(No Model.)

C. E. DAVIS.

NUT LOCK.

No. 348,112. Patented Aug. 24, 1886.

Fig. 1.

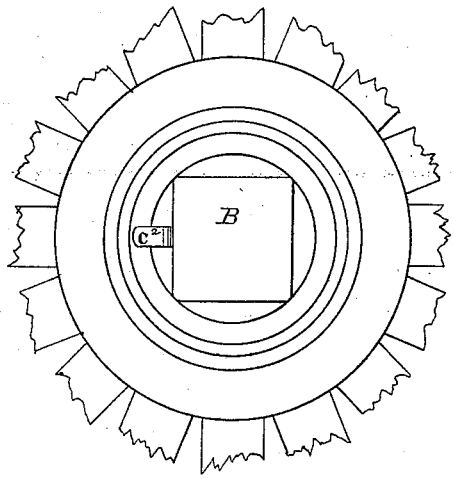


Fig. 2.

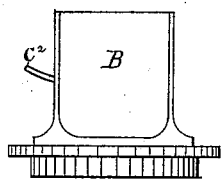


Fig. 3.

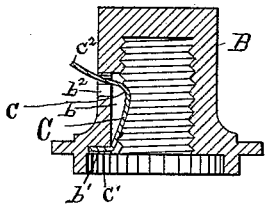


Fig. 4.

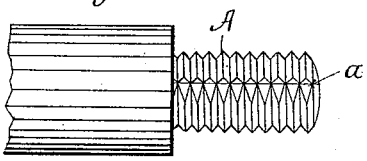
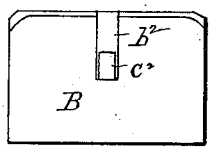


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES E. DAVIS, OF CHICAGO, ILLINOIS.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 348,112, dated August 24, 1886.

Application filed August 10, 1885. Serial No. 173,976. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. DAVIS, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Nut-Locks, of which the following is a description, reference being had to the accompanying drawings, which are made a part of this specification.

My invention relates to that class of nut-locks wherein the nut is positively locked to its bolt by some form of locking device. In many devices of this class the nut and bolt are permanently locked together, and their relative positions can be changed only by breaking the nut or bolt or locking devices themselves. In others the nut and bolt may be unlocked and held unlocked by the application of some external means, and the nut then unscrewed by the usual means. The first kind are expensive, because they can be used only once. The second are often expensive, by reason of their complicated construction, and are always difficult and unhandy to use. What is needed is a nut-lock which acts automatically to lock the nut to the bolt, which will not permit the nut to be jarred or shaken loose, but which will permit the nut to be removed with the same instrument and as easily as if there were no locking devices attached.

To this end my invention consists in the combination of a grooved bolt, a nut, and an automatic locking-spring, and means whereby the same is unlocked by engaging with the face of a wrench as it passes over the nut to unscrew it, and also in such sub-combinations as may be hereinafter more fully described, and definitely pointed out in the claims.

The preferable form in which I have contemplated carrying my invention into practice is illustrated in the drawings, and explained herein.

In the drawings, Figure 1 is an end view, and Fig. 2 a side view, of my improved nut-lock applied to a carriage-nut for holding a wheel on its axle; and Fig. 3 is a vertical section of Fig. 2. Fig. 4 is a view of a bolt adapted to said nut-lock. Fig. 5 is an elevation of an alternate form of my improvement.

Like letters represent similar parts in the several figures.

A represents the bolt, which is provided with one or more longitudinal grooves, *a*. In their preferable form these grooves are shouldered on one side only, as shown, so that said groove and the spring locking device act on the principle of a ratchet and pawl, which permits the nut to be screwed onto the bolt, but does not permit it to be unscrewed; but a square slot may be used, if desired.

B represents the nut, which may be of any desired form, two of which are shown. The parts of the nut essential to this invention are, first, a groove, *b*, in the bore thereof, in which the spring locking device acts; second, some means for attaching the spring locking device thereto, the preferable means is a groove, *b'*, in one face, in which one end of the locking-spring C is placed, and the sides of said groove are upset thereon; third, a slot or orifice through the side of said nut joining with said groove *b* in the bore.

C represents the locking-spring in its preferable and simplest form. It consists, as shown, of a flat spring bent so as to form three parts having three co-ordinate functions. One part, *c'*, is fastened to the face of the nut, preferably as above described. Another part, *c*, is the locking part proper, which lies normally partly within the groove *b*, below the level of the threads of the nut, and partly above the level of said threads, so as to engage with the slot *a* of the bolt, but capable of being drawn entirely into said groove *b*. The third part, c^2, is the unlocking part, which passes through said slot or orifice b^2 and stands normally at an angle upward from the horizontal.

The operation of the device is as follows: When the nut is screwed onto the bolt, the spring C passes readily up the inclined side of the groove *a* of the bolt; but any backward motion is prevented, and the nut cannot be jarred or shaken loose, by reason of the spring engaging with the shouldered side of said groove *a*. When it is desired to remove the nut, a wrench of almost any ordinary construction is applied thereto, so that its lower face shall strike against the projecting arm c^2 of the spring C. A pressure of the wrench upon said arm c^2, it is evident, will draw the locking part *c* wholly within the groove *b*, and the nut can be removed as readily as though there were no locking device connected with either nut or bolt.

The form of nut shown in Figs. 1, 2, and 3 is designed especially as a nut to retain a wagon-wheel upon its axle, and Fig. 1 shows it in combination with said axle and hub of the wheel, and it is found to be admirably adapted to the purpose.

The form of nut shown in Fig. 5 is a type of the ordinary nut, any form of which may be provided with my improved lock, as herein described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a screw-nut with an automatic spring locking device attached thereto, and having a part normally projecting into the bore of the nut and adapted to engage with a groove, or behind a shoulder upon the bolt, so as to lock the nut thereto, and having another part projecting from the external surface of the nut, as herein described, whereby a box-wrench, in passing down over the nut, comes in contact with said externally-projecting part and causes it to withdraw the internally-projecting part from the groove or shoulder of the bolt, and thereby unlocks the nut.

2. The combination of a screw-nut having a longitudinal groove in the bore thereof, and an orifice through the side of said nut connecting with said groove, and a locking-spring secured to said nut and operating in said groove, and having its free end extending out through said orifice in the side, whereby the spring itself is adapted both to lock the nut and to unlock the same by engaging with a box-wrench as it passes down over said nut, substantially as described.

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