

No. 637,360.

Patented Nov. 21, 1899.

F. G. STARK.
NUT LOCK.

(Application filed June 2, 1899.)

(No Model.)

Fig. 1.

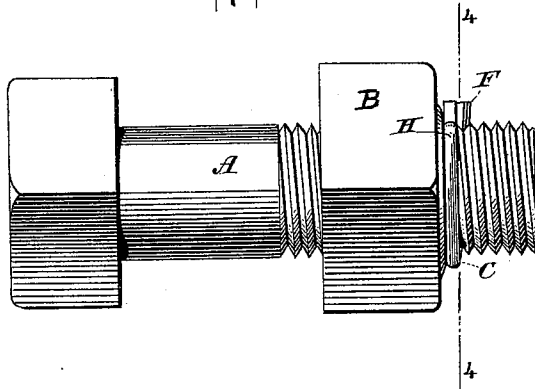


Fig. 3.

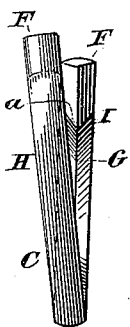


Fig. 2.

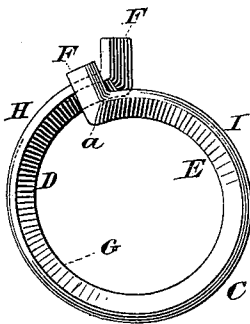


Fig. 4.

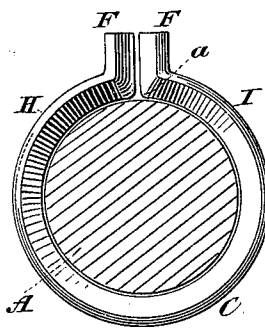


Fig. 5.

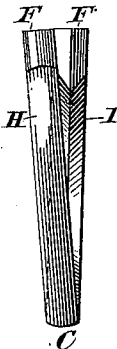


Fig. 6.

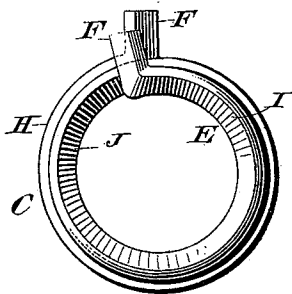
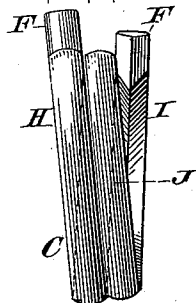


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK G. STARK, OF NEW YORK, N. Y., ASSIGNOR TO THE SPIRAL NUT LOCK COMPANY, OF SAME PLACE.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 637,360, dated November 21, 1899.

Application filed June 2, 1899. Serial No. 719,069. (No model.)

To all whom it may concern:

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

The invention relates to improvements in nut-locks; and it consists in the spring ring or clip hereinafter described and claimed, which is to be applied upon the thread of the bolt to prevent the nut from becoming loose or jarring therefrom. The spring ring or clip of my invention is readily distinguishable from all previous ring nut-locks in that it has an initial diameter which is not uniform, but differential, one portion or side of the ring or clip being on a line adapting it to be readily started on the thread of the bolt, while the other portion or side of the ring or clip is formed on a curve or arc of less diameter than the diameter of the bolt, whereby said portion when the ring or clip is screwed upon the bolt becomes expanded by the bolt to the diameter of the same and is caused to exert efficient binding force thereon, the degree of said force being capable of regulation by the relative diameter of the bolt with respect to the diameter of that portion of the ring which is to be expanded by the bolt. Thus the present spring ring or clip is of initial differential diameter—that is, before being applied to the bolt—and is of uniform diameter after being applied upon the bolt. Two important results are attained by the present invention, one being that without the use of expanding-tools the ring or clip may be readily started on the thread of the bolt and the other being that when once applied the ring has of itself such binding force that it effectually resists displacement. The ring or clip is made of comparatively thick spring-steel, and its portion or member which is formed on the reduced diameter exerts when on the bolt a powerful binding action.

The nature and objects of the invention will be more fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a bolt and

nut equipped with a nut-lock constructed in accordance with and embodying the invention. Fig. 2 is a side elevation of the spring-ring embodying my invention, the same being shown in the normal condition it possesses prior to being applied upon the bolt. Fig. 3 is an edge view of same. Fig. 4 is a vertical transverse section through the bolt, on the dotted line 4 4 of Fig. 1, equipped with the spring-ring of my invention, this figure illustrating the ring in the position it is forced to take when upon the bolt and in actual use. Fig. 5 is an edge view of the spring-ring illustrated in Fig. 4. Fig. 6 is an outer side elevation of a modified form of the ring illustrated in Fig. 2, the modification consisting simply in giving to the ring an additional coil; and Fig. 7 is an edge view of same.

