

W. P. & S. G. THOMSON.
NUT LOCK.
APPLICATION FILED NOV. 12, 1907.

1,004,502.

Patented Sept. 26, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

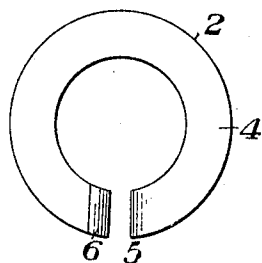


Fig. 2.

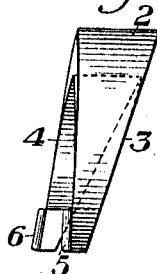


Fig. 3.

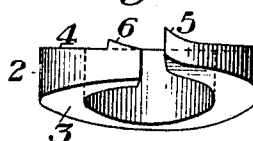


Fig. 4.

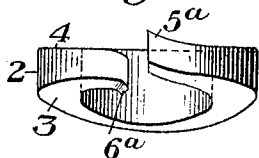


Fig. 5.

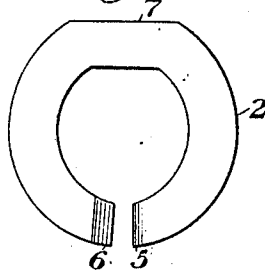


Fig. 6.

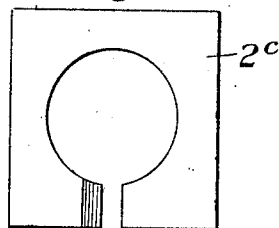


Fig. 7.

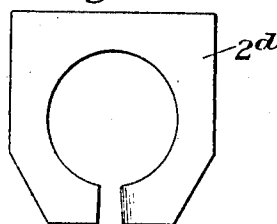


Fig. 8.

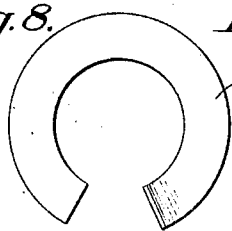


Fig. 9.

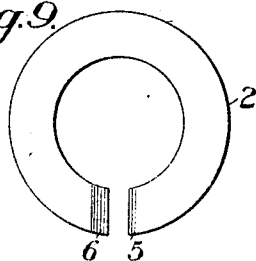
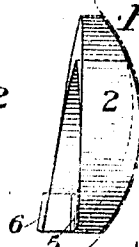


Fig. 10.



WITNESSES

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Fig. 11.

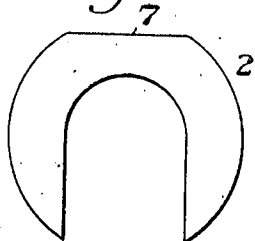


Fig. 13.

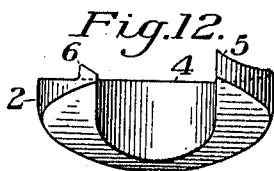
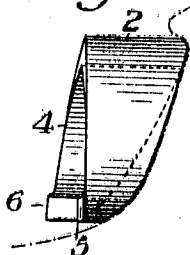


Fig. 14.

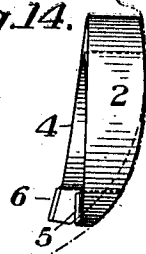


Fig. 15.

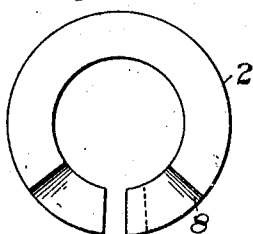


Fig. 16.

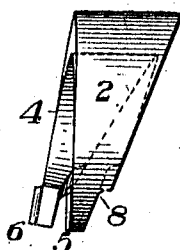


Fig. 18.

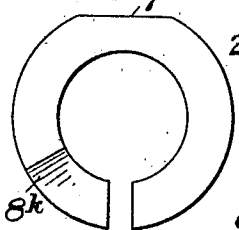


Fig. 19.

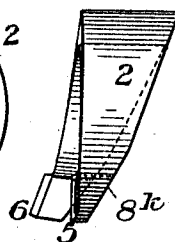


Fig. 17.

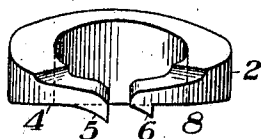
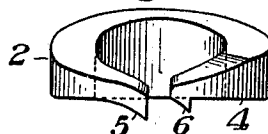


Fig. 20.



