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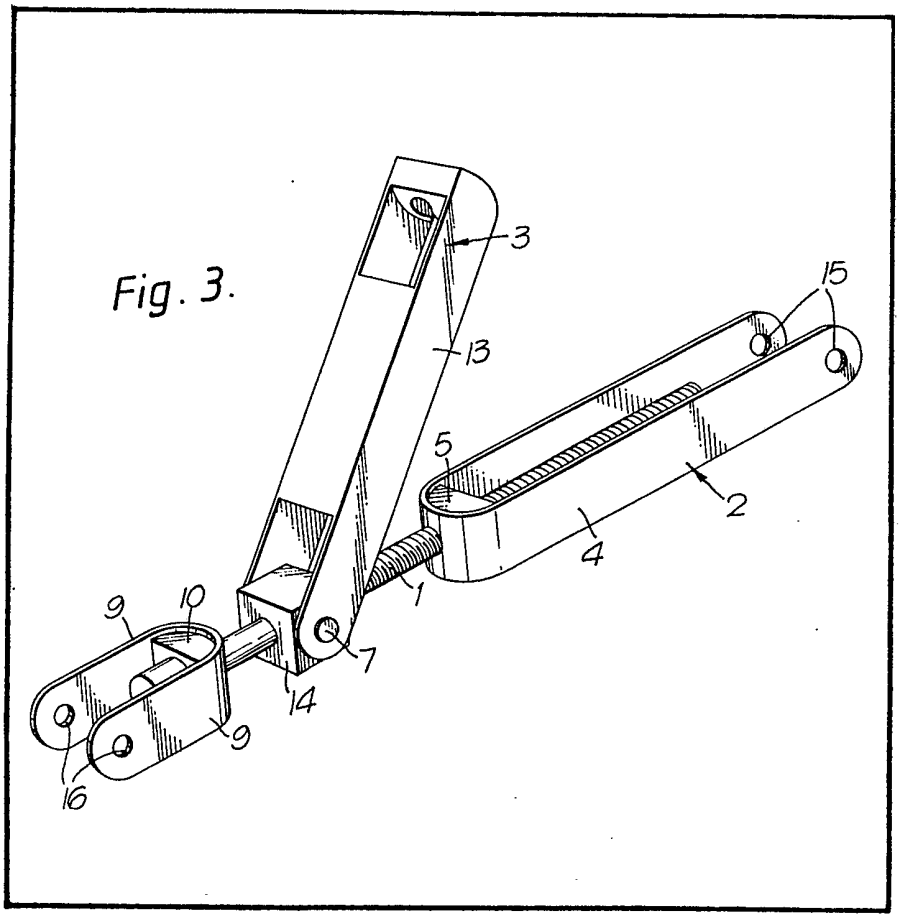
(54) **Tensioning Device**

(57) A tensioning device, such as a rigging screw, includes a bolt member (1), a female screw-threaded member (4) and a pivotally mounted locking member (3). In use, cables or the like which are to be tensioned may be attached to the device by means of apertures (15, 16) in the bolt and female members, and the device adjusted by screwing the female member onto or off the the bolt member, and further relative rotation is prevented by pivotting the locking member (3) into locking engagement with the female member (4).



