No. 715,498. Patented Dec. 9, 1902.

O. C. MOORE.

NUT LOCK.

(Application filed Apr. 10, 1902.)

(No Model.)

Fig. 1.

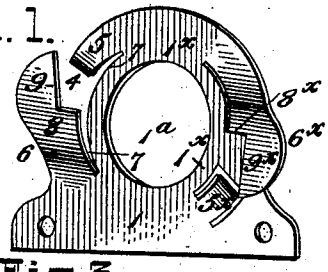


Fig. 2.

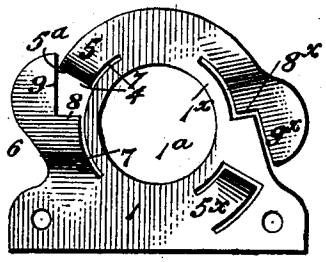


Fig. 3.

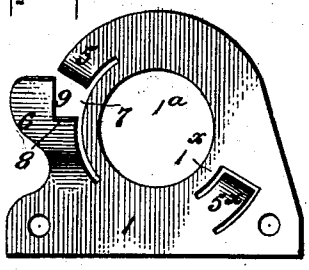


Fig. 5.

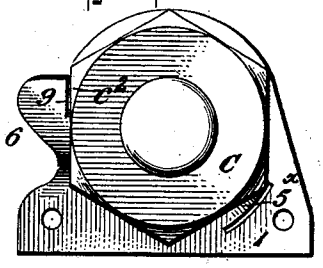


Fig. 4.

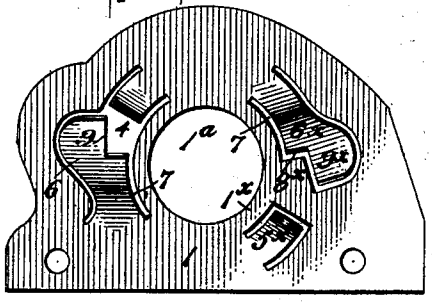


Fig. 6.

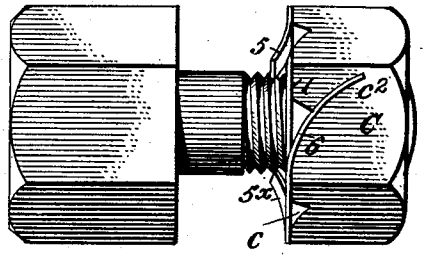


Fig. 7.



Fig. 9.

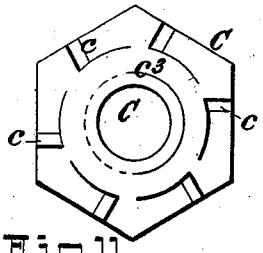


Fig. 10.

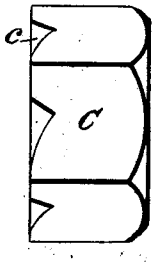


Fig. 8.

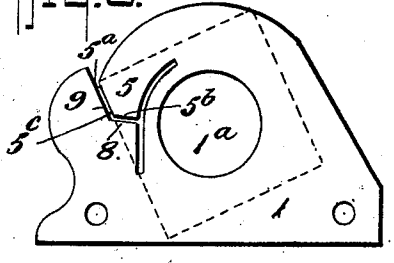
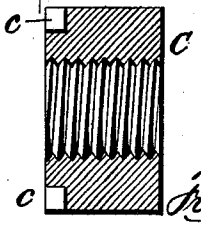


Fig. 11.



WITNESSES:

Guy V. Worthington

E. E. Overholt

INVENTOR

Otho C. Moore

BY

Fred G. Dieterich & Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OTHO C. MOORE, OF NORFOLK, VIRGINIA, ASSIGNOR OF ONE-HALF TO JAMES BARKLEY, OF NORFOLK, VIRGINIA.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 715,498, dated December 9, 1902.

Application filed April 10, 1902. Serial No. 102,209. (No model.)

To all whom it may concern:

Be it known that I, OTHO C. MOORE, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Nut-Locks, of which the following is a specification.

My present invention, which in its general nature relates to that class of nut-locking means including a spring-plate adapted to be held between the nut and the base to which the bolt is applied and having members for interlocking with the opposing faces of the nut and the object to which the spring-plate is held, more specifically comprehends certain improvements on the form of nut-lock disclosed in my Patent No. 674,302, dated May 14, 1901. In my patent referred to a special form of spring-plate is provided, having the usual bolt-aperture, slitted at one side from its outer edge into the bolt-aperture, whereby to provide for bending back a portion adapted to produce a spring-bearing to engage the fish-plate or other object to which the plate may be attached, and at the slitted side the said spring-plate is also slitted in a plane at right angles to the horizontal axis of the bolt, and its slitted portion is formed with a special construction of angles and tongues adapted to form portions to project beyond the plane of the outer face of the plate, whereby to form a spring stop member for engaging with the edge of the nut to hold it from turning backward and a tongue or detent to interlock with a receiving notch or recess on the inner face of the nut, also to hold the nut from turning off its bolt.

