

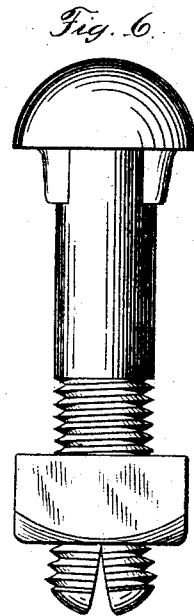
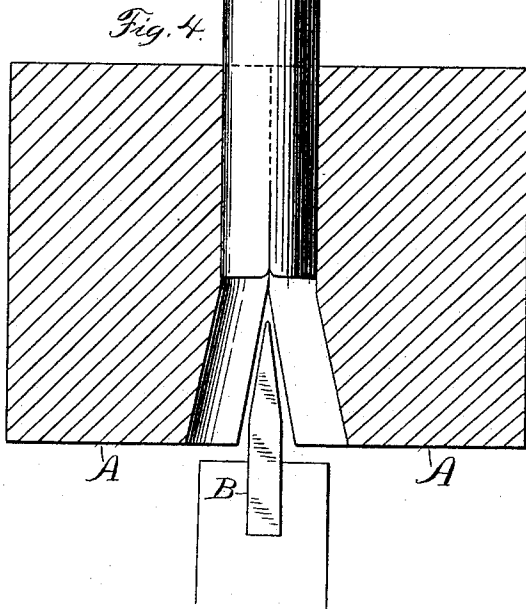
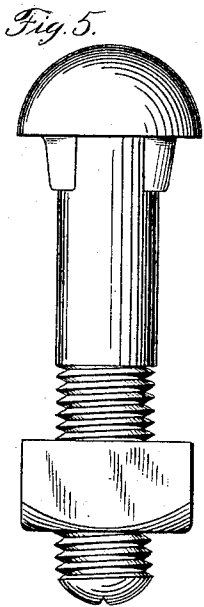
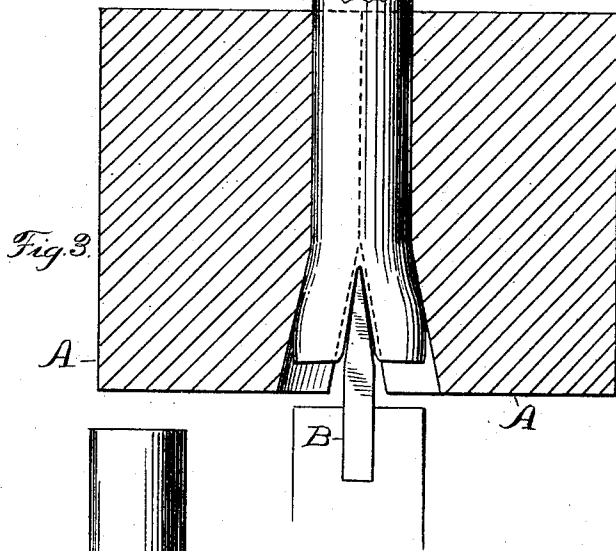
(No Model.)

F. A. SMITH.

METHOD OF MAKING SPLIT BOLTS.

No. 340,683.

Patented Apr. 27, 1886.



*Witnesses.*  
*John Edwards Jr.*  
*C. W. Welles*

*Inventor.*  
*Frederick A. Smith.*  
*By James Shepard*  
*Atty.*

# UNITED STATES PATENT OFFICE.

FREDERICK A. SMITH, OF CLEVELAND, OHIO, ASSIGNOR TO THE HOTCHKISS & UPSON COMPANY, OF FARMINGTON, CONNECTICUT.

## METHOD OF MAKING SPLIT BOLTS.

SPECIFICATION forming part of Letters Patent No. 340,683, dated April 27, 1886.

Application filed December 7, 1885. Serial No. 184,884. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK A. SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in the Manufacture of Divided-End Bolts, of which the following is a specification.

My invention relates to improvements in the manufacture of bolts having the threaded end divided, so that the two parts composing the divided end may be spread apart for locking the nut.

The objects of my improvement are to lessen the cost of manufacture and to produce a bolt having at once a divided end and a practically-continuous thread.

In the accompanying drawings, Figure 1 is a side elevation of a bolt-blank having one end split, the same being the result of the first step in my process. Fig. 2 is a like view of a bolt-blank having a split end, but with the sides of the blank pressed closely together, said blank being the result of the second step in my process. Fig. 3 represents in horizontal section and plan view a pair of holding-dies and a splitting-chisel, together with a part of a bolt-blank. Fig. 4 is a like view of the same, but with the blank differently placed in the die. Fig. 5 is a side elevation of one of my finished bolts; and Fig. 6 is a like view of the same with the end split open for locking the nut.

Bolts have heretofore been made with a slotted end for the purpose of spreading the two sides of the end apart for locking the nut; but these ends have been made by sawing a slot in the end of the bolt as threaded, a process wholly different from that invented by me.

A A designate holding-dies having parallel inner surfaces for a portion of their length, while the remainder of the inner faces is beveled off, so as to stand on the diverging lines, as shown at the lower side of Figs. 3 and 4. The inner faces of these dies are provided with semicircular grooves for the reception of the round blank, as shown.

B designates a knife or chisel for use in con-

nection with the holding-dies. These holding-dies and chisel are designed for use in an ordinary bolt-heading machine, in which the dies or one of them has a lateral movement for opening the dies and for closing them firmly upon the rod or blank.

The knife or chisel is set in the part corresponding to the header, which part has a reciprocating motion and moves toward the dies when they are firmly pressed together for holding the rod.

Such machines being well known, I consider a further description of them unnecessary.

I first heat one end of the rod or bolt-blank and then place it in the holding-dies with its end projecting into the diverging portion thereof, and while the blank is so held the knife B is forced forward and splits the end of the rod, as shown in Fig. 3, thereby producing the split and spread blank shown in Fig. 1. The dies are again opened, and while the blank is still hot it is drawn backward, so as to be within the parallel inner walls of the holding-die when the dies are again forced together, thereby compressing the split sides of the blank closely against each other, as shown in Figs. 2 and 4. The bolt can then be headed and threaded in any ordinary manner, the thread being formed on the split end of the bolt and the end preferably rounded, as shown in Fig. 5, in which the thread is practically continuous, while the slit is scarcely visible, except at the extreme end of the bolt, where the metal was depressed by the edge of the chisel before entering the heated end of the rod or bolt-blank.

When it is desired to lock the nut upon the bolt, it is only necessary to drive a chisel or wedge into the split end to spread the sides apart, as shown in Fig. 6. The entrance of the wedge is facilitated by the depression at the mouth of the split.

By this process a split-end bolt can be very cheaply produced, while the threaded end has practically the same amount of metal as a solid bolt, and the two sides of the split end are closely in contact, so that the thread is practically continuous.

I may add that it is not material to my invention whether the closed split is made by one or more heatings of the metal.

I claim as my invention—

- 5 That improvement in the art of forming divided-end bolts which consists of first splitting the ends and spreading them apart, then pressing the two sides thereof together, and finish-

ing the bolt in any ordinary manner, the thread of the finished bolt being formed on the split end, substantially as described, and for the purpose specified.

FREDERICK A. SMITH.

Witnesses:

G. W. FOSTER,  
JOHN E. HEENE.