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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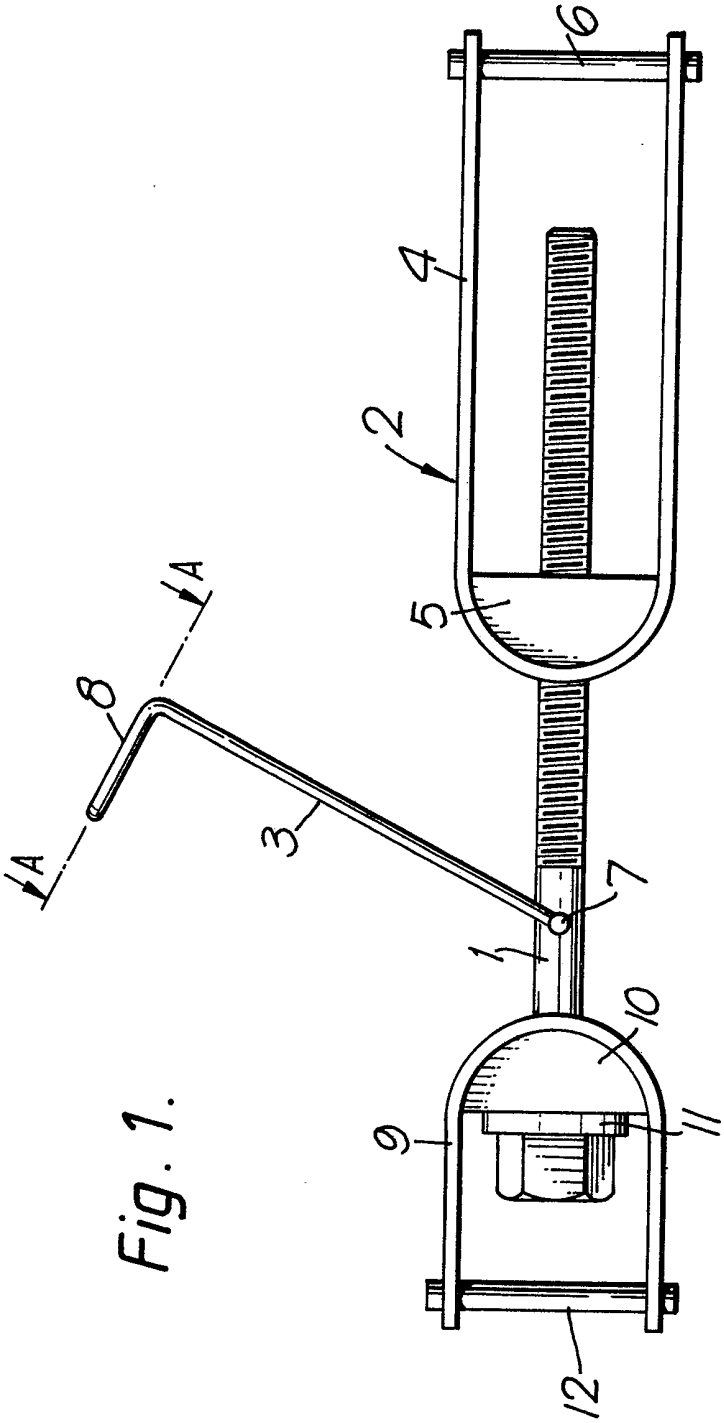

Fig. 1.

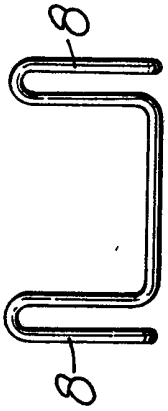

Fig. 2.

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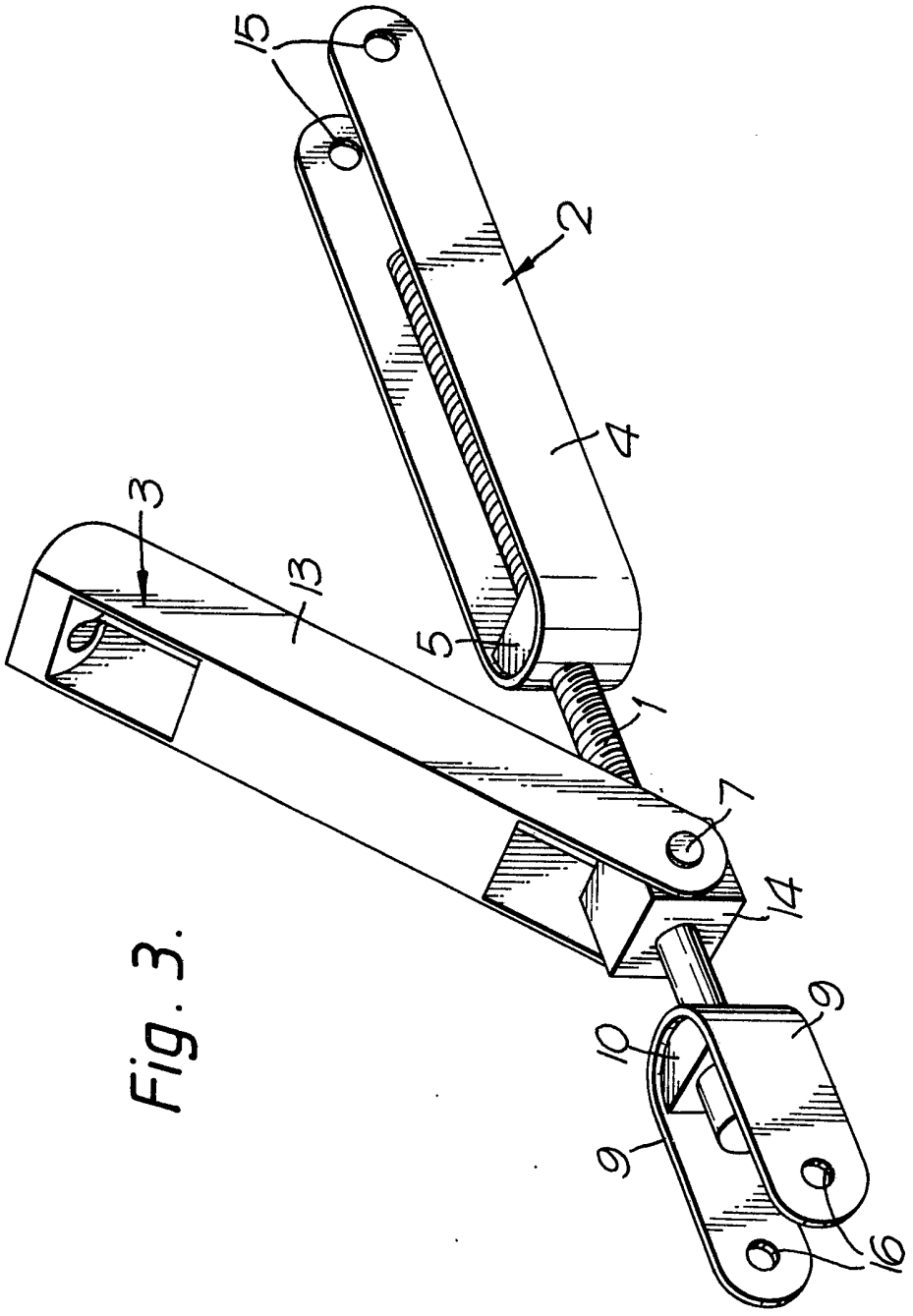

