

UNITED STATES PATENT OFFICE.

JOHN WALTER DUTY, OF BEARSVILLE, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO JOHN W. GRIM, OF SAME PLACE.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 625,493, dated May 23, 1899.

Application filed March 18, 1899. Serial No. 709,605. (No model.)

To all whom it may concern:

Be it known that I, JOHN WALTER DUTY, a citizen of the United States, residing at Bearsville, in the county of Tyler and State of West Virginia, have invented a new and useful Nut-
5 Lock, of which the following is a specification.

This invention relates to nut-locks, and has for its object to provide a simple and efficient
10 device for locking nuts against accidental displacement which may be readily applied and removed without altering the form of either the bolt or nut and without damaging or impairing the same.

To these ends the present invention consists in the combination and arrangement of
15 parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a portion of a railway-rail joint having my improved nut-lock applied thereto. Fig. 2 is a vertical transverse sectional view taken through one of the bolts. Fig. 3 is a
20 horizontal transverse sectional view. Fig. 4 is a detail perspective of a modified form of cap-plate. Fig. 5 is a longitudinal sectional view showing the modified plate applied in locked position. Fig. 6 is a face view showing the engagement of the plate with the nut.
25 Fig. 7 is a detail perspective view of the locking-key.

Like numerals indicate like parts in all the figures of the drawings.

Referring to the accompanying drawings, 35 1 and 2 designate, respectively, opposite abutting rail-sections having the usual fish-plates 3 and connecting-bolts 4, whereby the rail-joint is made secure. These parts of a rail-joint are shown in the drawings to illustrate the application and operation of the device, so that the same may be more readily com-
40 prehended.

The invention consists, essentially, in a cap-
45 plate 5, which is adapted to receive the nut and provided with a key 6, which is designed to prevent loss of the cap-plate longitudinally from the bolt or bolts. This cap-plate may be applicable to a plurality of bolts, as shown
50 in Fig. 1, or to a single bolt, as indicated in Fig. 5, a description of which latter is deemed

sufficient, as the form shown in Fig. 1 embodies simply a plurality of the devices combined in a single plate. Referring, therefore, particularly to Fig. 5, the plate is of suitable
55 length, flat upon its inner face, and thickened or enlarged outwardly, as at 7, intermediate of its ends. This enlargement is provided with a transverse opening 8 for the reception of the bolt to which it may be applied, and
60 the inner end of the opening, beginning at the inner face of the plate and extending inward a suitable distance, is enlarged, forming a socket or recess 9, which is adapted to in-
65 close the nut. The general contour of this socket is circular, being concentric with the opening 8 and provided with the toothed or angular peripheral wall 10. It will be noted that the opening 8 is formed near one side of the enlargement, and the rear wall 11 of the
70 socket is partly cut away at one side of the opening by a vertical slot 12, extending entirely through the enlargement from top to bottom and intersecting the opening at one side thereof.
75

In the application and operation of the cap-plate, as hereinbefore described, and shown in Figs. 1 and 2, the plate is positioned by receiving the nut end of the bolt through the
80 socket 9 and into the outer end of the opening 8, where it is adapted to remain. The nut 13 is received within the socket, the toothed or angular peripheral wall 10 thereof being adapted to snugly embrace any shape of nut and turned
85 at any angle, as will be understood. In this position the upper longitudinal edge of the cap-plate engages firmly against the under side of the overhanging tread 14 of the rail, and the lower edge rests upon the flange thereof and the inner flat face against the fish-plate, where-
90 by the cap-plate is fixed, and as the nut 13 is positively connected to the plate by the embracing peripheral wall of the socket 9 the said nut is effectively prevented from being
95 turned.

To prevent the cap-plate from being displaced longitudinally from the bolt, a flat wedge-shaped key 6 is provided, being shown in detail in Fig. 7. This key has one longitudinal edge 16 beveled or tapered inwardly
100 and downwardly from top to bottom, and the opposite edge 17 is sharpened, while the op-

