C. B. STILLWELL.

NUT LOCK.

APPLICATION FILED NOV. 8, 1910.

999,606. Patented Aug. 1, 1911.

3 SHEETS—SHEET 1.

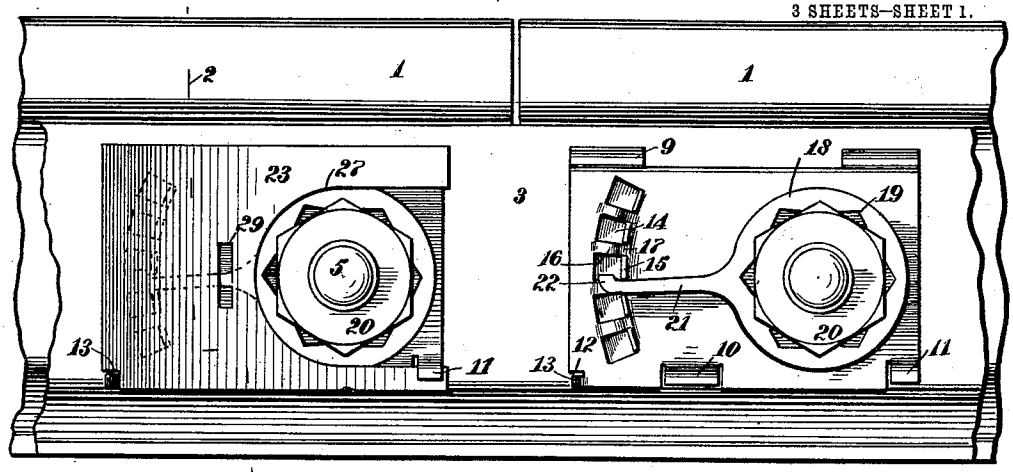

Fig-1

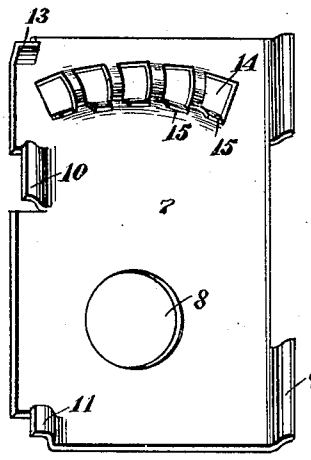

Fig-3

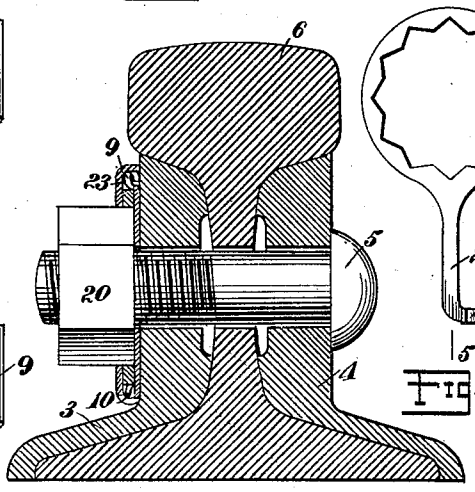

Fig-2

Fig-4

Fig-5

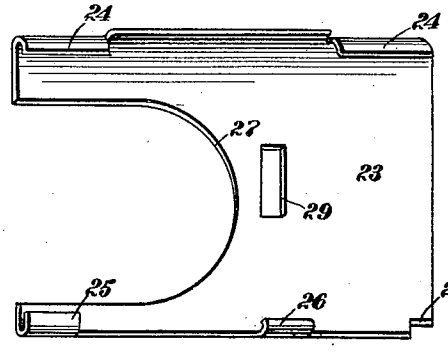

Fig-6

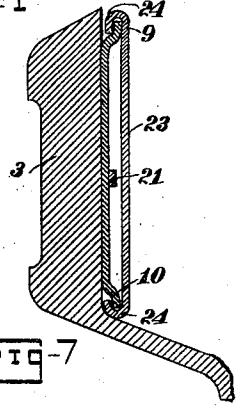

Fig-7

WITNESSES

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3 SHEETS—SHEET 2.

