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DOUBLE NUT FASTENING MECHANISM ADAPTED TO SECURE A THREADED STEM TO A TUBE

BACKGROUND OF THE INVENTION

The present invention relates to a double nut fastening mechanism adapted to secure a threaded stem to an upright tube, and more particularly to an improved structure of double nut fastening mechanism which makes the fine adjustment of the elevation of the threaded stem easy.

Figure 1 shows a double nut fastening mechanism installed in an upright tube 11 to fix a threaded stem 10 at the desired elevation. The double nut fastening mechanism comprises a locating nut 12 fixedly mounted on the upright tube 11 at the top, and a lock nut 13 threaded onto the threaded stem 10 and controlled to fix the threaded stem 10 to the locating nut 12 at the desired elevation. The locating nut 12 is welded to the top end of the upright tube 11. When adjusting the elevation of the threaded stem 10, the threaded stem 10 must be turned upwards or downwards in the fixed nut 12. If the locating nut 12 is not fixedly fastened to the upright tube 11, the threaded stem 10 cannot be firmly supported on the upright tube 11.

SUMMARY OF THE INVENTION

It is one object of the present invention to provide a double nut fastening mechanism which can be conveniently installed to firmly secure a threaded stem to an upright tube. It is another object of the present invention to provide a double nut fastening mechanism which makes the fine adjustment of the elevation of the threaded stem easy. To achieve these and other objects of the present invention, there is provided a double nut fastening mechanism which comprises a locating nut

fixedly secured to the top open end of an upright tube, and a lock nut unit mounted on the locating nut and controlled to fix a threaded stem to the upright tube, wherein the locating nut comprises an inside wall, a top chamber defined within the inside wall, and an inner thread provided at the top chamber; the lock nut unit is comprised of an outer nut supported on the locating nut, a hollow conical screw member mounted around the threaded stem and supported on the outer nut, and a holding down screw member threaded onto the threaded stem and threaded into the outer nut to hold down the conical screw member in the outer nut and to secure the threaded stem in position, the outer nut comprising an inner thread, and an inside stop flange at a bottom side, the hollow conical screw member comprising a conical head section supported on the inside stop flange of the outer nut, and an outer thread section extending out of the inside stop flange of the outer nut and threaded into the inner thread of the locating nut, the holding down screw member comprising an inner thread threaded onto the threaded stem, and an outer thread threaded into the inner thread of the outer nut.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a sectional view showing a double nut fastening mechanism according to the prior art.

Figure 2 is an exploded view of a double nut fastening mechanism according to the present invention.

Figure 3 is a sectional view of the present invention, showing the locating nut fastened to an upright tube, the holding down screw member threaded into the outer nut, and a threaded stem secured to the double nut fastening mechanism.

Figure 4 is an exploded view showing the double nut fastening mechanism used in a high-rise floor support structure according to the present invention.

Figure 5 is an elevational view of a high-rise floor structure constructed according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figure 2, a double nut fastening mechanism in accordance with the present invention comprises a locating nut 20, and a lock nut unit 30.

The locating nut 20 comprises an inside wall 21, a top chamber 22 defined within the inside wall 21, and an inner thread 22 provided at the top chamber 22.

The lock nut unit 30 is comprised of an outer nut 40, a hollow conical screw member 50, and a holding down screw member 60. The outer nut 40 comprises an inner thread 41, and an inside stop flange 42 at the bottom side of the inner thread 41. The hollow conical screw member 50 comprises a conical head section 51 at the top, and an outer thread section 52 at the bottom. The outer diameter of the conical head section 51 gradually increases from the outer thread section 52 toward the top. The holding down screw member 60 comprises an inner thread 61, and an outer thread 62.

The inner diameter of the inside stop flange 42 of the outer nut 40 gradually reduces from the inner thread 41 toward the bottom, and fits the tapered periphery of the conical head section 51 of the hollow conical screw member 50. When the hollow conical screw member 50 is inserted into the outer nut 40, the conical head section 51 of the hollow conical screw member 50 fits over the inside stop flange 42 of the outer nut 40 and is supported thereon, and the outer threaded section 52 of the hollow conical screw member 50 extends out of the bottom side of the inside stop flange 42 of the outer nut 40 for threading into the inner thread 23 of the locating nut 20. The

holding down screw member 60 is to be threaded into the inner thread 41 of the outer nut 40 to hold down the hollow conical screw member 50, permitting the conical head section 51 of the hollow conical screw member 50 to be retained firmly between the inside stop flange 42 of the outer nut 40 and the bottom edge of the holding down screw member 60.