posite flat faces converge downwardly. Near the upper end of the key and in the edge 16 is provided a notch 18. When the cap-plate has been fitted in place, as hereinbefore described, the key is inserted into the slot 12 from the upper end thereof, with its sharp edge next to the bolt, and is driven or forced downward until its lower end projects a suitable distance through the bottom of the slot and below the enlargement 7 of the cap-plate. By reason of the beveled edge 16 of the key engaging the wall of the slot the opposite sharp edge of the key is forced between the threads of the bolt, whereby the cap-plate is locked against longitudinal displacement, as will be understood. By reference to Fig. 3 it will be seen that the wedge-shaped key is also wedged against the outer face of the nut by reason of the slot 12 communicating with the socket 9, and the binding action had between the flat side of the key and the nut tends to bind the same together, and thereby prevent any lateral turning movement of either the nut or the cap-plate one upon the other. After the key has been set in place the lower projecting end 19 thereof is bent up alongside the enlargement, as shown in Fig. 2, either inward against the under face or outward and against the outer face thereof. Should it be desired to remove the device, the bent end of the key is straightened out and the key may be drawn out of the slot by the aid of some implement engaged with the notch 18, formed in the upper end of the key, and the cap-plate is free to be removed from the nut and bolt, after which the nut may be removed as usual.

In Fig. 1 the cap-plate is shown as having a lateral base extension 20, which fits over the similar portion of the fish-plate and the flange of the rail and is provided with suitable notches 21 to accommodate the track-fastenings.

The cap-plate as shown in Fig. 5 has not the base extension, but is provided throughout the entire length of its upper and lower longitudinal edges and projecting from its flat face with ribs or flanges 22. These flanges are adapted to embrace the upper and lower edges, respectively, of a fish-plate which does not have the base extension, as in Fig. 1. When the cap-plate has been locked by the wedge-shaped key, the flanges are forced over the edges of the fish-plate, and the cap-plate is thereby held firmly against being accidentally turned.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed is—

1. In a nut-lock, the combination with a bolt and the nut thereof, of a cap-plate pro-

vided with a socket adapted to receive the nut, an opening communicating with the socket and from the opposite side of the plate and adapted to receive the threaded end of the bolt, a slot intersecting the opening, and a key adapted to be inserted in the slot and engage the threads of the bolt, substantially as and for the purpose set forth.

2. In a nut-lock, the combination with a bolt and the nut thereof, of a cap-plate provided with a socket adapted to receive the nut, an opening communicating with the socket and adapted to receive the threaded end of the bolt, a slot intersecting the opening and communicating with the socket, and a wedge-shaped key adapted to be inserted in the slot and be wedged into engagement with the threads of the bolt, and with the outer face of the nut, substantially as and for the purpose set forth.

3. In a nut-lock, the combination with a bolt and the nut thereof, of a flat cap-plate having an enlargement formed intermediate of its ends, and provided in its flat face with a socket having a toothed or angular peripheral wall, an opening communicating with the socket and extending transversely through the enlargement, and a vertical slot intersecting the opening and communicating with the socket, the cap-plate being adapted to receive the end of the bolt in the opening and the nut in the socket, and a flat wedge-shaped key having one edge sharpened and adapted to be inserted in the slot, whereby the sharpened edge may be engaged with the threads of the bolt, and one of the flat faces of the key may be wedged across the outer face of the nut, substantially as and for the purpose set forth.

4. In a nut-lock, the combination with a bolt and nut, of a flat cap-plate having an enlargement formed intermediate of its ends, and provided with a socket in one face thereof, having a toothed or angular peripheral wall, the enlargement being provided with an opening extending from its outer face to and communicating with the socket concentrically thereof, a slot formed vertically through the enlargement intersecting the opening at one side thereof, and communicating with the socket at the back thereof, and a flat key having one longitudinal edge sharpened and the opposite edge beveled or inclined downwardly and inwardly, its opposite flat sides being inclined inwardly and downwardly, and having a notch formed in one edge near the top thereof, the wedge being adapted to be inserted through the slot and into engagement with the threads of the bolt and with the outer face of the nut, and the lower projecting end of the key being adapted to be bent back against the enlargement of the cap-plate, substantially as and for the purpose set forth.

5. In a nut-lock, the combination with a bolt and a nut, of a cap-plate provided with a socket formed in one face thereof, an opening communicating with the socket and from

the opposite side of the plate, a slot intersect-
ing the opening, longitudinal flanges provided
upon the upper and lower edges and project-
ing from the flat face of the plate, and a key
5 adapted to be inserted in the slot, substan-
tially as and for the purpose set forth.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in
the presence of two witnesses.

JOHN WALTER DUTY.

Witnesses:

W. O. McCULLOUGH,
L. G. RIGGS.