial No. 215,979. Divided and this application filed June 21, 1918. Serial No. 241,110.

To all whom it may concern:

Be it known that I, LAURENCE S. LACHMAN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Methods of Uniting Metal Parts, of which the following is a specification.

This invention relates to a method of uniting two pieces of metal, such as a base and a rod, tube or other standard projecting therefrom, by a homogeneous welded joint. The present application is a division of my application for patent filed February 8th, 1918, for composite metal work Serial No. 215,979.

The object of the invention is to secure cheapness of manufacture and strength in the joint and to permit the use, if desired, of the heating effects of a heavy electric current passed through the point of desired union to heat the parts at the desired plasticity for securing, by the application of pressure, an integral or homogeneous joint.

In carrying out the invention I employ as a base member a piece of metal preferably in the form of a plate and for the projecting rod or stem I use a metal tube, the union being located on the side of said plate opposite that from which the tubular rod or stem projects, all as more particularly hereinafter described and then specified in the claims.

In the accompanying drawings:

Figure 1 is a vertical central section through a tubular rod and base as assembled preparatory to the formation of the welded joint.

Fig. 2 is an inverted plan view of the perforated base.

Fig. 3 is a vertical central section through a piece of metal work the elements of which are secured together according to my invention.

1 indicates the base plate or element and 2 a tubular stem or rod projecting from one side thereof as shown. Said rod is located or positioned in a perforation in the plate 1 and the end thereof is integrally or homogeneously united with a flange 3 on the side of said plate opposite that from which the tube or rod 2 projects. An annular shoulder or flange 4 formed on the rod 2 engages the face or side of the plate opposite the flange so that in effect the plate 1 is locked between said annular shoulder and the annular homo-

geneous union between the end of the tube and the flange 3. The flange 3 surrounds the opening or perforation 5 in the plate 1, as shown, and may be formed in a stamp press constructed to produce the annular depression 6 from the bottom of which the flange 3 rises to a height approximately the same as the face of the plate 1, although in practice the edge of said flange might be located below the level of said face preparatory to the operation of forming the union, or might in fact rise slightly above the same. In any case it is preferable to so adjust the height of the edge of the flange that the finished union will lie below the level of the face of the plate 1 on the side on which the flange is formed.

In the stamping or forming operation the projection 7 will be naturally formed on the opposite face of plate 1 although this is not necessary to the invention. The annular shoulder 4 is preferably formed by the well-known electrical forging operation which, by end pressure applied to the heated section of the rod, causes the same to swell out into the annular protuberance 4. By this construction of the annular shoulder I avoid any weakening of the wall of the tube 2 which would follow if the end thereof were turned down to produce a shoulder or offset for engagement with the plate or base 1.

To secure the parts together when assembled in the relation shown in Fig. 1 I preferably employ a heating electric current and pressure in the axial line of the rod 2 applied by suitable electrodes, one adapted to engage the edge of the flange and the end of the rod and the other to grasp or engage the rod 2 at the opposite side of the plate 1 so as to permit the heating current to be passed from one to the other through the flange and edge or end of the tube 2. The heating and pressure results in an upsetting and welding or consolidating of the flange and tube with the substantial effect of producing a homogeneous joint of the form shown in Fig. 3. In this operation the annular groove or depression 6 serves to receive in part the upset metal so that there will be in the finished work no projecting material above the face of plate 1 opposite the face from which the stem or tube 2 projects.

What I claim as my invention is:

1. The method of uniting a perforated

base and a tubular stem or rod projecting from one side of the base, consisting in forming an annular depression in the base surrounded by a flange bounding the perforation, inserting said tube in said perforation and uniting the tube and flange by an integral or homogeneous union.

2. The method of uniting a perforated base and a tubular stem or rod projecting from one side of the base, consisting in forming an annular flange around the perforation, providing the tube with an annular shoulder, assembling the tube and base with the shoulder engaging one face of the base and the end of the tube extending through the perforation and welding the edge of the flange and the end of the tube together.

3. The herein described method of uniting a perforated base and a tubular stem or rod projecting from one side of the base, con-

sisting in forming an annular projection or flange around the opening on the opposite side of the base, providing the tube with an annular swell or shoulder, assembling the tube and base with the shoulder engaging one face of the base and the end of the tube extending through the perforation, and applying a heating electric current and end pressure to the edge of the flange and the end of the tube to form a union between the same, thereby locking the base and tube together.

Signed at New York, in the county of New York and State of New York, this 20th day of June, A. D. 1918.

LAURENCE S. LACHMAN.

Witnesses:

F. B. TOWNSEND,
F. ROESLER.