

No. 764,591.

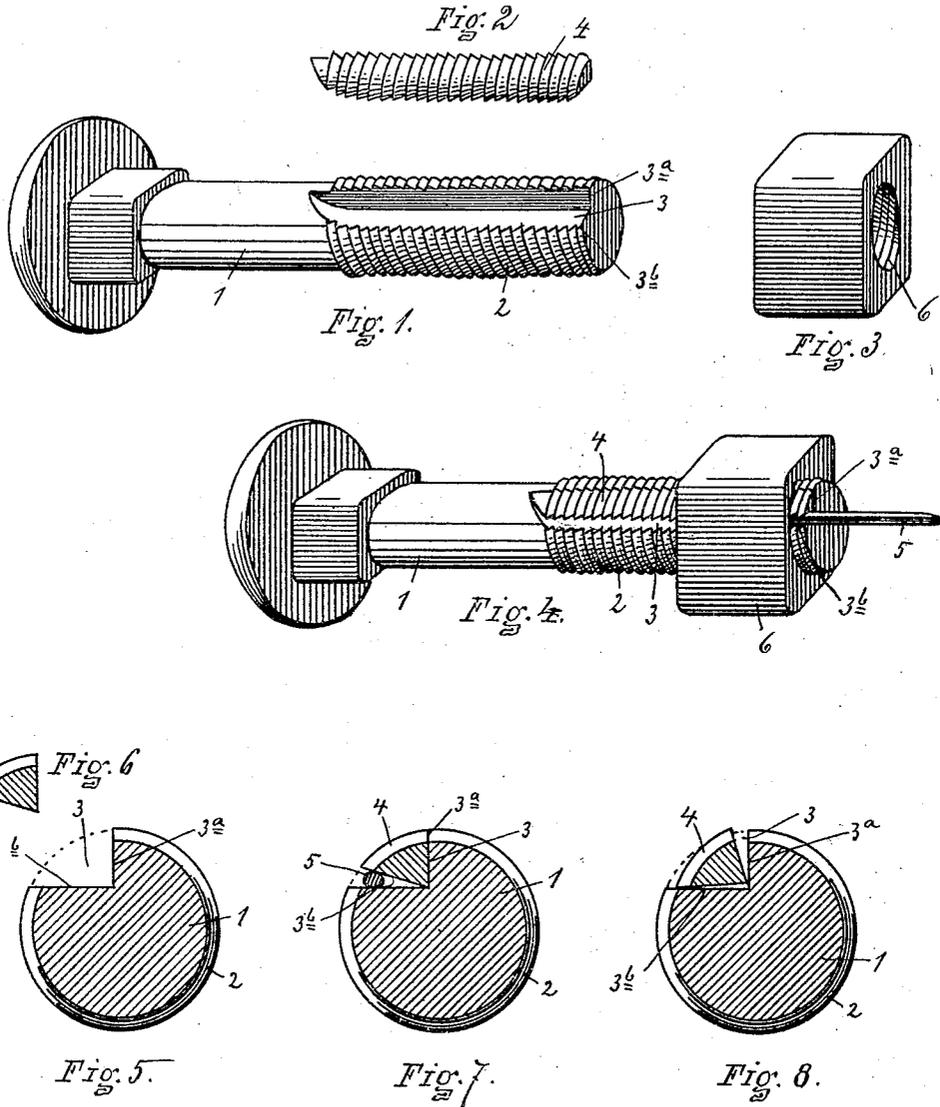
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H. T. HUGHES.

NUT LOCK.

APPLICATION FILED OCT. 2, 1903.

NO MODEL.



WITNESSES
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NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 764,591, dated July 12, 1904.

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To all whom it may concern:

Be it known that I, HUGH T. HUGHES, a citizen of the United States, residing at Frankfort, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Nut-Locks, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a nut-lock; and it consists in the construction and arrangement of the parts hereinafter more fully pointed out and claimed.

The object of my invention is to form a nut-lock simple in construction and reliable in operation whereby the nut can be instantly locked and unlocked and the nut removed without damage to the bolt or nut.

In the drawings, Figure 1 represents an ordinary bolt used in securing fish-plates to railroad-rails, showing a cut-away or a longitudinal depression in the bolt. Fig. 2 represents a screw-threaded section of a bolt of less arc than the depression in the bolt. Fig. 3 is an ordinary screw-threaded nut. Fig. 4 is a perspective side view of the bolt, nut, and nut-lock. Fig. 5 is a cross-section of the bolt, showing the longitudinal depression therein. Fig. 6 is a cross-section of a longitudinal piece having a less arc than the depression in the bolt. Fig. 7 is a cross-section of the bolt and longitudinal piece with a wedge or pin inserted to make the piece register with the periphery of the bolt, and Fig. 8 is a cross-section of the bolt and longitudinal screw-threaded piece in the position for forming the nut-lock.

