

No. 666,334.

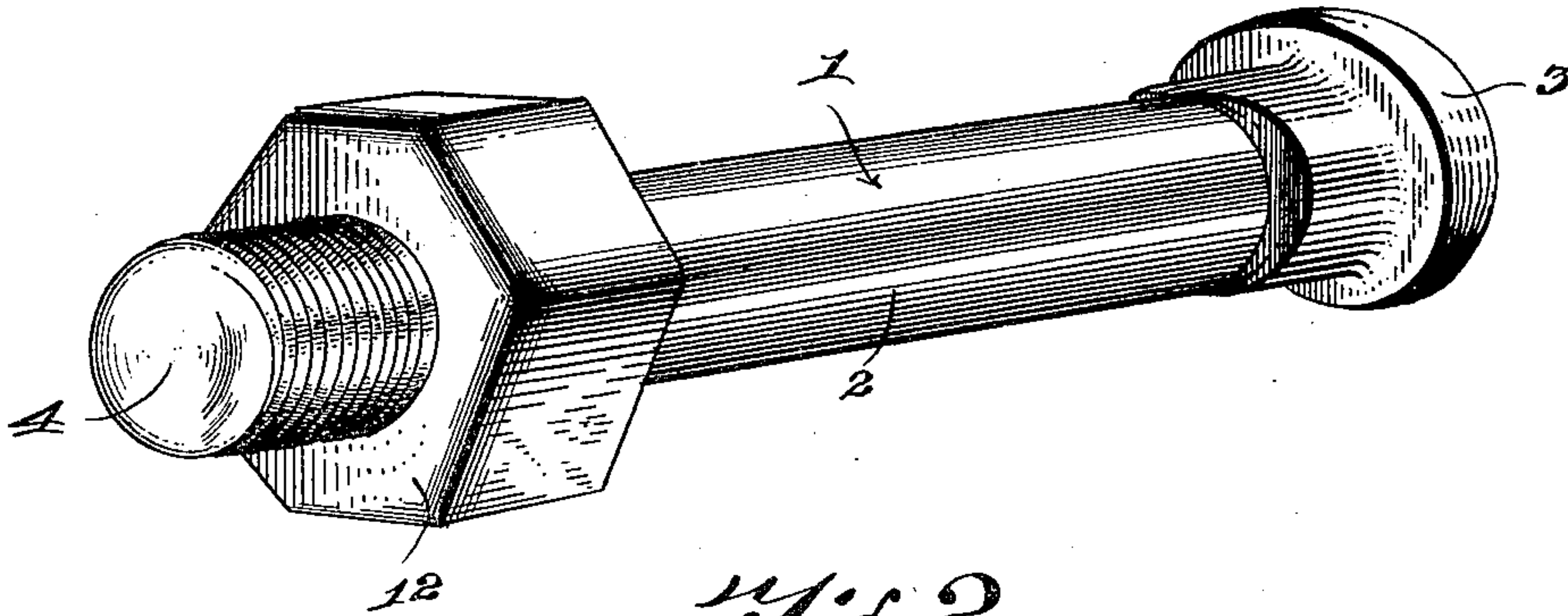
Patented Jan. 22, 1901.

