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T. T. HADDICK

1,777,201

METHOD OF MAKING LOCK NUTS

Filed April 26, 1929

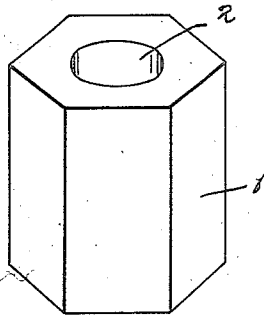


Fig. 1

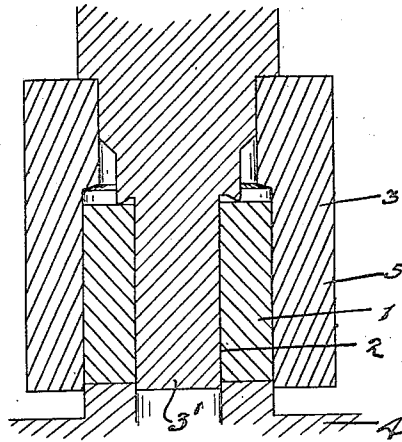


Fig. 2

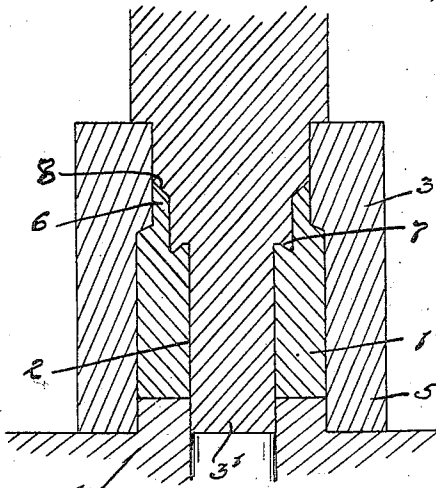


Fig. 3

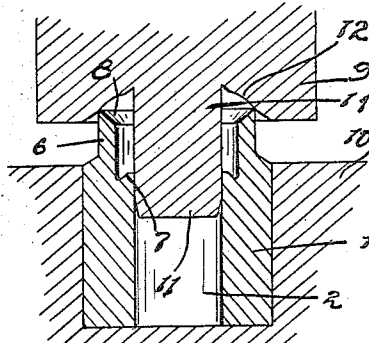


Fig. 4

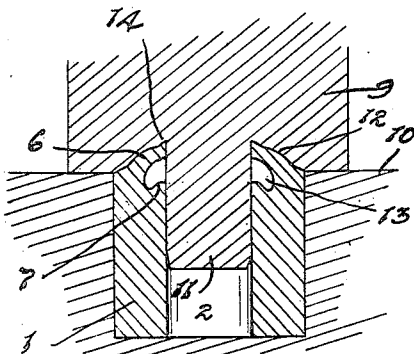


Fig. 5

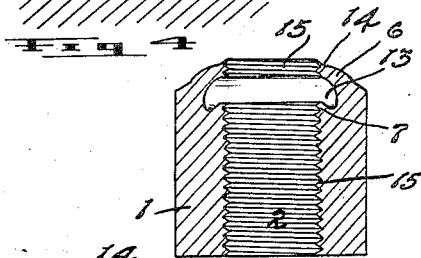


Fig. 6

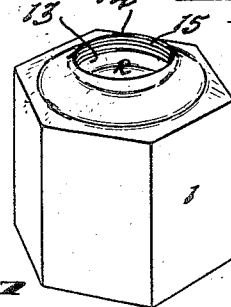


Fig. 7

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METHOD OF MAKING LOCK NUTS

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The invention relates to improvements in method of making a lock nut and an object of the invention is to provide a method of making a specific type of lock nut which permits the nut to be easily and quickly manufactured and sold at a reasonable price and which produces a nut the strength of which is in no way impaired.

In order that the invention may be clearly understood, I have shown in the accompanying drawings the various steps taken in producing the lock nut and in the drawing:—

Fig. 1 is a perspective view of the blank used.

Fig. 2 shows in vertical cross section the shape of the dies used in the first press and in their first position in regard to the inserted blank.

Fig. 3 shows in vertical cross section the final position of the dies of the first press used, these forming an upstanding flange on the upper end of the blank.

