No. 678,415. Patented July 16, 1901.

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NUT LOCK.

(Application filed Oct. 23, 1900.)

(No Model.)

Fig. 1

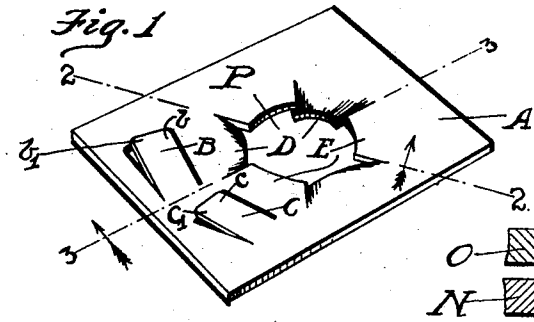


Fig. 6

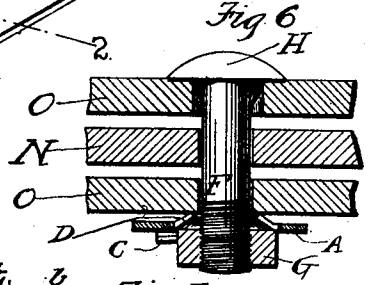


Fig. 2

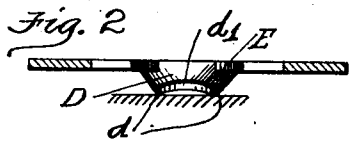


Fig. 3

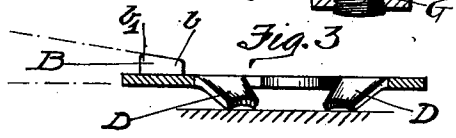


Fig. 4

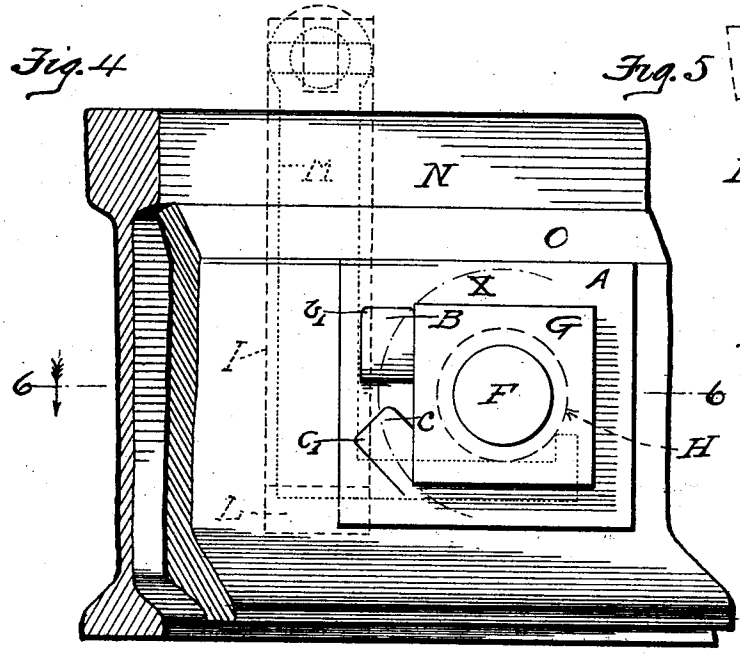
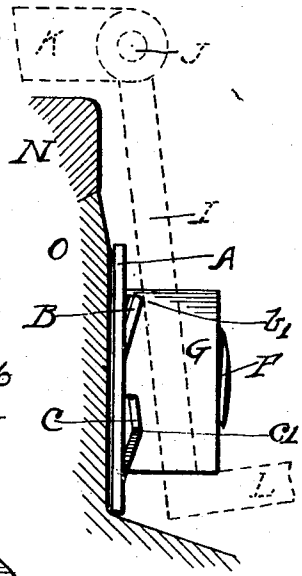


Fig. 5



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UNITED STATES PATENT OFFICE.