J. W. STEWART.  
NUT LOCKING BOLT.

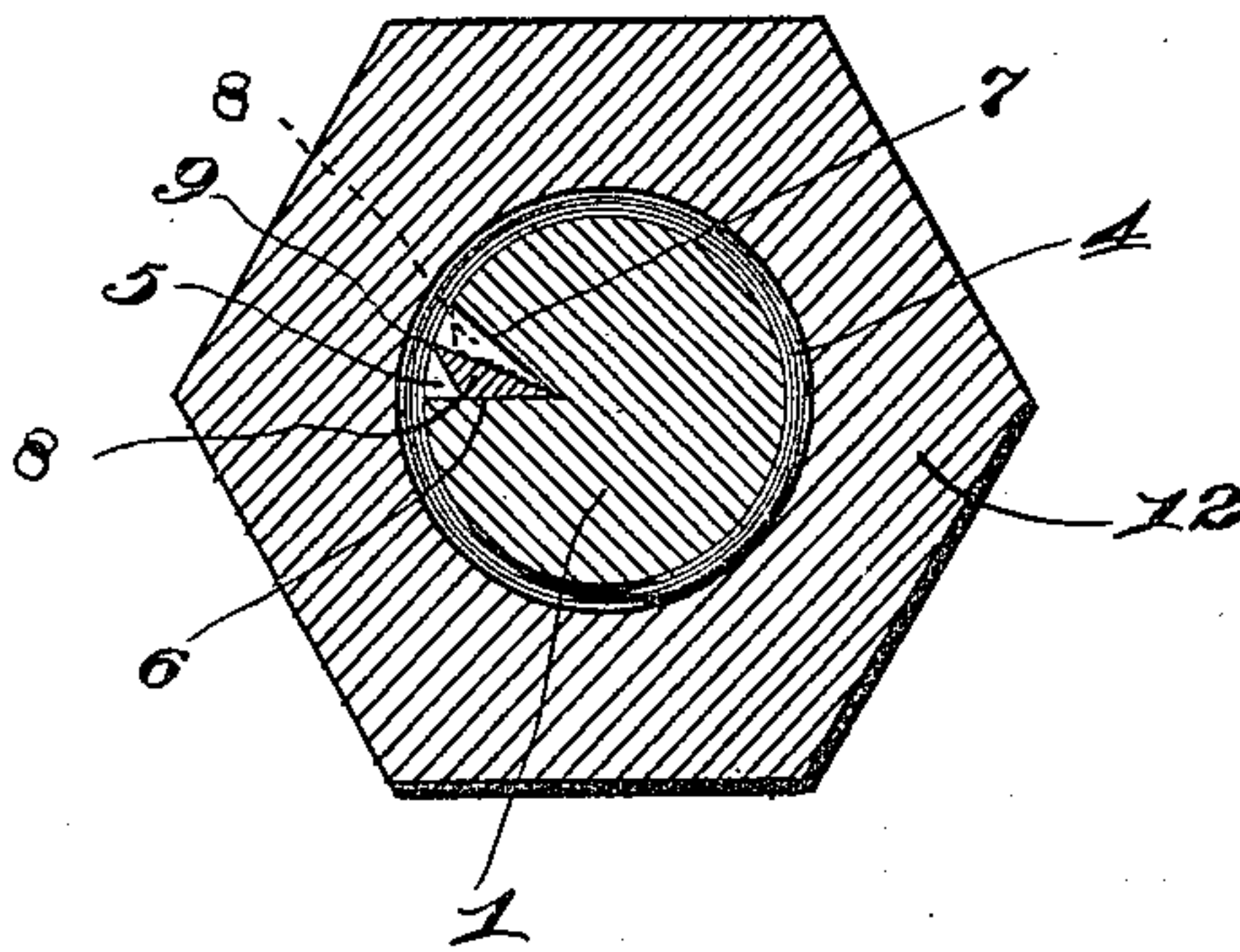
(Application filed July 27, 1900.)

(No Model.)

