

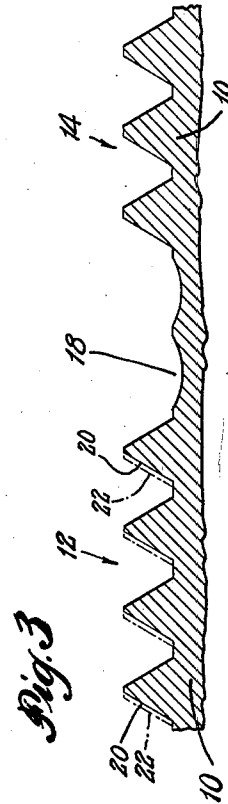
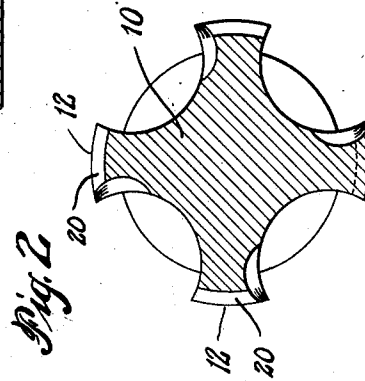
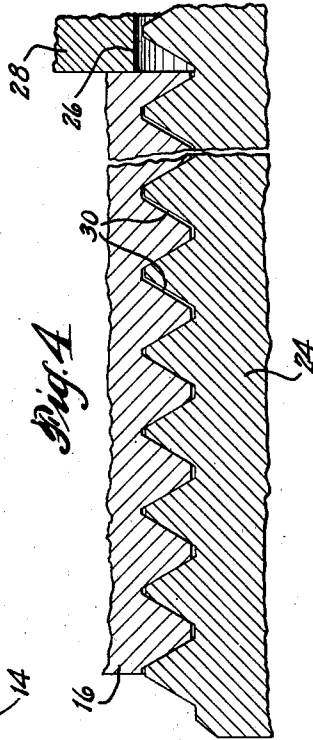
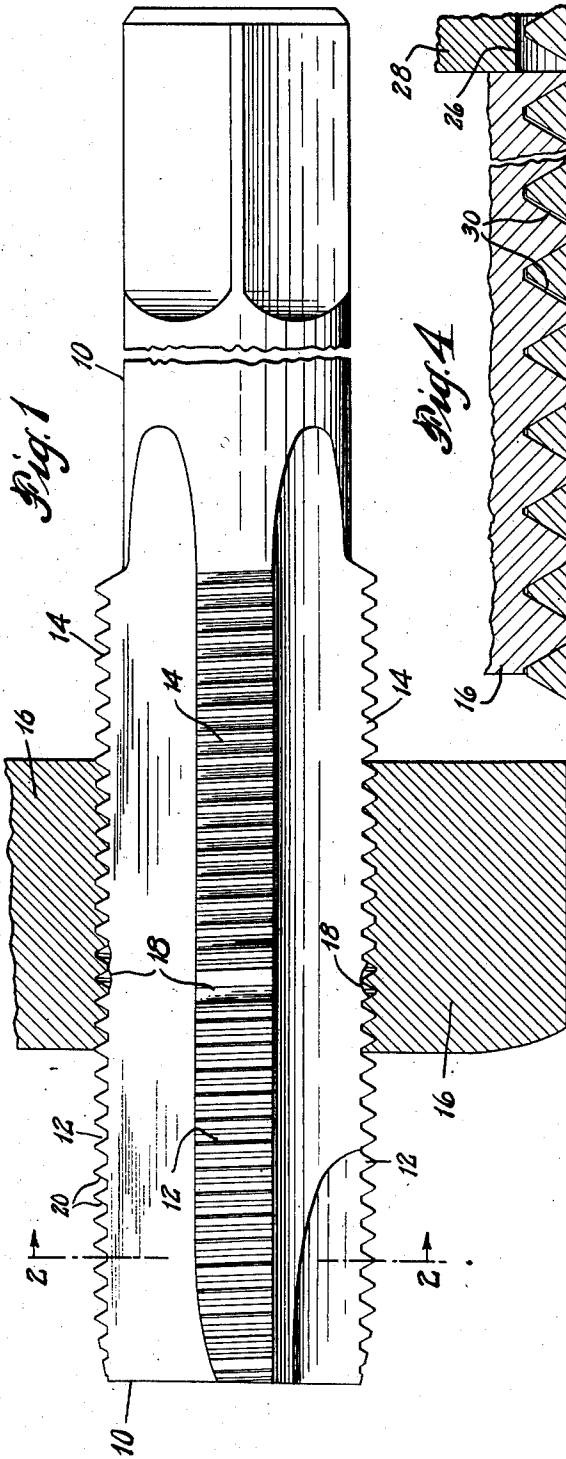
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LOCK NUT

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2,387,375

LOCK NUT

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4 Claims. (Cl. 151—22)

The present invention relates to a new and improved lock nut.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein as constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serves to explain the principles of the invention.