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NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 678,415, dated July 16, 1901.

Application filed October 23, 1900. Serial No. 34,048. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM B. MALLORY, JOSEPH L. ULLATHORNE, and JOHN GARLAND DEADERICK, citizens of the United States, residing at Memphis, Shelby county, State of Tennessee, have invented certain new and useful Improvements in Nut-Locks, of which the following is a specification.

Our invention relates to improvements in nut-locks, and especially to that class of locks in which an elastic washer is used having spring-tongues struck up therefrom, the same adapted to be depressed by the nut as it rotates forward and to engage the sides of the nut to prevent its backward motion or unscrewing. Such a lock is shown in our pending application, Serial No. 26,089, filed August 6, 1900, on which some of the features of this lock are intended as improvements, as hereinafter set forth.

The objects of our invention are, first, to provide a positive lock to prevent the nut from unscrewing; second, to provide a positive lock which may be unlocked if so desired, and, third, to provide an elastic seat for the nut having great strength and elasticity, which will bind and cut into the piece on which it does not turn, and will at the same time retard the tightening rotation of the nut as little as possible.

With these objects in view our invention consists in the novel combination and arrangement of the parts, as will be more fully hereinafter set forth in the drawings, specification, and claims.

In the drawings, Figure 1 is a perspective view of our locking-washer. Fig. 2 is a section on the line 2 2 of Fig. 1 to show the cupping of the tongues D. Fig. 3 is a section on the line 3 3 of Fig. 1 to show the inclination of the locking-tongue B. Fig. 4 is a side elevation of a section of a standard T-rail, showing position and action of an unlocking-tool where the lock is used in railroad-work. Fig. 5 is a sectional elevation of Fig. 4 looking from left to right. Fig. 6 is a sectional view, on a reduced scale, taken on the line 6 6 of Fig. 4.

Referring now to the drawings, in which like letters indicate like parts in all the views, A is a washer, made of spring metal, having a bolt-hole P punched nearer one end than the other and having radial slots cut outward from the hole and alternate tongues D bent down. The tongues E, between the tongues D, are left unbent to preserve the shape of the bolt-hole and hold the washer in place on the bolt, the purpose of the tongues D being to form a spring-seat for the nut to take up expansion and wear and where used on wood or other soft material to cut in and prevent rotation of the washer.

By referring to Fig. 2 the construction of the spring-tongues may readily be seen. These are cupped so that the points *d* seat on the piece to be held by the bolt and nut, which piece forces the tongues D upward relatively to the washer as the nut is screwed down until the nut comes to a bearing on the center of the tongues at *d'* and finally seats upon the entire top surface of the locking-washer. By this construction of the tongues D we preserve the shape of the bolt-hole, secure a long spring to give a considerable range of elasticity, and by the cupping shown a very powerful one. We secure, in addition, the biting or holding effect of the sharp edges *d* of the tongues and are enabled to dispense with other means of preventing the rotation of the washer when same is used on wood or any metal softer than the spring. The results, therefore, that we secure in these spring-tongues are great strength and range of spring, great holding power, and practically no distortion of the hole or washer.

B and C are the spring locking-tongues, which are arranged in close proximity to each other, as described in our pending application, Serial No. 26,089, filed August 6, 1900, for the purpose of allowing them to be simultaneously depressed and held to allow the unscrewing of the nut, as therein set forth. In addition to this arrangement of these tongues they have their inner edges and corners *b c* lower than the outer corners *b' c'*, so that when a tool is applied on the corners *b'* and *c'* to depress the locking-tongues B and C the corners *b* and *c* are brought down first and flush with the face of the washer to allow the nut to pass over them as it is unscrewed. This feature is best shown in Fig. 3, in which the diverging dash-and-dot lines

show clearly the construction of the locking-tongues. It will be understood in this connection that these tongues differ from those shown in our pending application mentioned only in the inclination of the tongues, which inclination we have found to be of great practical advantage.

