

(No Model.)

J. F. COLLINS.
NUT LOCK.

No. 601,430.

Patented Mar. 29, 1898.

FIG.1.

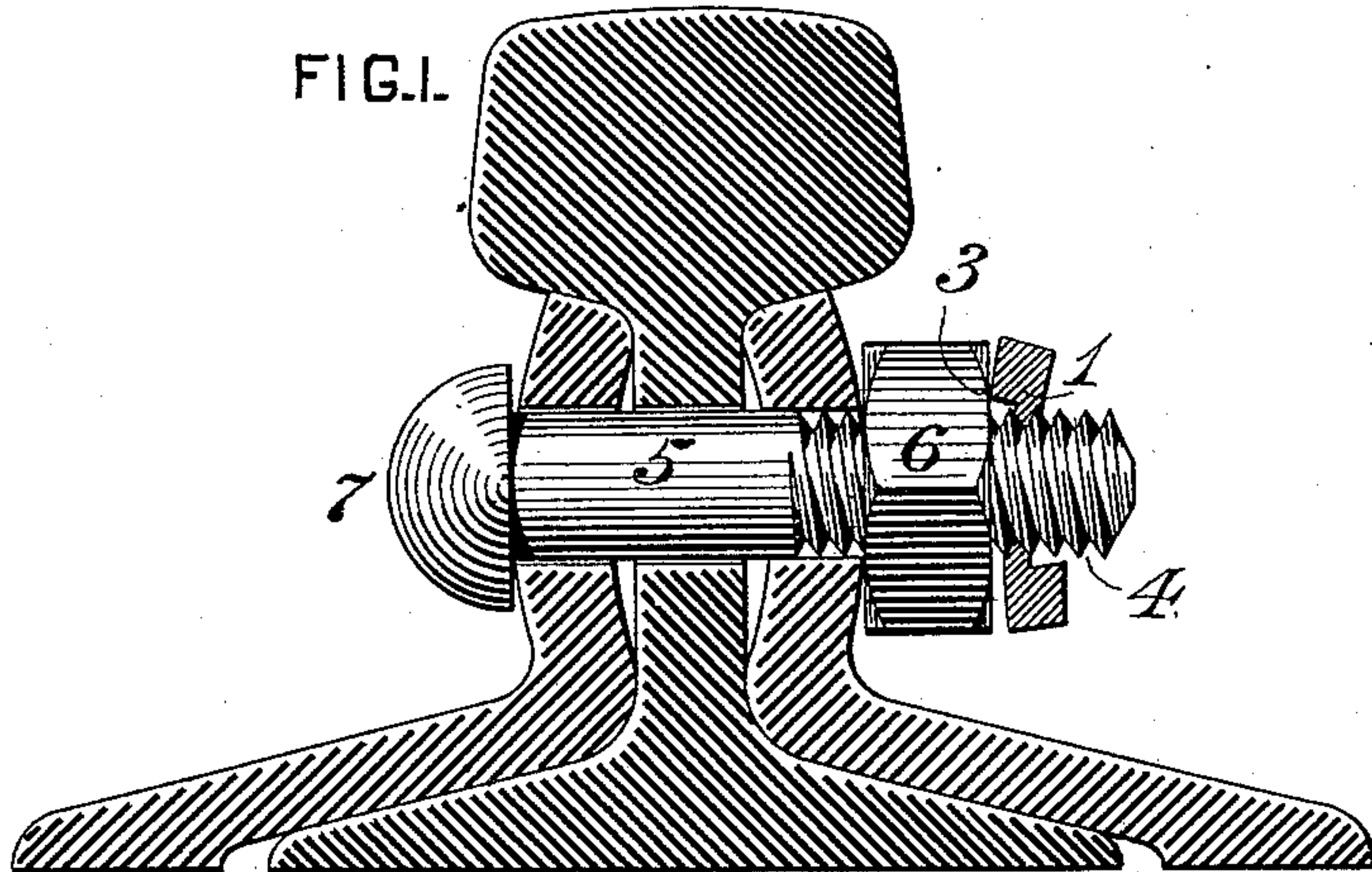


FIG.3.