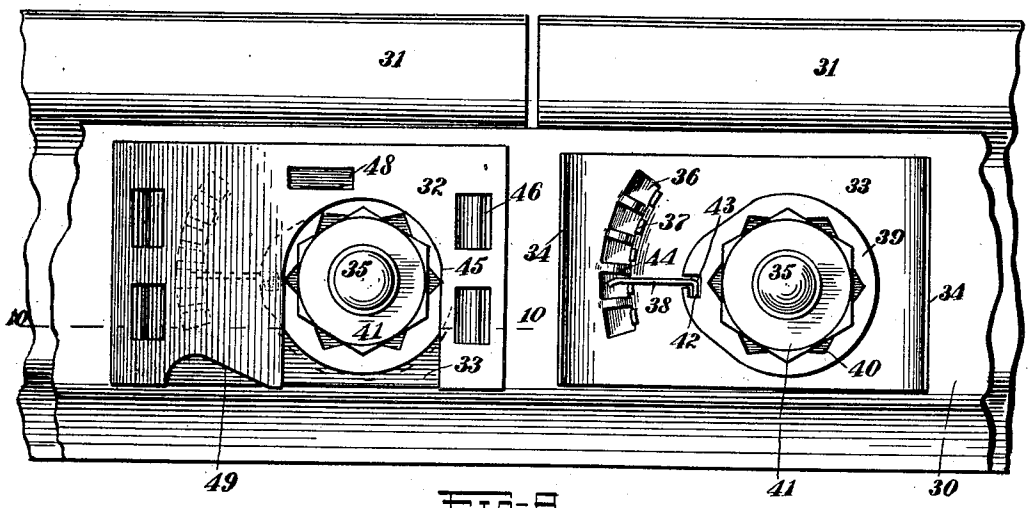

Fig-8

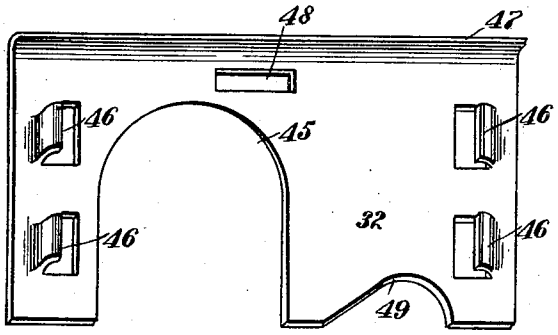

Fig-9

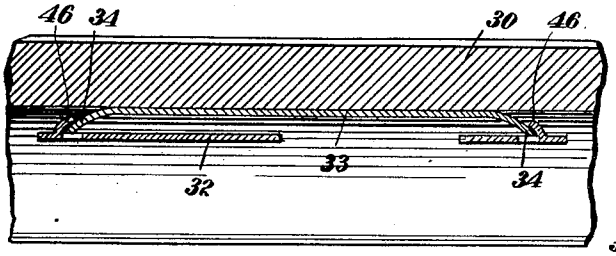

Fig-10

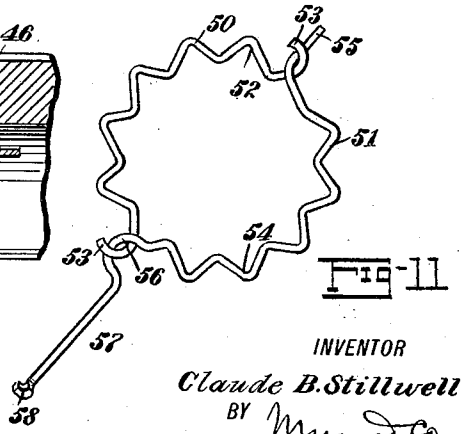

Fig-11

WITNESSES

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3 SHEETS—SHEET 3.

