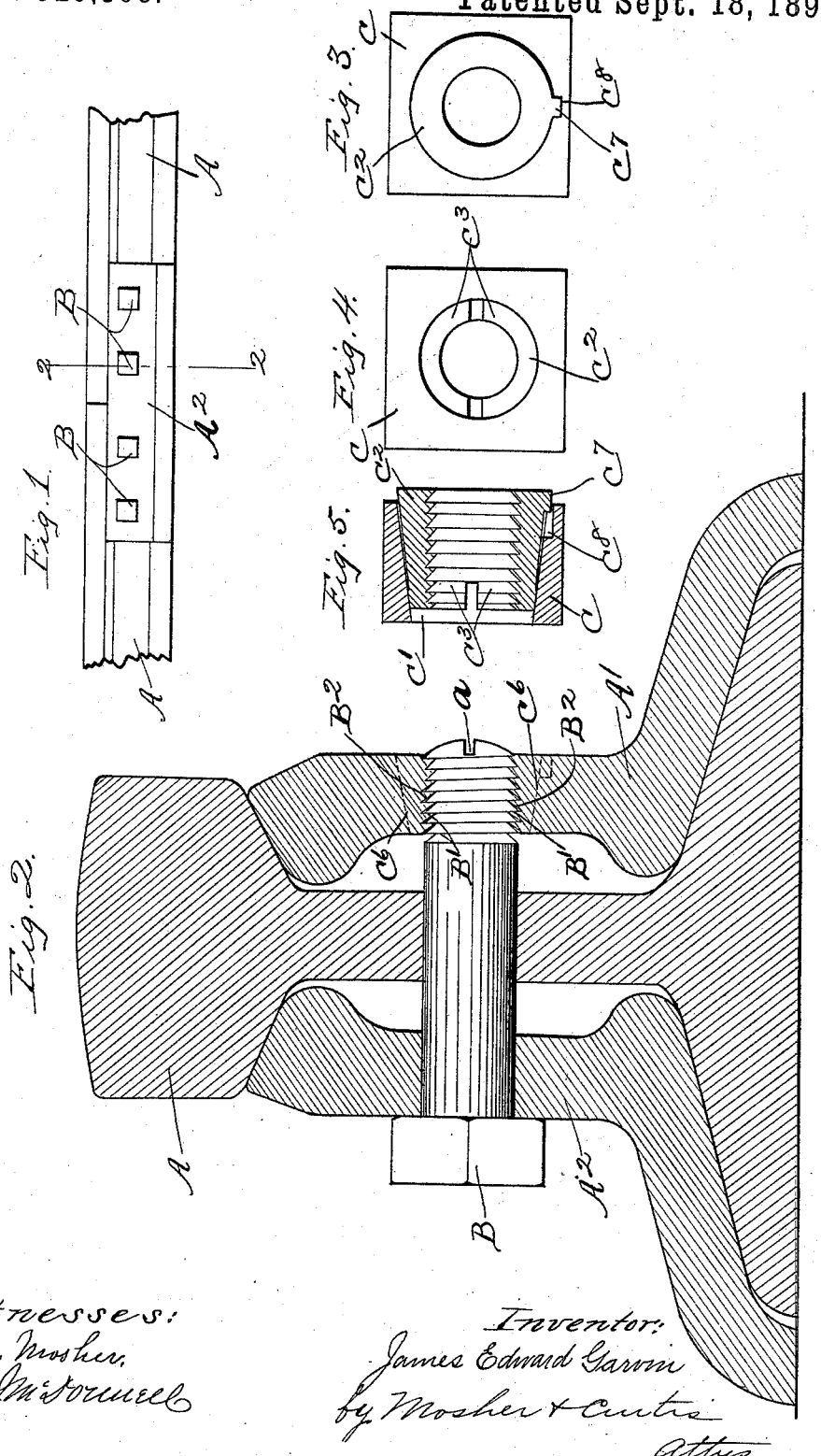
(No Model.)

J. E. GARVIN.

NUT AND BOLT LOCK.

No. 526,308. Patented Sept. 18, 1894.



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UNITED STATES PATENT OFFICE.

JAMES EDWARD GARVIN, OF MERRITT'S CORNERS, NEW YORK.

NUT AND BOLT LOCK.

SPECIFICATION forming part of Letters Patent No. 526,308, dated September 18, 1894.

Application filed May 23, 1894. Serial No. 512,190. (No model.)

To all whom it may concern:

Be it known that I, JAMES EDWARD GARVIN, a citizen of the United States, residing at Merritt's Corners, county of Westchester, and State of New York, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

My invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of my improved rail-joint. Fig. 2 is a vertical cross-section of the same taken on the broken line 2—2, in Fig. 1, enlarged. Fig. 3 is an end view of the detachable lock-nut, detached. Fig. 4 is a similar view of the opposite end of the nut. Fig. 5 is a central vertical section of the nut.

