

M. D. KOPPLE.
NUT LOCK.
APPLICATION FILED SEPT. 21, 1908.

1,060,687.

Patented May 6, 1913.

Fig. 1,

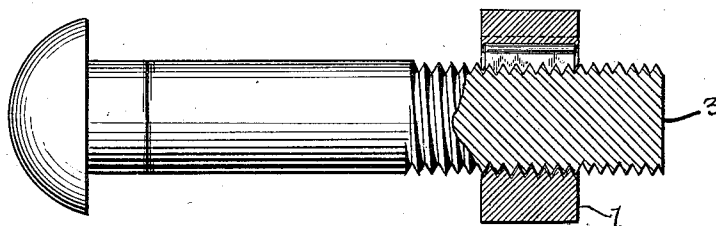


Fig. 2,

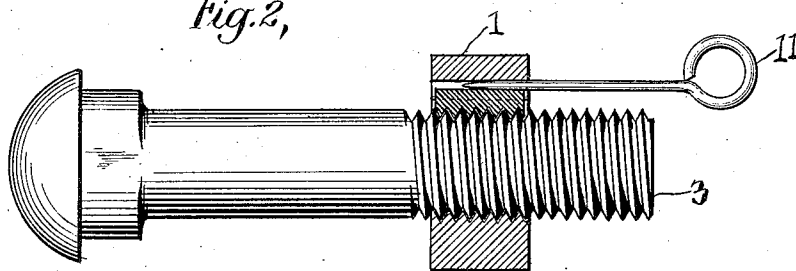


Fig. 3,

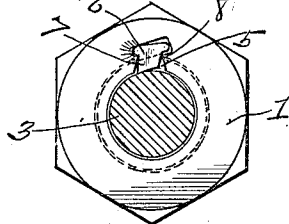


Fig. 4,

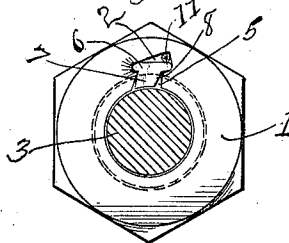
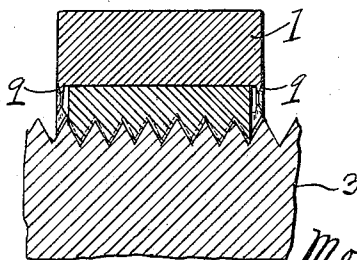


Fig. 5,



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NUT-LOCK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MORRIS D. KOPPLE, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Nut-Locks, of which the following is a specification.

My invention relates to locking devices; and, while it may be embodied in constructions adapted for various purposes, it is more particularly applicable to nut-locks.

Objects of the invention are to provide a device of the character referred to which is simple, cheap, and durable in construction; whose parts are few and securely arranged; and which is highly efficient in operation. These and other objects of the invention will in part be obvious and in part be made clear from the following description.

My invention consists in the novel parts, improvements, combinations, and features of construction herein shown and described.

In the accompanying drawing, which is referred to herein and forms a part hereof, is illustrated an embodiment of my invention, the same serving in connection with the description herein to explain the principles of the invention.

Of the drawing: Figure 1 is a diametrical section of a nut and bolt embodying my invention, part of the bolt being shown in side elevation; Fig. 2 is a diametrical section of a nut and a side elevation of a bolt and key; Fig. 3 is an end view of the nut, the bolt being shown in cross-section and the locking member of the nut in its locked position; Fig. 4 is a similar view, showing the locking member in its unlocked position; and Fig. 5 is a section on an enlarged scale, illustrating certain details.

A nut-lock constructed in accordance with one feature of my invention includes in combination, a nut, a recess in said nut, a communicating passage between said recess and the threaded interior of the nut, and a locking member arranged in said recess and passage and adapted to swing therein.

A nut-lock constructed in accordance with certain other features of my invention includes in combination, a nut, a recess extending through said nut substantially parallel with the threaded interior thereof and being enlarged at one end, a communicating passage between said recess and said threaded interior, the side walls of said passage diverging toward said interior, and a lock-

ing member comprising a main portion arranged in said recess and a branch portion arranged in said passage, one side of said branch portion lying at an obtuse angle to said main portion and the interior surface of said branch portion being threaded to conform to the said threaded interior, and the recessed portion of the nut being extended over said recess at both ends and upset to engage the respective end surfaces of said locking member.

Referring now in detail to the drawing, the embodiment of the invention illustrated comprises a nut 1 having a recess extending, preferably, through said nut substantially parallel with the threaded interior thereof. In order to permit of a swinging motion by a locking member, to be hereinafter referred to, said recess is gradually enlarged, see Fig. 4, toward one end thereof and in the direction in which the nut is turned to screw it onto the bolt 3. A passage 5 communicates between said recess and the threaded interior of the nut, the sides of said passage, preferably and as shown, diverging in the direction of said threaded interior. A locking member, preferably consisting of a main portion 6 and a branch portion 7, one of whose sides 8, as shown, lies at an obtuse angle to said main portion, is arranged in said recess and passage, the interior surface of said branch portion of said locking member, preferably and as shown, being threaded to conform to the threaded interior of the nut. To confine the locking member in said recess and passage, in the embodiment of the invention illustrated the recessed portion of the nut is extended at both ends of the recess to form portions 9 which are upset to contact with the respective end surfaces of said locking member.