In Figs. 4, 5, and 6 we show one specific use of our washer in railroad use. In these views, N is an ordinary T-rail, and O the angle-bar on the nut side, (the opposite bar not being shown except in Fig. 6.) F is the bolt, G the nut, and H (shown by long dash-lines) is the bolt-head on the opposite side. The short dash and dotted lines indicate the tool used in this case to depress the locking-tongues, the dotted lines showing hidden parts of the tool, which consist of a bar I, having an L-shaped foot-piece L and being pivoted at J to a piece K, which extends over the top of the rail and is adjustably fastened into a piece M on the opposite side thereof. This piece M fits under the bolt-head H, as shown, to hold the tool in place. By reference to Fig. 5, in which the depressing-tool I is shown just engaging the tongue B at b', it will be seen that pressure on the L-shaped extension L will cause the bar I to come against the two corners b' and c' and will thereby depress the tongues B and C and allow the removal of the nut. Fig. 4 shows that this tool comes outside of the circle X swept over by the nut and yet catches on the locking-tongues, as before stated. Reference to Fig. 6 will show that the spring-points D rest against the angle-bar and do not drop into any opening or hole therein. It will also be noted that only one angle-bar has an oval hole, the other on the nut side fitting close around the bolt, as is common practice now in railroad-work. All washers, therefore, which depend on tongues projecting into the bolt-hole to prevent their rotation are practically barred. We depend on the biting effect of the spring-tongues and on the straight sides of the washer for this purpose. Our tongues D are used, as before stated, primarily for their spring action and depend on the hole in the angle-bar being of practically the bolt diameter or only slightly larger to secure this. These tongues have, therefore, absolutely nothing in common with washers which project into the bolt-hole.

While our washer, as before stated, is intended for various uses, it has been thought sufficient to show a view of the tool used for depressing the locking-points in railroad-work, more especially since this tool forms no integral part of the lock and is entirely distinct therefrom.

While we have shown and described the spring-tongues D as alternate tongues depressed, it is not intended by such description to limit ourselves to alternate tongues, but, on the contrary, we wish it distinctly understood that we desire and reserve the right to turn down all the tongues D, so long as we form same by cutting outward from the bolt-hole and cupping same, as shown and described, and we wish it further understood that we do not in any way limit or confine ourselves by the number of such tongues shown or by the number of locking-tongues, one only or any number of which may be used, if so desired.

We do not claim, broadly, the use of the locking-tongues on one side of the bolt-hole in proximity to each other, but the inclining of such tongues toward the bolt-hole, as described. We further wish it distinctly understood that it is not our intention to limit ourselves to any specific use of this nut-lock, but to make use of same in any and all ways in which nuts and bolts are now used.

Having fully described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. A nut-lock comprising a washer provided with nut-engaging means, tongues upon said washer for preventing its turning, formed by cutting outwardly from the bolt-hole and depressing the tongues thus formed, the corners of each tongue being further curved downwardly to shoulder the washer against movement in either direction, substantially as described.

2. A nut-lock comprising a washer having nut-locking means, a spring center formed by cutting outward from the bolt-hole and depressing alternate tongues thus formed, the corners of the said tongues being arched downwardly to form biting-points adapted to hold the washer against movement in either direction, substantially as described.

3. A washer nut-lock formed with nut-locking tongues on one side, and washer-holding means on the other side comprising arched tongues bent to one side of the said washer, having biting-points adapted to shoulder the washer against movement in either direction, substantially as described.

4. A washer nut-lock, formed with arched holding spring-tongues bent outwardly around the bolt-hole of the washer, and having broad nut-locking tongues adapted to extend sufficiently far beyond the sweep of the nut to be capable of depression by an implement, while the nut is unscrewed by a suitable wrench, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM B. MALLORY.
JOE. L. ULLATHORNE.
JOHN GARLAND DEADERICK.

Witnesses:
T. F. KEELEY,
C. W. HEISKELL.