

W. J. Lewis.

Bolt Machine.

N^o 47, 113.

Patented Apr. 4, 1865.

Fig. 3.



Fig. 5

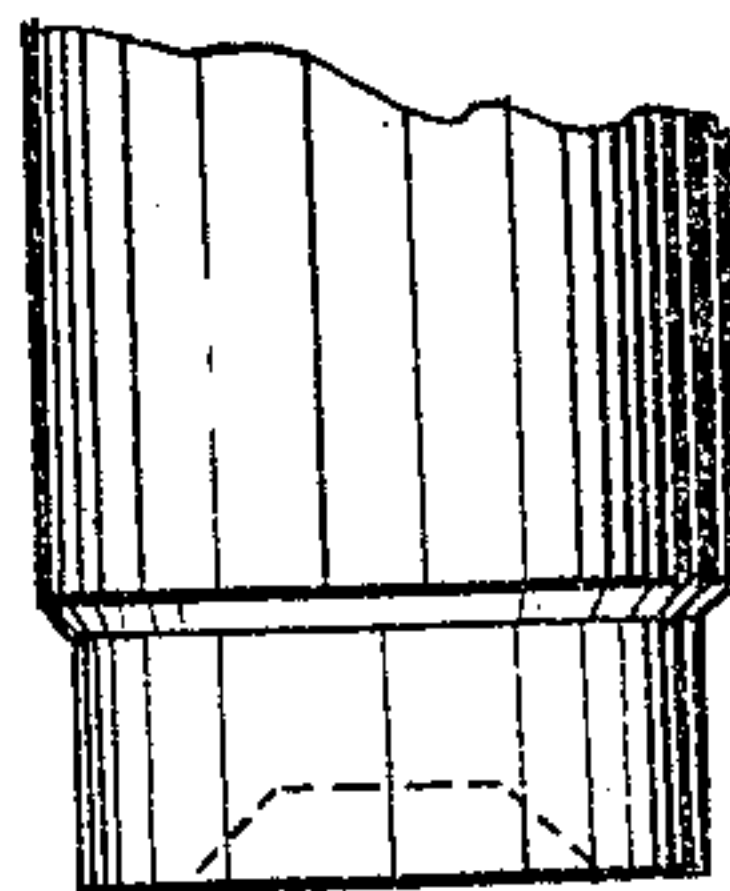


Fig. 2

