R. LONG.

NUT-LOCK.

No. 169,647. Patented Nov. 9, 1875.

Fig. 1.

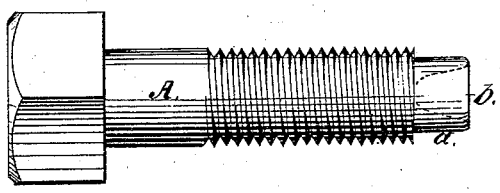


Fig. 2.

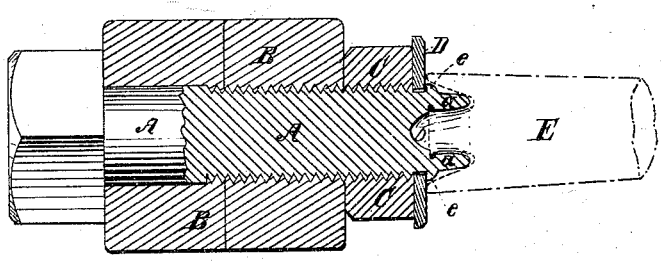


Fig. 3.

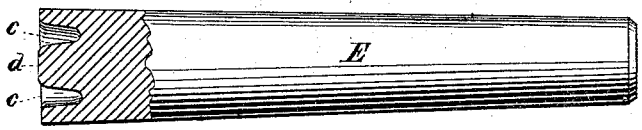
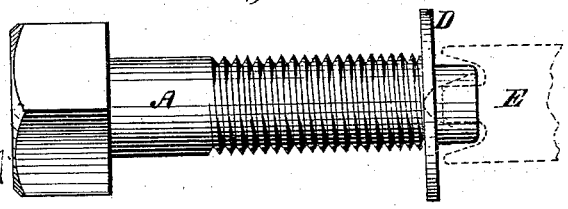


Fig. 4.



Witnesses:
Thomas L. Connolly
Harry A. Burton

Inventor:
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UNITED STATES PATENT OFFICE.

RICHARD LONG, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN NUT-LOCKS.

Specification forming part of Letters Patent No. **169,647**, dated November 9, 1875; application filed August 4, 1875.

To all whom it may concern:

Be it known that I, RICHARD LONG, of the city of Pittsburg, county of Allegheny, State of Pennsylvania, have invented an Improvement in Bolts and Nut-Locks, of which the following is a specification:

The object of my invention is to provide a cheap, simple, and efficient nut-lock, so constructed as to entirely overcome the great difficulty heretofore encountered in locking or fastening a nut upon a bolt, where both are subjected to great and continuous jarring or concussion, in such a manner as to keep the nut at all times perfectly tight in its place. In order to accomplish this I have constructed a screw-threaded bolt, with a neck formed on one end about equal or a little less in diameter than the body of the bolt, and having a conical recess countersunk in the same end; and I have also invented a punch of peculiar construction, to be used in connection therewith in securing the nut in place, having a cup-shaped recess in one end thereof, from the center of which a stem or projection rises, as will be hereinafter more fully set forth.

A represents a screw-threaded bolt, having a smooth neck, *a*, formed on one end thereof, and a conical recess, *b*, countersunk in the same end, as shown in side view in Figure 1 of the accompanying drawing. This bolt is passed through any device or devices that are to be screwed together, as represented by the plates B B′, Fig. 2, and a nut, C, of the usual construction, is screwed on the end thereof, with its outer face flush with the base of the last thread on the end of the bolt. A washer, D, of wrought-iron or other suitable metal, is then placed on the neck of the bolt, jam against the outer face of the nut C; and a punch, E, having a cup-shaped recess, *c c*, in its end, from the center of which a central stem or projection, *d*, rises, having its end cut square or straight off, but with its edges slightly beveled to prevent its cutting the metal, as shown in Fig. 3, is then applied to the recessed end of the bolt, the end of the projection *d* resting in the recess *b*, on a line slightly in advance or on the outside of the face of the washer D, as shown in Fig. 4. The outer end of the punch E is then struck with a hammer, which forces the projection *d* farther into the recess *b*, and causes the beveled edges of the projection to force or expand the metal of the neck *a* out over the hole in the washer D, thereby forming an annular rib or projection, *e*, on the neck of the bolt in front of the washer, as clearly shown in Fig. 2, while, at the same time, the outer end of the neck of the bolt is firmly held in the recess in the end of the punch, between the projection *d* and the outer rim of the punch, thus preventing the outer end of the neck from splitting or spreading while the annular rim is being expanded.

In case the outer end of the screw-thread should project beyond the outer face of the nut when the latter is screwed home, a washer large enough to go over the thread should be put on, so as to give an even bearing for the locking-washer to rest against; but it is preferable to have the locking-washer fit directly against the face of the nut, and this can always be done, even if the bolt should be too long, by putting washers on the end of the bolt, against its head.

Where a nut is dispensed with, and a plate or bar is used instead, the latter is provided with screw-threaded holes for the bolts, and the screw-threads on the bolts come out flush with, but not beyond, the outer face of the bar or plate, and the locking-washer is applied and riveted against the face of the plate, in the manner already described.

By this method of fastening the nut it is effectually prevented from ever working loose, while at the same time it can be removed, when desired, by applying extra force with a wrench, in such a manner as not to injure either the bolt or nut, as by turning the bolt or nut the annular rib is forced back into the countersunk space in the neck of the bolt, and as this neck is of a smaller diameter than the body or threaded portion of the bolt, it can be withdrawn through the nut without injuring in any manner the screw-thread of the nut. In this way the bolt and nut can be used as many times as may be desired.

Having thus fully described my invention, what I desire to secure by Letters Patent is—

1. The bolt A, having the smooth neck *a* formed on the end thereof, and the conical recess *b*, also in the end of the neck, substantially in the manner and for the purpose set forth.

2. The punch E, having the cup-shaped recess *c c* and the central stem or projection *d*, substantially in the manner and for the purpose set forth.

RICHARD LONG.

Witnesses:
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