Dec. 21, 1943. E. J. COLE 2,337,030

SELF-LOCKING NUT

Filed Sept. 2, 1942

Fig. 1.

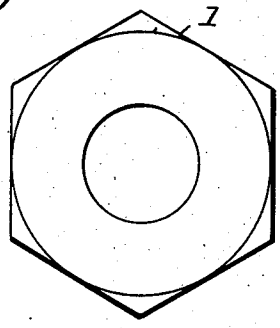


Fig. 2.

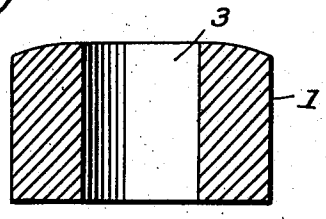


Fig. 3.

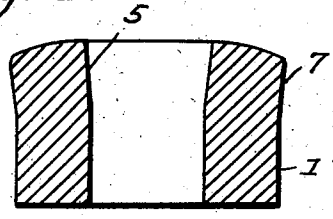


Fig. 8.

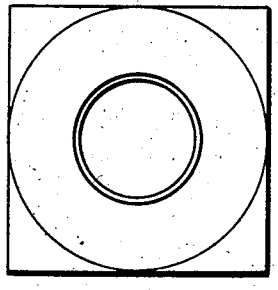


Fig. 4.

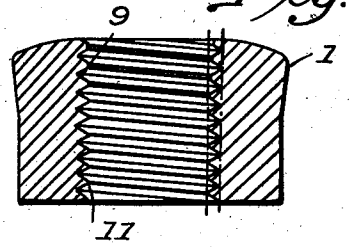


Fig. 5.

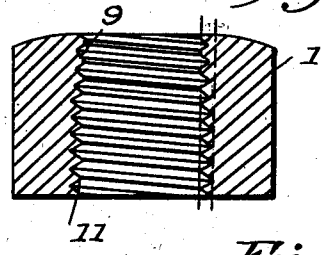


Fig. 6.

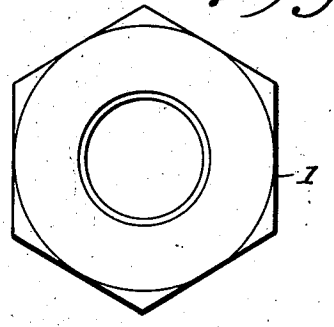
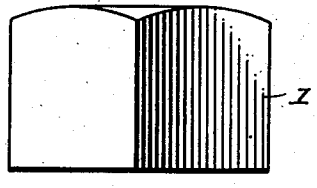


Fig. 7.



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UNITED STATES PATENT OFFICE

2,337,030

SELF-LOCKING NUT

Edward J. Cole, Peekskill, N. Y., assignor to Cole Machinery Mfg. Corp., a corporation of New York

Application September 2, 1942, Serial No. 457,086

4 Claims. (Cl. 151—21)

This invention relates to a novel form of improved standard grip nut which may be readily and economically produced from all forms of standard nut blanks, together with a method of producing this form of binding nut.

The principal object of the invention is the production of nuts of the general type shown in my prior Patents No. 1,905,621, patented April 25, 1933, and No. 1,966,613, patented July 17, 1937, although the present nut is considerably simpler in structure and manufacture. In this instance, I am able to operate on conventional standard nut blanks of any desired form and to flare the upper portion of the nut blank bore and consequently spread the crown portion of the nut without cutting or splitting the crown, as disclosed in my prior patents.

Th resultant improved standard grip nut produced by this method is standard in all respects, that is, the nut blank is conventional and, aside from the flaring and spreading step, the blank is tapped in a conventional screw tapping machine to form a standard thread therein followed by a compression of the flared and spread parts, so that the upper part of the threaded bore has threads of lesser depth than the remaining threads.

