No. 706,955. Patented Aug. 12, 1902.

R. KANTNER.

NUT LOCK.

(Application filed Dec. 31, 1901.)

(No Model.)

Fig. 1.

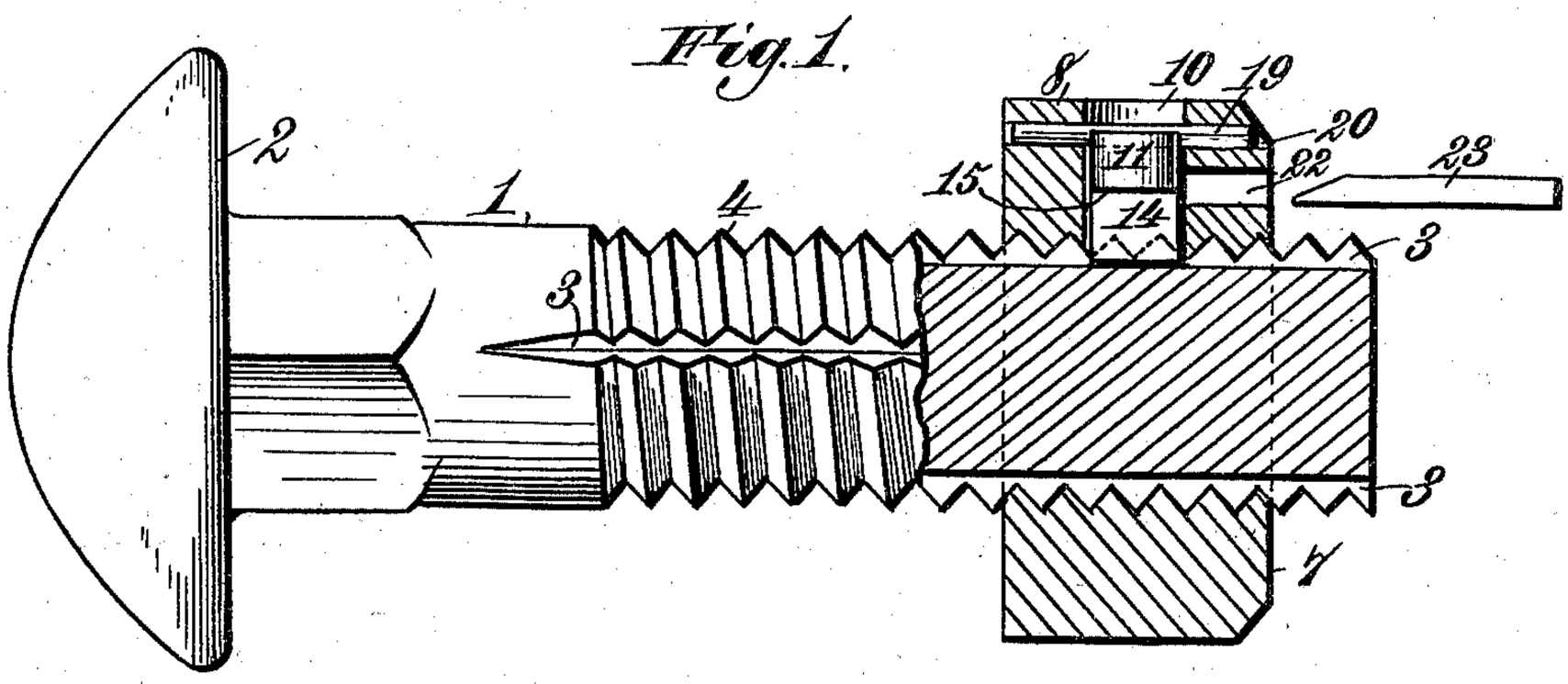


Fig. 2.

