(No Model.)

W. S. STARNES.

NUT LOCK.

No. 394,143. Patented Dec. 4, 1888.

Fig. 1.

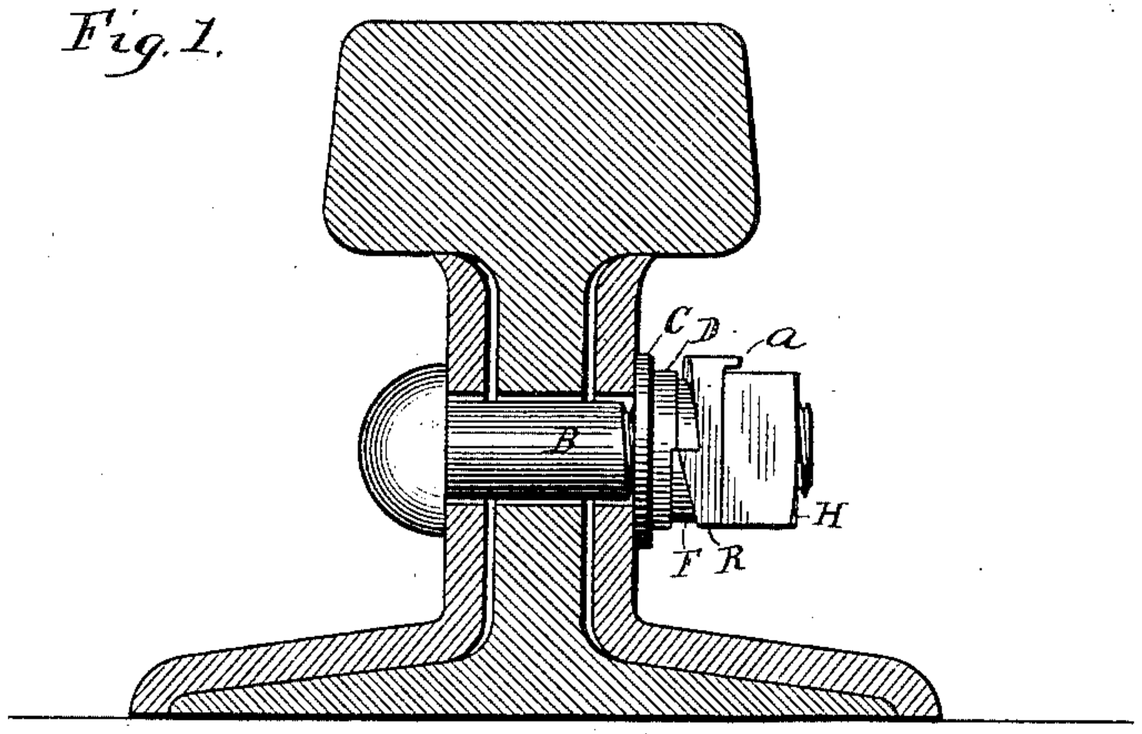


Fig. 2.

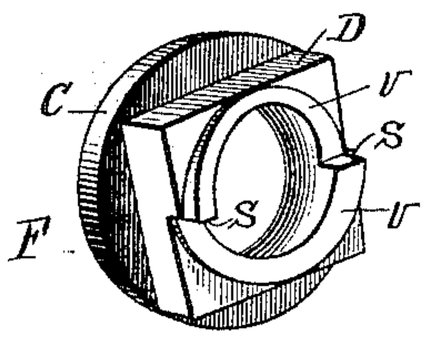


Fig. 3.

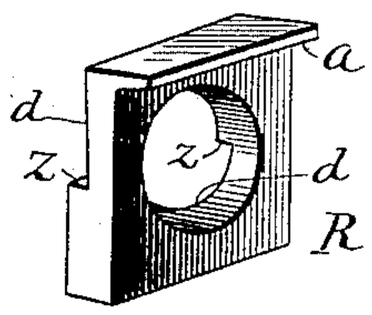


Fig. 4.

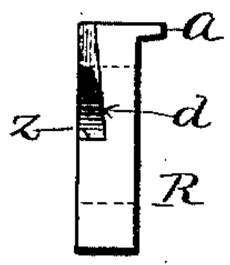
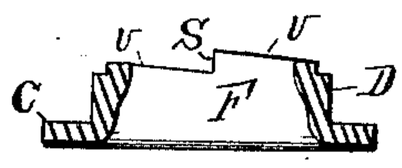


Fig. 5.



Witnesses.

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Wm. J. Hutchins.

Inventor.

Winfield S. Starnes.

By Homer C. Hartman.

Atty.

UNITED STATES PATENT OFFICE.

WINFIELD S. STARNES, OF CHICAGO, ILLINOIS.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 394,143, dated December 4, 1888.

Application filed April 2, 1888. Serial No. 269,313. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD S. STARNES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented an Improvement in Nut-Locks, of which the following is a specification.

