United States Patent

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[54] TENSION DEVICE FOR WIRES, STRAPS, AND THE LIKE

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[52] **U.S. Cl.** .....**24/68 D**, 24/269, 254/161

[51] **Int. Cl.**.....**B65d 63/00**

[58] **Field of Search**.....24/68, 16, 19, 269, 71.1, 71.2, 24/71.3; 254/161, 165; 248/361 A

[56] **References Cited**

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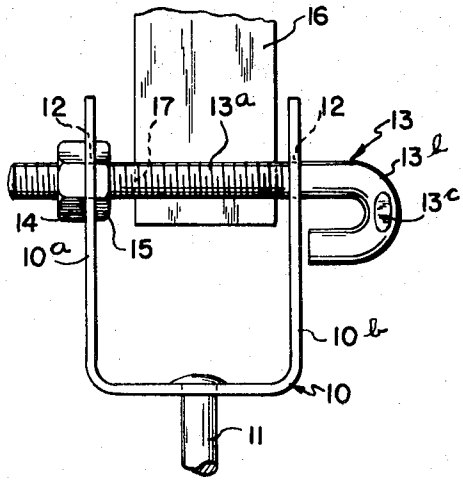
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[57] **ABSTRACT**

A tensioning device for flexible wires, straps, and the like utilizes a U-shape yoke having parallel legs through which passes a straight portion of a cylindrical rod about which the flexible wire or strap is wound by rotation of the rod to provide the desired tension. One end of the rod is threaded and provided with a securing nut on the outside of the associated yoke leg and a lock nut on the inside of the same leg for controlling the endwise movement of the straight portion of the rod relative to the yoke. The other end of the rod is provided with a bent portion which aids in the rotation of the rod to wind up the flexible member thereon and which is interengaged with a part of the associated yoke leg to hold the rod against unwinding action after the desired tension has been attained. The nuts at the other end of the rod hold this locking position.

