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Miller, Jr. et al.

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[54] **BARBED T-NUT**

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[52] **U.S. Cl.**.....**151/41.73,** 248/188.4

[51] **Int. Cl.**.....**F16b 39/00**

[58] **Field of Search**.....151/41.73, 37; 85/32 K; 248/188.4

[56] **References Cited**

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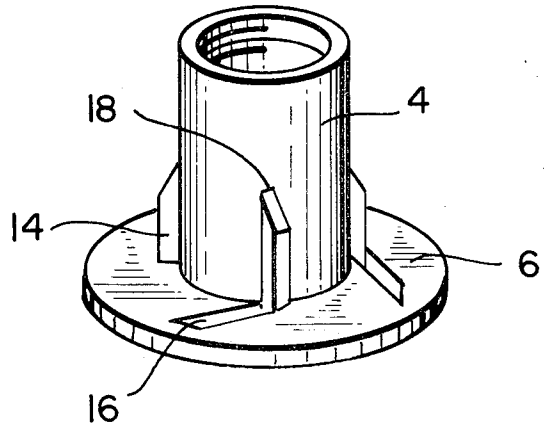
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[57] **ABSTRACT**

A T-nut for driven insertion into a preformed axial bore in the bottom of a wooden furniture leg or the like comprises a flange extending radially outward from the lower end of an internally threaded barrel. The flange has, struck out from wholly within its perimeter, a series of equidistantly spaced barbs which are upstanding in contact with the barrel surface and become embedded in the surrounding wood when the barrel is driven up into the bore.

2 Claims, 4 Drawing Figures



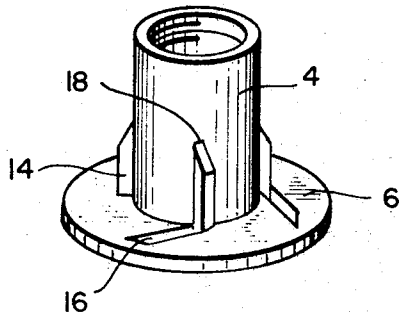


FIG. 1

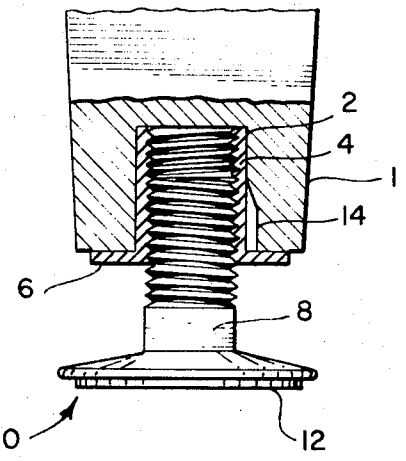


FIG. 2

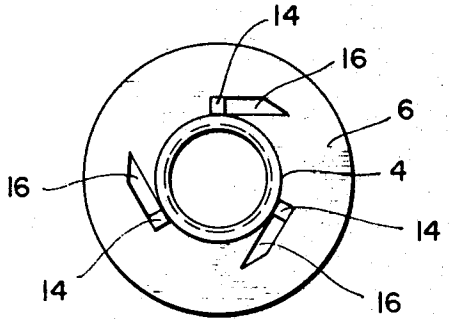


FIG. 3

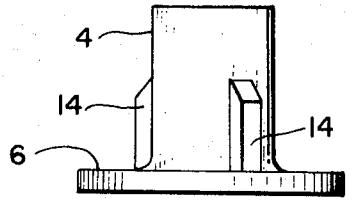


FIG. 4

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BARBED T-NUT

DESCRIPTION

BACKGROUND OF THE INVENTION

The prior art provides numerous arrangements of barbs upstanding from the bottom-flaring flange of a T-nut barrel intended to be driven into an axial hole drilled up into the bottom of the wooden leg of a chair, table or the like for the purpose of receiving in threaded engagement the upstanding bolt member of some foot element, such as a caster, leveler, special foot or the like. These barbs are generally struck up from slots formed in the flange, which are open to the periphery of the flange, so that the edge of the flange is interrupted and discontinuous. This weakens the flange, requiring use of heavier gauge sheet metal, or blanks of increased width, for the stamping process by which the device is made. In most cases too the barbs are spaced outwardly from the outer surface of the barrel, thus penetrating the wood of the leg in locations spaced from the bore, which results in a decided tendency to split the wood, particularly in the case of legs of small diameter.

SUMMARY OF THE INVENTION

The present invention differs from the prior art by having the barbs, which are struck up from slots formed in the flange, specially located totally within the perimeter or periphery of the flange, so that the slots left by the barbs are not open to the outer edge of the flange, which is accordingly continuous and uninterrupted. Thus metal of lighter gauge, and/or a narrower blank, can be used, with no sacrifice of flange stiffness. Moreover, the barbs extend up in contact with the barrel, so that on entering the bore they enlarge the bore by forming radiating channels, one for each barb, instead of digging a new and independent hole midway between the bore and outer surface of the leg, one channel for each barb. Thus the tendency to split the wood is materially reduced. Again, in the preferred form of the invention the barbs are struck up from slots that are tangential to the barrel rather than radial. Thus the barb length is not limited to the radial distance between the barrel and the flange periphery. And because the barbs are formed from slotS that are wholly within the confines of the flange, they can be struck out with points in any desired shape, which is not possible when segments of the flange periphery form the distal ends of the barbs. Finally, the completely closed slot left in the flange by the new barbs facilitates use of supplemental affixing means, such as brads driven through the slots and into the wood in cases where the barbs become loosened in the wood.

