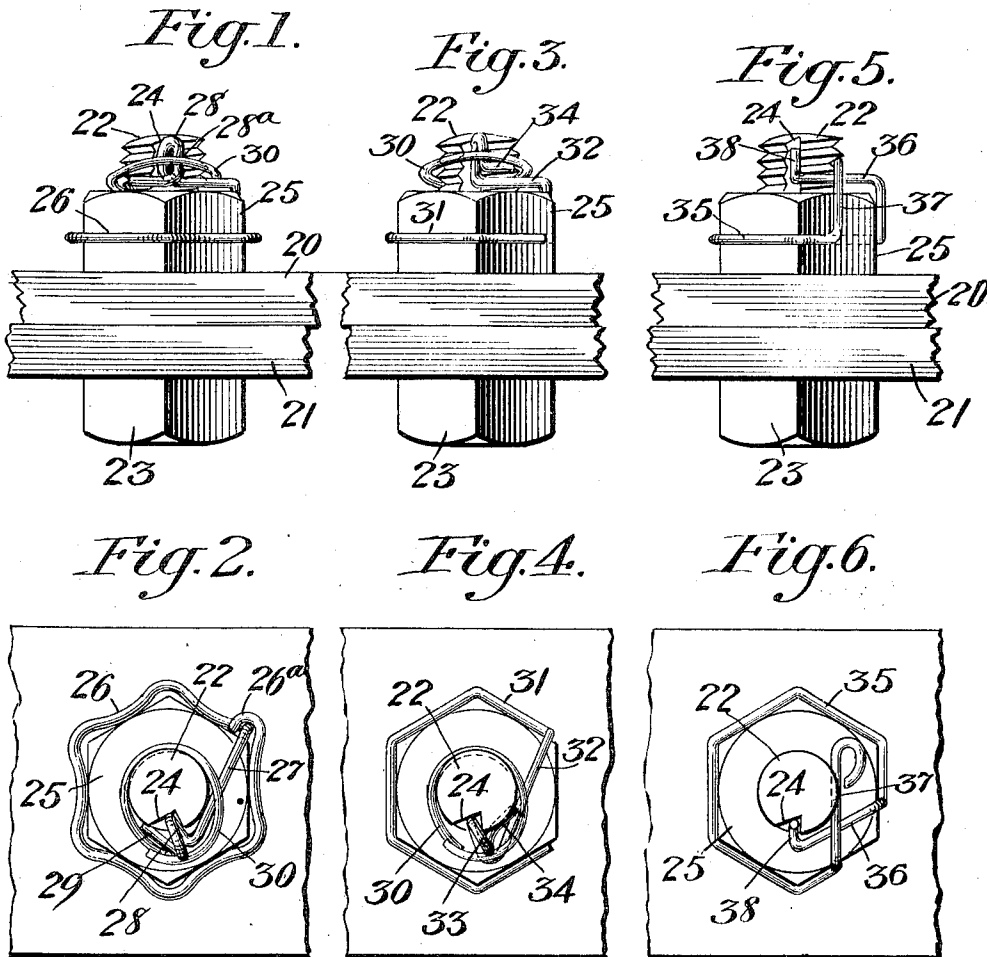


T. G. PALMER.  
NUT LOCK.  
APPLICATION FILED AUG. 9, 1910.

998,796.

Patented July 25, 1911.

2 SHEETS—SHEET 1.



Witnesses.

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Inventor.