The operation of the device is as follows: The nut 1 is screwed upon the bolt 3 to the desired point, the branch portion 7 of the locking member inclining in a direction opposite to that in which the nut is turned and the main portion 6 of said locking member abutting against the shoulders formed by the sides of the recess toward the threaded interior of the nut, as shown in Fig. 4. Should it be attempted, however, to turn the nut in the opposite direction or unscrew it from the bolt, the locking member will swing slightly upon its end in the smaller portion of the recess 2, the swinging movement being

permitted by the communicating passage 5 and enlarged portion of the recess 2 so that the locking member is thrown out of inactive relation with the bolt 3 and into locking contact with the same, so that the greater the pressure exerted to unscrew the nut, the harder the locking member will bite. If it is desired, however, to unscrew the nut, this can be done by simply inserting any convenient instrument, as the key 11, which can consist, for example, of a piece of wire of a proper size, in the enlarged portion of the recess 2, see Figs. 2 and 4, where the key will hold the locking member in inactive relation with the bolt so that the nut can be removed.

By reason of the fact that the recess in the nut is, preferably and as shown, of relatively wider dimension at one side than at the other, and by reason of the form of the locking member (comprising the pivot and branch-portions), and by reason also of the fact that the passage extending from the recess to the threaded interior of the nut is of relatively less width than that of the recess, said locking member is caused to fulcrum in the narrow portion of the recess, the enlarged portion of the recess at the opposite side permitting an oscillatory movement of the locking member whereby there is presented, between the outer wall of the pivot-portion of the locking member and the wall of the recess, a space into which the key 11 may be inserted. At least two important advantages flow from this construction: First, the key is positioned against a portion of the locking member remote from the threaded portion thereof, so that the thread on the stem of the bolt is in no way endangered by the insertion of said key; and, secondly, the locking member is permitted to swing so that, when in one position—while the nut is being positioned on the threaded portion of the bolt—it will readily ride over the surface of the threaded portion of the bolt, and, when in another position, have an effective holding action when it engages the thread of the bolt. The channel formed by the recess and passage, aforementioned, is, therefore, of such dimensional area that the required bodily oscillatory movement of the locking-member is permitted.

It will be seen that a nut-lock constructed in accordance with my invention is simple, cheap, and durable; has few parts, which are securely protected from loss or disarrangement; and can be unlocked with the simplest tool. Other advantages will be apparent to those skilled in the art.

My invention in its broader aspects is not limited to the precise construction shown and described nor to any particular construction by which the same has been or may be carried into effect, as many changes may be made in the details thereof without de-

parting from the main principles of the invention or sacrificing its chief advantages.

I claim:

1. A nut-lock including in combination, a nut provided with a channel extending through said nut substantially parallel with the threaded portion thereof and with a communicating passage extending between said channel and the bore of the nut, said channel being at one side of relatively greater dimensional area than at the other side, and a locking member comprising pivot and branch-portions adapted to be housed in said channel and communicating passage and of dimension less than those of the channel and communicating passage whereby said member may have a limited oscillatory movement in the channel and present above the pivot-portion of the locking member a key-receiving space.

2. A nut lock including in combination, a nut provided with an elongated recess and with a communicating passage extending between said recess and the threaded interior of the nut, said recess being of relatively wider dimension than said passage, and a locking member housed in said recess and passage and comprising a pivot portion occupying a position in said recess, and an engaging portion adapted to engage the stem of a bolt or the like and occupying a position in said passage and extending at an angle from said pivot portion, the aforementioned recess being of dimensions greater than said pivot portion of said locking member whereby a positioning instrumentality may be inserted into the recess and against said pivot portion.

3. A nut lock including in combination, a nut provided with an elongated recess of larger dimensional area at one side than at the other and extending through the nut substantially parallel with the threaded interior thereof; said nut also being provided with a communicating passage between said recess and said threaded interior and having its walls arranged at an angle to each other; and a locking member housed in said recess and channel and comprising a pivot portion and an integral branch portion, said pivot portion being adapted to fulcrum at the narrow portion of said recess and to have a limited movement at the opposite portion thereof; the sides of said branch portion being converged and adapted to engage, respectively, the walls of said passage.

4. The combination of a bolt and a self-locking nut, said nut being provided with an elongated recess extending through said nut substantially parallel with the threaded interior thereof and being of relatively larger dimension at one side than at the other, a communicating passage between said recess and said interior and of a width less than that of said recess, and a locking member

housed within said recess and passage and comprising a pivot portion and a branch portion, said pivot portion being of a width relatively greater than that of said branch portion and adapted to fulcrum in the narrow portion of said recess and to have a limited movement at its opposite side in the larger portion of said recess, one side of the branch portion lying at an obtuse angle to the pivot portion, and the interior surface of said branch portion being threaded to conform to the threaded interior of the nut; said nut being extended over said recess at both ends and upset to engage the respective end surfaces of said locking member; the aforementioned enlarged portion of said recess being sufficient to receive a key inserted to prevent a swinging movement of the locking member.

5. A nut lock including in combination, a nut, a recess extending through said nut substantially parallel with the threaded interior thereof, a communicating passage between said recess and said threaded interior, and a

locking member comprising a main portion arranged in said passage, one side of said branch portion lying at an obtuse angle to said main portion and the interior surface of said branch portion being threaded to conform to the threaded interior of the nut, said locking member being adapted and arranged to be swung into operative position by the movement of the nut, and the body of the nut being extended over said recess at both ends and upset to engage the respective end surfaces of said locking member, said recess being enlarged at one end whereby said swinging movement of said locking member is permitted and a key can be inserted to prevent said swinging movement of said locking member.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

MORRIS D. KOPPLE.

Witnesses:

EMMA H. FISHER,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."