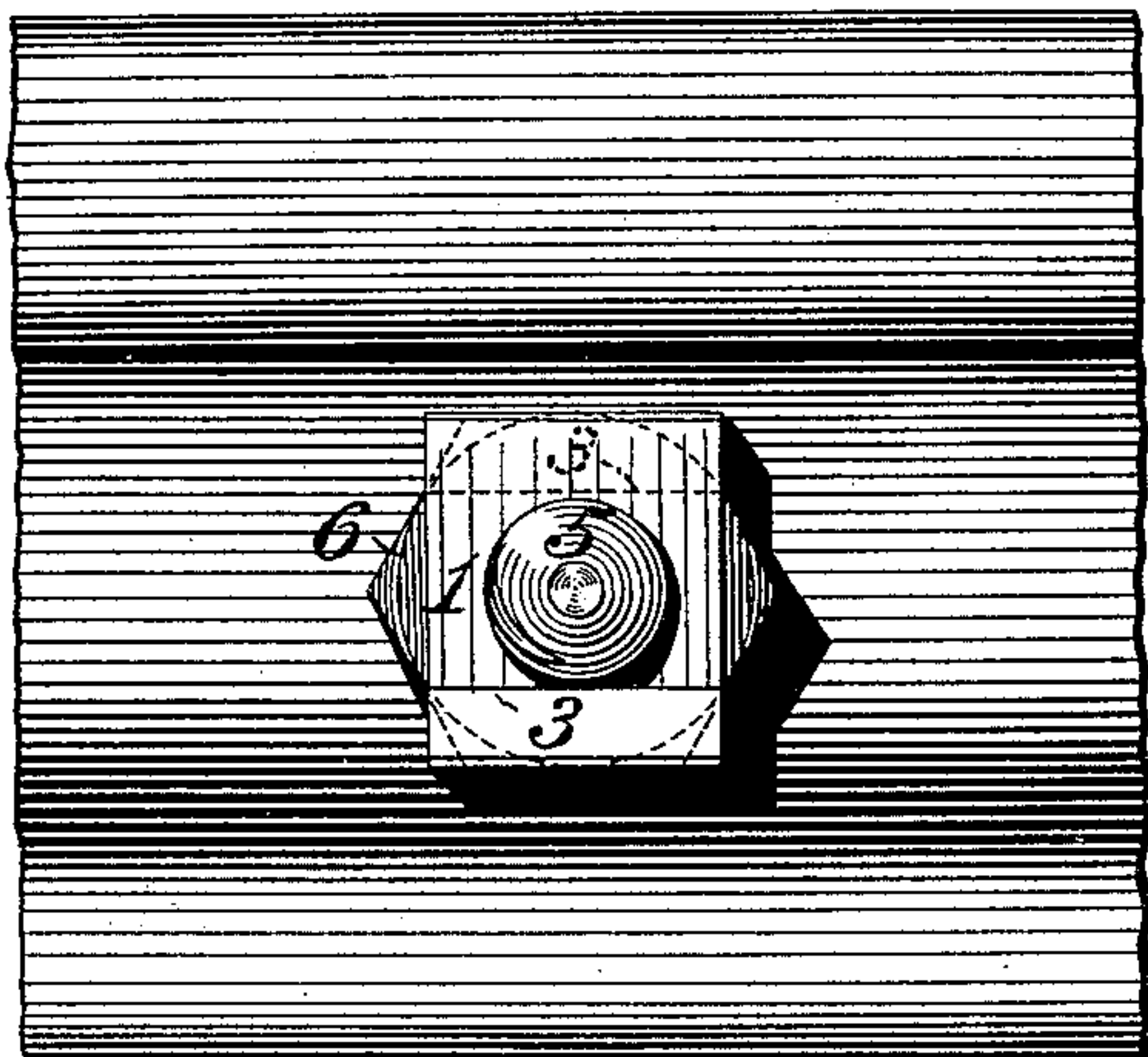


FIG.4.