SHORT DESCRIPTION OF THE FIGURES

In the accompanying drawing,

FIG. **1** is a perspective view of a nut embodying the invention;

FIG. **2** is an axial cross-sectional view of the nut shown applied in operative position to the lower end portion of a wooden furniture leg;

FIG. **3** is a top plan view of the nut; and

FIG. **4** is a side elevational view.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In these views the reference numeral **1** designates the lower end portion of a conventional wooden leg of any common type of furniture to which application of any leveling device, caster or the like is to be made. Up from the bottom of the leg, which may be of square, round or other cross-sectional shape, a bore **2** is drilled, centrally or axially in the wood. It is into this bore or socket that the nut provided by the invention is to be inserted to make a tight, non-rotatable driven fit.

The nut is best made as a die stamping from sheet metal, preferably steel although brass or other metal could be used, and comprises a single unitary one-piece member consisting principally of a tubular barrel or hollow cylindrical portion **4** terminating at one end, which may be considered the lower end, in a flange **6** which flares radially outwardly right-angularly and is preferably though not necessarily circular and dimensioned relative to the leg to be accommodated so as to cover, or substantially cover, the bottom surface of the leg when the barrel is driven up into the bore of the leg, as shown in FIG. **2**.

The hollow of the barrel extends entirely through the barrel and flange, i.e., is open through the flange bottom surface, and is threaded internally for engagement by the external thread of a bolt or screw element **8** of the device that the nut is intended to affix to the leg, e.g., the leveling element **10** of FIG. **2**, which in this case is a foot **12** swiveled on the bottom of the screw **8**.

In order to fix and secure the nut firmly in the leg bore, against rotation as well as against axial withdrawal, the invention provides a novel series of integral barbs, shown at **14** in the illustrated embodiment. These barbs, here shown as three in number, are lanced or struck up from the material of the flange, each from an outer point spaced well within the periphery of the flange to a point adjacent the juncture of the barrel and flange, thus leaving in the flange a slot **16** whose outer end is inset from the flange periphery and whose inner end is at the base of the upturned barb. Preferably, as shown in FIGS. **1** and **3**, the slots lie in directions tangent to the barrel, and they are arranged equidistantly around the barrel base. The barbs are struck up right-angularly from the flange and extend up the lower portion of the barrel and in contact or substantial contact with the barrel outer surface. Each barb is formed with a reasonably sharp edge beveled on its distal end, as shown at **18**, a shape that is accomplished by forming the corresponding slot with its outer end pointed, as appears in FIG. **3**. The barb end is actually a flat beveled terminal edge, ending in a short line lying against the barrel surface, and the width of this edge is of course equal to the thickness of the flange from which the barb was struck. This thickness can be quite short, resulting from use of sheet metal stock providing a relatively thin flange, without sacrificing stiffness of the structure because the flange periphery is uninterrupted and unbroken by the barb-producing slots. The thickness of each barb, i.e., the dimension radial of the barrel, is a function of the width of the slots, and this is a matter of choice. We prefer to select a width of slot that will result in the barbs being of substantially square cross-section, as shown in the illustrated embodiment.

It is believed to be obvious that application of the nut to the pre-drilled bore of a chair or table leg or the like as shown in FIG. 2 requires merely insertion of the upper end of the barrel into the bore and driving the device, as by hammer blows on the flange, into full seating relation in the bore, with the barbs cutting into the wood and the upper surface of the flange engaged with the bottom surface of the leg. This penetration is accomplished with a minimum tendency to split the wood, and with no tendency at all to produce splitting extending to the outer surface of the leg, as often results from barbs that rise from points on the flange nearer the flange outer periphery. The barbs of the present invention can be made as long as desired, since their length is not limited to the radial dimension of the flange because they are struck up from slots that are tangential rather than radial. The bore in the leg can be made slightly oversize relative to the diameter of the barrel and the barbs will still insure tight fit of the nut in the leg with elimination of all possibility of rotation of the nut or unintended axial withdrawal.

The specific material of which the new nut is made and the series of method steps used in producing it form no part of the present invention. However, it may be stated that the preferred material is cold rolled steel of suitable gauge provided in the form of strips cut into blanks of appropriate length. The blanks are die stamped by progressive steps to complete the formation of the barrel and flange relationship. The barbs are then lanced out from the flange, and the threading of the barrel completes the operation.

It is to be understood that the utility of the new T-nut is not to be considered limited to furniture legs and that the design details of the illustrated embodiment are capable of modification within the inventive principles. Thus, the nut can be applied to expansive flat surfaces of wood or the equivalent, such as paneling of plywood, particle board and the like, and the shape and dimensions of the flange and the barbs, the number of barbs, and other details of the preferred example are matters of choice that are variable within the spirit of the invention as defined by the appended claims.

We claim:

1. A T-nut for driven insertion into a preformed axial bore in the bottom of a wooden furniture leg or the like comprising

an internally threaded barrel of generally cylindrical shape having an upper end portion adapted to be driven into operative position in said bore,

a flange flaring radially outwardly right-angularly from the lower end of the barrel and adapted in said operative position to engage and substantially cover the bottom surface of said leg,

and a series of barbs cut from slots in the flange, substantially tangent to the barrel, and right-angularly upstanding in substantial contact with the outer surface of the barrel,

the proximal end of each barb being at the juncture of the barrel and flange,

and the outer end of each slot being spaced inwardly from the periphery of the flange,

whereby said periphery is continuous and uninterrupted.

2. A T-nut as claimed in claim 1, in which each slot has its outer end beveled, whereby the distal end of each barb is formed with an edge facilitating its penetration of the material of the leg surrounding the bore within the leg.

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