Fig. 3.

SPECIFICATION

Tensioning Device

The present invention relates to a tensioning device.

There are numerous instances in which it is necessary to tension a cable, rope, wire or the like. A number of devices have been devised for this purpose and one widely available type includes a bolt having an aperture or eyelet for the cable, rope or wire, a co-operating nut for tensioning the bolt, and a locking nut to prevent relative movement between the nut and the bolt. A difficulty arises when devices of this type are used to join two separate cables, for example parts of a boat's rigging or parts of a guy rope. For convenience, such devices are referred to herein as rigging screws.

The present invention permits the use of locking nuts to be avoided, and by the provision of a locking member in the form of a lever, facilitates the rotation of the tensioning screw section of the device. Further, whereas rigging screws conventionally require both right and left-handed threaded sections in the tensioning screw, the device according to the present invention requires only a single thread.

Accordingly, the present invention relates to a device comprising a screw-threaded bolt member, a female screw-threaded member threaded onto the bolt member, and a locking member pivotally mounted on the bolt member or the female member with its pivotal axis substantially perpendicular to the longitudinal axis of the bolt member, said locking member being pivotally moveable into and out of locking engagement with the female member or the bolt member respectively, by which locking engagement relative rotational movement between the bolt member and the female member is prevented.

The invention will be further described with reference to the accompanying drawings in which like reference numerals refer to like parts and in which:

Fig. 1 is a side elevation of a device according to the invention;

Fig. 2 is an end view of the locking member along the lines A—A of Fig. 1;

Fig. 3 is a perspective view of a further device according to the invention.

Referring now to Figures 1 and 2 the device comprises a bolt member 1 and a screw threaded member 2 mounted thereon. Pivotally mounted on the shaft of the bolt is a locking member 3.

The screw threaded member 2 comprises a shaped metal strap 4, suitably of stainless steel, mounted on a tapped and shaped insert 5. The strap 4 is optionally provided with a fixing bar or pin 6 to which cables or the like are secured in use.

The locking member 3 takes the form of a metal clip, suitably of stainless steel, mounted on the bolt member 1 by means of a pin 7 passing through the shank of the bolt member. As shown in Figure 2, the end of the clip is a spring clip shaped to engage with the strap 4 and be releaseably retained thereon by means of the gripping effect of the arms 8 of the spring clip. It will be understood that in Figure 1, the strap 4 must be rotated through 90° before the locking member 3 can be engaged on the strap.

The head of the bolt 1 may be provided with means or securing the device to a cable or the like in use. The means illustrated in Fig. 1 comprises a U-shaped metal strap 9, suitably of stainless steel, rotatably mounted on the bolt by means of an aperture (not shown), a shaped insert 10, and a washer or thrust brace 11. The strap 9 is optionally provided with a fixing bar 12 to which the cable, or the like may be secured in use.