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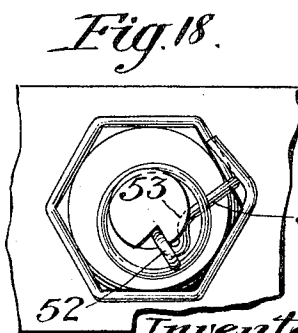
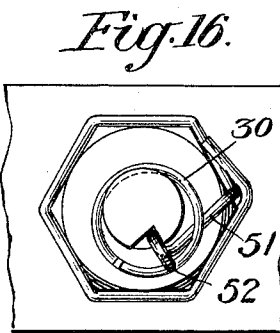
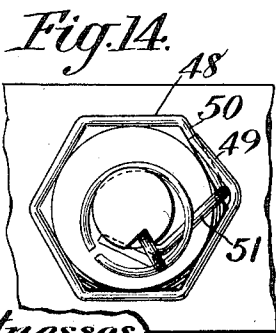
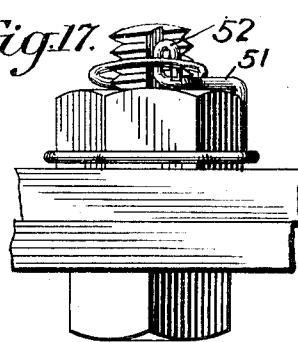
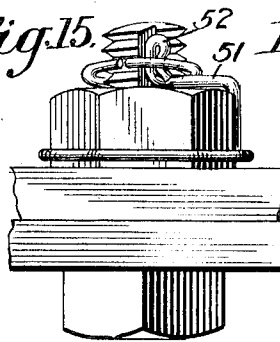
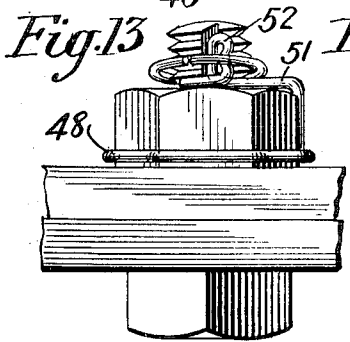
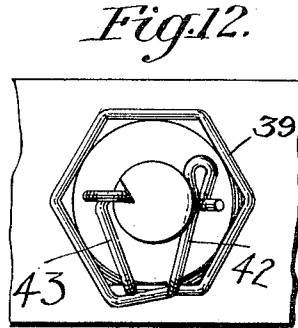
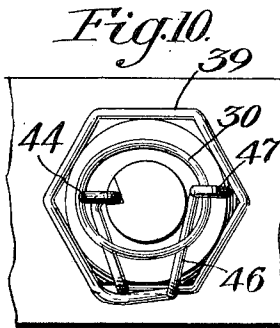
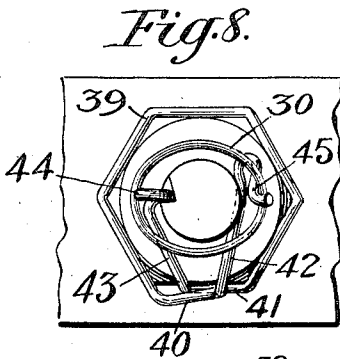
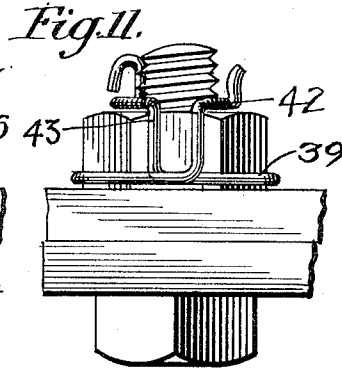
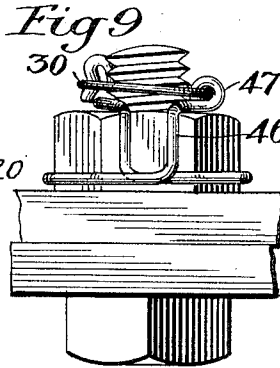
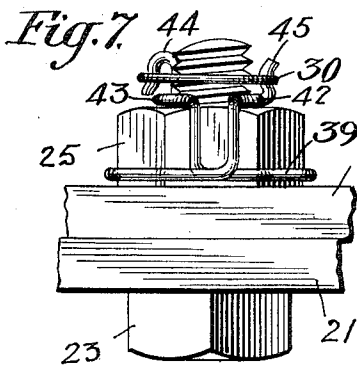
by  
Fannie L. O'Neil  
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2 SHEETS-SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

TRUMAN G. PALMER, OF CHICAGO, ILLINOIS.

## NUT-LOCK.

998,796.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed August 9, 1910. Serial No. 576,355.

*To all whom it may concern:*

Be it known that I, TRUMAN G. PALMER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Nut-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In an application filed of even date herewith I have described a nut lock comprising a locking member swiveled on one of the nut faces and having a projection to take into a longitudinal groove in the bolt, said projection being firmly held in the bolt groove by means of an auxiliary clamping member such as a ring embracing the bolt and the projection of the locking member.