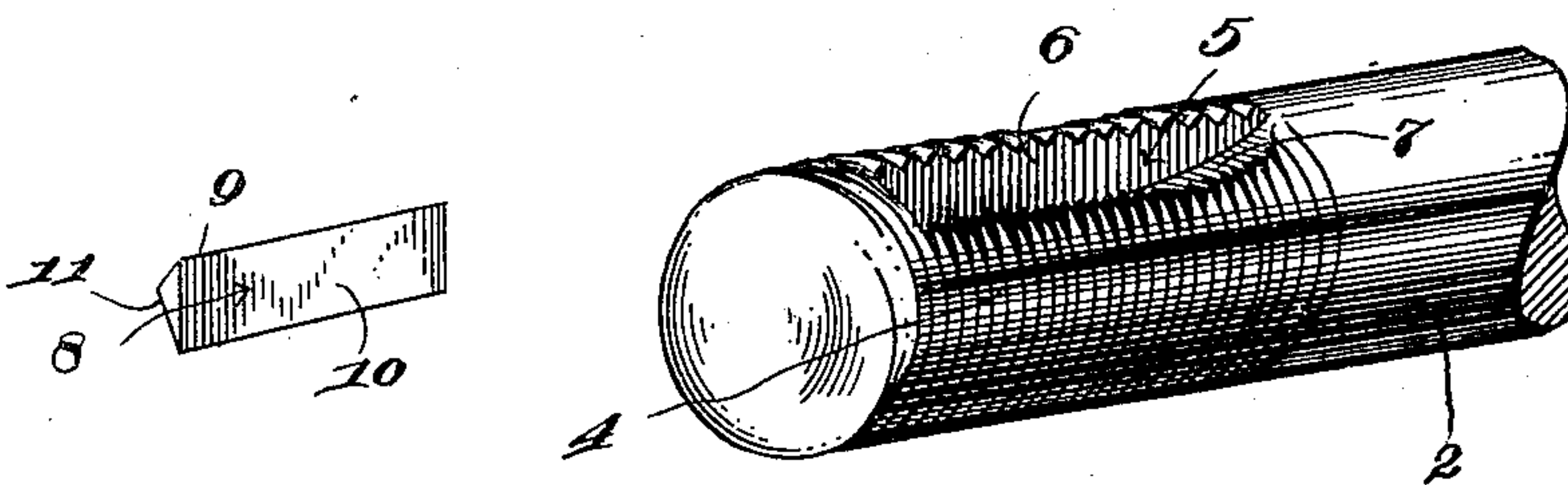
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN WESLEY STEWART, OF TYRONE, PENNSYLVANIA.

## NUT-LOCKING BOLT.

SPECIFICATION forming part of Letters Patent No. 666,334, dated January 22, 1901.

Application filed July 27, 1900. Serial No. 25,039. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WESLEY STEWART, a citizen of the United States, residing at Tyrone, in the county of Blair and State of Pennsylvania, have invented a new and useful Nut-Locking Bolt, of which the following is a specification.

This invention relates to a nut-locking bolt; and the object of the same is to provide a simple and effective device of this character for use particularly in coupling or securing railroad rails or iron or for other purposes where it is desired to have a nut applied in such manner as to resist accidental disconnection by vibration, and especially to avoid producing any particular nut construction and utilize the ordinary form of nut and also avoid weakening the bolt at any portion having the strain brought to bear thereon and incident to securing adjacent parts therewith, the nut in the present arrangement being free to be run on the bolt, but obstructed in the opposite movement off the bolt until freed by means which will be hereinafter explained.

The invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of a bolt and nut embodying the improved construction and illustrating the nut as originally made and without mutilation. Fig. 2 is a transverse vertical section through the nut and bolt, showing the inclosed loosely-mounted key and seat therefor wholly within the bolt. Fig. 3 is a detail perspective view of the screw-threaded extremity of the bolt, showing the key-seat therein, and to one side illustrating the key in detail perspective.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a bolt of the usual form of construction and embodying a shank 2, with a head 3 and a screw-threaded extremity 4, the latter having a key-seat 5 formed therein and extending longitudinally of the bolt and provided with a straight wall 6, in a plane diametrical of the bolt, and an outwardly-inclined wall 7. The outer termination of the seat is inward from the free end of the bolt, and said seat extends from this

point the full length of the screw-threads of the nut-receiving extremity, and by the provision of the walls 6 and 7, as set forth, the seat is given a form similar to a right-angular triangle inverted. Within the seat a key 8 is loosely mounted and is of scalene triangular form to provide an elongated sharp biting edge 9, which stands outermost, the greatest width of the key being materially less than the greatest width of the seat in order to permit the said key to have free gravitating movement. The longest face or side 10 of the key when bearing against the wall 7 of the seat will cause the edge 9 to exactly aline with bases of the screw-threads of the bolt; but when the opposite shorter side 11 of said key is against the wall 6 the biting edge will be projected beyond the bases of the bolt-threads or occupy a locking position, as clearly shown in Fig. 2. An ordinary nut 12 is used in connection with the bolt, and when run onto the latter the key will be automatically thrown over against the wall 7, or toward the right, and the nut will be free for tight application, as may be desired. A forceful attempt to turn the nut to the left or a tendency of movement of the nut in said direction will be absolutely obstructed by reason of the fact that the key will return to a left position and the biting edge will catch into the threads of the aperture of the nut, as shown by Fig. 2.