In the drawings, A designates a usual bolt, B the nut thereon, and C the nut-lock applied upon said bolt.

The nut-lock C is in the nature of a spring ring or clip formed on the line of a decreasing diameter, as indicated at D E, the part E being of less diameter than the part D. The ends of the ring are free of one another and each is formed, by preference, with an outwardly-extending arm F, which arms F are provided to receive the tool by which the ring is screwed upon the bolt. The outer surfaces of the ring C will preferably be convex, and the inner surfaces of the said ring will preferably be of cone shape in cross-section, so as to form an edge G, capable of entering the thread of the bolt. That portion of the ring C curved on the larger diameter D is lettered H and may be termed the "inner" portion of the ring, since it is this portion of the ring which is first applied to the bolt and which when the ring is in position upon the bolt is in advance of the outer portion or side I of the ring, which is formed on the reduced diameter E. The main feature of the ring C and the one which distinguishes it from all previous spring rings or clips known in this art is that the inner part H of the ring is on a curve substantially corresponding with that of the bolt, while the outer portion or side I of said ring is curved on a diameter less than the diameter of the bolt. The purpose of thus forming the inner portion H of the ring is to

enable the ring to be started on the thread of the bolt with ease and facility and without any previous expanding of the ring. The portion I of the ring when the latter is screwed upon the bolt becomes expanded by the bolt and exerts efficient binding force thereon. The normal or initial condition of the ring C prior to its application to the bolt is illustrated in Figs. 2 and 3, and the condition of the said ring after its application to the bolt is illustrated in Figs. 1, 4, and 5, in which it will be seen that the ring C then conforms to the diameter of the bolt. After the ring has been applied to the bolt its inner edge G will grip the latter, but the outer portion I of said ring will have a very decided binding action upon the bolt, so much so in fact that greater force is required for the removal of the ring from than for its application to the bolt. The end *a* on the outer portion I of the ring has in itself a tendency to resist the removal of the ring.

It is well understood that split-spring-rings have heretofore been used as nut-locks; but I believe in no instance has there been used heretofore a spring ring or clip nut-lock possessing the characteristics of my present invention or equivalent principles of construction and operation.

One of the main features of the construction of my present split ring or clip nut-lock is that it possesses, when in its initial form, the two diameters indicated at D E, these being formed by bending the bar from which the ring is made on a gradually-reducing diameter and, as hereinbefore explained, enabling the attainment of important results.

The manner of constructing the split ring of my present invention may probably be better understood by explaining that the bar from which the ring is made describes a gradually-reducing diameter and that if the coiling of the bar were continued with the coils on a parallel plane they would form a helix or helical coil and if spirally coiled would form the outline of a cone.

The main consideration to be observed in the construction of the split ring of my present invention is that the inner portion H shall be on the larger diameter, so as to readily start upon the bolt without the preliminary

spreading of the ring, and that the part I shall be on the reduced diameter, so that it may be expanded by the bolt while the ring is being screwed thereon.

In Figs. 6 and 7 I illustrate my invention in a slightly-modified form, the modification consisting simply in giving the ring an additional coil J intermediate the inner and outer parts H I, said coil J being less in diameter than the bolt to which it is to be applied, so that it and the said outer part I may possess an extended gripping edge for contact with the thread of the bolt.

The construction shown in Figs. 6 and 7 illustrates what I have hereinbefore described as a gradually-reducing diameter, and also the statement that if the bar from which the ring is made were continued on a spiral line the resulting structure would have the form of a cone.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A nut-lock comprising a spring ring or clip initially of reducing diameter, one side of the ring substantially conforming to the bolt so as to be readily started thereon, without preliminary spreading of the ring, and the other side thereof defining a smaller diameter than that of the bolt so as to be expanded by the bolt as the ring is screwed on, substantially as and for the purposes set forth.

2. A nut-lock comprising a spring ring or clip initially of reducing diameter and having at its ends the outwardly-extending arms, one side of the ring substantially conforming to the bolt so as to be readily started thereon, without preliminary spreading of the ring, and the other side thereof defining a smaller diameter than that of the bolt so as to be expanded by the bolt as the ring is screwed thereon, substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 1st day of June, A. D. 1899.

FRANK G. STARK.

Witnesses:

CHAS. C. GILL,
E. JOS. BELKNAP.