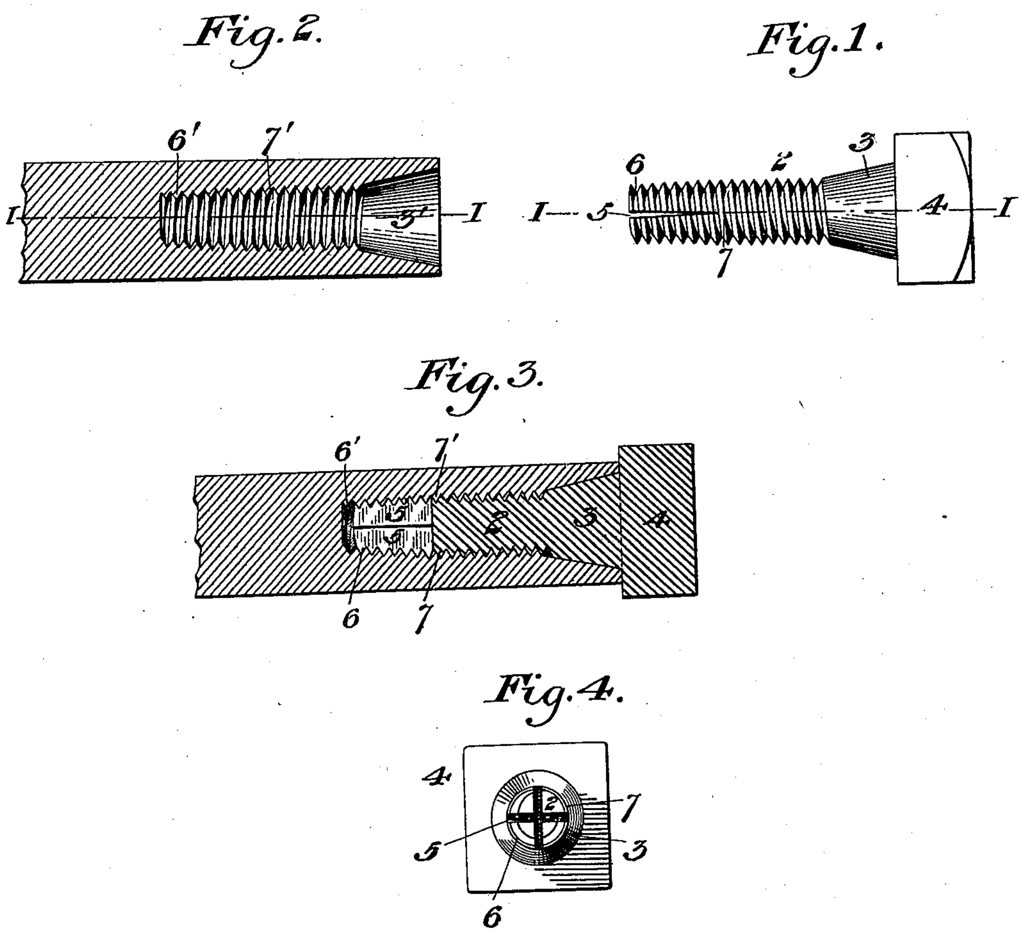
No. 645,548. Patented Mar. 20, 1900.

J. M. BOWMAN & R. S. HENRY.

SCREW.

(Application filed June 29, 1898. Renewed Aug. 8, 1899.)

(No Model.)



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES M. BOWMAN AND RICHARD S. HENRY, OF PITTSBURG, PENNSYLVANIA; SAID HENRY ASSIGNOR TO SAID BOWMAN.

SCREW.

SPECIFICATION forming part of Letters Patent No. 645,548, dated March 20, 1900.

Application filed June 29, 1898. Renewed August 8, 1899. Serial No. 726,600. (No model.)

To all whom it may concern:

Be it known that we, JAMES M. BOWMAN and RICHARD S. HENRY, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Tie-Bolts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a portion of our improved bolt, and Fig. 2 is a partial longitudinal section of the remainder thereof. Fig. 3 is a longitudinal section on the line I I of Figs. 1 and 2, showing the two in juxtaposition; and Fig. 4 is an end elevation of Fig. 1.

Our invention relates to tie-bolts, stay-bolts, and the like, and is designed to afford a device whereby the binding and retaining part may be held securely in the desired position and also to afford means for protecting the threads from corrosion.

In the drawings, in which like figures of reference indicate like parts, 2 is a threaded shank with cone-shaped portion 3, having a suitable head 4.

5 5 are longitudinal slits in shank 2 at right angles to each other and preferably extend about one-half the length of the threaded portion of said shank. We also preferably taper the end portion of said shank, so that it shall be slightly less in diameter at end 6 than it is at the middle part thereof, as indicated at 7. This taper is not, however, essential, and the same diameter may be maintained throughout the entire length of the threaded shank, if desired.

In Fig. 2 we show the nature of the hole or cavity to which shank 2 and cone 3 are applied and in which the parts correspond thereto and are the converse thereof. We show the corresponding parts of said hole or cavity by primed reference-figures. We provide a taper in the said hole or cavity of such degree that when shank 2 is screwed therein the end portion thereof will be compressed, as shown in Fig. 3, and the pronged part will act as binding-springs. The cone-shaped portion 3, impinging upon the part 3′, will also act as a binding part and increase the efficiency in the locking thereof. This binding of the cone 3 is, however, only incidental thereto, as the prime function thereof is to protect the threads from corrosion by the closeness of its contact with cavity 3′. We show our tie-bolt herein broken away, inasmuch as it may be of any desired length and the retaining-head at the end (not shown) may be of any suitable shape.

In adjusting our improved bolt we proceed as follows: The part, Fig. 2, having retaining-head, being of a diameter corresponding to the diameter of the orifice in the material or materials to be retained, is inserted in said orifice until part 3′ appears at the surface opposite the retaining-head. Shank 2 is then inserted therein and screwed down until cone 3 impinges firmly upon part 3′ and head 4 upon the surface of the material and binding the same. When it is desired that the materials may be released, it will be apparent that it is necessary only to unscrew the head 4 and remove it and shank 2.

The advantages of our invention will be apparent to those skilled in the art to which it relates. It is simple in construction and therefore the cost of manufacture is small. It is effective in operation, affording a tie-bolt that while it easily and automatically locks itself can as easily be released without injury to itself or to its threads. By the use of the cone-shaped portion adjoining the head we are enabled to protect the thread from corrosion, thus permitting its use under all unfavorable conditions without danger of injury.

Changes may be made in the parts by the skilled mechanic without departing from our invention as defined in the claim. The head may be of any desired shape or size, and the number of the slits may be increased or decreased and may be of any length, as may also the taper of the threaded portions. Other changes and modifications will suggest themselves, since

What we claim is—

A tie-bolt having a cone-shaped cavity in the end thereof, a threaded continuation

thereof, the inner portion of which is contractingly tapered, and a nut having a cone-shaped portion contacting with said cone-shaped cavity and a split threaded shank integral with said cone and nut adapted to cooperate with said threaded cavity and be compressed and retained therein, substantially as described.

In testimony whereof we have hereunto set our hands.

JAMES M. BOWMAN.
RICHARD S. HENRY.

Witnesses:
G. I. HOLDSHIP,
L. A. CONNER, Jr.