Having described my invention with reference to the figures in the drawings, I shall now proceed to describe my invention more in detail, in which similar numerals of reference refer to corresponding parts in the several views.

I provide bolt 1 of any desired form with screw-threaded end 2. I provide either a cut-away or depressed longitudinal section 3 with walls 3^a and 3^b, running from the end of the bolt toward the head. In this instance the depression is in the form of an angle in the cross-section; but I do not confine myself to

this form in cross-section of the depression, although I consider it preferable. I provide a screw-threaded piece or section 4, formed independent of or taken from the screw-threaded bolt, of less arc than the depression in the bolt, the screw-threads being arranged to register with the screw-thread on the bolt when the nut is applied and to be thrown out of alinement with the screw-threads on the bolt for locking the nut on the bolt. The side of the screw-threaded piece or lock 4 which is adjacent to the edge 3^a of the depression is of equal width with that edge. In screwing the nut on the adjacent edge of the screw-threaded piece or lock is against the face 3^a; but in unscrewing the nut the friction between the nut and the lock tends to turn the latter away from such position. It is to be noted that the line or face 3^a is not exactly on the diameter of the bolt; but to one side—that is to say, the line of the face of the lock which is adjacent to the face 3^a is a section of the diameter of the bolt, but it moves on a bearing which is to one side of the diameter. The result of this is that the arc of the screw-threaded piece or lock is thrown slightly out of the line of the circumference of the bolt itself when the nut is turned or attempted to be turned toward the left, which forms a biting contact between the corner of the lock 4 and the threads of the nut. Were the bearing-point of the lock on the diameter of the bolt any movement of the lock would withdraw its curved surface within the line of the circumference of the bolt; but being to one side of that diameter the curved surface of the lock is thrown slightly outward. The contact between the nut and the bolt ordinarily is such that any increased closeness of contact forbids the one to turn on the other. The arc of the lock being of some extent forms a greater bearing-surface between the lock and the bolt than would be formed if the bearing-surface were substantially on a single line instead of a superficies, as here shown. An additional benefit is that the biting edge of the lock is reinforced by the body of the screw-threaded piece or lock and the edge or corner of the lock is not worn off or beaten down by

use. One or both of the sides of the longitudinal depression in the bolt are of course longer than the shortest distance from the angle of the depression to the circumference of the bolt, so that the face 3^a when swung on its bearing will be thrown outside of that circumference. While I illustrate a depression of substantially a right-angle form, it will be understood that I do not limit myself in that way. The screw-threaded piece 4 when it acts as a nut-lock assumes the position shown in Fig. 8 and will normally assume the position shown in Fig. 7 when the nut is screwed on the bolt. For unlocking the nut I insert a wedge 5, nail, or any other hard substance between the wall of the depression and the screw-threaded piece, whereby it is moved into the position shown in Fig. 7, which effects the unlocking of the nut. I use the ordinary screw-threaded nut 6.

In operation the bolt is inserted in the hole. The screw-threaded piece 4 is placed in the depression 3 in the bolt so that the screw-threads in the piece register in alinement with the threads on the bolt. The nut is then applied to the bolt and turned to the required degree of tension, where it is instantly locked by the movable screw-threaded piece tilting so as to be out of alinement with the screw-threads on the bolt and engage its arc against the bolt, as above described, thereby binding and securing a rigid lock of the nut.

By inserting the wedge between the shoulder in the depression and the face of the screw-threaded piece, as shown in Figs. 4 and 7, the movable screw-threaded piece is moved into the position shown in Fig. 7, when the nut is unlocked.

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

1. A nut-lock, having the following elements in combination; a screw-threaded bolt having a section longitudinally cut therefrom extending from the nut end of the bolt toward its head, one of its faces being wider than the shortest distance from the angle of the section to the line of the circumference of the bolt, a screw-threaded acute-angled longitudinal section of a bolt with less arc than the space from which the section is cut and a screw-threaded nut, substantially as set forth.

2. A nut-lock having the following elements in combination; a screw-threaded bolt longitudinally recessed from the nut end toward the head said recess comprising a reëntrant angle each of whose sides is less than the radius of the bolt, a screw-threaded acute-angled longitudinal section of a bolt with less arc than the recessed space and having one of its edges wider than the shortest distance between the circumference of the bolt and the angle of the said section, a screw-threaded nut and a wedge inserted between the longitudinal section and the bolt whereby the nut is released, substantially as set forth.

3. A nut-lock having the following elements in combination; a screw-threaded bolt having an angled section longitudinally cut therefrom and within one quadrant of the bolt, a screw-threaded angled longitudinal section of a bolt of a less arc than the longitudinal section of the bolt having each of its faces narrower than the radius of the bolt and constructed to register with the screw-threads on the bolt when the nut is applied to the bolt, its arc being thrown without the circumference of the bolt when the nut is unscrewed, and a screw-threaded nut, substantially as set forth.