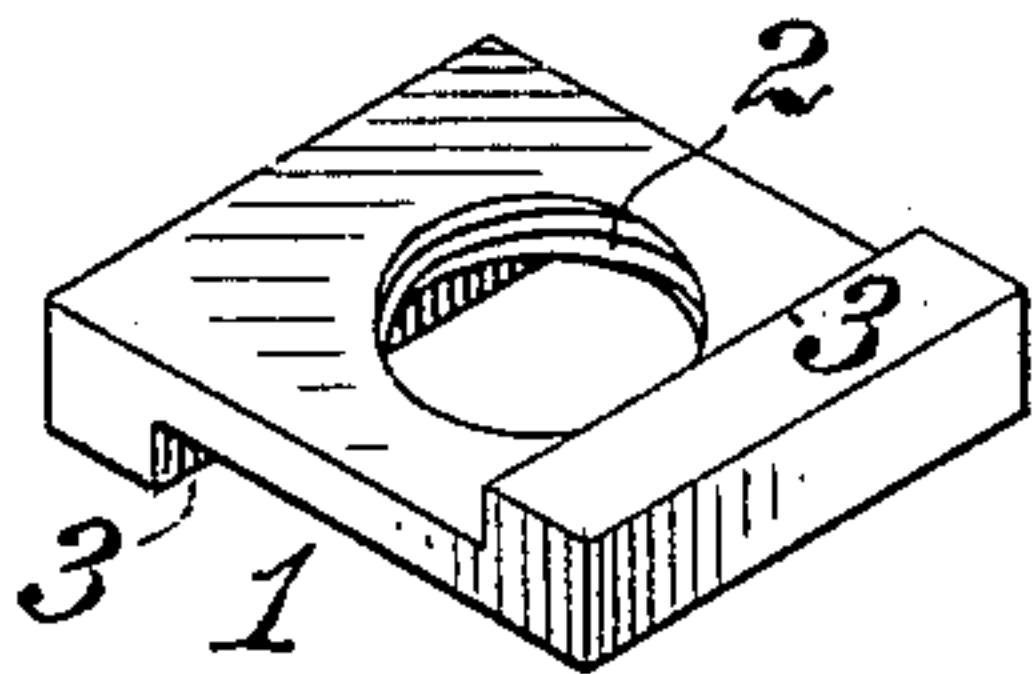


FIG.2.