3 Claims, 5 Drawing Figures



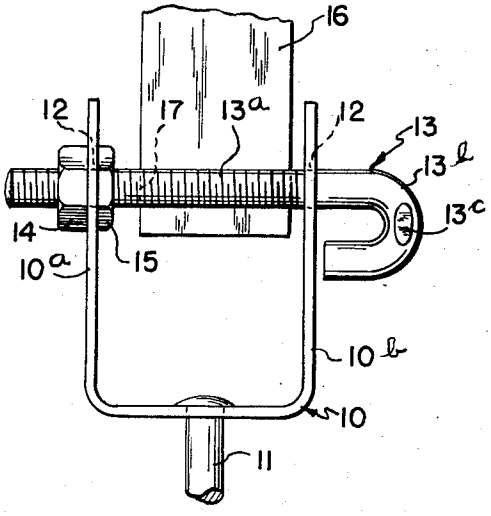


FIG.1

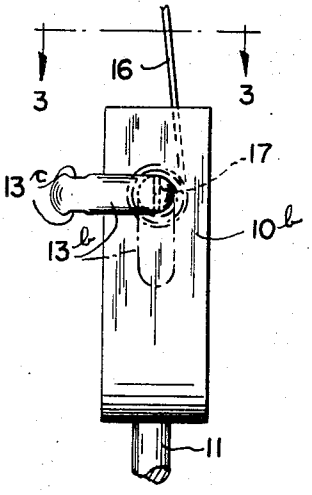


FIG.2

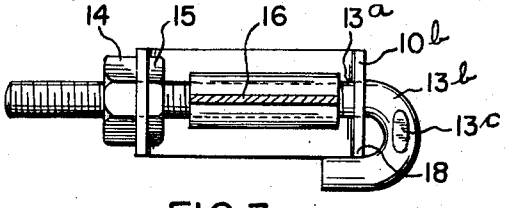


FIG.3

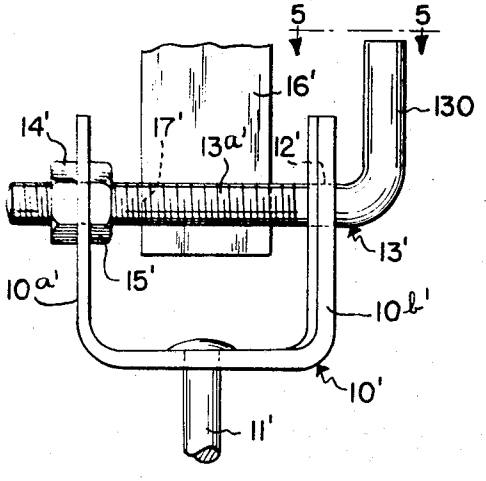


FIG.4

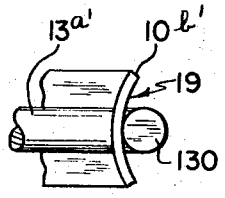


FIG.5

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TENSION DEVICE FOR WIRES, STRAPS, AND THE LIKE

One of the objects of the present invention is to provide a simple device, especially suited for use in tightening and holding in a taut state any line or strap which may require retightening or tensioning at intervals. Such an application might be found in an anchor for a mobile home, an anchor line for a plane or a boat, and similar uses.

Another object of this invention is to provide a device having a small number of parts which are easily made and easily assembled, and trouble-free in use.

Other objects and advantages of this invention will be apparent from the accompanying drawings and description and the essential features thereof will be set forth in the appended claims.

In the drawings,

FIG. 1 is a top plan view of a first embodiment of this invention;

FIG. 2 is a side elevational view of the same showing one of the positions of the bent end of the securing rod in full lines and another position in dot-dash lines;

FIG. 3 is an end elevational view taken along the line 3—3 of FIG. 2;

FIG. 4 is a view similar to FIG. 1 showing a second embodiment of the invention; while

FIG. 5 is a fragmental view taken from the position of the line 5—5 of FIG. 4.

FIGS. 1, 2 and 3 show an embodiment of this invention wherein a U-shape yoke or frame **10** provides two spaced parallel legs **10***a* and **10***b*. Any desired means is provided for fastening the yoke **10** to a fixed support, such as the rod **11** attached to the cross piece of the U-shape yoke. Registering through openings **12** are provided in the legs of the yoke through which passes the straight portion **13***a* of a generally cylindrical rod **13**. The rod is rotatable in the openings **12**. The rod **13** is also movable endwise relative to the yoke **10** and means is provided for holding the rod in different adjusted positions endwise relative to the yoke. A securing nut **14** is threaded on the left-hand end of rod **13** as seen in FIGS. **1** and **3** on the outside of the yoke leg **10***a*. A lock nut **15** is also threaded on the rod **13** on the inside face of the leg **10***a*.

Means is provided for attaching one end of a flexible member, such as a wire, strap or the like, **16** to the rod portion **13***a* for winding. This may be a through opening **17** passing through a diameter of the rod portion **13***a* or the rod could have a central slot cut on a diameter beginning at the left-hand end of rod **13** as viewed in FIG. **1** so as to enter the strap member **16** in the position shown in FIG. **1**. Obviously, in the case of a wire or the like, a round hole could be pierced through the rod portion **13***a* on a diameter thereof.

The right-hand end of rod **13** as seen in FIGS. **1** and **3** is provided with a bent portion **13***b* adapted to interengage with a portion of the yoke leg **10***b* upon endwise movement of the rod portion **13***a* toward the left as viewed in FIG. **1** in order to lock the rod **13** against unwinding when the tensioning process is completed. To this end, the end portion **13***b* in FIGS. **1**, **2** and **3** makes a U-turn back toward the yoke capable of embracing that portion of the associated yoke leg **10***b* between the straight portion of the rod **13***a* and one edge of the associated yoke leg **10***b* as indicated at **18** in FIG. **3**.

Preferably, but not necessarily, flattened portions **13***c* may be provided on opposite sides of the bent portion **13***b* of the rod **13** so that the bent portion may be more easily gripped by a wrench. Otherwise, the rod **13** may be rotated to provide the desired tension by passing a bar through the space between the bends of the U-turn shown at **13***b*.