Of the drawing:

Figure 1 is a longitudinal sectional view showing typical and illustrative embodiments of the present invention;

Figure 2 is a sectional view of the tap Figure 1 and taken on the line 2—2 of Figure 1;

Figure 3 is an enlarged fragmentary view showing the cutting face of the tap; and

Figure 4 is a fragmentary enlarged sectional view showing the nut of the present invention as applied to a conventional bolt.

The present invention has for its object the provision of a novel and improved lock nut. A further object is the provision of an improved lock nut which will fit on a standard bolt, can be threaded by a tap in a single operation, does not damage the bolt threads, and applies the strain over the full length of the engaged portion of the bolt threads.

In accordance with the present invention there is provided a lock nut having a standard form of thread and which is divided into two portions spaced axially from each other, the angles of both thread portions being the same, with the same pitch and pitch diameter. The leading portion of the thread has narrower tops than in the trailing portion, and the centers of the tops of the thread are displaced rearwardly of the nut from the normal or uniform pitch position, thus effectively displacing the forward portions of the thread with respect to the rearward portion.

The threads of the nut are similarly displaced in the outer portion of the nut, and are formed by passing a tap only part way into the nut.

It will be understood that the foregoing general description and the following detailed de-

scription as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the typical and illustrative embodiment of the invention as shown in the accompanying drawing, the nut is preferably formed by a tap 10 having threaded portions 12 and 14, shown in Figure 1 tapping the bore of a nut 16. The forward and rear portions 12 and 14 are separated by a reduced, non-threaded portion 18 which serves as a gauge to indicate how far the tap is run into the nut.

The invention may be described with relation to the formation of the tap, as follows. A standard tap 12, shown as an American standard thread tap, is grooved, as at 18 in Figure 3, and the forward faces 20 of the threads of the tap are cut or ground away slightly, their original shape and size being indicated by the dot-dash lines 22. The included angle of the tap thread remains the same as do the thread depth and pitch. However, the width of the thread tops is reduced, the root or bottom width is increased and the forward faces are displaced rearwardly with respect to the normal pitch, although the rear faces of the tap threads are not displaced. Exemplarily, in a $\frac{3}{4}$ " tap, the amount removed from each forward face in the threaded portion 12 may be from 0.002" to 0.005".

In tapping the nut, the tap is run into the nut bore until the reduced portion 18 is intermediate the faces of the nut 16. Thus the portion 12 has cut tight, displaced threads throughout the nut bore, while the normal portion 14 has cut only the rear portion of the nut 16.

From Figures 1 and 4, it will be seen that the nut of the present invention has tight, displaced threads at one end and normal threads at the other end.

Figure 4 shows the nut of the present invention applied to a conventional bolt 24 projecting through an aperture 26 in a plate 28, and screwed tightly against the face of the plate. As shown, the threads of bolt 24 are American standard and the nut is started on the bolt with its looser, standard threads. As the nut is tightened in place, the tighter threads fit with little or no clearance, while the standard threads of the bolt engage with the nut threads on their forward faces leaving all the clearance 30 (greatly exaggerated in the drawing) at the outer face of the threads. Thus, the tight fit of the nut at its outer end holds the nut against backing off by vibration, distributes the strain on the bolt over all of the engaged thread and greatly facilitates putting on and taking off of the nut, as a

considerable portion of its bore is of normal fit.

The present application is a division of my pending application Serial No. 446,422 filed June 10, 1942.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A lock nut having a threaded bore, all of the threads of the nut being of the same pitch, diameter, thread depth and included angle but with the threads near one end of the nut being slightly displaced axially from the other threads and fitting more tightly on a given bolt than said other threads.

2. A lock nut having a threaded bore, all of the threads of the nut being of the same pitch, diameter and included angle, the faces of one side of all of the threads being uniformly spaced, and the other faces being spaced uniformly in one portion of the bore, and uni-

formly in the remainder of the bore but having said other faces in the two groups axially displaced slightly one group toward the other.

3. A lock nut having a threaded bore, all of the threads of the nut being of the same pitch, diameter and included angle, the faces on one side of all of the threads being uniformly spaced, with the tops of the threads near one end of the nut being of different width from the tops in the remainder of the nut.

4. A lock nut comprising a threaded bore, said bore comprising two portions, all of the threads of said nut being of the same pitch, said threads further being of the same major and minor diameter and of the same included angle, the faces of one side of all of said threads being uniformly spaced, the opposite faces of said threads being uniformly spaced within each of said portions, the threads of one of said portions being out of pitch with the threads of the other portion, the threads of one of said portions further being thicker than the threads of the other of said portions.

FRANK V. WHYLAND.