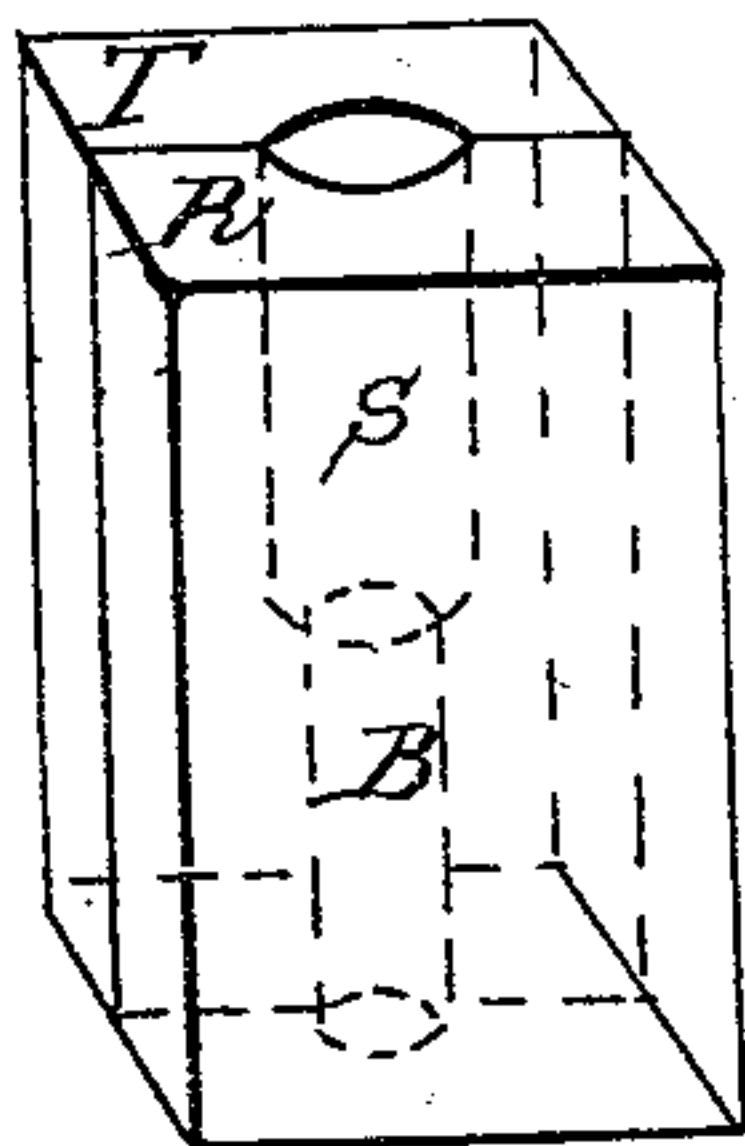


Fig. 4

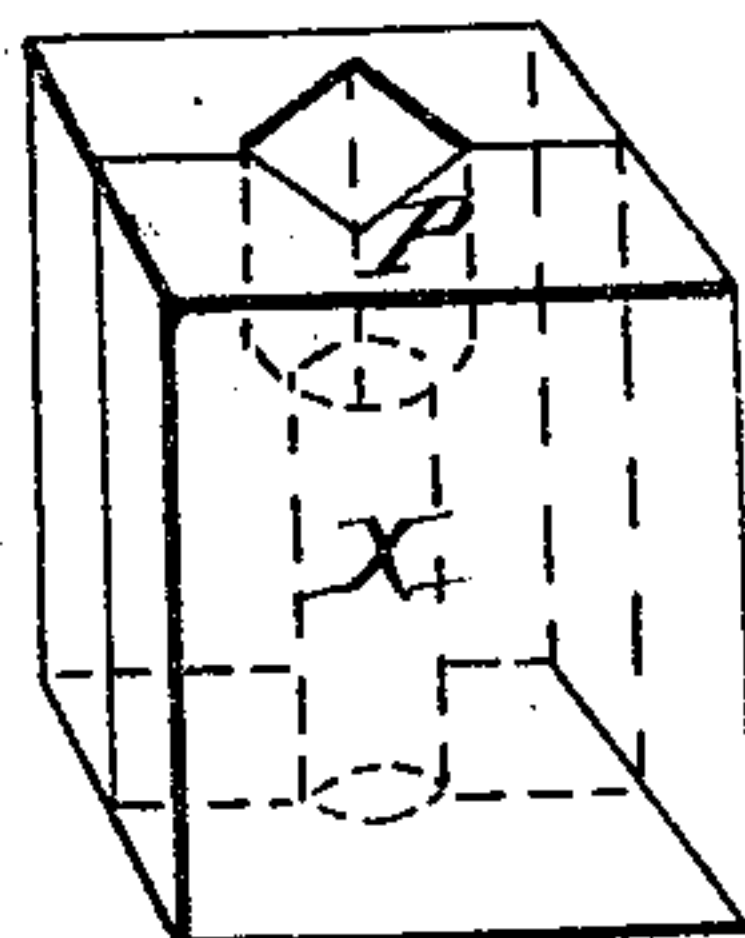
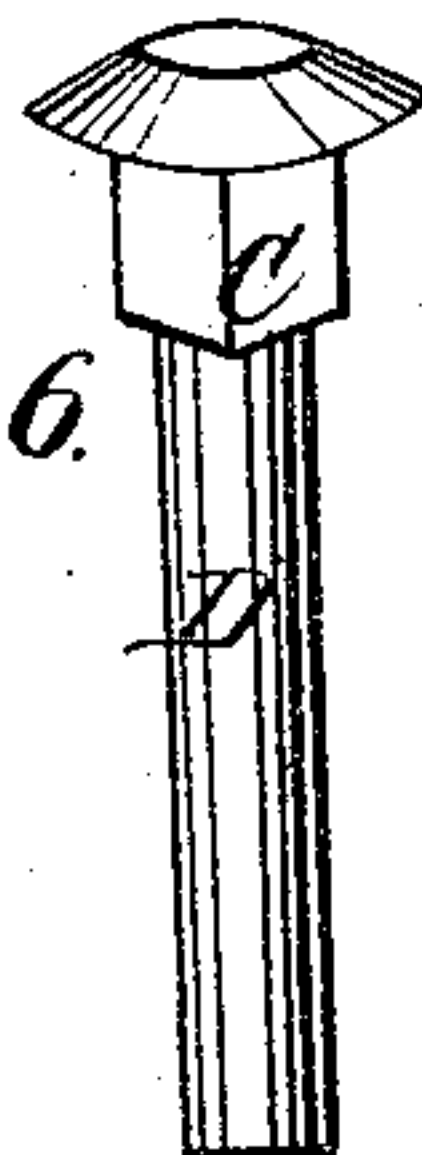