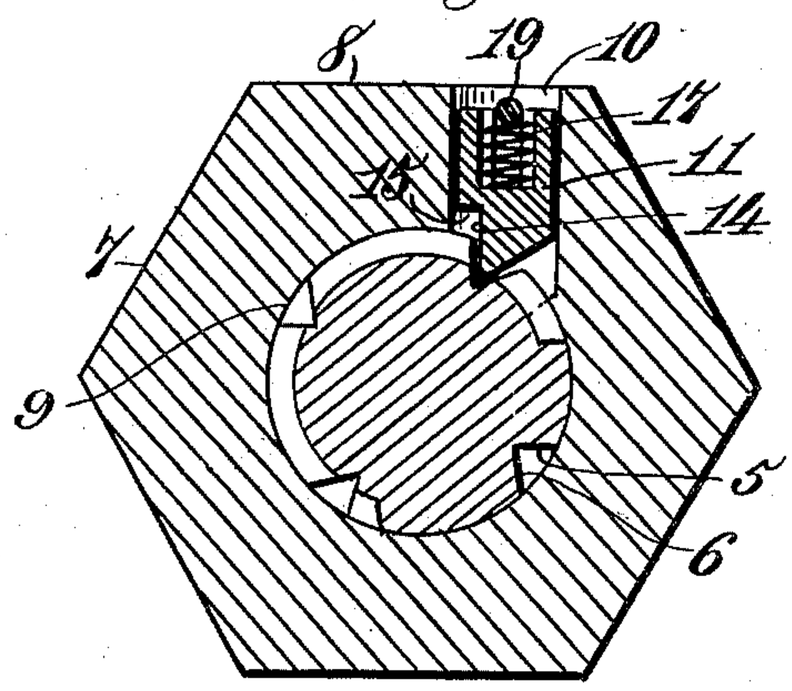
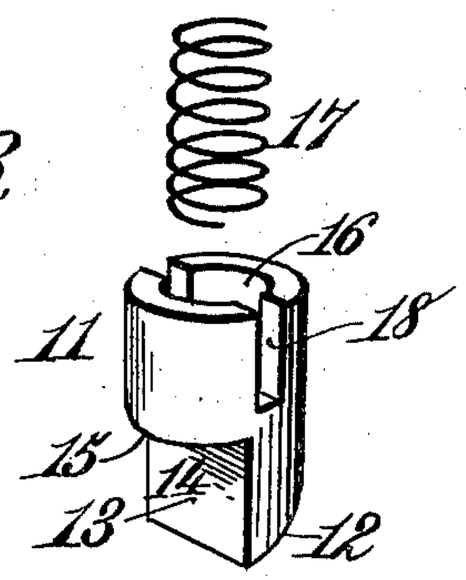


Fig. 3.



Witnesses.
Robert Gwatt.
Dennis Sumby.

Inventor.
Ralph Kantner.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

RALPH KANTNER, OF POTTSVILLE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO OTTO GINTHER, OF POTTSVILLE, PENNSYLVANIA.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 706,955, dated August 12, 1902.

Application filed December 31, 1901. Serial No. 87,900. (No model.)

To all whom it may concern:

Be it known that I, RALPH KANTNER, a citizen of the United States, residing at Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented new and useful Improvements in Nut-Locks, of which the following is a specification.

This invention relates to nut-locks, and has for its object to provide simple and effective means for locking a nut on its bolt in such manner that the nut may be freely turned during the operation of applying the nut to the bolt, but which will be automatically and securely held against rotation in the reverse direction, either by vibration or by the unauthorized use of a wrench for the purpose.

It also has for its object to provide novel and simple means whereby the locking dog or pawl may be quickly and easily withdrawn from engagement with the bolt when it becomes necessary to loosen or remove the nut from the bolt.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a central longitudinal sectional view of the bolt and nut. Fig. 2 is a transverse sectional view thereof, and Fig. 3 is a detail enlarged view of the dog or pawl removed from the nut.

Referring to the drawings, the numeral 1 indicates a threaded bolt, and 2 the head thereof, the bolt being longitudinally grooved on its periphery, as at 3, said grooves intersecting the threads 4 of the bolt and each preferably having a straight side 5, formed radially relatively to the bolt, and with an inclined side 6.