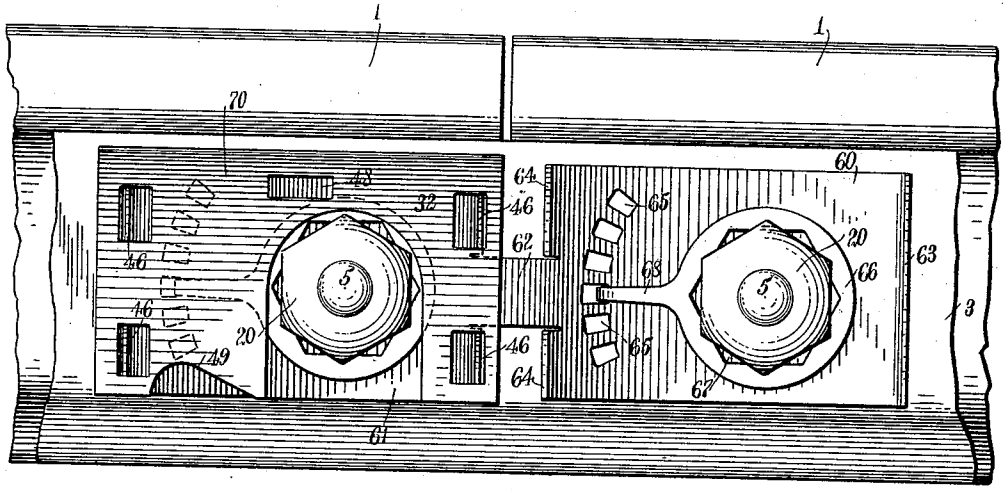

Fig. 12.

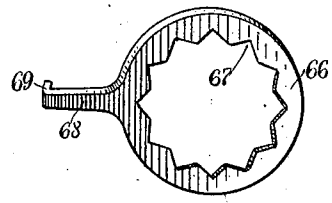

Fig. 13.

WITNESSES

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UNITED STATES PATENT OFFICE.

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NUT-LOCK.

999,606. Specification of Letters Patent. Patented Aug. 1, 1911.

Application filed November 8, 1910. Serial No. 591,279.

To all whom it may concern:

Be it known that I, CLAUDE B. STILLWELL, a citizen of the United States, and a resident of Savannah, in the county of Chatham and State of Georgia, have invented a new and Improved Nut-Lock, of which the following is a full, clear, and exact description.

This invention relates to nut locks, and it is particularly applicable to the construction of such devices when used in securing the nuts of the bolts which attach the fish plates to the rails at the rail joints.

The invention constitutes an improvement on the device patented to me March 3, 1908, No. 880,930. In the present invention, the invention contemplates the use of improved means for preventing the nut from rotating on the bolt, and the principal object of the invention is to provide means for covering the mechanism of the device so as to prevent it from being injured or displaced.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation showing a rail joint to which my invention has been applied, in this view at the left side the device is shown complete and at the right side of the view the parts are shown with the cover plate or cover removed; Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1; Fig. 3 is a perspective of the main plate of the device; Fig. 4 is a side elevation of the locking ring which engages the nut so as to prevent it from rotating; Fig. 5 is a vertical section through the locking ring taken on the line 5—5 of Fig. 4; Fig. 6 is a perspective of the cover plate; Fig. 7 is a vertical section taken through one of the fish plates and passing through the cover and main plate so as to illustrate the manner in which they interlock with each other; Fig. 8 is a side elevation similar to Fig. 1, but showing a modified form of the invention in which the cover plate is applied by a vertical instead of by a horizontal sliding movement as in Fig. 1; Fig. 9 is a perspective of the cover plate showing the inner side of the same; Fig. 10 is a horizontal section taken on the line 10—10 of Fig. 8; Fig. 11 is a side elevation of a locking ring of a modified form; Fig. 12 is a side elevation of a railway rail joint showing a modified form of the invention; and Fig. 13 is a perspective view of a modified form of the lock plate.

Referring more particularly to the parts, and especially to Figs. 1 to 7, the numerals 1, 1 designate the abutting ends of two adjoining rails, on the sides of which fish plates 3 and 4 are attached by means of bolts 5. As indicated in Fig. 2, the outer faces of the fish plates 3 and 4 are disposed between the outer surfaces of the head 6 of the rail. In applying my invention to such a rail joint, I provide a main plate 7 which has a rectangular body with an opening 8 through which the shank of the bolt 5 passes. The opening 8 is disposed near one end of each main plate. The said main plates are provided at the upper edge with two upwardly and outwardly projecting fins 9. At the lower edge of the plates similar fins 10 are formed at an intermediate point. At the end of the plate adjacent the bolt, a downwardly projecting outwardly off-set tongue 11 is formed. At the opposite end of the lower edge, a horizontal cut or slit 12 is made in the plate, which forms a narrow finger 13 projecting horizontally at this point. This main plate is provided at a point remote from the bolt with a plurality of openings 14 which are arranged in the segment of a circle, the center whereof is located at the axis of the bolt, as shown. In forming the openings 14 the inner edges of the openings which lie adjacent to the bolt are forced upward to form projections or ears 15, and between the openings radially disposed bars 16. In this manner between the ears 15 retaining notches 17 are formed.

