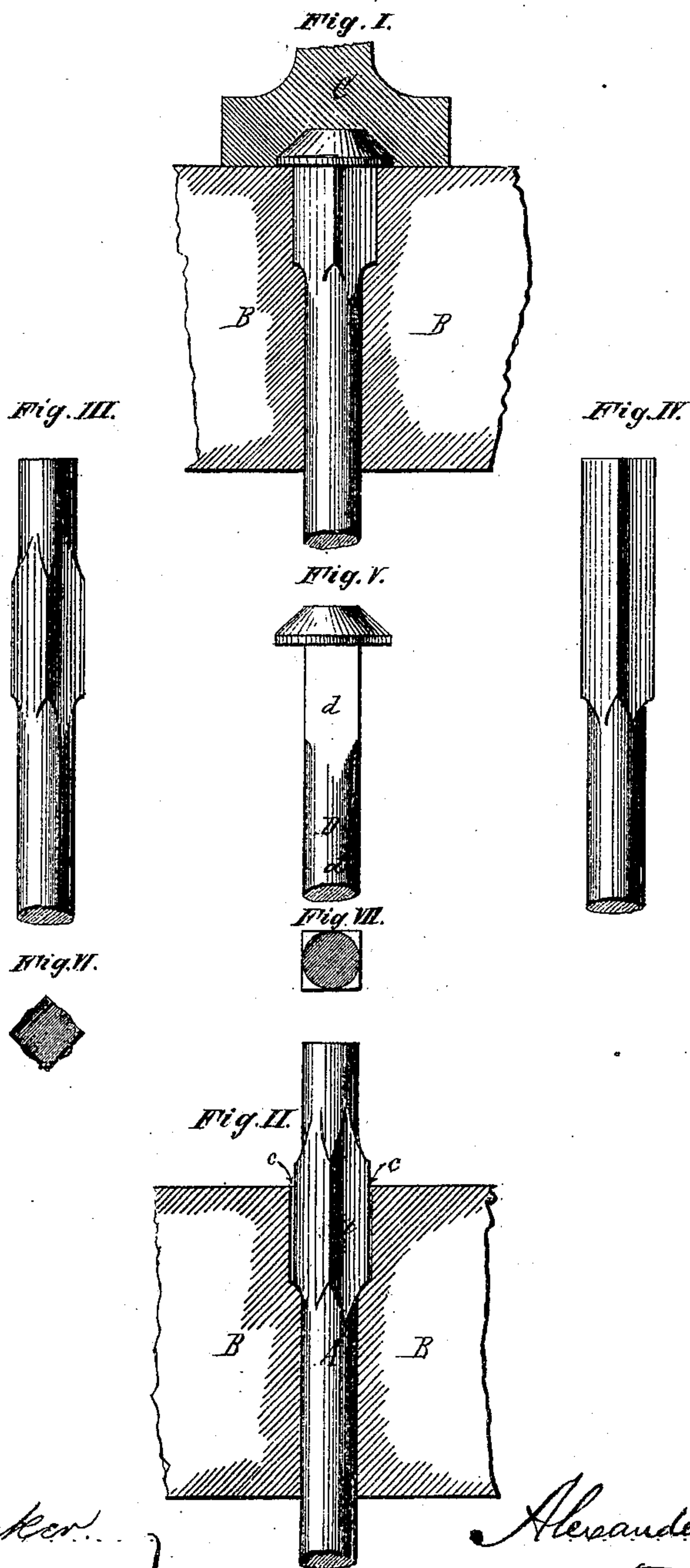


A. Mailer,
Bolt Making.

No. 102,566.

Patented May 3, 1870.



Victor A. Becker,
Geo. J. Bonner,
Witnesses.

Alexander Mailer,
Inventor
By Forbush & Hyatt
his attys

United States Patent Office.

ALEXANDER MAILER, OF BUFFALO, NEW YORK, ASSIGNOR TO GEORGE C. BELL AND R. H. PLUMB, OF SAME PLACE.

Letters Patent No. 102,566, dated May 3, 1870.

IMPROVEMENT IN THE MANUFACTURE OF BOLTS.

The Schedule referred to in these Letters Patent and making part of the same.

I, ALEXANDER MAILER, of the city of Buffalo, in the county of Erie and State of New York, (assignor to GEORGE C. BELL and R. H. PLUMB, of the same place,) have invented a certain new and useful Improvement in the Manufacture of Bolts, of which the following is a specification.

My improvement relates to the manufacture of bolts with square necks or shanks. The diameter of the round portion of these bolts is required to be equal to the side of the square neck. They have been made from rods of varying shape and size, each adapted to a particular mode of manufacture. For instance, bolts have been made from square iron of the size of the neck of the bolt, by upsetting one end to form the head, and rounding the other end to form the body. Rods, oval in cross-section, or of equivalent polygonal shape, having a sectional area equal to that of the square neck of the bolt, have been used by swaging the square neck, and rounding the body, by passing it between rollers; and still another method is that described in the patent granted to William J. Lewis, April 4, 1865, which consists in, first, upsetting the end, to increase its area, and then forming the square neck by swaging, as it has been found impracticable to properly fill out the corners of the square neck by upsetting alone.

My invention consists in manufacturing square-neck bolts from round iron, of the size of the body of the bolt, by first squaring a portion of the blank near one end, between swaging-dies or otherwise, and then, by upsetting in a square die of the required size of the neck of the bolt, form both neck and head, by the same operation, the square portion of the blank, which is upset in forming the neck, filling out the corners as the upsetting of a round rod would not.

In the accompanying drawings—

Figure I represents the position of the bolt in the dies after the upsetting operation which formed the head and enlarged the neck to the required size.

Figure II represents a squared blank clamped in the finishing-dies ready to receive the pressure of the heading and upsetting-die.

Figure III is a view of a blank after it has passed through the squaring operation.

Figure IV is a view of another form of a blank after the first operation.

Figure V is a view of a formed bolt.

Figure VI is a cross-section through the squared portion of the bolt before upsetting.

Figure VII is a cross-section through the round portion, showing the relative size compared with the finished square neck.

Like letters of reference designate like parts in each of the figures.

A, Fig. II, represents a blank after the portion *a*, designed for the neck, has been squared between suitable swaging-dies; B B are the finishing-dies; and C, the head-forming die, all of ordinary construction and operation.

c, Fig. II, shows the space around the squared portion of the blank before it is upset, which space is filled by the expansion of the metal as it is upset by the head-forming die represented in Fig. I.

D is the finished bolt;

d, the square neck, of enlarged sectional area; and

d', the body of the bolt, of the same size as the original rod from which the bolts are made.

From the foregoing description of my improvement, it is manifest, that a bolt can be formed complete by the two simple operations of, first, compressing between swaging-dies, and then upsetting the head; the latter operation, also upsetting the neck to the required size, in the most perfect manner.

What I claim as my invention is—

The method of manufacturing bolts from round iron of the size of the round portion of the bolt, by first squaring a portion to form the neck, and then upsetting the neck and head together, substantially as hereinbefore set forth.

ALEXANDER MAILER.

Witnesses:

VICTOR T. BECKER,
JNO. J. BONNER.