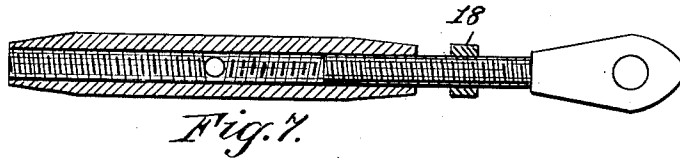
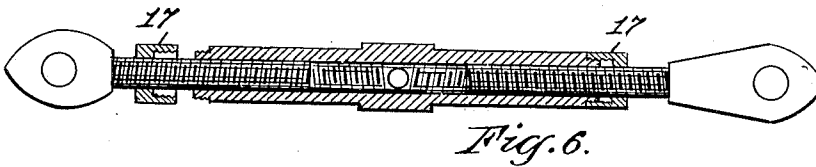
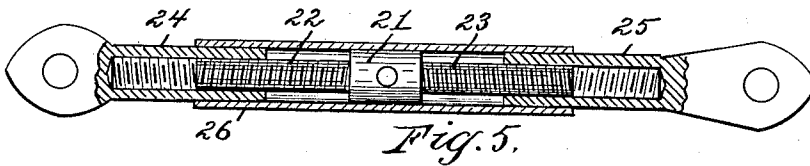
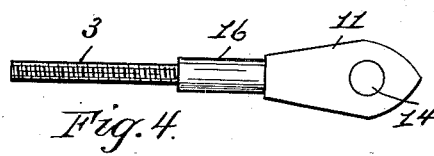
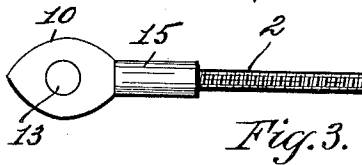
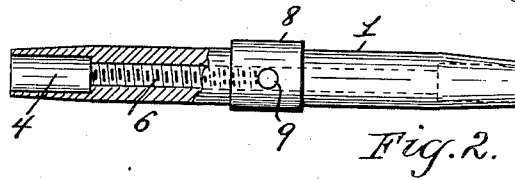
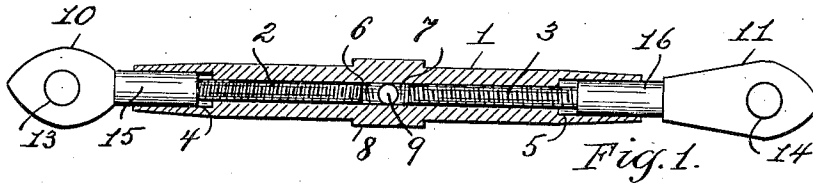


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TURNBUCKLE.
APPLICATION FILED APR. 10, 1918.

1,366,732.

Patented Jan. 25, 1921.



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TURNBUCKLE.

1,366,732.

Specification of Letters Patent. Patented Jan. 25, 1921.

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To all whom it may concern:

Be it known that I, DANIEL HOYT, a citizen of the United States, residing in the city of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Turnbuckles, of which the following is a specification.

My invention relates to improvements in turnbuckles especially adapted for use on aeroplanes.

In the construction of aeroplanes every wire and rod which braces and holds the entire structure together is tightened to a certain tension by a turnbuckle, and the breaking or failure of one turnbuckle might cause disaster to the entire machine.

Owing to the terrific speed at which aeroplanes travel, and the various maneuvers they make cause all kinds of lurching movements of the machine and subject the turnbuckles to extraordinary endwise and side-wise strains. For these reasons turnbuckles for aeroplanes should have a reserve strength, both endwise and sidewise far beyond what would be required in a straight steady pull.

One of the objects of this invention is to make a turnbuckle wherein the threaded shanks are securely held in alinement with the threaded barrels with which they have screw threaded engagement, thereby preventing any side strains on the threaded parts.

Another object is to strengthen the threaded shanks by providing them with enlarged necks with reinforced bearings.

Another object is to provide means for protecting the threaded parts from the elements.

With this end in view, my invention consists in certain novelties of construction and arrangements of parts, as hereinafter set forth and pointed out in the claims.

While the preferred forms of my invention are illustrated in the accompanying drawings, yet it is to be understood that minor changes may be made without departing from the scope thereof.

In the accompanying drawings,

Figure 1 represents a sectional side elevation of my improved device.

Fig. 2 represents a side elevation, partly in section, of the threaded barrel which constitutes one part of the device.

Figs. 3 and 4 represent side elevations of the threaded shanks, constituting the other parts of my improved device.

Figs. 5, 6, 7 and 8 represent sectional side elevations of slight modifications of my improved device.

Similar numerals of reference refer to like parts throughout the specification and drawings.

The turnbuckle illustrated in the accompanying drawings, in its preferred form consists of three elements, namely; a barrel 1 and the threaded shanks 2 and 3. The barrel is preferably made from a naval bronze rod provided with a central bore, said central bore terminating a short distance from the ends of the barrel into enlarged cavities 4 and 5. The central bore from one end to the center of the barrel is provided with a left handed screw thread 6, and from the other end of the barrel to the center thereof with a right handed screw thread 7, to be presently described.