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3 SHEETS—SHEET 3.

Fig. 21.

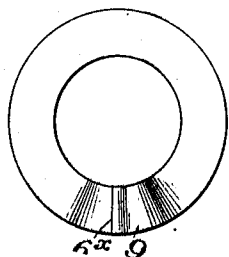


Fig. 22.

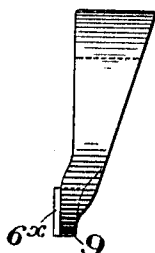


Fig. 23.

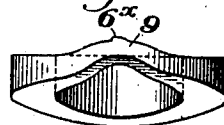


Fig. 24.

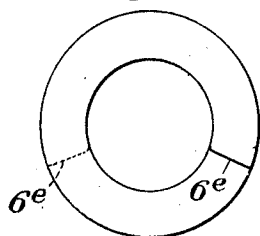


Fig. 25.

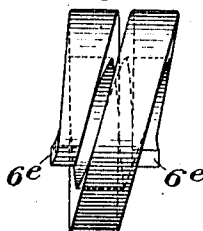


Fig. 26.

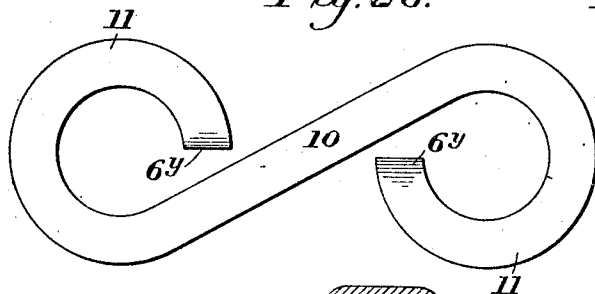


Fig. 27.

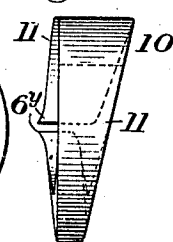
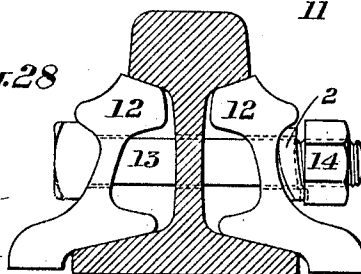


Fig. 28.



WITNESSES

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UNITED STATES PATENT OFFICE.

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A PARTNERSHIP.

NUT-LOCK.

1,004,502.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed November 12, 1907. Serial No. 401,825.

To all whom it may concern:

Be it known that we, WILLIAM P. THOMSON and SAMUEL G. THOMSON, both of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Nut-Lock, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1, 2 and 3 are different elevations, showing one form of our invention; Figs. 4 to 27, inclusive, illustrate modified forms and Fig. 28 is the application of one form of our invention to a rail joint splice bar.

The invention relates to nut locks, and is designed to provide a simple and cheap device of this character which is especially adapted for bolting faces, which extend at other than a right angle to the axis of the bolt. It is especially designed for railroad angle bars, wherein the angle bar has an inclined or curved bolting face.

Heretofore it has been proposed to use a washer contacting with the face of the angle bar and providing on its other face a vertical bolting face for the nut or bolt head. In this connection, our invention combines both the functions of such a washer with those of a nut lock.

In the drawings, referring to the form of Figs. 1, 2 and 3, the nut lock is shown as comprising a spring ring 2, having an inclined or beveled face 3 at one side while the other face 4 is straight or vertical when the two portions of the split ring are forced into substantially the same plane. In this form, one end 5 of the ring is bent outwardly to form a point or cutting edge, while the other end 6 is provided with a side lip for the same purpose. One or the other of these lips may be used instead of both.

Fig. 4 illustrates a similar construction except that the engaging points 5^a and 6^a are bent in opposite directions.

In the forms of Figs. 1 to 4, the beveled or inclined face of the ring prevents it from turning around with the bolt, owing to the cam action between this face and the correspondingly inclined face of the angle bar. We may, however, form the ring with a flattened edge portion, as shown at 7, in

Fig. 5, to fit against a flange of the angle bar and prevent turning.

Instead of a ring, a rectangular or square washer plate of spring metal may be employed as shown at 2^c and 2^d in Figs. 6 and 7, the corners being cut off in one of these figures.