Further, the locating nut 20 comprises a radial screw hole 24 into which a tightening-up screw 25 is threaded, and a bottom coupling groove 26 around the periphery. The outer nut 40 comprises a radial screw hole 43 into which a tightening-up screw 44 is threaded. The hollow conical screw member 50 comprises a pair of vertical tool holes 53 symmetrically disposed at the top side of the conical head section 51. The holding down screw member 60 comprises two vertical tool holes 63 symmetrically disposed at the topmost edge thereof. Through the tool holes 53 or 63, the hollow conical screw member 50 or holding down screw member 60 can be positively turned in and out of the locating nut 20 or outer nut 40 with a hand tool.

Referring to Figure 3, the bottom coupling groove 26 of the locating nut 20 is fixedly coupled to the top open end 71 of an upright tube 70, then the holding down screw member 60 is threaded onto the a threaded stem 80, then the threaded stem 80 is inserted through the conical screw member 50 and then threaded into the inner thread 23 of the locating nut 20 and adjusted to the desired elevation, then the holding down screw member 60 is threaded into the inner thread 41 of the outer nut 40 to hold down the conical screw member 50, and then the tightening-up screws 25;44 are respectively fastened tight to

secure the threaded stem 80 and the holding down screw member 60 in position.

Figures 4 and 5 show an application of the present invention to support a high-rise floor, in which the upright tube 70 comprises a bottom mounting plate 90 at the bottom side fastened to the ground floor; the threaded stem 80 comprises a top mounting plate 100 at the top side fastened to the high-rise floor; the locating nut 20 is welded to the top open end 71 of the upright tube 70; a lock nut 110 is threaded onto the threaded stem 80 and adapted to lock the holding down screw member 60. If the elevation of the high-rise floor is to be adjusted, the holding down screw member 60 is loosened from the hollow conical screw member 50, then the hollow conical screw member 50 is turned downwards or upwards in the locating nut 20 to the desired elevation.

While only one embodiment of the present invention has been shown and described, it will be understood that various modifications and changes could be made thereunto without departing from the spirit and scope of the invention disclosed.



What the invention claimed is:

1. A double nut fastening mechanism comprising a locating nut fixedly secured to one open end of a tube, and a lock nut unit mounted on said locating nut and controlled to fix a threaded stem to said tube, wherein said locating nut comprises an inside wall, a top chamber defined within said inside wall, and an inner thread provided at said top chamber; said lock nut unit is comprised of an outer nut supported on said locating nut, a hollow conical screw member mounted around said threaded stem and supported on said outer nut, and a holding down screw member threaded onto said threaded stem and threaded into said outer nut to hold down said conical screw member in said outer nut and to secure said threaded stem in position, said outer nut comprising an inner thread, and an inside stop flange at a bottom side, said hollow conical screw member comprising a conical head section supported on the inside stop flange of said outer nut, and an outer thread section extending out of the inside stop flange of said outer nut and threaded into the inner thread of said locating nut, said holding down screw member comprising an inner thread threaded onto said threaded stem, and an outer thread threaded into the inner thread of said outer nut.

2. The double nut fastening mechanism of claim 1, wherein said locating nut has a radial screw hole into which a tightening-up screw is threaded to tighten up said threaded stem in said locating nut; said outer nut has a radial screw hole into which a tightening-up screw is threaded to tighten up said holding down screw member in said outer nut.

3. The double nut fastening mechanism of claim 1, wherein said conical screw member has at least one pair of vertical tool holes symmetrically disposed at the topmost edge thereof for turning with a hand tool; said holding down screw member has at least one pair of vertical tool holes symmetrically disposed at the topmost edge thereof for turning with a hand tool.



4. The double nut fastening mechanism of claim 1, wherein the outer diameter of the conical head section of said conical screw member gradually upwardly increases from the outer thread section of said conical screw member; the inner diameter of the inside stop flange of said outer nut gradually downwardly reduces from the inner thread of said locating nut, and fits the tapered periphery of the conical head section of said hollow conical screw member.

5. The double nut fastening mechanism of claim 1, wherein said locating nut has a bottom coupling groove around the periphery adapted for coupling to the open end of said tube.