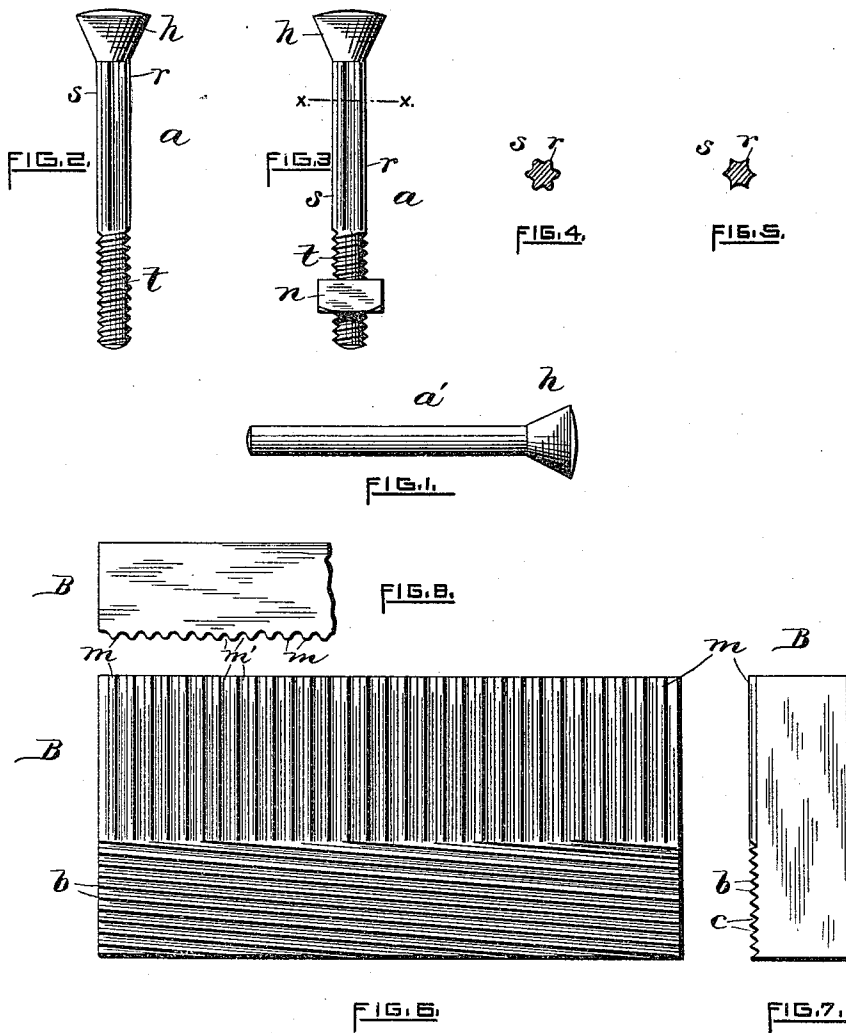


(No Model.)

C. D. ROGERS.
DIE FOR MAKING SCREW BOLTS.

No. 440,331.

Patented Nov. 11, 1890.



WITNESSES.

Charles Hamman.
Herbert F. Tourtellot.

INVENTOR.

Charles D. Rogers.
By Remington & Henthorn
Attys.

UNITED STATES PATENT OFFICE.

CHARLES D. ROGERS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
AMERICAN SCREW COMPANY, OF SAME PLACE.

DIE FOR MAKING SCREW-BOLTS.

SPECIFICATION forming part of Letters Patent No. 440,331, dated November 11, 1890.

Application filed August 4, 1890. Serial No. 360,866. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. ROGERS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Tire-Bolts and Dies for Making the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

15 In the production of tire-bolts as heretofore practiced it has been usual, so far as I am aware, to make the portion of the shank contiguous to the head substantially plain or smooth. An objection to such former bolts is that the smooth portion possesses but little holding capacity laterally when inserted into the wooden rim or felly of a wheel. Another objection is that the continual running of the wheel over uneven surfaces, coupled with a slight shrinkage of the wood, produces a jarring movement, which acts to loosen the bolt and at the same time causes a rattling noise. I would state that the hole bored through the wood for the bolt becomes gradually enlarged by wearing away or upsetting the fibers of the wood contiguous to the bolt, the same being due largely to the jar or vibrations of the wheel in running, as stated, and to the rotation of the bolt within the hole; but with the body of the bolt fluted, as herein described, there is sufficient engagement with the wood to prevent or greatly diminish the tendency to turn.