Fig. 4 shows in vertical section the two dies used in the second press for turning the previously formed flange, the dies being in their initial position in respect to the flange.

Fig. 5 shows the position of the dies of the second press used, after they have been brought together to inturn the flange in the manner shown in said figure.

Fig. 6 is a vertical sectional view centrally through the completed lock nut, the body of the nut being of the same form as it appears in Figure 5 but having the internal bore thereof screw threaded by a tap in the usual manner.

Fig. 7 is a perspective view of the completed nut.

In the drawings like characters of reference indicate corresponding parts in the several figures.

I might initially state that a lock nut of the type herein shown has been previously made but in constructing it a standard sized nut was taken and a suitable tool was inserted to ream out an internal channel in the upper end of the nut. This tool naturally cut away some of the threads of the nut so that its strength was impaired and the method of

manufacturing was obviously costly as it required considerable machining.

In carrying out my invention, I first provide a nut blank 1 herein shown as hexagonal in cross section and as provided with an internal bore 2. I then employ a press having a male die 3 and a female die 4 between which the blank is placed. The male die embodies a centering pin 3' and an outer shell 5 providing therebetween an annular cavity to receive the blank, the pin being designed to pass slidably into the bore 2.

The upper end of the cavity is shaped as shown in Figure 2 so that when the male die is pressed down towards the female die, the upper end of the inserted nut blank will be forced under the exerted pressure into the shape shown in Figure 3 where it will be observed that the blank is at such time provided with a continuous upstanding flange 6 of predetermined length having an internal diameter somewhat greater than the diameter of the bore 2 and presenting at its base a somewhat curved inclined sloping ledge 7. It will also be observed that the upper end of the flange formed presents an upwardly and outwardly sloping face 8, the angular position of which will be determined by experiment.

Having formed the blank into the shape shown in Figure 3, I then employ a second press embodying a male die 9 and a female die 10, the female die being adapted to receive and hold the retained hexagonal portion of the partially formed nut. Here it will be observed that the flange 6 extends upwardly above the female die. The male die is provided with a centre pin 11 adapted to enter the bore 2 and at the upper end of the pin, the body of the male die is of a somewhat ogee shape as indicated at 12 so that when the male die is forced down, the flange will be caught and inturned and shaped as shown in Figure 5.

In this figure, it will be observed that there is an internal continuous channel 13 formed adjoining the upper end of the blank, that the flange has at this time a leading upwardly extending annular tip 14, that the face 8 previously mentioned has been brought into a

vertical plane and that the internal diameter of the flange is the same as the internal diameter of the bore.

After the blank has been formed as shown in Figure 5, it is removed from the latter press and is internally threaded by a tap in the well known manner, the threads being indicated at 15 in Figure 6. As before stated, Figure 6 and Figure 7 show the finished lock nut in vertical sectional and perspective views.

According to the above, it will be apparent that the lock nut can be formed easily, quickly and accurately and requires no machining to provide the internal channel and further that the strength of the nut is in no way impaired as the flanged portion thereof is formed more as an extension to a nut of standard size rather than being cut from a nut of standard size as was previously done.

When the nut is to be used, it is turned upside down, the leading tip 14 being in contact with the part to be fastened. When the nut is screwed up tightly by a wrench or other tool, the flange flexes and the threads of the flange bite tightly into the threads of the bolt carrying the nut and an internal pressure is developed which acts to effectively lock the nut on the bolt.

What I claim as my invention is:—

1. The method of making an annular channel in the upper end of a nut blank having a central bore which consists in forming under pressure an upstanding continuous flange at one end of the blank having an interior diameter greater than the diameter of the bore, then inturning the flange under pressure and terminating the then inner edge of the flange so that the cross sectional area there within is approximately the same area as the cross sectional area of the bore and is axially aligned therewith.

2. The method of forming a nut lock which consists in providing a nut blank having an internal bore, placing the blank under pressure to provide an upstanding continuous flange at one end thereof having a greater diameter than the diameter of the bore and an internal ledge at the base of the flange and then forcing the flange inwardly under pressure while retaining an annular space between the inturned flange and the ledge and then threading the bore and the inner edge of the flange.

Signed at Winnipeg, this 22nd day of March, 1929.

THOMAS T. HADDICK.