In use, cables, wires, ropes or the like (not shown), are secured to one or both of the fixing bars 6 and 12. If only one of the fixing bars is so secured, the other end of the device may be bolted, screwed, tied or otherwise secured to a fixed mount. With the locking member 3 out of engagement with the strap 4, the bolt member 1 is screwed into the threaded member 2 until the desired tension is achieved. The screw action may be facilitated by positioning the locking member 3 substantially perpendicular to the shank of the bolt member 1 and using the locking member 3 to gain additional leverage for rotating the bolt member 1. The locking member 3 is then pivoted so that the arms 8 thereof are secured onto the strap 4, in which position relative movement between the bolt member 1 and screw threaded member 2 is prevented.

An alternative device may be provided by rigidly mounting parts 9 and 10 onto the bolt member 1, and pivotally mounting the locking member 3 onto the screw threaded member 2, such that the locking member 3 can be moved into locking engagement with the strap 9 analagously to the engagement with strap 4 described above with reference to Fig. 1.

In a further alternative, the parts 9, 10 and 11 might be replaced by a shackle passed through an aperture in the head of the bolt.

The device illustrated in Figures 1 and 2 is particularly suited for relatively light work, for example as a rigging screw in a sailing dinghy, where the tensions imposed on the device are not relatively high.

Turning now to Figure 3, the device shown includes a locking member 3 formed as a lever 13 of rectangular-section open on one long side. The lever 13 is pivotally mounted on a block 14 which is rigidly mounted or formed on the bolt member 1. In the locking position, the lever 13 encloses the strap 4.

Where the level 13 is made of a heavy material, for example a thick steel plate, the weight of the lever will bias it into the locking position.

In place of the optional fixing pins or bars 6 and 12 of the device of Figure 1, the device of Figure 3 may be provided with apertures 15, 16 adjacent to the ends of the members 2, 9. In use, pins or bolts (not shown), may be passed through the

apertures, and secured in position.

The device of Figure 3 is capable of accepting higher forces than the device of Figure 1, and is suitable for use as a rigging screw, or as a tensioning device on, for example, a guy rope.

Although the locking member 3 of the device illustrated in Figure 3 may be biassed into the locking position by its own weight, if desired the device may include spring means to bias the locking member into the locking position. Alternatively, or additionally, the device may include retaining means for releaseably retaining the locking member in the locking position. Such means include clips, toggles or catches, or a pivoted pin adapted to pass through apertures in both the locking member 3 and the member 2. A further alternative retaining means comprises a sleeve, for example of metal of plastics material, which is slideably mounted on the strap 4 so as to be capable of being slid over the locking member 3 when in the locking position.

A further modification to either the devices shown comprises strap 4 being in the form of a closed loop with two bolt members 1 threaded one onto each end. If the bolts are of reverse thread, rotation of the strap 4 increases or decreases the tension at twice the rate obtained using a single bolt member 1.

Claims

1. A device comprising a screw-threaded bolt member, a female screw-threaded member threaded on to the bolt member, and a locking member pivotally mounted on the bolt member or the female member with its pivotal axis substantially perpendicular to the longitudinal axis of the bolt member, said locking member being pivotally moveable into and out of locking engagement with the female member or the bolt member respectively, by which locking engagement relative rotational movement between the bolt member and the female member is prevented.

2. A device as claimed in claim 1 wherein the locking member is capable of being used, when not in locking engagement, as a lever to facilitate relative rotational movement between the bolt and female members.

3. A device as claimed in claim 1 or claim 2 wherein the device includes retaining means for releaseably retaining the locking member in locking engagement with the female member or the bolt member.

4. A device according to claim 3 wherein the retaining means comprises spring clip means mounted on or forming part of the locking member.

5. A device as claimed in any previous claim wherein at least one of the bolt member and the female member is provided with fixing means by which, or through which, a cable, rope or wire is capable of being secured to the device.

6. A device as claimed in claim 5 wherein the fixing means comprises a pin or bar mounted adjacent to the end of either the bolt member or the female member with its axis substantially perpendicular to the longitudinal axis of the bolt member.

7. A device as claimed in claim 5 wherein the fixing means comprises one or more apertures in at least the bolt member or the female member adjacent to the end of the bolt member and/or the female member.

8. A device according to any previous claim which is a rigging screw.

9. A device substantially as described with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.

10. A device substantially as described with reference to and as illustrated in Figure 3 of the accompanying drawings.

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