The present invention relates to nut locks of the same general type, but I have devised a new means of mounting the locking member on the nut in such a way that it may be very easily applied to the latter, without the necessity of mounting it for laterally swinging movement.

The present improvements also relate to the structure of the bolt engaging portion or portions of the locking member, and I have also devised certain nut locks in which the locking member, mounted on the nut in the manner referred to above, can be used without an auxiliary clamping member.

The novel features of the invention will appear clearly from the following description and claims.

In the accompanying drawings, Figures 1 and 2 are a side elevation and a top plan view, respectively, of a nut lock embodying the present improvements, Figs. 3 and 4 are similar views of a modified form of nut lock, Figs. 5 and 6 show a still further modified form, in which the auxiliary clamping member is omitted, Figs. 7, 8, 9 and 10 show other modifications of the structure, Figs. 11 and 12 illustrate the same device shown in Figs. 7 and 8, but with the auxiliary clamping ring omitted, and Figs. 13 to 18 inclusive illustrate still further modifications.

Referring to the drawings, 20 and 21 indicate two members bolted together by a bolt 22 of the usual form, having a fixed head 23. The shank of the bolt is threaded

in the ordinary way, but is provided with a longitudinal locking groove 24, of which any number may be used. The nut 25, which is secured on the bolt in the usual way, serves as a mounting for my locking device, which takes the form of a detachable attachment for said nut.

Referring particularly to Figs. 1 and 2, the locking member, which is preferably made of wire, is bent to form a main portion or frame 26 that embraces the nut 25 and is held thereon by its spring action. In order to accommodate the locking member to nuts of slightly varying dimensions, the frame or main portion of the locking member may be made of the undulating form illustrated, the undulations in the wire bearing against the intermediate portions of the nut faces and leaving the corners free. Owing to the fact that one end 26<sup>a</sup> of the locking frame is simply bent over the adjacent part of the frame, it is obvious that the diameter of the latter may be varied by compressing or expanding the frame or nut embracing portion of the locking member, as called for by circumstances. This nut embracing portion is provided with an extension 27 which passes into close proximity to the bolt and is provided with a projection such as the eye 28, to take into the bolt groove 24. Beyond the projection or eye 28 the locking member is preferably provided with a further extension 29 which lies in the thread of the bolt. This engagement of the locking member with the bolt groove and the bolt thread is quite similar to that which takes place in using a nut lock such as described in my application, Serial Number 548,641, filed March 11, 1910, and the clamping ring 30 is constructed and acts in substantially the same way as set forth in my companion application referred to above. The ring 30 lies in the bolt thread at one side and at the other side in a small notch or indentation 28<sup>a</sup> in the projection 28 of the locking member.

The construction just described has the advantage that the locking member may be very readily placed on and removed from the nut without boring or drilling the latter or in any way modifying its usual commercial form. The nut embracing portion of the locking member is simply slipped over the nut, and it is held firmly in position by its spring action, regardless of slight

differences in the size of the nuts used. The extension 27 of the locking member forms a more or less rigid continuation of the nut embracing portion and does not have to be swiveled, because its spring action tends to hold the projection 28 in the bolt groove. This action is supplemented by the clamping ring, which effectively prevents any displacement of the locking projection 28 or the thread engaging extension 29, and it will be apparent that the placing of the clamping ring in position, and its removal, can be effected very readily.

In Figs. 3 and 4 I have shown a locking member having a nut engaging part or frame 31 which does not extend completely around the nut. It will be evident that in this form the locking member can be easily applied to nuts of slightly different dimensions. The extension 32 of the locking member carries a groove engaging eye 33, similar to the eye 28, previously described, but in this case the thread engaging extension 34 is turned back from the eye, that is to say, directed toward the extension 32. The clamping ring 30 is mounted in substantially the same way as that previously described.

In the form shown in Figs. 5 and 6, the clamping ring is omitted. The nut embracing portion 35 of the locking member is provided with two extensions 36—37 in the form of crossed arms which are held against the bolt by their spring action. In other words, these crossed arms form an angle in which the bolt 22 is received. The arm 37 is formed to lie in the valley of the thread, as shown, to prevent the longitudinal displacement of the attachment, while the arm 36 has a projection 38 to take into the usual bolt groove and thereby prevent relative turning movements of the parts. This is a very simple form of nut lock which merely necessitates the grooving of the bolt, without any modification of the nut, and owing to the fact that the locking member acts very effectively and can be readily placed on and removed from the nut, the construction is of considerable value.

