(No Model.)

F. G. STARK.

NUT LOCK.

No. 329,861. Patented Nov. 3, 1885.

Fig: 1.

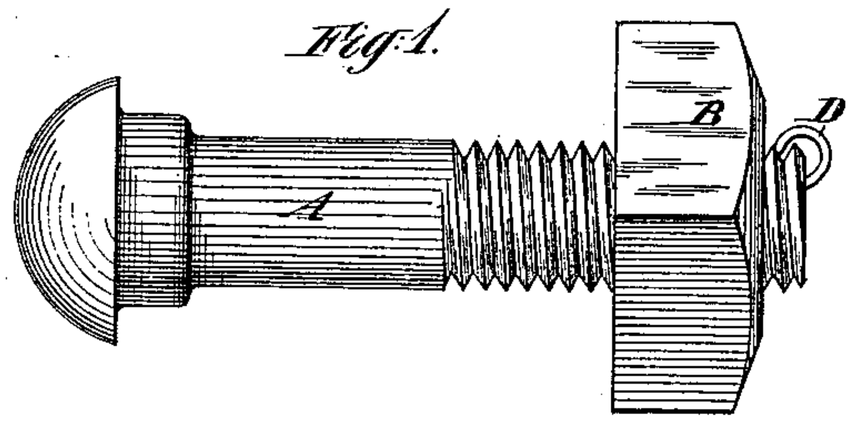

Fig: 2.

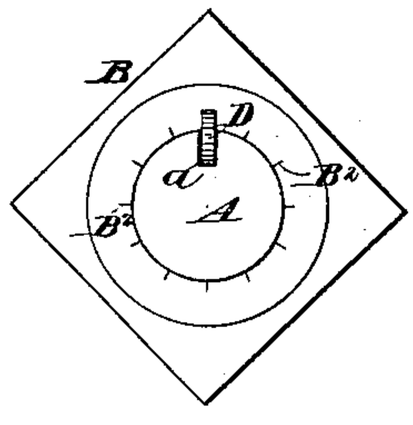

Fig: 3.

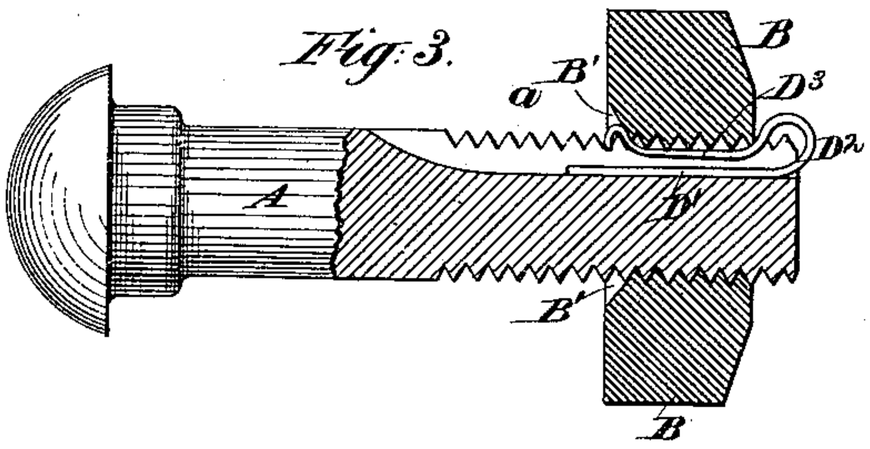

Fig: 6.

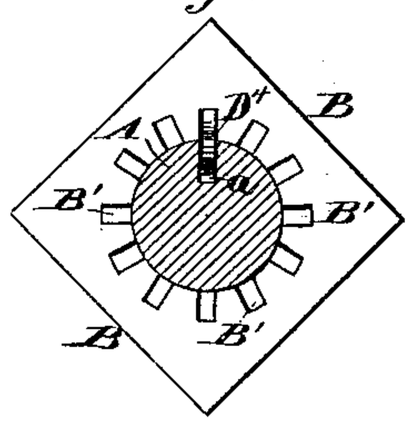

Fig: 4.

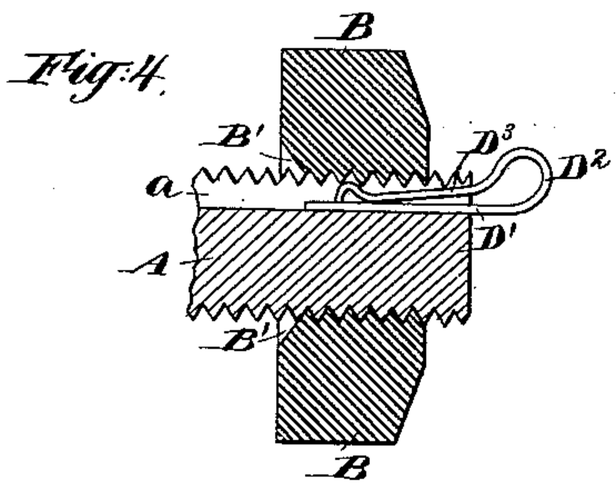

Fig: 5.

Witnesses:
Charles R. Searle,
E. Brooker

Inventor:
Frank G. Stark
by his attorney
Thomas Spencer Stetson

UNITED STATES PATENT OFFICE.

FRANK G. STARK, OF NEW YORK, N. Y.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 329,861, dated November 3, 1885.