As is customary in turnbuckles of this kind, the barrel is provided with a central hub 8, said hub being provided with an aperture 9 for the reception of a rod, by means of which the barrel may be turned. The threaded shanks 2 and 3 are preferably made from nickle-steel, having the usual heads 10 and 11 provided with apertures 13 and 14 to which the cables may be secured. The shanks 2 and 3 are screw threaded to correspond with the threaded bore of the barrel, with which they have screw-threaded engagement, namely, one is provided with a left handed screw thread and the other is provided with a right handed screw thread. Each of the threaded shanks is furthermore provided with an enlarged neck 15 and 16, designed to be received into and engage with the cavities 4 and 5 formed in the ends of the barrel 1.

By providing the shanks with the enlarged necks a threefold purpose is accomplished, namely; the weakest portion of the ordinary turnbuckle being the neck, is here strengthened at this point. By locating the enlarged necks of the threaded shanks into and having engagement with the enlarged cavities of the barrel, the heads are held in alinement with the threaded portions and side strain comes on the walls of the enlarged cavities rather than on the threads. The threaded parts are protected from the elements.

Inasmuch as the dimensions of the enlarged necks and cavities are such that at no time does any portion of the threaded shanks extend beyond the end of the barrel, this

being the case a portion of the enlarged neck is always in the cavity and supported thereby.

It is apparent that the construction and arrangement of the parts just described will prevent chattering of the threaded parts by wire or rod vibration, that the barrel and shanks will always be held in true alinement and that no side strain can come on the threaded parts, and that it will be practically impossible to bend or break the turnbuckle by the hardest usage.

In assembling the turnbuckle, the threaded shanks are screwed into the respective ends of the barrel until the enlarged necks 15 and 16 enter the cavities 4 and 5, then the heads are secured to the wire or cable which is to be tightened and a lever or rod is inserted into the aperture 9 in the hub of the barrel and the latter revolved thereby drawing the shanks toward each other in the barrel and tightening the cable to any tension required.

As the threaded shanks are drawn inwardly, the enlarged necks 15 and 16 are drawn into the enlarged cavities 4 and 5 in each end of the barrel, which it will be readily understood prevents any side strain on the threaded shank and also prevents any vibration or chattering of the threaded parts. Inasmuch as the side wall of the ends of the barrel engage with the enlarged necks of the threaded shanks, thereby reinforcing the latter, they may be subjected to any amount of side strain or shock without injury thereto. As the threads on the shank are continuous, the holding power increases as they are screwed further into the barrel which increases the strain on the cable.

Fig. 5 illustrates a modified form of my novel turnbuckle wherein 21 is a hub of a specified diameter and having screw threaded extensions 22 and 23, 24 and 25 are shanks of the same outside diameter as the hub 21, the shanks 24 and 25 being bored and screw threaded to correspond with the screw threaded extensions 22 and 23 on which they are adapted to screw. 26 is a tube of the same inside diameter as the outside diameter of the hub 21 and the shanks 24 and 25, the tube 26 is secured to the hub 21 at the center and the ends of the tube 26 forming cavities which support the shanks and hold them in rigid alinement with the threaded extensions.

In some cases, I may provide the screw threaded shank with a lock nut 17 which has screw threaded engagement with the shank and the end of the barrel, as illustrated in Fig. 6, or with a lock nut 18 which has screw threaded engagement with the screw threaded shank only, so that when said lock nuts are screwed against the ends

of the barrel, the shanks are locked in their adjusted positions.

In some cases I may make use of the form illustrated in Fig. 8 of the drawings in which a short section of a tube 19 is secured to the interior of a tube 20 of longer dimensions, in any desired or convenient manner, the short section of the tube 19 being provided with a central bore screw threaded in opposite directions, designed to receive the screw threaded shanks, whereby the space between the end of the short tube 19 and the end of the long tube 20 forms a cavity corresponding to the cavity illustrated in Figs. 1 and 2 of the drawings, designed to receive the enlarged neck of the threaded shank for the same purposes heretofore described.

Experience has demonstrated that the device above described is a highly efficient one, and while the device shown is the preferred embodiment of my invention, I do not care to restrict myself to the exact details of construction described, it being obvious that minor variations thereof not involving the exercise of invention, may be made by any skilled mechanic, and such departures from what is herein described and claimed, not involving invention, I consider as within the scope and terms of my claims.

I claim:

1. A device of the character described, comprising a screw threaded barrel the ends thereof being provided with enlarged cavities, and shanks provided with screw threaded portions having screw threaded engagement with said barrel, said shanks being further provided with enlarged necks adapted to have holding engagement with the cavities in said barrel.

2. A device of the character described, comprising an internally threaded barrel, shanks adapted to have screw threaded engagement with said barrel, said barrel and shanks being provided with cooperating means for supporting the said shanks in said barrel beyond the threaded portions.

3. A device of the character described, consisting of a barrel having an internal screw threaded portion and a smooth portion, a shank having a screw threaded portion and a smooth portion, the screw threaded portion of the shank adapted to engage the screw threaded portion of the barrel and the smooth portion of the shank adapted to engage the smooth portion of the barrel, thereby supporting the said shank.

This specification signed and witnessed this 2nd day of February 1918.

DANIEL HOYT.

Witnesses:

FRED'K C. FISCHER,
EDWARD HAZLER.