The use of the device of FIGS. **1**, **2** and **3** should now be apparent. With the yoke **10** fastened through the member **11** to some fixed support or anchor, the parts are placed in the position of FIG. **1** with the flexible tensioning member **16** attached to a mobile home or vehicle which it is desired to anchor under tension. This member **16** is passed through an opening in the rod portion **13***a* as previously described. The bent portion **13***b* of the rod is then rotated to wind the flexible member **16** upon the rod portion **13***a*, the nuts **14** and **15** being sufficiently loosened at this time to provide for the desired rotation of the rod **13** while at the same time holding the bent portion **13***b* clear of the yoke leg **10***b*. When sufficient tension is achieved in the flexible member **16**, and with the rod portion **13***b* in the full line position of FIGS. **2** and **3**, the nuts **14** and **15** are so manipulated as to move the rod portion **13***a* endwise toward the left as viewed in FIGS. **1** and **3**, until the bent portion **13***b* reaches the position shown in FIG. **3** where it embraces that portion of the yoke leg **10***b* between the straight portion of the rod **13***a* and one end of the associated yoke leg at **18**. In this position the nuts **14** and **15** are tightened, after which the tensioned member **16** is held firmly in position.

In the modification of FIG. **4**, all parts performing the same function as those in the first embodiment are given the same reference characters with a prime suffix. The only difference between this embodiment and that first described is in the bent portion **130** of the rod **13'**, and the manner in which the same is interengaged with the associated leg of the yoke **10'** to provide locking engagement after the flexible member **16'** has been tensioned.

Here the bent portion **130** has a right angle bend away from the straight portion **13***a'* of the rod **13'**, and a recess **19** is provided in the yoke leg **10***b'*, this recess extending radially from the opening **12'** through which the rod **13'** extends. This recess **19** could extend in any radial direction but a simple manner to form the same is shown in FIGS. **4** and **5** where the recess extends longitudinally of the leg **10***b'* of the yoke.

In use, the operation of the second embodiment of FIGS. **4** and **5** is quite similar to that shown in FIGS. **1**, **2** and **3**. With the parts in the position of FIG. **4** and with the nuts **14'** and **15'** loosened, the flexible member **16'** is engaged in a slot **17'** in the straight portion **13***a'* of the rod **13'** between the legs of the yoke. The member **16'** is then wound on the rod portion **13***a'* by rotation of the rod using the bent portion **130**. If a wrench is used, then flattened portions on opposite sides of the rod bent portion **130** may be provided as suggested at **13***c* in the first embodiment. Another manner would be to place a length of pipe over the end of the bent portion **130**. In any case, the rod **13'** is rotated until sufficient tension is achieved in the member **16'**, after which the nuts **14'** and **15'** are manipulated to carry the rod portion **130** from the position of FIG. **4** to the position of FIG. **5** where it is received in a locking interengaging manner in the recess **19** as shown in FIG. **5**. Then tightening of the nuts **14'** and **15'** hold this position as long as desired.

It should be obvious that in both embodiments of this invention the lock nut **15** may be utilized to push the rod **13** or **13'** toward the right as viewed in FIGS. **1** and **4**, respectively, in order to disengage the bent portion **13***b* or **130** when it is desired to release the tension in the flexible member **16** or **16'**.

What is claimed is:

1. A tensioning device for flexible members such as wires, straps and the like to be tensioned, comprising a generally U-shape yoke adapted to be fastened to a support, said yoke having two spaced parallel legs, there being registering circular openings in said legs, a generally cylindrical rod having a straight portion passing through said opening and rotatable therein and extending outside of said legs, one end of said rod being threaded, a securing nut threaded on said one end of said rod outside of the associated leg, a lock nut threaded on said one end of said rod inside of the associated leg, said nuts being adjustable on said rod to control its position endwise relative to said yoke, means for securing one end of a flexible member to said rod between said legs, there being a bent portion in the other end of said rod at its distal end, said bent portion aiding in the rotation of said rod to wind said flexible member thereon, and said bent portion and the associated leg of said yoke having interengaging parts movable by endwise movement of said rod into locking engagement after said flexible member has been tensioned by winding the same on said rod, which engagement is maintained by adjustment of said nuts.

2. A tensioning device as defined in claim 1, wherein said bent portion of said rod makes a U-turn back toward said yoke capable of embracing that portion of the associated yoke leg between the straight portion of said rod and one edge of said associated yoke leg, said bent portion of said rod and said embraced portion of said leg providing said interengaging parts.

3. A tensioning device as defined in claim 1, wherein said bent portion of said rod makes substantially a right angle bend

away from the straight portion of said rod, there being a recess in the outer face of the associated yoke leg extending radially from said opening in said associated leg through which said rod extends, and said recess receiving said right angle bend upon endwise movement of said rod relative to said yoke and providing said interengaging parts for locking said rod against turning.

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