Referring to the accompanying drawing:

Fig. 1 is a top plan of a standard hexagonal grip nut blank, although it will be understood that the invention is equally adaptable for operation on square, wing, or other standard nuts;

Fig. 2 is a vertical section showing the straight bore through the standard nut blank;

Fig. 3 illustrates the standard blank after the upper part of the bore has been flared and the upper portion of the crown spread;

Fig. 4 is a section disclosing the flared and spread standard nut blank after it has been screw threaded or tapped on a conventional screw threading machine;

Fig. 5 illustrates the two depths of the threads which result from reforming or compressing the blank after it has been threaded;

Fig. 6 is a top plan of the completed self-locking nut;

Fig. 7 is a side elevation of the completed nut illustrating its standard specifications; and

Fig. 8 shows a completed square nut produced by the present method.

Specifically, a standard nut blank 1 of any desired size, shape, type, form or configuration is bored, punched, or otherwise cut, to form a straight-sided bore 3 therein, after which the bored nut blank is processed to flare the upper portion 5 of the bore 3 and to spread the upper portion of crown 7 of the nut blank, as shown in Fig. 3. This flaring and spreading may be accomplished in any desired manner, either manually or by passing the blanks through a machine of the character described and claimed in my copending application, Serial No. 447,267, filed June 16, 1942. After the flaring and spreading operation, the blank 1 is screw threaded throughout the length of the bore and, due to the outward flare 5, the screw threaded portion 9 coincident with the length of the flared part 5 is of lesser depth than the lower screw threaded portion 11, where the bore is the same diameter as the originally formed bore.

As shown in Fig. 4, the base line of the thread throughout the entire bore is in a vertical plane while the crest line of the thread is in a vertical plane throughout the unflared portion of the bore and follows the flare line in the flared portion of the bore. It will be observed that the crest of the thread in the unflared portion is a continuous sharp line or edge and the crest of the thread through the flared portion is progressively wider as the flare becomes more acute toward the crown of the blank.

Fig. 5 illustrates the threaded blank after the side walls thereof have been recompressed to place the exterior of the nut blank in identical form and size to the original blank disclosed in Fig. 1, and here the lesser depth of the screw threaded part 9 is clearly indicated in comparison to the greater depth of the threaded part 11 in the unflared section of the bore.

After compression, the base line of the thread in the unflared portion of the bore remains in a vertical plane while the base line in the flared portion assumes a similar form to that previously maintained by the flare. The crest line of the thread of the completed and compressed nut is then in a vertical plane throughout the entire bore.

After the standard blank nut with its flared crown portion has been tapped with a standard thread and the flared portion compressed to standard dimensions the finished nut is applied to a standard thread bolt with the result that the full threads of the bolt binds at the base of the less than full thread in the crown portion of the nut and thus takes up all looseness or play therebetween and firmly grips the threaded bolt. This formation also permits the flare and compression to vary when necessary to give an increased spring grip action.

Figures 6 and 7 illustrate the top and sides of

the completed grip nut after it has been operated upon through the several method steps heretofore described and it will be appreciated that the exterior configuration is identical to a conventional standard screw threaded nut. In Fig. 8 a similarly completed standard four-sided or square nut is shown after passing through the steps of this method.

As before stated, the type of nut blank is immaterial as the present method and grip or binding nut formed thereby may be of any desired kind and size.

What I claim is:

1. A grip nut comprising a nut blank of standard configuration, said blank having a central threaded bore extending therethrough, the thread in the outer portion of one end of said bore being of gradually decreasing depth with respect to the remainder of the thread and the crest line of the thread throughout the nut being in a vertical plane, said thread being uninterrupted throughout its length.

2. A grip nut comprising a standard nut blank wherein the depth of the thread throughout the major portion of the blank bore is of standard S. A. E. specification and the thread through a minor portion thereof is of gradually decreasing depth, the crest line of the thread throughout the bore being in a vertical plane, said thread being uninterrupted throughout its length.

3. A grip nut comprising a standard nut blank having a continuous central screw-threaded bore therethrough, said thread being uninterrupted throughout its length and its depth adjacent the crown of the nut blank being gradually shallower than the remainder of the screw thread, said thread being of uniform pitch throughout its entire length.

4. A grip nut as set forth in claim 3 wherein the diameter of the bore taken on the crest line thereof is uniform throughout the bore.

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