In the nut lock shown in Figs. 7 and 8 the nut embracing part 39 of the locking member is somewhat like that shown in Figs. 5 and 6, but the end portions of said part overlap each other as indicated at 40, 41. Said part 39 has two extensions 42, 43 which extend alongside the bolt at opposite sides and are forced toward each other and into engagement with the bolt by the spring action of the locking member as a whole, the part 39 being gripped on the nut in substantially the same way. The extension 42 lies in the bolt thread, as shown, while the extension 43 has a projection 44 to take into the bolt groove. In this instance, the clamping ring 30 embraces both the projection 44 and a terminal projection 45 on the extension 42,

as shown in Fig. 7, and both of the aforesaid projections are suitably indented or bent to form seats for the clamping ring.

In Figs. 9 and 10, I have shown an arrangement wherein the arm or extension 42 of Figs. 7 and 8 is replaced by a shorter extension 46 having a terminal eye 47 through which the clamping ring is passed. In this way, the clamping ring is permanently connected with the main locking member.

In certain cases the clamping ring may be omitted from the device shown in Figs. 7 and 8, and the device will then have the appearance shown in Figs. 11 and 12. The oppositely acting arms or extensions 42 and 43 grip the bolt firmly and effectively prevent both a longitudinal and a relative turning movement of the parts. It is preferable to have the nut embracing part of the locking member extend around the lower part of the nut, in order to give sufficient wrench room.

In Figs. 13 and 14, the nut embracing portion 48 is provided with two overlapping parts 49, 50, which permit the attachment to be applied to nuts in which there is a considerable difference in size. The extension 51 is very much like the extension 27 described in connection with Figs. 1 and 2, having a terminal portion to lie in the bolt thread. In the construction shown in Figs. 15 and 16, the extension 51 is provided with a bent up projection 52 to engage the bolt groove, but in this case the main locking member does not engage the bolt thread. However, the clamping ring 30 engages said thread in the usual manner. In the form shown in Figs. 17 and 18, the extension 51, which is cut off short at the projection 52, as in Figs. 15 and 16, is provided intermediate of its length with a curved thread engaging portion 53.

Without limiting myself to the constructions shown I claim:—

1. In a nut lock, the combination with a grooved bolt, of a locking member embracing the nut and having an extension directed alongside the projecting threaded portion of the bolt, a projection on said extension to take into the bolt groove, and means engaged with the thread of the bolt to hold said projection in said groove.

2. In a nut lock, the combination with a longitudinally grooved bolt and a nut thereon, of a locking member formed of bent wire and having a main portion or frame sprung onto and embracing the nut, said frame or main portion being open to permit its application to nuts of different dimensions, and an extension on the nut embracing portion or frame, directed alongside the threaded projecting portion of the bolt and having a projection to take into the bolt groove.

3. In a nut lock, the combination with a grooved bolt, and a nut thereon, of a wire

locking member having a portion embracing the nut, and extensions on said portion directed alongside the threaded portion of the bolt and urged toward each other and  
5 against the bolt by spring action, one of said extensions lying in the bolt thread and the other having a projection to take into the bolt groove.

4. In a nut lock, the combination with a  
10 longitudinally grooved bolt, and a nut thereon, of a locking member embracing the nut and having an extension directed inwardly and free from the nut, a projection on said extension to take into the bolt  
15 groove, and a clamping ring embracing the bolt and said projection.

5. In a nut lock, the combination with a

grooved bolt, and a nut thereon, of a wire locking member formed to embrace the nut and having overlapping end portions to per- 20  
mit of its adjustment, an extension or arm carried by the nut embracing portion of said member and having a bent up portion en-  
gaging the bolt groove, and an auxiliary clamping device embracing the bolt and ly- 25  
ing in the thread thereof, and likewise embracing said projection.

In testimony whereof I affix my signature, in presence of two witnesses.

TRUMAN G. PALMER.

Witnesses:

U. C. LINCOLN,  
CHARLES HERMANN.

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

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