A—, A— are the rails which are connected by the joint-plates A'—, A^2— which lap the neighboring ends of the rails and embrace such ends between them, as shown in Fig. 1. The plates and the web of the rail are provided with apertures to receive the stay-bolts B—. The apertures in one of the plates, A'— are screw-threaded and adapted to receive and engage the screw-threaded end of the bolt. The threads are so formed on both bolt and plate that their working faces B'— are approximately vertical. The thread-groove in the plate is larger in diameter at the inner end of the aperture and gradually diminishes in diameter toward the outer or contracted end, thus forming an outwardly tapering aperture. I term the vertical faces the working faces of the threads, since they resist the tensile strain upon the bolt, and the inclined faces B^2— the idle faces because they do not assist in resisting such strain. As the bolt is screwed into the threaded aperture, the idle faces do not engage at all until the bolt is well into the aperture and engages its contracted portion so that the bolt is readily and easily started, but when the bolt reaches the contracted end of the aperture and has forcibly drawn the plates into engagement with the rails, not only the working faces are in close frictional engagement, but the idle faces have also been forced into a frictional engagement developing a resistance to the rotary movement of the bolt proportioned to the relative size of the contracted end of the threaded aperture and the threaded portion of the bolt, thereby locking the bolt against a rotary movement.

The working faces of the threads being vertical, the entire face of the thread on the bolt, inclosed by the threaded aperture, engages the thread on the apertured plate, whereas, if the working faces were inclined toward the bottom of the grooves, the working faces which would be brought into engagement in the larger end of the aperture would be comparatively small, and the thread in the contracted end of the aperture would be compelled to resist nearly all the strain, thereby weakening the parts; also, if that part of the threads taking most of the strain yielded before the strain was more evenly distributed throughout the length of the engaging threads, the pressure and frictional resistance between the idle surfaces would be materially reduced and the frictional lock, produced thereby, destroyed.

By making the working faces vertical, the strain is evenly distributed throughout the length of the threads in the first instance, and there will be no yielding of parts to reduce the frictional resistance of the idle surfaces, thereby maintaining the nut and bolt locked in a fixed position relatively to each other.

The nut may be the apertured joint-plate itself, as shown in Fig. 1, or it may be the detachable nut as shown in Figs. 3, 4, and 5, in which the body part of the nut C— is provided with an outwardly flaring tapered aperture C'— adapted to receive the sleeve C^2,— exteriorly tapered inwardly to approximately fit the aperture.

The sleeve is interiorly screw-threaded with a thread similar to that on the bolt, and its smaller end is bifurcated with the bifurcate arms C^3— slightly enlarged exteriorly so that as the sleeve is drawn into the body part of the nut by the bolt, the enlargements, engaging the inner beveled walls of the aperture in the body part of the nut, cause the

inner threaded surface of the bifurcate arms to firmly grip the threaded portion of the bolt, whereupon the nut has all the functions of the nut previously described, being smaller at its inner end than at its outer end.

It is obvious that the bifurcated beveled sleeve can be inserted in a correspondingly beveled aperture in the joint-plate itself, as indicated by the dotted lines C^6—.

To prevent the sleeve from rotating in the body-part of the nut, I provide the sleeve with a projecting lug C^7— adapted to be seated in the recess C^8— in the body-part.

When desired, the enlargement may be on the wall of the aperture at its contracted end, the essential feature being that the bifurcated portion of the sleeve should taper less than the contracted portion of the aperture.

When a bolt is secured by a separate nut on its threaded end in engagement with the joint-plate and the bolt becomes broken, the broken end of the bolt and the attached nut are thrown away; but when the bolt is screwed directly into one of the joint-plates, should a bolt of the usual construction become broken, it would be necessary to separate the parts of the joint in order to remove the broken threaded portion from the joint-plate. I therefore provide the bolt, when so employed, with a transverse screw-driver slot *a*— in its threaded end, thus permitting the threaded portion, when broken from the head, to be unscrewed from the plate without interfering with the other parts of the joint.

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

1. The combination with a screw-threaded bolt having a vertical working face on its thread, of a similarly threaded nut having its thread-groove varying in depth in different parts of the nut, substantially as described.

2. In a rail-joint, the combination with a bolt provided with a head on one end, and on the other end with a screw-thread having a vertical working face, of an apertured joint-plate on one side of the rails adapted to engage with the bolt-head, and an apertured joint-plate on the opposite side of the rails having its aperture threaded to correspond with the threads on the bolt and having its thread-groove varying in depth in different parts of the aperture, substantially as described.

3. A lock-nut comprising a body-part provided with an outwardly flaring beveled aperture, having a recess in the aperture-wall, a sleeve exteriorly beveled and interiorly threaded with a thread having a vertical working-face, the smaller end of the sleeve having yielding bifurcated members tapered less than the contracted part of the flaring aperture, substantially as described.

In testimony whereof I have hereunto set my hand this 11th day of May, 1894.

JAMES EDWARD GARVIN.

Witnesses:
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