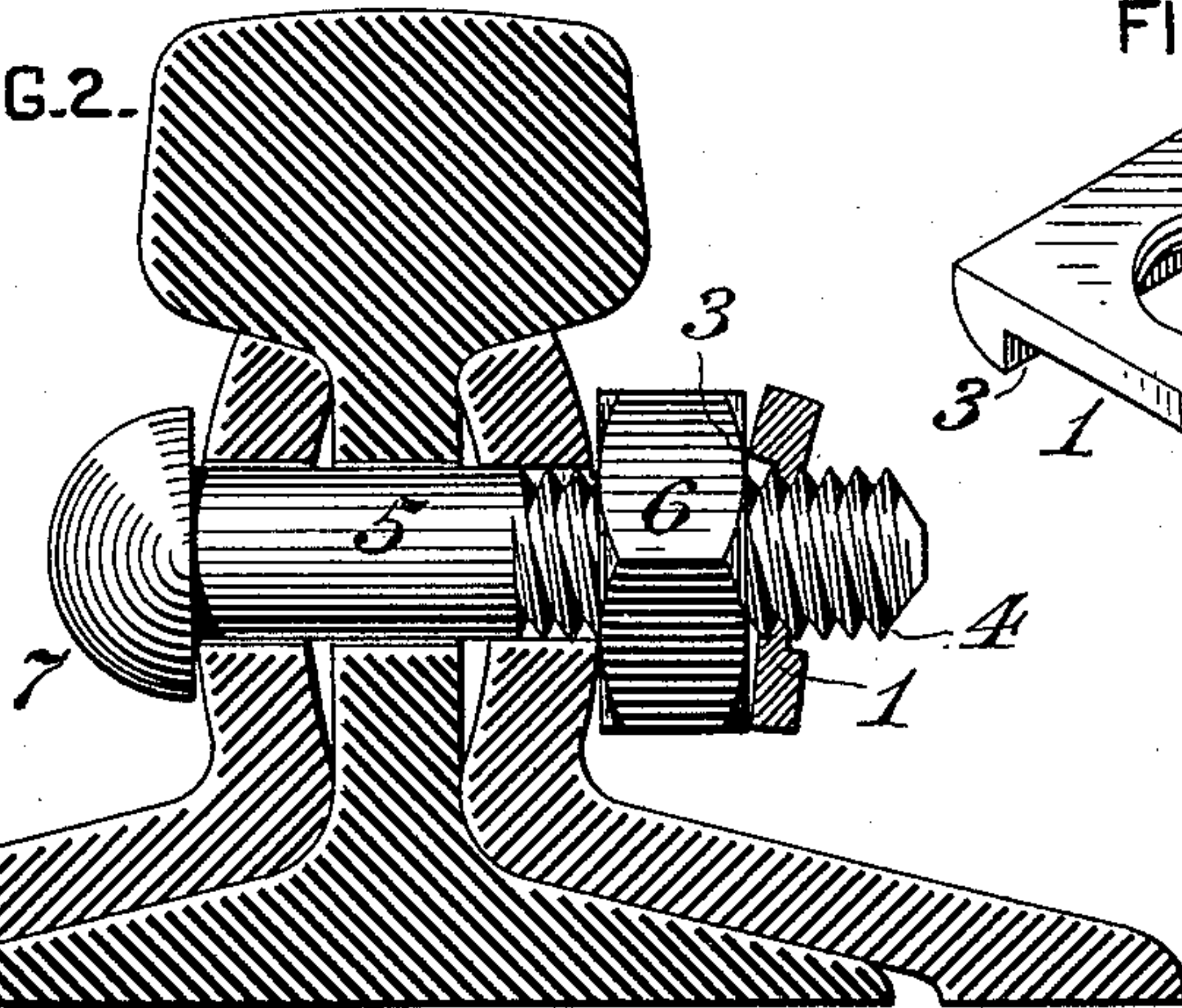
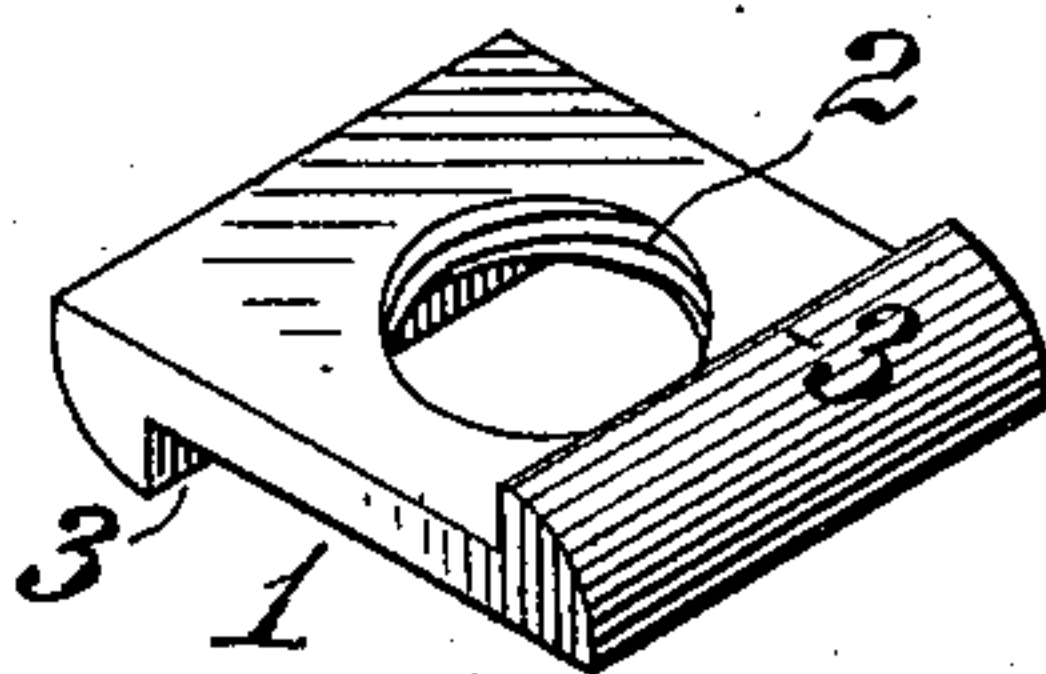


