METHOD OF MAKING SELF LOCKING NUTS

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My invention relates to methods of making nuts such as are disclosed in the patents to Ture G. Rennerfelt No. 1,726,828 and No. 1,729,013, dated respectively September 3 and September 24, 1929, and its general purpose is to provide a method by the employment of which the speed at which the nuts can be made may be substantially accelerated and whereby also the cost of manufacture may be substantially decreased.

The nuts comprise a metal tapped portion in combination with a non-metal relatively elastic portion, the two portions being permanently united or fastened together.

The invention consists in fastening together of bar of metal and a non-metal strip of indefinite length and providing at intervals in the metal strip tapped openings and at corresponding intervals in the non-metallic strip openings which are not tapped.

In order that the invention may be readily understood and its practical advantages fully appreciated I shall now proceed with a full and detailed description thereof and in so doing shall refer to the drawing accompanying and forming a part of the specification.

In the drawing:

Fig. 1 is a view in perspective of a portion of a metal bar having a channel therein within which a strip of non-metallic material is adapted to be placed;

Fig. 2 is a perspective view of a portion of a non-metallic strip adapted to be placed in the channel which is shown in Fig. 1;

Fig. 3 is a perspective view showing portions of a metal bar and a non-metallic strip in assembled relation;

Fig. 4 is a view in transverse section of the assembled bar and strip shown in Fig. 3;

Fig. 5 is a view in end elevation of a machine or apparatus for fastening the channel metal bar and a non-metal strip together;

Fig. 6 is a view in side elevation of said machine or apparatus looking toward the left in Fig. 5;

Fig. 7 is a view showing in cross section a metallic bar and strip after the two have been secured together and also showing the portions of the co-operating parts of the said machine by which the said metal bar and strip are fastened together;

Fig. 8 is a view in perspective of portions of a bar and strip after they have been permanently fastened together; and

Fig. 9 is a view in perspective of a self-locking nut produced from the combined metal bar and strip as shown in Fig. 8.

In the carrying out of the method of my invention I take a bar 1 of suitable metal having a channel 2 in one side thereof, the opposite edges or corners of the said bar being beveled, as indicated at 3, so as to provide relatively thin edges 4 which may be turned over onto a strip 5 of suitable material preferably non-metal. The strip 5 may consist of vulcanized fiber or of any other material. Preferably the material of the strip 5 should be flexible. It will be noted that the bar 1 is provided with tapped openings 7 at intervals and also that the strip 5 is provided with untapped openings 8, the intervals between the openings 7 and the openings 8 being equal so that when the bar 1 and strip 5 are assembled as shown in Fig. 3 of the drawing these openings may be in registry with each other. Although the openings 7 and 8 are illustrated and described as having been placed in the bar 1 and strip 5 prior to the assembling and fastening of the same together it is to be understood that these openings may be formed in these parts after they have been assembled and secured together as they are shown in Fig. 8 of the drawing. The diameters of the openings within the strip 5 are or should be identical with the diameters of the openings through the bar 1; that is, with the diameters of the inner edges of the screw threads of the said openings 7. It will be noted that the upper edges 4 of the bar 1 project above the strip 5 after the latter has been placed within the channel 2. The assembling of the bar 1 and strip 5 may take place simultaneously with the feeding of the same to the machine or apparatus shown in Figs. 5 and 6 which is employed for the purpose of bending over and clamping the edges 4 upon the top side of the strip 5 in adjoining relation to the edges thereof as is shown in Figs. 7 and 8.
The machine for turning over the edges 4 and clamping the same onto the strip 5 comprises a roller 10 the peripheral surface of which is channeled, as shown in Fig. 5, for the reception of the bottom or smooth side of the bar 1 and an opposed co-operating roller 11 the periphery of which is shaped as shown and operates to engage and turn inwardly the edges 4 of the bar 1 onto the top side of the strip 5 as shown at 12. The rollers 10 and 11 are secured upon shafts 13 and 14 mounted in bearings which are supported upon the frame structure of the machine as shown. The shaft 13 is driven from any suitable source and is provided with a gear 15 which engages a gear 16 on the shaft 14 to drive the latter with the same speed as that at which the shaft 13 is driven.

Although I prefer to employ a machine of the character of that indicated for pressing and turning the edges 4 of the bar 1 over onto the strip 5 it should be understood that any other suitable means which might be preferred may be employed for effecting this operation.

In the bending over of the edges 4 the pressure employed usually is sufficient to cause the said edges to slightly penetrate the material of the strip 5. Although not essential or necessary to the completed nut structure this is desirable in order that the two portions of the completed nut may be fastened securely together. The metal bar 1 and strip 5 having been secured together to form the composite bar shown in Fig. 8, the said bar is then severed at intervals, as indicated by the dash and dot lines 17, for the purpose of dividing the same into a plurality of nuts 18, one of which is shown in Fig. 9.

It will be seen that by the method of my invention I first combine a metal bar and a strip of relatively great length and afterwards sever the same at intervals by means of any suitable cutting tool to form separate self-locking nuts. Before the severing operation the bar 1 is provided with tapped openings and the strip 5 with untapped openings as described and these openings may be formed either before or after the fastening of the bar 1 and strip 5 together as has been previously stated.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In the method of making a self-locking nut the steps which comprise the providing of a metal nut blank having a channel in one side thereof, placing a section of flexible material in said channel, the thickness of which is less than the depth of said channel, causing the outer edges of the side walls of said channel to overlie and clamp against the top sides of the outer edges of said material, forming tapped openings at intervals in said blank, and forming untapped openings in said material in registry with said tapped openings.

2. The method of making self-locking nuts which comprises the providing of a bar having a channel in one side thereof, placing a strip of flexible material in said channel the thickness of which is less than the depth of the said channel, thereafter causing the outer edges of said channel to overlie and clamp against the top side of the said strip and providing the said metal bar at intervals with tapped openings and the said strip at like intervals with untapped openings.

3. In the method of making self-locking nuts the steps which comprise the placing of a strip of flexible non-metallic material in a channel of a metal bar, turning the opposite edges of said channel over onto the said strip and causing the said edges to press against the latter and thereafter severing the said bar and strip into sections, each section adapted to form a nut.

4. The method of making self-locking nuts which comprises the providing of a metal bar having a channel in one side thereof, the outer edges of the side walls of said channel being relatively thin, a flexible strip of non-metallic material, placing the said strip in the said channel, bending the outer edges of said channel inwardly and downwardly onto the top side of the said strip and causing the said edges to penetrate said strip, the said bar having tapped openings at intervals therein and the said strip having untapped openings at like intervals therein in registry with the tapped openings of said bar and severing the combined bar and strip in planes midway between the said openings.

5. The method of making self-locking nuts which comprises the providing of a metal bar having a channel in one side thereof, the outer edges of the side walls of the said channel being relatively thin, and a flexible strip of non-metallic material adapted to be placed in said channel, forming tapped openings at intervals in the said bar and untapped openings at like intervals in the said strip, placing the said strip in the said channel with the openings in the bar and strip in registry with each other, turning the outer edges of the opposed walls of said channel inwardly over and in clamping relation to the said strip and thereafter severing the combined bar and strip into sections along planes midway between the openings thereby.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 15th day of September, A.D. 1930.

CARL ARTHUR SWANSTROM.