I have found in the practical application of my patented form of nut-lock that the same is generally effective for the purposes intended and especially well adapted for holding square nuts locked on the bolt. When used in connection with hexagonal nuts, I find that while the generic arrangement of the spring member, the stop, and detent edges are adaptable for holding any ordinary form of nut, yet to provide for a perfect holding of the hexagonal nuts certain modifications of the stop, the detent, and the back-bent spring portions are required. These modifications form an essential feature of my present construction of nut-locking means, which also comprehends a peculiar coöperative arrangement of the bolt-aperture in the plate, the slits, and the cut-out portions, whereby a more simple, effective, and easily-adjustable locking-plate is provided and in which a bearing-surface entirely surrounding the bolt-aperture is provided and a weakened portion found in my other form of locking-plate is avoided.

My present invention also comprehends a special construction of locking-plate having means for interlocking with the nut at diametrically opposite sides of the bolt and particularly arranged for firmly holding hexagonal nuts; and in its more subordinate nature it consists in certain novel details of construction and peculiar combination of parts, all of which will hereinafter be fully described, and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a complete form of my improved nut-lock having a plurality of oppositely-disposed locking means especially arranged for engagement with hexagonal nuts. Fig. 2 is a face view thereof. Fig. 3 is a face view of the same slightly modified in its construction. Fig. 4 is a face view of another modification of the lock-plate shown in Fig. 1. Fig. 5 is a similar view showing a hexagonal nut in position on the bolt and locked from turning. Fig. 6 is a view of the parts shown in Fig. 5 and illustrating the correlative arrangement of the bolt, the nut, and the lock-plate, with its outwardly and inwardly interlocking and stop member. Fig. 7 is an edge view of the plate shown in Fig. 2. Fig. 8 is a modified form of my present type of lock-plate, especially adapted for use with square nuts. Figs. 9, 10, and 11 are respectively a plan of the inner face, an edge view, and a cross-section of a nut specially designed for use in connection with my improved nut-locking device.

In the drawings I have illustrated my improved nut-locking means as applied for use on an ordinary rail-bolt and fish-plate, it being understood that the same may be used in connection with any of the ordinary applica-

tions of fastening bolts and nuts in which a bearing-surface against which the lock-plate rests is employed.

In my present invention the locking-plate 1 is formed, as in my patent hereinbefore referred to, of a thin or sheet metal body of sufficient elasticity to give the several parts their required spring action. In the most complete form my improved locking-plate is made with a nut-stop member and a spring lug or detent disposed at diametrically opposite sides of the bolt-aperture 1^a, and said members and detents are especially designed and have such relation to the bolt-aperture 1^a that the stop and detent at one side will be found especially well adapted for use with a hexagonal nut, while the like portions on the other side are adapted for use with a square nut. By referring now more particularly to Figs. 1, 2, and 7 it will be noticed at one side the plate has the spring locking member 6 for engaging the nut and holding it from turning backward. This tongue 6 in the present construction is also formed as an integral part of the plate 1 and is separated from the portion of the plate which immediately surrounds the bolt-aperture 1^a by the cut or slit 7, that extends concentrically with the axis of the bolt-aperture. The tongue 6 in practice is bent outward to project in a plane forward of the front face of the plate 1, and it is formed with a shoulder 8 in a plane parallel with the horizontal axis of the bolt and with an edge 9, that extends at a right angle to the shoulder 8. The shoulder 8 forms a detent to engage with any one of a series of undercut or ratchet surfaces c on the inner face of the nut C, (see Fig. 6,) and the edge 9 has such relation to the vertical plane of the bolt-axis as to engage with one of the sides c^2 of the hexagonal nut when said side is disposed vertically, as shown, and by this arrangement it is possible to positively hold a hexagonal nut from turning backward and from loose play—a result not obtainable in my patented construction before referred to. Furthermore, by reason of the right-angle relation of the edges 8 and 9 a more positive interlocking of the nut with the plate is obtained, as the detent 8 presses against the back face of the nut in an outward direction, while the edge 9 forms a solid abutment to hold the nut from turning backward. In my present invention the plate 1 is also provided with an inwardly-bent spring member 5 to bear against the surface to which the plate 1 is to be applied, and said member is formed by slitting the plate radially, as at 4, the same as in my patented form, except that in my present invention the slit 4 does not extend to the bolt-aperture but merges with the concentric slit 7, which extends upward beyond the outer end 5^a of the member 5, whereby to produce a sufficient length of said member 5 to provide a sufficient bendable portion to produce a spring-bearing bendable backward in a plane beyond the back face of the plate 1, as clearly shown in Fig. 7. By constructing the parts 5, 4, 6, 7, and 8 as shown and described means are provided for engaging the nut in the manner stated of greater stability than the same parts in my patent referred to and with a greatly-increased bearing-surface for the inner or smooth part c^3 of the nut to bear against, which surface (designated by $1^\times$) in my present form extends entirely around the bolt-aperture, as shown.