FIG.5.



WITNESSES:

D. J. Hogan.
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INVENTOR:

James F. Collins,
By J. Mendenhall,
Att'y.

UNITED STATES PATENT OFFICE.

JAMES F. COLLINS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO FREDERICK T. ASCHMAN, OF SAME PLACE.

NUT-LOCK.

SPECIFICATION forming part of Letters Patent No. 601,430, dated March 29, 1898.

Application filed August 16, 1895. Renewed January 31, 1898. Serial No. 668,671. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. COLLINS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Nut-Locks, of which improvement the following is a specification.

My invention relates to appliances of the class known as "nut-locks," which are designed to prevent the accidental slackening or backing off of a nut from its bearing on a member connected with another by a screw-bolt under the action of jars or shocks to which the parts are exposed in service.

The object of my invention is to provide a device of such character which shall be of simple and inexpensive construction, which may be used upon occasion without a main nut, and which will effectually resist the loosening action of jars, shocks, or vibrations in service.

To this end my invention, generally stated, consists in a locking-plate having an internal screw-thread adapted to engage the thread of a screw-bolt and a raised bearing edge exterior to the thread and projecting from a surface of the plate which is transverse to the axis of the thread.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figures 1 and 2 are transverse sections through a railroad-rail and splice-bars, illustrating the application of my invention in connection with the ordinary bolt and nut of a rail-joint; Fig. 3, a side view in elevation of the same in the position of Fig. 1; Fig. 4, an isometrical view of the locking-plate detached, and Fig. 5 a similar view showing a modified form.

In the practice of my invention I provide a flexible locking-plate 1, which is preferably of steel or wrought-iron, and may be of rectangular, square, hexagonal, or other desired form suitable for the application of a wrench. An internal screw-thread 2 is cut on the flexible locking-plate, said thread being slightly greater in diameter than the external thread

4 of the screw-bolt 5, to which the locking-plate is to be applied, so that the latter may be an easy fit upon the former to enable its tightening function to be exerted in the manner presently to be described. A raised exterior portion of the plate provided with a comparatively sharp bearing or biting edge 3 is formed upon one, or, if preferred, upon each, of the surfaces of the locking-plate which are transverse to the axis of its screw-thread 2, said raised portion being exterior to the screw-thread and projecting or being raised a short distance above the surface of the plate.

In the instances shown in the drawings a bearing and biting edge 3 is formed on each side of the locking-plates, these edges being located on opposite sides, respectively, of the opening in which the thread 2 is cut, such construction rendering the locking-plate reversible, if required, and also giving it greater strength. The surface of the plate from the bearing edge to the adjacent outer side may be either substantially parallel with that of the opposite side, as shown in Figs. 1, 2, and 4, or it may extend angularly thereto or curved therefrom, as in Fig. 4, so as to remove a portion of the metal on the outer side of the bearing edge 3 and give the latter more of the character of a cutting edge.