This invention relates to certain improvements in nut-locks, which improvements are fully set forth and explained in the following specification and claims, reference being had to the accompanying drawings, and the letters and figures thereon, making a part of this specification, in which—

Figure 1 is a cross-sectional view of a railroad-rail and angle fish-plate and a side perspective view of a connecting-bolt with the nut-lock thereon in position. Fig. 2 is a perspective view of the base-washer of the nut-lock. Fig. 3 is a perspective view of the lip-washer used between the nut and base-washer. Fig. 4 is a side view of the lip-washer, and Fig. 5 is a central cross-sectional view of the base-washer.

The nut-lock in this instance is shown as being used in connection with a railroad-rail and fish-plates for holding the ends of the rails together; but it may be used for any other purpose where a nut-lock is necessary.

Referring to the drawings, B is a connecting-bolt for passing through the rail and fish-plates in the ordinary manner.

F is a base-washer intended to be placed on the screw-threaded end of the said bolt next the fish-plate, and is constructed with an enlarged circular bearing, C, on its under side and a projection, D, on its upper or opposite side, formed with its sides at right angles with its base and of the same size and number of faces as the nut H and lip-washer R, with which it is to be used, so that a wrench adjusted to one will fit the others, and on said projection is formed a rim having two inclined surfaces, V V, which terminate at the vertical offsets S S. A hole is made through said base-washer of a size to loosely fit about the bolt, and is preferably tapered in form, largest at the base next the circular bearing C on its under side, but may be of any suitable form. This said base-washer is formed with two contact-surfaces of different diameters, having different degrees of frictional contact.

R is an intermediate washer formed with an extending lip, *a*, at one side at right angles with its plane to extend at the side of the nut H for preventing turning backward of the said nut. Said washer is formed on its face opposite said lip with inclines and offsets corresponding with those of washer F and reverse thereto, and adapted to register therewith.

H is a nut of the ordinary pattern.

In application when the nut-lock is used in locking nuts of the connecting-bolts of railroad-rail joints, as illustrated, the bolt being in place, the base-washer F is placed on it next the fish-plate with its bearing C next the fish-plate. The washer R is placed on the said bolt next base-washer F, so its inclines and offsets will register with those of said base-washer. The nut H is then turned on the bolt until it engages with the washer R, when a wrench is applied to said nut and two washers simultaneously, after which the washers with the nut are turned so the bearing-surface C of the base-washer F will be hard against the fish-plate. The force with which the washer F is held in contact with the fish-plate and the nut and washers are held in contact depends on the pitch of the screw-threads, but the amount of frictional contact of parts depends upon the area or diameter of contact-surface. The diameter and contact-surface C of the washer F is larger than the contact-surfaces of said washer with washer R, and hence should a jar or vibration or other motion tend to turn and loosen the parts on the bolt the smaller surface between the washers would be first to be overcome, as the surface C has greater resistance than said lesser surface; but, however, should the nut H be caused to turn backward independently it will engage the lip *a* of washer R and turn said washer with it and cause the inclines of said washer to move up the inclines of washer F more rapidly than the screw-threads advance the nut, and thus jam the nut more closely against the washer R, as the pitch of said inclines is greater than that of the screw-threads.

When it is desired to remove the nut from the bolt, a wrench is adjusted and applied to both nut and washers at the same time, and they are all turned backward together, and

as soon as they are started the jam of the nut is relieved, and the parts can be easily removed.

I am aware of the use of nut-locks wherein inclined faces and nuts and washers have been used, operating conjointly to lock the nut; but I am not aware of the use of any such device wherein the contact-surface of the base-washer against the fish-plate is greater than the contact-surface between said two washers, and where the inclined surfaces of said washers are of greater pitch than that of the screw-threads of the bolt, and where the washers are formed with faces or sides in size and form corresponding with that of the nut, so that a wrench can be applied to both washers and nut at the same time, and also where an intermediate washer having inclines and offsets corresponding with those of the base-washer and adapted to register therewith, and a lip for engaging the side of the nut to prevent the independent turning backward thereof, and wherein said parts are all combined and used as described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

1. The nut-lock shown and described, consisting of the combination of the base-washer F, having the enlarged bearing-surface C, face projection D, of less diameter than its bearing C, and having circular inclines and vertical offsets on said projection surrounding its opening, intermediate washer, R, having the extending side lip, *a*, and inclines and vertical offsets on its side or face opposite said lip corresponding and adapted to register with those of said base-washer, nut H, and the connecting-bolt B, having screw-threads of less pitch than said inclines, substantially as and for the purpose set forth.

2. The combination, with the bolt B and nut H, of the base-washer F, having the enlarged circular bearing C, vertical offsets S S, and circular inclines V V, of less diameter than said bearing C, and the intermediate washer, R, having the extending side lip, *a*, and vertical offsets and inclines on its opposite face corresponding and adapted to register with those of base-washer F, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name, in the presence of two witnesses, this 29th day of December, 1887, at Chicago, Illinois.

WINFIELD S. STARNES.

Witnesses:
W. R. CHURCH,
LESLIE MALONE.