4. A nut-lock having the following elements in combination; a screw-threaded bolt having an angular section longitudinally cut therefrom, a longitudinal section of a bolt of less arc than the section taken from the bolt and screw-threaded to register with the screw-threads on the bolt, constructed to swing on the angle of the section and bearing in the angle of the depression in order to bind and lock the nut by crowding of its arc against the inner face of the nut, a screw-threaded nut and means for moving and holding the screw-threaded section so that the nut may be released, substantially as set forth.

5. A nut-lock having the following elements in combination; a screw-threaded bolt formed with a longitudinal angular depression therein, a longitudinal piece screw-threaded to register with the screw-threads on the bolt when the nut is applied and with less arc than the depression in the bolt whereby the section is movable in the depression so that the screw-threads on the movable section are thrown out of the line of the circumference of the bolt on the unscrewing of the nut the bearing-point of the screw-threaded piece being in the angle of the depression, and a nut screw-threaded to register with the threads on the bolt and movable section, substantially as set forth.

6. A nut-lock having the following elements in combination; a screw-threaded bolt formed with a longitudinal sectional depression therein, a longitudinal piece screw-threaded to register with the screw-threads on the bolt when the nut is applied, with less arc than the depression in the bolt, whereby the piece is made movable in the depression in the bolt for throwing the screw-threads on the piece out of the line of the circumference of the bolt, so that they bind the nut, the bearing of the threaded piece being in the angle of the depression and at one side of the diameter of the bolt drawn parallel to one of the faces of the depression, a screw-threaded nut and means for unlocking the nut by holding the screw-threaded piece at one side of the depression in the bolt, substantially as described.

7. A bolt having an angular segment in cross-section cut therefrom in the direction of its length, in combination with an angular

screw-threaded segment having one of its faces equal to the adjacent face of the bolt cut out and having an angle in the direction of its length bearing in the angle of the cut-out forming a rocking edge or angle, the said bearing-point being at the side of the diameter drawn parallel with the adjacent faces of the cut-out and the threaded piece, a nut and mechanism for holding the angular section in position for unlocking the nut, substantially as set forth.

8. A bolt having a section angular in cross-section cut therefrom in the direction of its length, in combination with an angular section of a bolt having plane faces narrower than the radius of the bolt and having an edge opposite the screw-threads bearing in the angle of the cut-out, the distance from the curved faces of the section being less than the radius of the bolt and greater than the shortest distance between the angle of the cut-out and the circumference of the bolt, the angle of said section forming a rocking edge in the angle of the cut-out, a screw-threaded nut registering with the bolt and section, substantially as set forth.

9. A bolt provided with a longitudinal angular cut-out in the thread end thereof, the sides of which cut-out are each less than the radius of the bolt, a screw-threaded section provided with an angle opposite the screw-threads to rock in the angle of the cut-out, the sides of which section are the one equal to the adjacent side of the cut-out and the other equal to the distance between the angle of the cut-out and the circumference of the bolt when the section is in right-hand position as when the nut is screwed on, in combination, substantially as set forth.

10. In a nut-locking device, a screw-threaded member provided with a longitudinal angular cut-out in the threaded portion thereof, the sides of which cut-out are less than the radius of the bolt, a screw-threaded section provided with an angular edge to rock in the angle of the cut-out and both of whose sides are of such width that when the nut is screwed on the threads of the section are in the same circum-

ference as the threads of the bolt and register therewith, and that when the nut is unscrewed the threaded surface of the section is thrown without the circumference of the bolt, a screw-threaded nut, in combination, substantially as set forth.

11. A bolt having cut therefrom a longitudinal angular recess, a screw-threaded member supported therein, the periphery of said member lying within the periphery of the bolt when the nut is screwed on and being thrown without such periphery when the unscrewing of the nut is attempted, substantially as shown.

12. A bolt having a longitudinal angular recess in its screw-threaded portion, an angular member seated therein having a screw-threaded surface lying within the inner diameter of the nut when the latter is screwed on and rocking on its angular edge in the angular seat of the bolt to throw its periphery without the periphery of the bolt when the unscrewing of the nut is attempted, substantially as shown.

13. A bolt provided with a longitudinal cut-out having therein a reëntrant angle, a member with an angular edge supported in the reëntrant angle and having a screw-threaded surface, the said member being constructed to turn on its angle to permit the screwing on of the nut and prevent the unscrewing of the same by the projection of its screw-threaded surface, substantially as shown.

14. A bolt having a screw-threaded surface comprising two portions one of which is integral for the greater portion of the circumference of the bolt, and the other of which is adapted to rock in the remaining portion of the circumference of the bolt, the latter being mounted on an angular edge in an angular recess in the bolt to permit the free screwing on of the nut and to prevent the unscrewing of the same by the projection of its screw-threaded surface, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

HUGH T. HUGHES.

Witnesses:

E. E. RISLEY,
GRACE C. ELLIS.