The locking-plates may be cheaply manufactured by rolling long plates of the desired transverse section, cutting them into proper lengths to form the plates, and tapping the internal screw-threads of a number of the cut sections in a single operation.

The device is ordinarily applied in connection with a main nut 6, which engages the thread 4 of a screw-bolt 5 and serves to connect two or more plates or other elements through which the bolt passes and which it is desired should be maintained tightly clamped together between the head 7 of the bolt and the main nut 6—as, for example, a rail and two splice-bars, as shown. The main nut 6 is first screwed to a proper bearing against the adjacent plate or other connected element, and the locking-plate is then screwed

up against the opposite or outer face of the main nut. When the raised portion of the locking-plate has been brought into contact with the adjacent face of the main nut, the continued application of power to the wrench, by which the locking-plate is turned on the screw-thread 4 of the bolt 5, causes a tilting of the raised portion and a bending of the flexible portion and forces the bearing edge 3 of the locking-plate to a tight bearing against the main nut and partly by reason of the slightly-loose fit of the locking-plate on the thread 4 and partly through the elasticity of the metal of the locking-plate and of the thread 4 forces the locking-plate into a position of greater or less inclination and twist (depending on the power applied to the wrench) relatively to the axis of the bolt and the surface of the main nut.

When in such inclined position as shown in Fig. 1, the bearing edge 3 of the locking-plate is held tightly against and bites into the surface of the main nut, and an elastic resistance is interposed through the locking-plate between the main nut and the thread 4 of the bolt, by which both the main nut and the locking-plate are effectually prevented from being slackened or backed off from their respective bearing-contacts by any jar, shock, or vibration to which the construction may be subjected. The inclination and twist of the locking-plate and the elastic resistance may be increased by the further application of power to the wrench until the locking-plate is brought to a bearing on the main nut on the side of the bolt opposite to the bearing edge 3, as shown in Fig. 2, the tightness with which the members are locked being in such case correspondingly increased.

It will be seen that in the application of my improvement no modification in the ordinary bolt and main nut is required and that the locking device is simple, inexpensive, and of very small compass, so as to be practicable in any location in which the locking of a nut is necessary or desirable. The locking-plate may also be employed without a main nut in many places where a permanent but readily detachable connection under a resistance

which does not impose strain beyond the capacity of the locking-plate is required.

I claim as my invention and desire to secure by Letters Patent—

1. A locking-plate comprising a flexible portion provided with a screw-thread adapted to engage the thread of a screw-bolt, and a raised bearing exterior to the flexible portion, which is provided with a biting edge and which is adapted to be tilted to bend the flexible portion of the plate and to bring the biting edge into holding position, substantially as set forth.

2. The combination of a screw-bolt, a locking-plate comprising a flexible portion provided with a screw-thread of greater diameter than the screw-thread of the bolt, and a raised bearing exterior to the flexible portion, which is provided with a biting edge and which is adapted to be tilted to bend the flexible portion of the plate so as to cause the threads on the flexible portion to bind on the threads of the bolt and to bring the biting edge into holding position, substantially as set forth.

3. A reversible locking-plate comprising a flexible portion provided with a screw-thread adapted to engage the thread of a screw-bolt, and raised bearings exterior to the flexible portion, which are provided with biting edges and which are adapted to be tilted to bend the flexible portion of the plate and to bring a biting edge into holding position, substantially as set forth.

4. The combination of a screw-bolt, a main nut threaded to engage the bolt, a flexible locking-plate having an internal screw-thread of greater diameter than the bolt, and a raised bearing exterior to the flexible portion of the plate which is adapted to be tilted to bring one of its edges into holding position as the flexible portion is bent by being screwed up on the bolt, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES F. COLLINS.

Witnesses:

J. SNOWDEN BELL,
W. H. ERSKINE.