In the preparation of the bolt the seat is located on the left side, and the key will always have a tendency to gravitate toward the side or wall 6 of the said seat, and when the key is in locking position the lower reduced portion will be firmly held in the angle of the seat by being braced against the lower wall, which will be the straight wall 6. It will be understood that the structure would be reversed in a left-hand-threaded bolt and nut, and in arranging the bolt in vertical securing position it is necessary to insert a suitable implement in the seat after the nut has been run on a sufficient distance to place the key in locking position or to bring the biting edge 9 thereof in contact with the nut-threads and then complete the lock by forcefully turning the nut against the key by means of a wrench or like device. It has also been found by experiment that when the bolt is disposed hori-



zontally with the key-seat in such position that the key will not be affected by gravitation to assume a locking position or to throw the biting edge thereof into contact with the threads of the nut a slight tap on the side of the bolt, in accordance with a right or left position thereof, will cause the key to jump, as it were, into locking position, and a slight pressure on the nut in the direction to turn the same off the bolt will immediately institute a firm locking engagement between the key and the nut. The same operation can be pursued in releasing the key in a reverse direction, the tap to release being delivered at a point opposite a tap to secure and at the same time apply a turning pressure in a direction to run the nut on the bolt. It will also be seen that the outer portion of the key has the greatest weight, and consequently the gravitating movement thereof results, the key automatically moving on the inner reduced edge as a fulcrum.

Another mode of removing the nut when the device is arranged in a horizontal position, as in connecting rails or similarly-positioned structures, is to drill a hole in the end of the bolt to give access to the seat and permit manipulation of the key in a longitudinal direction by the insertion of a suitable small tool to press the biting edge out of engagement with the threads of the nut. Other means may also be employed for releasing the key; but under all conditions and arrangements the key will prevent any movement of the nut off the bolt in an accidental manner.

The advantages of the improved construction are the use of only a single nut and the absolute certainty of its action in preventing the bolt from loosening. It is not affected by a loss of temper or resiliency, as in some locking structures of this character, and its effective operation will not be in the least modified by the action of the natural elements. The nut can be fully screwed home and immediately locked without requiring the insertion of pins or upsetting or bending other attachments. The nut is not in the least changed and is not weakened by a multiplicity of grooves or like devices in any of its faces or sides, and the cost of manufacture and application is reduced to a minimum.

It will be obviously apparent that changes in the form, size, proportions, and minor details may be resorted to without in the least departing from the principle of the invention.

Having thus described the invention, what is claimed as new is—

1. In a nut-lock, the combination with a nut having the ordinary screw-threaded aperture therethrough without counter recesses therefrom, of a bolt having a threaded extremity to receive said nut, said threaded bolt extremity having a longitudinally-extending recess therein with its outer termination inward from the end of the bolt, the walls of the recess converging to an inner terminal acute angle and the one wall having a greater angle than the other, and an unattached key of less maximum transverse extent than the recess and movably fitted in the latter, said key being of irregular triangular contour and having an inner acute angular edge to fulcrum in the inner terminal acute angle of the walls of the recess and an outer end in an oblique plane to projecting one sharpened edge in advance of the other so that said key when moved to a locking position in relation to the nut-threads will in full width exceed the distance between the inner acute angular terminal of the recess and the said nut-threads.

2. In a nut-lock, the combination with a nut having the ordinary threaded aperture therethrough, of a bolt with a threaded extremity having a longitudinally-extending recess therein, said recess having opposite inwardly-converging side walls, and an unattached angular key loosely mounted in the said recess before the nut is applied to the threaded extremity of said bolt and adapted to be automatically thrown into locking or unlocking position at the proper time by a sudden vibratory tap on reverse sides of the nut, the said key having an inner reduced edge to loosely fulcrum on the inner angle of convergence of the recess-walls and an outer projected biting edge.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN WESLEY STEWART.

Witnesses:

J. R. EVANS,  
W. H. FLENNER.