METHOD OF MANUFACTURING BOLTS.

To all whom it may concern:

Be it known that I, Ethan I. Dodds, a citizen of the United States, and a resident of Central Valley, in the county of Orange and State of New York, have invented a new and useful Method of Manufacturing Bolts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional perspective view, largely conventional, showing one form of heating furnace which I may use in carrying out my invention. Fig. 2 is a perspective view of one of the blanks used for making the bolt. Fig. 3 is a sectional view through one form of bending die. Fig. 4 is a similar view of a compressing die. Fig. 5 is a sectional view of a heading die. Fig. 6 is a side elevation of one form of bolt made by my method; and Fig. 7 is a similar view of another form of bolt made by my method.

My invention relates to a novel method of making bolts of various characters, such as described and claimed in my co-pending applications Serial No. 759,915, filed April 9, 1913 and Serial No. 759,107, filed April 9, 1913.

The first case discloses stay bolts having solid threaded end heads, which are connected to each other by two bar members and which are twisted about each other throughout an angle of at least 180 degrees.

The track bolt shown in the latter application consists of a body portion composed of two separable bar members twisted upon each other through an angle of less than 180 degrees and which is provided with a threaded portion at one end and a flanged head at the other end.

In making my improved bolts, I preferably proceed as follows: I take a blank, such as shown in Fig. 2, which may be formed of stay bolt iron or steel, depending upon the purpose for which the bolt is to be used. The blank is first placed above a female die, such as shown at 2, in Fig. 3, and is bent upon itself by means of a male member 3 which is moved downwardly to bend the blank into the position shown at 4. The blank is then placed between a plurality of die members 5 which are moved relative to each other to squash the members in a transverse direction so that the flat face of one member is against the flat face of the other member. The blank or blanks are then placed through openings 6 in a furnace 7 to heat the head portion thereof and after they have been heated to the proper temperature, they are placed between horizontally movable die members 8, such as shown in Fig. 5, and are welded and shaped by means of a plunger 9. After the bolt has been headed, the body of the bolt is twisted upon itself to the proper angle for the specific bolt, and if the bolt is to be provided with a head and screw threaded portion, such as shown in Fig. 7, the end is threaded in any suitable manner.

If it is desired to form a bolt such as shown in Fig. 7, the heads are formed in suitably-shaped dies of a character such as shown in Fig. 5, and the body of the bolt may be twisted after the formation of the first head and before the formation of the second head, or if desired, the body may be twisted after both heads have been upset and welded. If desired the blank may be placed in a lower position than that shown in Fig. 4, so as to completely close the space between the end of the head.

My invention provides for the rapid, economical and efficient manufacture of stay bolts of this character, and avoids the piling of the separate members in the openings of the heating furnace.

I am aware that it is old to form bolts of a plurality of members which are piled and placed in the heating furnace to heat the ends before upsetting and welding, but in this method, it is very hard to retain the several members in proper position for the formation of the first head. By the use of my method, the several members from which the body portion is formed are fixedly held to each other throughout the heating and heading operations.

I claim:

1. The herein described method of manufacturing bolts, which consists in bending a blank upon itself, then further bending the blank in a transverse direction to bring the flat face of one member of the blank into engagement with the flat face of the other member of the blank, then heating the bent end of the blank, and then forming the head by upsetting said end and simultaneously welding the adjacent faces to each other at the upset portion; substantially as described.

2. The herein described method of manu-
facturing bolts, which consists in bending a blank upon itself, then further bending the blank in a transverse direction to bring the flat face of one member of the blank into engagement with the flat face of the other member of the blank, then heating the bent end of the blank, then forming the head by upsetting said end and simultaneously welding the adjacent faces to each other at the upset portion, then twisting the body of the bolt, and then shaping the other end to receive a connecting member; substantially as described.

3. The herein described method of manufac
turing bolts, which consists in bending a blank upon itself, then further bending the blank in a transverse direction to bring the flat face of one member of the blank into engagement with the flat face of the other member of the blank, then heating the bent end of the blank, then forming the head by upsetting said end and simultaneously welding the adjacent faces to each other at the upset portion, and then forming a head on the other end of the bolt and screw threading both of said heads; substantially as described.

In testimony whereof, I have hereunto set my hand.

ETHAN I. DODDS.

Witnesses:

Geo. B. Bleming,
Leo A. Guehl.

Copies of this patent may be obtained for five-cents each, by addressing the "Commissioner of Patents, Washington, D. C."