Application filed February 28, 1885. Serial No. 157,416. (No model.)

To all whom it may concern:

Be it known that I, FRANK G. STARK, of New York city, in the county and State of New York, have invented certain new and useful Improvements in Nut-Locks, of which the following is a specification.

I produce a longitudinal groove, sometimes denominated a "spline," in the bolt. I make no groove or spline in the nut, but produce a set of notches of rectangular section on the back face of the nut, arranged around the hole, which is fully screw-threaded, as usual, except at this notched end. I provide an implement, which I will term a "spring-key," adapted to be inserted in the spline, and to engage by its elasticity in one of the notches in the nut. The key will hold itself in place under all ordinary or extraordinary conditions, so long as no force is applied with the intent to remove the key; but when it is desired to unlock the nut a sufficient force applied to move the spring-key endwise will induce its prompt removal.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a side view; Fig. 2, an end view, and Fig. 3 a longitudinal section. These figures show parts engaged. Fig. 4 is a longitudinal section showing the parts in the act of being engaged or released. Fig. 5 is a spring-key detached. Fig. 6 is a cross-section of the bolt, showing the rear face of the nut in elevation.

Similar letters of reference indicate corresponding parts in the figures where they occur.

A is the body of the bolt, and *a* is a deep spline-groove milled or otherwise produced therein. It will be observed that this groove is considerably deeper than the threads of the screw.

B is the nut, and B′ B′ a series of notches in one end or face thereof. These notches extend inward only a little distance—say across one thread of the screw.

B^2 B^2 are slight impressions on the opposite faces of the nut, coinciding exactly with the notches B′.

D is my spring-key, certain portions being designated, when necessary, by additional marks, as D′ D^2. One arm, D′, of the key is adapted to lie in the bottom of the spline *a*.

D^2 is a loop connecting D′ by an incline, D^5, with the spring-arm D^3, which latter is curved, as indicated, forming a swell, D^4, at its free end.

I have in my experiments made all parts of the spring-key of uniform width, a little less than that of the spline-groove *a*. In such case the notches B should be of about the same width as the spline; but this condition may be varied.

In operating the invention the nut is turned, by a suitable wrench or other means, until it is tightened or is in the position it is desired it shall maintain. Then the spring-key is inserted in the spline *a*. The faint impressions B^2 serve the function of indicating to the eye the position of the corresponding notches, B′. The spring-key, being properly entered, may be driven endwise by any suitable force, the swell D^4 riding under the several screw-threads in the obvious manner. The length of the key is such that when it is fully home the swell D^4 coincides with one of the notches B′ in the under face of the nut and by the elasticity of the spring-key engages in such notch and holds firmly. The swell D^4, taking hold of the notch, prevents the key from slipping out. The contact of the incline D^5 of the loop D^2 with the front face of the nut prevents the key from moving too far inward. The nut cannot turn on the bolt with the key in position without shearing the metal of the key. It will remain reliably locked for any length of time. No accidental force, as gravity or concussion, can remove the key. So long as the key remains in position the nut is locked; but whenever it is desired to liberate the key it may be drawn out by any suitable hook device engaged in the loop D^2. It is important that the swell D^4 be beveled on both faces and smoothly finished, so that it can ride under the threads of the nut both in the act of being inserted and in the act of being removed. The absence of longitudinal grooves or splines in the interior of the nut insures that there is always a proper threaded surface engaged with the partial threads of the bolt. The grooves or splines *a* in the bolt must be sufficiently deep to accommodate the spring-key

entirely below or within the innermost edges of the threads.

Modifications may be made in the forms and proportions. I can make the swell D^4 narrower than the main body of the key. In such case narrower notches B′ may serve. I can duplicate the splines *a* in the bolt. One spline *a* is sufficient for all ordinary cases.

I am aware that grooves have been made in the threaded portions of both nut and bolt to receive a spring locking-key; but when the nut-slots are thus located they are either so distant from each other that they impair the functions of the nut, or, being numerous, they greatly impair the strength of the nut.

Instead of locating my key-engaging slots in the barrel of the nut, I place them upon one of its faces.

I am aware of English Patents Nos. 1,644 of 1866 and 298 of 1880, in which the recesses are made in the bore of the nut.

I claim as my invention—

1. The combination, with a nut having radial recesses upon its inner faces, arranged at approximate right angles with the bore of the nut, and with a slotted bolt, as shown, of a spring-key having an arm to engage said recesses upon one face of the nut, and an arm to engage the opposite or outer face of the nut and limit the inward movement of the key, as set forth.

2. The combination, with a nut having radial recesses B′ upon one face and corresponding marks or recesses, B^2, upon the other face, of a slotted bolt and a key having an arm with opposing inclines, as D^4 D^5, to engage opposite recesses upon both faces of the nut, as set forth.

3. The combination, with the nut B, having recesses B′ arranged upon one face at approximate right angles to the plane of the bore of the nut, and with the bolt A, having slot *a*, of the spring-key having arms D′ D^3, and the latter provided with arms or inclines D^4 D^5, arranged to engage the nut upon opposite faces simultaneously, as set forth.

In testimony whereof I have hereunto set my hand, at the city of St. Louis and State of Missouri, this 20th day of February, 1885, in the presence of two subscribing witnesses.

FRANK G. STARK.

Witnesses:

THOS. A. RUSSELL,

E. P. JOHNSON.