The object I have in view is to produce a stronger tire-bolt than commonly made, and one, too, which is devoid of the objections before referred to.

To that end my present invention consists of a tire-bolt having the surface of its shank portion intermediate of the head and threaded portions provided with a series of longitudinally-arranged ribs and grooves or flutings.

My invention further consists of a novel form of die arranged to simultaneously form on the bolt-blank the screw-thread and the said flutings.

My invention is more especially adapted to the "rolling" process—that is to say, the blanks are introduced singly between a pair of suitably-arranged reciprocating dies provided with ribs and grooves, which at one and the same operation impress or form the screw-threads and flutings into the blank's surface. It would, I think, be impossible with any machinery now known to form on the surface of a bolt at any reasonable expense the screw-thread and fluting which I have described; but by means of a die about to be described it can be done at an insignificant cost.

In the accompanying sheet of drawings, which illustrate my improvements, Figure 1 is a side elevation of the bolt or screw-blank. Fig. 2 is the same after it has been acted upon by the dies which form the screw-thread and flutings. Fig. 3 shows the bolt provided with a nut. Fig. 4 is a cross-sectional view taken on line *x x* of Fig. 3, showing the arrangement of the peripheral ribs and grooves formed in the bolt's surface. Fig. 5 is a similar view showing another form of flutings. Fig. 6 is a side elevation of the die adapted to produce the said screw-thread and grooves. As drawn, the figure represents the front or working face. Fig. 7 is an end view, and Fig. 8 shows a partial plan view, of the die.

In the several figures, *a* indicates the bolt or screw itself, the same having at one end a head *h* and at the other end a screw-threaded portion *t*. The shank portion *s*, intermediate of the head and screw-threaded portions, is provided with a series of longitudinally-arranged ribs *r* and grooves. These I prefer to make well rounded both at the top and bottom transversely, substantially as shown in Fig. 4, although other forms may be made, as shown in Fig. 5.

The die used is indicated by B. The upper portion of its working-face is provided with a series of parallel ribs *m* and grooves *m'*, alternating with the ribs. The lower portion of the die's face is provided with a series of inclined parallel ribs *b* and grooves *c*, having a V-shape form. As drawn, the ribs and grooves are substantially uniform cross-sectionally at any point throughout the length of the die.

In rolling the bolts *a* the headed blanks *a'*,

Fig. 1, are introduced singly between a pair of the dies B, which are reversely arranged and separated laterally a distance somewhat less than the diameter or size of the wire or plain portion of the blank. Now upon reciprocating the dies toward each other the blank is seized between them, the continued movement of the dies impress the fluting-ribs *m* and threading-ribs *b* into the blank's surface simultaneously (the blank meanwhile turning on its axis) until at the end of the operation the dies pass each other and allow the now-fluted and screw-threaded screw or bolt *a* to drop from them. In thus rolling the screw the metal is expanded radially, so that the diameter taken across the fluted or screw-threaded portions exceeds that of the normal size of the shank *a'*. Obviously the form and number of the flutings may be varied, as desired. So, also, in like manner the form of the screw-threads may be modified. As drawn, the threads *t* indicate a fine pitch or "machine-thread." The threads may, however, be coarser, substantially like wood-screws, without departing from the spirit of the invention. Any such change or variation must first be effected by a corresponding change in the form

of the ribs and grooves of the dies. The transverse ribs upon the die by their engagement with the metal prevent any slipping or displacement of the blank between the dies.

I claim as my invention—

1. The herein-described die for making bolts, provided with transverse ribs and grooves over a portion of its surface to produce longitudinal ribs and grooves or flutings over a portion of the body of the blank, combined with ribs and grooves on another portion of the die and nearly at right angles to the said transverse ribs to form screw-threads on the lower or entering end of the blank.

2. A bolt having its shank provided at its entering end with spiral ribs and grooves arranged to form a screw, and the portion between the screw and the head provided with longitudinal ribs and grooves or flutings, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES D. ROGERS.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.