I provide a locking ring or locking plate 18, the body of which is in the form of a ring having a polygonal opening therethrough presenting notches which are adapted to receive the angles of the nut 20 in the manner indicated in Fig. 1. The number of notches 19 exceeds the number of angles on the nut. In the drawings, the nut is represented as hexagon in shape, while there are twelve notches. In the case of a square nut there would be provided four times as many notches as angles or corners on the nut. This construction enables the locking ring to be applied to the nut when in a

variety of positions. From the body portions of the locking ring a finger 21 extends, the outer end of which is bent laterally to form a hook 22.

When the locking ring is applied to the nut, as indicated, the end of the finger is adapted to extend through one of the notches 17 and the hook 22 is inserted in the openings 14 to engage the radial bars 16. When the locking ring is applied as described, it is evident that the nut is held from rotating on the bolt.

To protect the locking ring from injury, I provide a cover plate 23. This plate is substantially rectangular in form, as illustrated in Fig. 6. On its upper edge it is provided with inwardly turned crimps 24 to engage the fins 9 when the cover plate is slid horizontally on the main plate. At the lower edge of the cover plate 23, similar crimps 25 and 26 are formed. The crimp 25 is disposed at the forward edge of the plate, which edge is formed with a large gap 27 of horseshoe form, as shown. At the lower rear edge of the plate 23, a notch 28 is formed, and when the plate is slid in position this notch impinges upon the finger 13. In placing the plate in position, the crimp 25 engages the edge of the plate adjacent the tongue 11, while the flange 26 engages the fin 10. The tongue 11, however, projects out over the outer edge of the forward portion of the cover plate, as indicated in Fig. 1. It will be observed that the gap or opening 27 provides a space through which the nut can project.

After the plate is in position the finger 13 is bent upwardly behind the rear edge of the plate, as indicated in Fig. 1, so as to lock it against accidental movement.

Near the middle portion of the plate 23, the plate is provided with a vertical slot 29 which is adapted to receive a tool of some kind to assist in removing the cover plate.

Referring now particularly to Figs. 8 to 10: in this form of the invention the fish plate 30 is sufficiently thick to project beyond the sides of the rail heads 31. It is then possible to apply the cover plate 32 from above instead of from the side, as described in the other form of the invention. The main plate 33, as indicated in Fig. 8, is substantially rectangular in form, having its vertical edges 34 turned outwardly to form flanges. The plate is applied over the bolt 35 in the same manner as the plate 7. At a point remote from the bolt are formed openings 36 similar to the openings 14, with the ears 37 forming notches therebetween. The notches are adapted to receive a finger 38 which projects from a locking plate 39. The plate 39 is formed as a ring having a polygonal opening presenting angles 40, similar to the angles 19, and adapted to receive the corners of the nut 41. The finger 38 is formed from wire and is separate from the body of the locking plate. The finger 38 is bent to form a lateral extension or hoop 42 at its one end for insertion in a bayonet socket 43 formed in the locking ring or locking plate. The outer end of the finger rests between the ears 37, as shown. In this connection attention is called to the fact that the radial bars 44 formed between the ears 37 project upwardly and outwardly so that each bar coöperates with the ears 37 on each side of the same to hold the tail in position.

After the locking ring has been applied, as illustrated at the right of Fig. 8, the cover plate 32 is applied from above as illustrated at the left of the said Fig. 8. This cover plate has a deep gap or notch 45 in its lower edge which is disposed opposite the nut, as shown. Near the ends the plate sections are there bent in to form guide fins or flanges 46 to engage the edges 34, as shown at Fig. 10, to retain the cover plate in position. The upper edge of the cover plate is bent to form a crimp 47 which impinges upon the edge of the fish plate, and limits the downward movement of the said plate. The base of the cover plate lies against the outer face of the ring plate to hold the finger 38 in operative position to prevent the head 42 from becoming disengaged from the socket 43. Near its upper edge the cover plate 32 is provided with an opening 48 to receive a hook or other instrument for removing the cover plate. A large notch 49 is also formed in the lower edge of the plate, presenting an inclined edge to afford opportunity for inserting a wedge for loosening the cover plate when necessary to remove it.

Instead of forming the locking ring 39 as described above, I may form the locking ring as shown in Fig. 11, from wire and in the two sections 50 and 51. The section 50 is of substantially semicircular outline, and bent to form a plurality of notches 52 corresponding with the notches 40, and adapted to fit the corners of the nut. At its end this section 50 has formed thereon the hooks 53. The section 51 has a substantially semicircular body bent to form notches 54 similar to the notches 52 and adapted to fit the corners of the nut. At one end this section 51 is provided with a stub tail 55 to be received in a suitable slot formed in the main plate to receive the same. At the opposite end of the section 51 there is formed a bight 56 to engage one of the hooks 53. A straight finger 57 is also formed, said finger terminating in a hook 58 to engage the bars 44.

