June 19, 1934. J. H. TAYLOR 1,963,724

APPARATUS FOR UPSETTING PLATE EDGES

Filed June 27, 1930

Fig. 3.

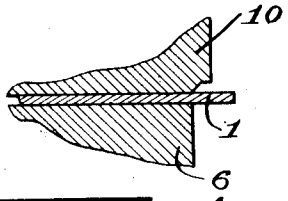


Fig. 4.

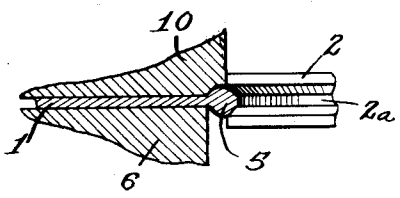


Fig. 5.

Fig. 1.

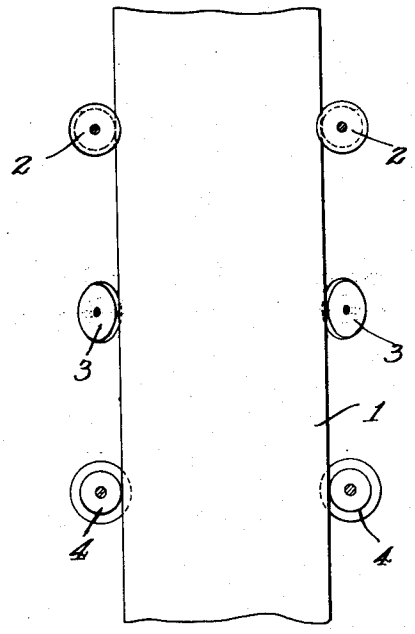


Fig. 2.

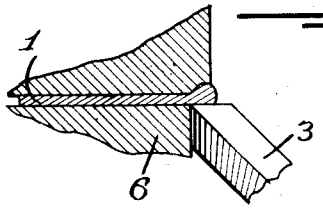
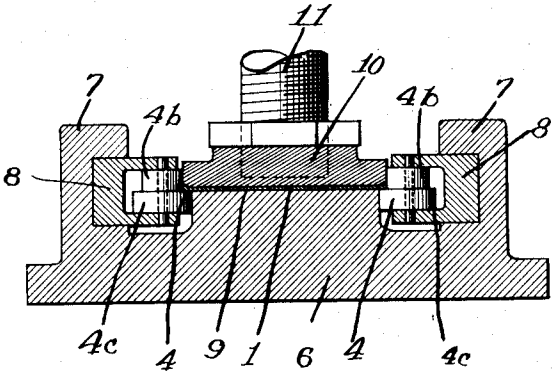
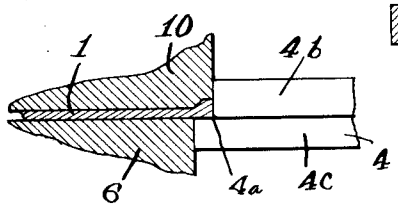


Fig. 6.





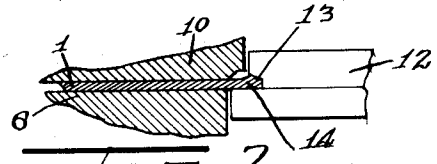


Fig. 7.

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UNITED STATES PATENT OFFICE

1,963,724

APPARATUS FOR UPSETTING PLATE EDGES

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Application June 27, 1930, Serial No. 464,218

3 Claims. (Cl. 80—40)

This invention relates to a method and apparatus for upsetting the edges of plates.

In the manufacture of spiral pipes, it is desirable to upset the edges of the metal plate that forms the pipe for the purpose of providing sufficient metal for welding the joints.

The invention comprises the novel method structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawing which illustrates a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is a diagrammatic view of a plate and rollers acting upon the edges for upsetting the same.

Figure 2 is a sectional view through an apparatus for upsetting the edges of the plate.

Figures 3, 4, 5, and 6 are fragmentary sectional views through the clamp showing the rollers in elevation and illustrating the different steps in the operation.

Figure 7 is a sectional view illustrating a modified step in the method.