The numeral 7 indicates a nut, shown in the present instance as being of the hexagonal type; but manifestly it may be of any shape suitable for the purpose. Formed in one of the faces 8 of the nut and extending entirely through the internally-threaded wall 9 thereof is a perforation 10, in which is freely movable a sliding latch-bolt 11. The latch-bolt at its inner end is beveled, as at 12, and on one of its vertical sides is cut away or planed off, as at 13, to form a flat straight side 14 and a shoulder 15. The outer end of the latch-bolt 11 is bored or hollowed out longitudinally, as indicated at 16, thereby forming a socket, in which is fitted a coil-spring 17. The outer end of the dog or pawl is transversely slotted, as indicated at 18, for the reception of a pin 19, which is fitted transversely in a perforation 20, formed in the nut, and bears upon the outer end of said spring and confines the latter to its seat within the socket in the locking pawl or dog. The spring 17 operates to normally force the dog or pawl into engagement with the threads on the bolt and also to force the beveled edge of the said dog or pawl into engagement with the longitudinal grooves 3 whenever the pawl is brought opposite to or in register with one of said grooves. In the operation of securing the nut onto the bolt the beveled edge 12 of the dog or pawl slips idly past the inclined sides of said grooves to permit of the nut being freely turned up into place. If the nut, however, attempts to turn in the reverse direction, so as to unscrew from off the bolt, the straight or vertical side 14 of the dog will engage the corresponding straight side of one of the grooves 3 and will be held thereby against rotation. Formed in the side of the nut below the perforation 20 is an auxiliary perforation 22, in which a pin or key 23 may be inserted to engage the shoulder 15 and raise the dog or pawl out of engagement with the grooves 3 of the bolt, whereupon the nut may be freely rotated in the proper direction to loosen or remove it from the bolt. By forming a socket in the outer end of the dog and housing the spring therein a twofold result is accomplished. In practice it is highly desirable that the dog be made relatively long compared to its diameter or circumference; otherwise the strain placed on the dog when the nut attempts to turn backward has a tendency to twist or turn over the dog and permit the nut to turn. When the dog is comparatively long, this cannot occur, as the dog has an extended bearing in the bore or perforation in the nut. If the spring should bear against the end of the dog, however, the dog would necessarily have to be made com-

paratively short to afford room for the spring, owing to the limited distance between the bolt-hole of the nut and the outer face of the latter in nuts of average size. By forming a socket in the dog and arranging the spring therein the dog can be made nearly the length of the bore or perforation in which it is fitted. Furthermore, by fitting the spring in the socket, as shown, the spring is not only housed and protected, but its end is caused to bear against the dog at a point near the engaging extremity of the latter, an arrangement that is obviously the best for causing the dog to move freely and truly in its bore or perforation. Another important feature of my invention consists in forming the slots 18 in the dog through which the pin 19 passes. The pin thus not only serves to hold the spring in place, but also prevents the dog from turning, and thus causes the beveled end of the dog to always be properly presented to the grooves in the bolt.

The nut constructed in the manner described may be as freely and quickly applied to a bolt and tightened up as may a nut of ordinary construction, and after it has been screwed up to place in the manner described it will be securely held in its adjusted position by the dog or pawl, so as to effectually prevent, either from vibration or other cause, any tendency of the nut to become loose or unscrewed, and when it becomes necessary to remove or loosen the nut it is only necessary to insert the pin in the hole 22, as before described, thereby raising the dog or pawl from out of its engagement with the grooved bolt, when the nut may be readily turned from off the bolt in the same way as a nut of ordinary construction.

The device constructed as described is extremely simple, strong, and durable in construction and efficient in operation, as well as also capable of being manufactured at a very slightly increased cost over the ordinary nut and bolt.

In the drawings I have shown the bolt provided with a right-hand screw-thread; but it will of course be understood that it may be provided with a left-hand screw-thread without departing from my invention.

Having described my invention, what I claim is—

1. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, and means for holding the spring in place in its socket, substantially as described.

2. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, and a pin inserted in a transverse perforation in the nut and operating to hold the spring in place in its socket, substantially as described.

3. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket and oppositely-disposed longitudinal slots formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, and a pin inserted in a transverse perforation in the nut and passing through said slots, said pin operating to hold the spring in place in its socket and prevent the dog from turning, substantially as described.

4. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket and oppositely-disposed longitudinal slots formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, a pin inserted in a transverse perforation in the nut and passing through said slots, said pin operating to hold the spring in place in its socket, one side of the inner end of the dog being recessed to form a shoulder, and a transverse perforation formed in the nut in alinement with said shoulder to permit the insertion of a key to retract the dog from engagement with the bolt, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RALPH KANTNER.

Witnesses:
OTTO GINTHER,
L. OTTO WITMAN.