

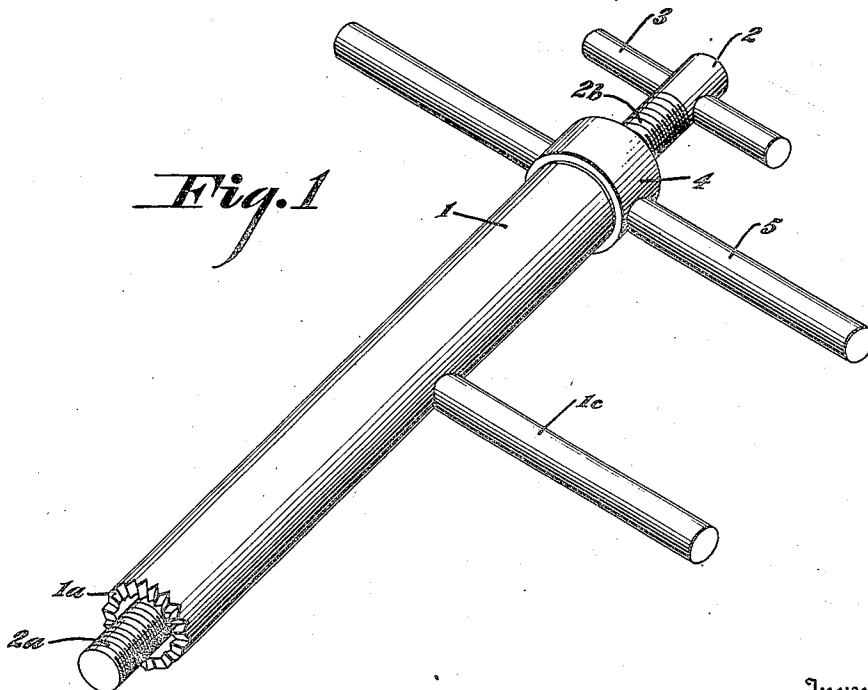
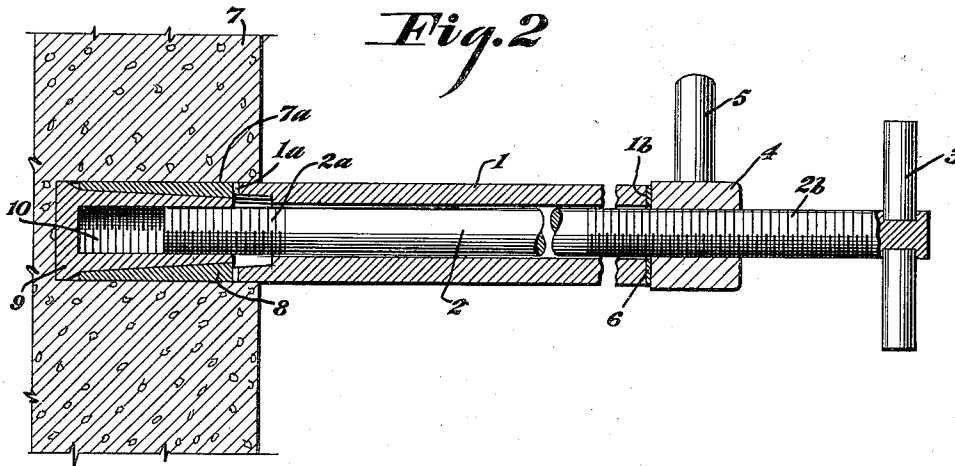
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EXPANSION NUT SETTING TOOL

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EXPANSION NUT SETTING TOOL

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This invention relates to a tool for setting and expanding an expansion nut in a hole, such as in a concrete floor, wall or the like.

It is common in the art to provide tools for expanding expansion nuts in holes drilled in concrete floors and walls so that the internally threaded portion of the nut assembly may serve as an anchor for receiving a screw threaded portion of a structure to be firmly anchored or supported. A common type of expansion nut assembly is one in the form of a tapered lead tube or shield having snugly interfitting therein a correspondingly tapered expander or nut of hard metal, which nut when forced longitudinally relative to the shield will, by camming action of the tapered parts, expand the soft metal shield in diameter so as to firmly anchor it to the walls of the hole in the concrete or other material. Such nut is known in the trade as a "Star Tampin." Most concrete floors average between 1½" and 2" in thickness. Well-known types of tools for setting and expanding such nuts are not suitable for properly setting expansion nuts at variable depths in concrete floors. When the concrete floor is shallow and the drill drops through, one does not have a firm foundation to pound the lead shield down over the tapered "Tampin" nut or expander in the shield.

An object of the present invention, therefore, is to provide a tool for properly setting and expanding an expansion nut assembly at any desired depth in the hole, such as a hole in a concrete floor so as to provide a secure anchor for anchoring such devices as automatic washers to the floor, which anchor will not become loosened despite excessive vibration inherent in such washers.

A more specific object of the present invention is to provide a novel tool comprising, generally, a barrel, a threaded spindle extending therethrough having a handle at one end and being threaded at the other end to permit threaded engagement with the expander portion of an expansion nut, and a second nut threaded to the spindle and having a handle to enable pulling of the spindle through the barrel to cause relative longitudinal movement between the expander and shield portion of the expansion nut while the barrel is firmly anchored to the shield portion of the nut.

Other objects and advantages of the present invention will become apparent from a study of the following specification, taken with the accompanying drawing wherein:

Fig. 1 is a perspective view of a tool for setting and expanding expansion nuts and embodying the principles of the present invention, and

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Fig. 2 is a longitudinal cross-sectional view of the tool shown in Fig. 1 illustrating how such tool is applied to an expansion nut assembly which is set in a hole in a concrete wall.