According to this invention, the longitudinal edges of the plate are first simultaneously compressed to provide thickened edge portions which may be in the form of beads. The thickened portions or beads may be symmetrically formed as shown in Figure 4 or may be formed upon one side of the plate as shown in Figure 7. The thickened portions or beads, if, as shown in Figure 4, are then shifted to one side of the plate as shown in Figure 5 and the lower surfaces and outer edges thereof are flattened or smoothed to bring the same at right angles to each other. According to Figure 7, the method contemplates the omission of the step illustrated in Figure 5, and the thickened portions are simultaneously formed upon one side of the plate requiring only the operation shown in Figure 6 to complete the same. This method may be carried out in different forms of apparatus and as a matter of illustration one has been shown and will now be described.

In Figure 1, there is shown in diagrammatic form, a metal plate 1 being acted upon by a plurality of sets of rollers 2, 3 and 4. The rollers 2 which constitute the first set for acting upon the edges of the plate have grooves 2*a*, preferably of polygonal form, as shown in Figure 4, for compressing the edges of the plate and forming thickened portions or beads 5 thereon, as illustrated in Figure 4. The rollers 3 are designed to shift the beads upwardly and then flatten the underside thereof as shown in Figure 5. The rollers 3 may be of any suitable design for accomplishing the function stated. Herein, they are shown as of double conical formation. The rollers 4 are designed to form a proper angular relation between the lower corners of the plate as shown in Figure 6. To this end, each roller 4 is formed with an annular angle 4*a* which, in the present instance is shown as a right angle. To provide this angular angle, each roller 4 is formed of an upper reduced portion 4*b* and a lower enlarged portion 4*c*, the upper surface of which rolls against the bottom of the bead. The periphery of the reduced portion 4*b* rolls against the outer edge of the bead to bring the outer edge and bottom of the bead at proper angles to each other.

In Figure 2, there is shown in cross section a draw bench for upsetting the edges of the plate as just explained. The section is taken at the rollers 4. This draw bench may consist of a base 6 having upstanding and overhanging lugs 7 with recesses under the overhanging portions thereof for receiving bifurcated slide bearings 8 in which the rollers 4 are mounted. This base is provided with a flat top 9 upon which the plate 1 is adapted to be clamped or pressed by a suitable pressure block 10. Pressure may be exerted upon the pressure plate 10 in any suitable manner. In the drawing, a portion of a screw plunger 11 has been illustrated for such a purpose.

The lower edges of the pressure plate 10 are cut away to receive the beads 5 on the plate 1, as shown in Figures 3 to 6; each lower edge is so cut away as to form a groove of different configuration according to the desired form of bead. It will be noted that these grooves are sufficiently deep to provide a substantial bead containing the necessary metal for welding purposes. The slide bearings 8 containing the rollers are adapted to be drawn longitudinally relative to the clamped plate whereby the rollers will act upon the edges thereof.

In Figure 7, there is shown a modified form in which the roll 12 is substituted for the rolls 2 and 3. The roll 12 is stepped similar to the roll 4 with the exception that it has a groove 13 for forming a bead or thickened portion by compression upon one side of the plate. Such bead 14 is then acted upon by the rollers 4 to force the same into the form shown in Figure 6.

It will be appreciated that a novel method and apparatus for upsetting the edges of a plate for a spiral pipe that provides sufficient material for welding has been disclosed that not only im-

proves the product but also saves time and labor.

I am aware that numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon, otherwise than as necessitated by the prior art.

I claim as my invention:

1. An apparatus for upsetting the edges of a plate, consisting of a base having a flat top, a clamping member upon said top and having lower grooved edges, slide members carried by said base upon opposite sides of said clamping member, bead forming rolls carried by said slide members, bead shifting rolls on said slides rearwardly of said bead, forming rolls and bead shaping rolls carried by said slide rearwardly of said bead shifting rolls.

2. An apparatus for upsetting or flanging the edges of a plate comprising a base member for supporting the plate, a member for clamping the plate upon said base member, one of said members having flanging or beading grooves, said base member having guide ways, slidable means mounted in said guide ways, and embodying bead forming rolls, bead shifting rolls and bead shaping rolls adapted for engaging the opposite edges of said plate.

3. An apparatus for upsetting the edges of a plate comprising a base adapted for supporting the plate, a clamping member adapted for retaining said plate upon said base, said clamping member having bead forming grooves in its lower surface, said base having parallel guide ways, and slidable mechanism mounted in said guideways and embodying a pair of opposed beading members for simultaneously engaging the edges of the plate and a pair of opposed bead shaping and finishing members rearward of said beading members for truing the sides of the formed beads.

JAMES HALL TAYLOR.