Fig. 1



Fig. 6



Witnesses;

Isiah W. Ellis.

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UNITED STATES PATENT OFFICE.

WILLIAM J. LEWIS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN THE MANUFACTURE OF BOLTS.

Specification forming part of Letters Patent No. 47,113, dated April 4, 1865.

To all whom it may concern:

Be it known that I, WILLIAM J. LEWIS, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Method of Making Bolts with Square Necks; and I hereby declare that the following is a full, clear, and exact description of my invention, reference being had to the accompanying drawings, forming part of this specification, and to the letters of reference marked thereon.

The nature of my invention consists in making square-necked bolts from round iron rods, one side of which square will equal the diameter of the round rod from which they are forged, and this I accomplish by first "staving-up" or enlarging that part of the rod intended for the neck and head to such an extent that when subsequently placed between the gripping and heading dies that portion required for the neck will be compressed into a perfectly sharp-cornered square, and at the same time that the head is being made.

To enable others to understand my improved method, I will proceed to describe the operation by reference to the accompanying drawings.

To make square-necked bolts in accordance with my plan, I first take a round rod of iron of the diameter required for the body D, Fig. 1 of the bolt. This, when properly heated, is inserted in the cavity B between the steel gripping-dies T R, Fig. 2, which are constructed and operated in a similar manner to those of other bolt-heading machines. The upper portion of the cavity S, however, being somewhat larger than the rod, this enlargement reaching half the depth of the dies, the rod on its insertion is gripped and held by the narrowest part, B, of the cavity until the advance of the heading punch L staves up that part of the rod in the large part of the cavity S until it assumes the shape and increased thickness N represented at Fig. 1, when, on

being released by the opening of the dies, Fig. 2, it is taken by the operator, reheated, and submitted to the action of the compressing and squaring dies, Fig. 4. These dies are similar in construction to those just described; but instead of the cavity *x* in these dies being cylindrical all the way through the upper part, P, is made square, which, as the dies close on the enlarged end of the rod, give shape by compression to the neck C, Fig. 6, of the bolt, forming a perfectly full and sharp-cornered square, unattainable by any other means where the bolt is made from round iron the size required for the body under the neck. As soon as the dies, Fig. 4, close on the iron, the advancement of the cup-shaped header, Fig. 5, takes place and forms the head by further staving up of that portion of the enlarged rod projecting beyond the dies toward the header, this operation being similar in all respects to that of other bolt-heading machines already in use.

I would here remark that I am aware that bolts with square necks have been made from round rods, but in that case the square was produced by staving in a die having a square recess. Therefore I wish it distinctly understood that I lay no claim to making bolts with square necks from round iron. Neither do I claim the formation or construction of dies or the operation of any kind of machinery for the purpose of making bolts; but

What I do claim is—

Making bolts with square necks from round iron by first staving up or enlarging that part of the rod intended for the neck previous to the formation of the square, and subsequently squaring that part by compression or otherwise without regard to the nature of the tools used for that purpose.

WM. J. LEWIS.

Witnesses:

JOSIAH W. ELLS,
JOHN McKENNA.