Referring more particularly to Figs. 1 and 2 of the drawing, numeral 1 denotes a barrel or body portion of a tool for setting and expanding expansion nuts. Barrel 1 has a notched end portion 1a and a smooth end portion 1b. Extending laterally from and integrally formed with the barrel or body portion 1 is a handle portion 1c. Extending through the bore of barrel 1 is a threaded spindle or pull bolt 2 having a screw threaded portion 2a at one end and a screw threaded portion 2b at the other end, the latter end portion having integrally secured thereto a handle 3. A screw threaded nut or collar 4 is screw threaded to spindle portion 2b and has integrally formed therewith a handle 5 to facilitate turning thereof. Sandwiched between the nut 4 and smooth end of body portion 1 is a washer 6 of brass or other anti-friction material.

As shown in Fig. 2, a concrete wall or floor, indicated by numeral 7, has drilled therethrough a hole 7a, such as a ¾" hole or a hole of any other desired size, into which is dropped an expansion nut assembly, such as one known in the trade as an "Ackerman Johns Star Tampin," comprising a tapered shield or sheath 8 of lead or other soft metal and an expander 9 which is correspondingly tapered and snugly interfitted in the sheath, and which has a threaded socket portion 10 therein for receiving the threaded end portion 2a of the spindle. The tool, of course, can be made of any desired size.

The operation of the tool is as follows: the expansion nut assembly comprising shield 8 and expander 9 is screw threaded to the threaded end portion 2a of spindle 2. The expansion nut assembly is thereafter lowered into the hole 7a to any desired depth. Handle 1c is grasped by the left hand of the operator and barrel 1 is held firmly. Handle 5 is then turned clockwise by the right hand and by virtue of the threaded relationship between the nut 4 and screw threaded portion 2b of the spindle, the nut 4 and washer 6 will press against the smooth end portion 1b of the barrel and spindle 2 will pull the expander 9 to the right, as viewed in Figure 2, and relative to the shield so that by virtue of the camming or wedging relationship with lead shield 8, the shield is expanded in diameter so as to become firmly anchored to the walls forming the hole in concrete 7. Barrel 1 in the meanwhile is held stationary and restrained against rotating by vir-

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tue of the biting engagement between its notched end portion 1a and the exposed end surface of shield 8 after a predetermined turning of nut 4, also by virtue of the anti-friction quality of washer 6 which prevents transmission of the rotary movement of nut 4 to the barrel. Thus shield 8 is restrained from rotation and held in place. To further insure that barrel 1 will not rotate and will be held stationary, handle 1c is firmly held by the left hand of the operator.

The opening at the left end of the barrel as viewed in Figure 2 is preferably enlarged and tapered as shown with a slope of $1\frac{1}{2}^\circ$ or thereabouts to receive an end portion of expander 9 when the expander is pulled through shield 8. Since the expander end portion is guided, centered, and snugly fitted in such opening, this prevents any part of the shield 8 from being pulled into the bottom of the barrel and anchors the shield and expander centrally of the drilled hole.

After the expander has been pulled sufficiently through shield 8 so as to expand and firmly anchor the shield to the hole in the concrete, handle 3 is rotated counterclockwise so as to unscrew the threaded end portion 2a of the spindle from the threaded socket portion 10 of the expander, thereby releasing the tool from the expansion nut assembly. The expansion nut assembly is now firmly anchored in the hole and its threaded socket portion 10 is ready to receive a threaded part of a support member of a washing machine, bracket, or any other device to be anchored to the concrete wall or floor 7.

Thus it will be seen that I have provided an efficient, relatively simple and inexpensive tool for accurately setting and expanding expansion nut assemblies, such as those of the so-called "Star Tampin" type, which tool will insure firm anchoring of such nuts so they will not become loosened even as the result of excessive vibration of the machine which is anchored thereto.

While I have illustrated and described certain specific embodiments of my invention, it will be understood that these are by way of illustration only, and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. A tool for setting and expanding an expansion nut assembly, comprising a barrel, a spindle extending through said barrel, said spindle being screw threaded at both ends and having a handle at one end, a nut screw threaded to said threaded portion on the handle end

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of the spindle, said nut having an integrally formed handle to facilitate screwing the nut on said spindle and against the adjacent end of the barrel, the other end of said barrel farthest from said nut being notched to enable biting engagement with the expandable portion of an expansion nut assembly, said barrel having an integrally formed handle extending laterally therefrom to facilitate holding of said barrel in place during turning movement of the nut to effect expansion of said expansion nut assembly.

2. A tool for setting and expanding an expansion nut assembly of the type having a sheath of soft metal and inner, longitudinally tapered walls and a correspondingly tapered inner expander of hard metal having an internal threaded socket portion, said tool comprising a barrel having a notched end adapted to be held against the exposed end of the sheath after it is set in a hole, the other end of the barrel being smooth, a spindle extending through said barrel, both end portions of said spindle being threaded, one threaded end portion being adapted to be screw threaded into said socket, a handle integrally formed on the other threaded end, and a nut screw threaded to said last mentioned end portion and having an integrally formed handle thereon to enable turning of the nut to urge it against the adjacent smooth end of the barrel and at the same time pull the spindle and expander so as to expand the shield in diameter and firmly anchor it in the hole in which it is set.

3. Apparatus recited in the immediately previous claim 2 wherein said barrel has an integrally formed, laterally extending handle portion to enable holding of the barrel in place as the handle of the nut is turned, and wherein an anti-friction washer is disposed between said nut and smooth end of said barrel.

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