W. J. LEWIS.

MANUFACTURE OF BOLTS.

No. 172,459. Patented Jan. 18, 1876.

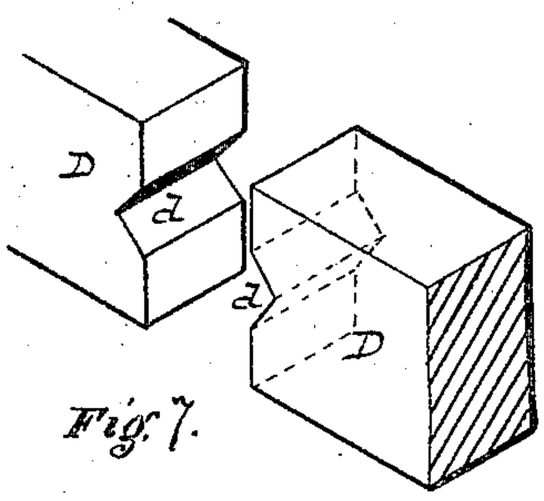

Fig. 7.

Fig. 1.

Fig. 4.

Fig. 2.

Fig. 3

Fig. 5

Fig. 6.

Witnesses
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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. **172,459**, dated January 18, 1876; application filed October 20, 1875.

To all whom it may concern:

Be it known that I, WILLIAM J. LEWIS, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in the Manufacture of Bolts; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a view in perspective of the operative ends of a set of dies illustrative of my improvement. Fig. 2 is a perspective view of a plate from which the bolt-blanks are severed. Fig. 3 is a like view of one of the blanks, as cut. Fig. 4 shows a blank headed. Fig. 5 illustrates the next step of a rounded stem. Fig. 6 shows the finished article, and Fig. 7 shows the griping-dies of Fig. 1, made with V-shaped, instead of square, grooves.

My improvement relates to the manufacture of bolt-blanks and bolts, and more particularly carriage-bolts, by severing the blank from the end or edge of a metallic plate, and compressing a round stem and upsetting a head thereon.

In carrying out my invention I roll out, or make by suitable means, a plate of any desired thickness, according to the size of blank desired. Such plate I trim or divide in the manner ordinarily practiced in preparing nail-plates, but in such manner as to give a plate, A, one edge, *a*, of which will be of any desired length, and ordinarily about as long as the bolt B′ to be made. In cutting these plates, where the material is a fibrous metal, the edge *a*, from which the blanks are cut, preferably runs longitudinally with the fiber; but where the metal is non-fibrous, or homogeneous, or is fibrous only to a slight degree, it makes little, if any, difference from which edge of the plate the blanks are cut. I then cut or shear, or otherwise sever, the blanks B from the parent bar or plate by the use of any suitable devices for that purpose, severing the blank so that its cross-section shall be a square or nearly so.

When making blanks for carriage or screw bolts I make the plate A (in general terms) of a thickness equal to one side of the square of the shank *b*, and equal, or about equal, to the diameter of the rounded stem *b′*, or to the diameter of a circle inscribed within the square of the shank *b*. Also, in such case I cut off for each blank a width of material equal, or about equal, to the thickness of the plate, and also cut the blank so that it shall be of uniform size through so much and such part of its length as goes to form the body of the stem, or of the shank and stem. Such blanks are then, or by one or more subsequent operations, caught by or placed within side griping-dies D D′ of any suitable construction, with reference to giving the desired form to the stem *b′* or shank *b*, and by one or more simultaneous or consecutive actions of such dies, while the shank *b* retains the form in cross-section of the blank, with but little, if any, change, the stem *b′* may be rounded, as shown, these functions being secured by the round and rectangular or V grooves *d d′*. The projecting end of the blank is then, or previously, upset into a head, b^2, by a header, D^2, or by other suitable dies, such as are employed in bolt-heading operations. In this way I produce, by mechanical means, the bolt B^1, of Fig. 5, and only need to cut the thread and add a nut to produce the finished article B^3, shown in Fig. 6. By varying the form of the groove *d d′* any desired irregular or angular shape may be given to the shank or stem *b* b^1.

While I have shown the dies D D^1 for purposes of illustration I do not in the mode of manufacture described limit myself specifically to these dies, nor to the conjoint action on the blank of these or other dies of like function, since the operations of shaping and heading may be performed either simultaneously or in succession, one after the other; and the rounding of stem b^1 may be effected by compression applied through any known or suitable means of rolling or rounding iron, grooved segmental rolls being one means suitable for the purpose. The entire blank, except so much of it as is required for or goes to make the head, may be rounded up in the manner described, so as to produce an ordinary bolt. The blanks B produced in this operation, made of uniform size to the extent above stated, and headed, as in Fig. 4, by side grip-

ing-dies D and a header, D^2, constitute properly an article of trade, and such a blank, being new, is claimed herein as a new article of manufacture. Such blanks may be sold in large quantities and finished up by the purchaser, by hand or by mechanical means, at pleasure.

I claim as my invention—

1. As an improvement in the art of making screw-bolts, severing the rectangular blank from the edge or end of a metallic plate, forming a head thereon, and shaping a rounded stem by lateral compression in dies or otherwise, substantially as described.

2. A headed bolt-blank, B^4, made as described, and possessing substantially the characteristics specified, with reference to Fig. 4.

In testimony whereof I have hereunto set my hand.

WILLIAM J. LEWIS.

Witnesses:

C. E. MILLIKEN,

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