In my patent referred to but a single tongue and member 5 is provided, and by reason thereof a spring-bearing is disposed at one side of the bolt. This under some conditions is objectionable in that a perfect or uniform bearing of the entire plate 1 cannot be had. To overcome this, I provide in my present form of nut-lock the plate 1 with an additional concentrically-disposed spring-bearing $5^\times$, stamped out of that part of the plate 1 diametrically opposite the member 5. This additional member 5 balances the plate 1 and produces an additional spring-bearing for maintaining the plate in a perfect locked engagement with the rear face of the nut. The position of the shoulder 8 relative to the bolt-aperture 1^a in the present case is also such that the nut when on the bolt always lies over or covers this part of the tongue 6, thereby keeping one part of the tongue under the nut to engage the ratchet-face thereof and another exposed part projected over the edge of the nut, and the nut in the present case also covers the members 5 and $5^\times$ and serves to force the plate at opposite sides of the bolt uniformly against the fish-plate or other bearing-surface.

When it is desired to use my improved type of nut-lock with square nuts, the construction thereof is slightly modified, but the generic features are not departed from. The modified form shown in Fig. 8, it will be noticed, has the concentric slit 7, the edges 8 and 9 on the tongue 6, and the spring member 5, but the edge 9 is disposed at an angle of substantially forty-five degrees to the edge 8 and the member 5 extends down in close proximity to the edges 9 and 8, its edges 5^a 5^b being separated from said edges 8 and 9 by a slit 5^c, that merges with the slit 7.

In Figs. 1 and 2 the preferred form of my present invention is presented, and in this form all of the parts shown in Fig. 8 are utilized, and in addition another tongue $6^\times$ is formed on the upper edge of the plate 1 opposite the tongue 6, which has an edge $9^\times$ at an obtuse angle to the horizontal plane of the bolt-axis that merges with an edge $8^\times$, projected inwardly in a plane at right angles to the edge $9^\times$, and the tongue $6^\times$ projects in an opposite direction to the tongue 6. When constructed in the manner described, the plate 1 can be used in connection with either hexagonal or square nuts, the former to cooperate with the tongue 6 and its kindred parts and the latter with the tongue $6^\times$ and the adjacent portions.

To further increase the strength of the plate 1, the same may be as shown in Fig. 4, from which it will be seen the locking-body proper is stamped out to provide a supplemental flat portion surrounding the locking portion therof.

When it is desired to remove the nut, the spring locking-tongue is pressed back in a plane with the body 1 and out of the path of movement of the nut.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction and the advantages of my present invention over what has been heretofore provided in this line, and especially over my patented nut-lock referred to, will be readily understood by those skilled in the art to which it appertains.

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

1. A nut-lock, consisting of a plate having a bolt-aperture, said plate having a slit adjacent said aperture and in a line concentric with the aperture, the body of the plate outside of the said slit being cut to form a tongue bendable in a plane forward of the face of the plate, and a spring member bendable in a plane back of the plate, the tongue having an edge to engage the side of the nut, substantially as shown and for the purposes described.

2. A nut-lock, consisting of a plate, having a bolt-aperture, and a slit adjacent said aperture and concentric therewith, that portion of the plate outside the said slit having a cut-out part merging with the said slit, whereby a tongue 6 is formed bendable in a plane in front of the face of the said plate, said tongue having a detent portion 8 disposed radially to the axis of the bolt-aperture, and an edge 9 merging with the portion 8, and projected at right angles therefrom, all being arranged substantially as shown and for the purposes described.

3. The combination with a nut having an inner serrated face; of a lock-plate formed of a plate of spring metal having a centrally-disposed aperture for the passage of the bolt, and having a concentrically-disposed slit adjacent the bolt-aperture at one side thereof, and a concentrically-disposed portion at the opposite side of the aperture cut to be bent backward in a plane beyond the rear face of the plate, and having a second concentric slit also on the side opposite the first-named slit, the portions of the plate outside the concentric slits being cut out to form tongue portions 6, bendable in a plane in front of the face of the plate, the tongue at one side being projected in a direction opposite to that of the tongue on the other side, said plate being also provided with a rearwardly-projecting spring bearing member disposed diametrically opposite the cut-out bendable portion, each of the tongues having an edge to engage with the sides of the nut, and a portion to engage the serrated surface thereof, all being arranged substantially as shown and for the purposes described.

OTHO C. MOORE.

Witnesses:
W. H. T. SMALL,
G. M. PAYNE.