On account of the fact that there are a plurality of the ears which project from the main plates in either form of the invention, it will be evident that the locking ring can always be applied to the main plate so as to lock the nut against becoming unscrewed.

When the locking device is formed of wire as illustrated in Fig. 11, the sections can be hooked each with the other, as they are applied to the nut.

In the modified form of the invention illustrated in Figs. 12 and 13, the main plates 60 and 61 are connected by a strip 62. Each of the said plates is provided at the vertical sides with out-turned edges 63, 64 and 64. The edges 64, 64 are separated by the connecting strip 62, as shown best in Fig. 12 of the drawings. The plates 60 and 61 are provided with perforations to fit over the bolts for securing the fish plates 3 and 4, and are provided with a series of perforations 65, 65 which are punched in the plates 60, 61 in a circular arrangement concentric with the center of the bolts or the perforation formed in the plate. The locking ring 66 shown in the modified form, and as seen in Fig. 13, is provided with a plurality of star-shaped notches 67, arranged in order similar to that shown in rings 18, 39, 51 and 52 for the detention of the securing nuts for the bolts. Extended from the ring 66 in radial disposition is a finger 68, the outer end whereof is over-turned to form a hook 69, the hook 69 resting in one of the perforations 65. In operation the plates 60, 61 are passed over the threaded ends of the bolts 5. The nuts 20 are then secured on the said bolts and set up hard against the plates 60, 61 to draw the fish plates against the rails 1, 1, clamping the main plates 60, 61 against the fish plate 3. The locking ring 66 is then adjusted over the nuts 20, 20, the ring being adjusted so that the notches 67 fit the corners of the nuts 20 permitting the end 69 of the finger 68 to be inserted in one of the perforations 65. It is to hold the rings 66 in position that I provide the cover plates 70. The plates 70 are constructed in a manner similar to the plates 32 as best shown in Fig. 9 of the drawings. The plates 70 differ from the plates 32 only in that in the plates 70 the over-turned edge 47 with which the plate 32 is provided is in the plates 70 omitted.

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

1. In a nut lock embodying a main plate having a perforation to receive in holding relation a bolt and a series of detent devices up-raised on the surface of said main plate, said devices being removed from said perforation and disposed concentric therewith, said main plate adapted to rest in non-rotative contact with the body in which said bolt is mounted; a locking plate having a perforation adapted to pass a nut, the inner wall of said plate having a plurality of recesses adapted to engage the corners of said nut, said locking plate being provided with an extended member for engagement with said detent devices on said main plate.

2. In a nut lock embodying a main plate having a perforation to receive in holding relation a bolt and a series of detent devices up-raised on the surface of said plate, said devices being removed from said perforation and disposed concentric therewith, said main plate adapted to rest in non-rotative contact with the body in which said bolt is mounted and said main plate being further provided with out-turned ears to receive in holding relation a cover, and a locking ring adapted to engage in holding relation a nut when mounted on said bolt, said ring having an extension to engage said detent devices; a cover for said ring adapted to slide on said ears and having a recessed opening one end thereof adapted to pass over said nut; and means for holding the said cover in position on said main plate.

3. In a nut lock, embodying a plurality of locking rings shaped to engage bolt nuts, each having a radial extension adapted for holding said rings in position; and a main plate extended between the nuts and having a plurality of perforations to fit the bolts on which said nuts are mounted, said plate being provided with a series of detent devices raised from the surface of said main plate to engage the extensions on said locking rings.

4. In a nut lock, embodying a plurality of locking rings shaped to engage bolt nuts, each having a radial extension adapted for holding said rings in position; a main plate extended between the nuts and having a plurality of perforations to fit the bolts on which said nuts are mounted, said plate being provided with a series of detent devices raised from the surface of said main plate to engage the extensions on said locking rings, a plurality of cover plates provided with edge opening recesses to receive the said nuts, said plates being adapted to rest over said rings to protect the same; and means for fastening said cover plates in fixed position on said main plate.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLAUDE BATTEY STILLWELL.

Witnesses:
J. K. McIver,
Harry L. Truchelut.