In Fig. 8, we have shown a form 2^e similar to Fig. 1, except that the cuts of the ring are on radial lines.

In Figs. 9 and 10, we show a form similar to that of Fig. 1, except that the inner face of the nut lock washer is curved instead of beveled and flat. The shape of this inner face will depend on whether the bolting face is on a straight angle or on a curve.

In Figs. 11 and 12, the nut lock is of U shape.

In Figs. 13 and 14, we show the bolting faces arranged on different curves with different thickness of the ring.

In order to increase the gripping action of the sharp edges, we may cut away the bolting face of the ring to leave a sharp shoulder, as shown at 8 in Figs. 15, 16, and 17, thus giving a more springy action to the engaging lips.

In Figs. 18, 19 and 20, we have shown a similar form except that the face 8^a is cut off at a sharper angle than the remainder of the bearing face.

In Figs. 21, 22 and 23, we have shown a form of the invention wherein the ring instead of being split, is solid, but is bent laterally, as shown at 9, to give a springy form. This bent-out portion is shown as provided with a lip 6^x to engage the nut or the surface.

In Figs. 24 and 25, we show a form wherein the legs of the ring are extended past each other in the form of part of a spiral spring. In this case, the opposite legs are shown as provided with lips 6^e.

In Figs. 26 and 27, we show a double form wherein the bar 10 is provided with ring loops 11, at its opposite ends, each of these loops being shown as provided with a laterally bent portion having a lip 6^x. This form is adapted to be used with two bolts.

The advantages of our invention will be apparent to those skilled in the art.

When the bolting face is at an angle to the axis of the bolt, which is other than a right angle, the nut lock performs both the

functions of a nut lock proper, and also that of forming a bolting face at right angles to the bolt. The beveled or curved face of the washer prevents it from being turned
5 around, owing to the cam action on the face, although other means may be employed for aiding in this action.

The shape, size and material of the spring washer may be varied without departing
10 from the broad bevel feature of our invention, since this feature may be introduced into a nut lock of any form.

We consider ourselves the first to provide a nut lock device which is adapted for bolt-
15 ing against an inclined or curved bolting face without the intervention of a bevel washer or plate, or other means for securing a vertical bolting face. In other words, we are the first to provide a combined washer
20 and nut lock which fits against an inclined or curved bolting face.

The word "inclined" as used by us in the claims is intended to include either a straight
25 inclined face or a curved inclined face, the inclination being either inwardly or outwardly in either case.

We claim:—

1. A combined nut lock and washer, comprising a body of spring material having a
30 bolt-opening therethrough and having its inner and outer faces at an angle to each other in both the free and locking positions of the device, said lock and washer having a spring portion adapted to be seated and compressed
35 between an inclined bearing surface and the inner plane face of a nut, substantially as described.

2. A combined nut lock and washer, having a spring portion forming a nut bearing,
40 said lock having an inner face inclined to the inner face of the nut in both the free and locking positions of the washer, and decreasing in thickness in opposite directions

from a relatively thick portion, substantially
45 as described.

3. A combined nut lock and washer, comprising a split spring ring of decreasing
50 thickness toward both its ends, one of its end portions being normally out of the plane of the other but being adapted to be pressed toward the plane of the other, and the decrease in thickness being entirely upon one
55 face, substantially as described.

4. A combined nut-lock and washer, comprising a split member having a spring portion
60 forming a nut bearing, the inner seating face of said member being inclined in both the free and the locking or compressed positions of the member, substantially as described.

5. A combined nut-lock and washer, comprising a split member having a spring portion
65 forming a nut bearing, the inner seating face without the intervention of a bevel face of said member being inclined in both the free and the locking or compressed positions of the member, and the outer nut-bearing
70 face of said member having means for engaging the nut to increase the turning friction thereof.

6. In a rail joint, the combination with a
splice bar having an outer face inclined at
an angle to the vertical, a nut, and a nut
lock comprising a wedge-shaped spring
75 body forming a seat for the nut and having its outer face substantially parallel to the inner face of the nut and an inner face substantially parallel to said inclined outer face
80 of the splice bar, substantially as described.

In testimony whereof, we have hereunto
set our hands.

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SAMUEL G. THOMSON.

Witnesses:

S. E. PATTERSON,
MCLEOD THOMSON