

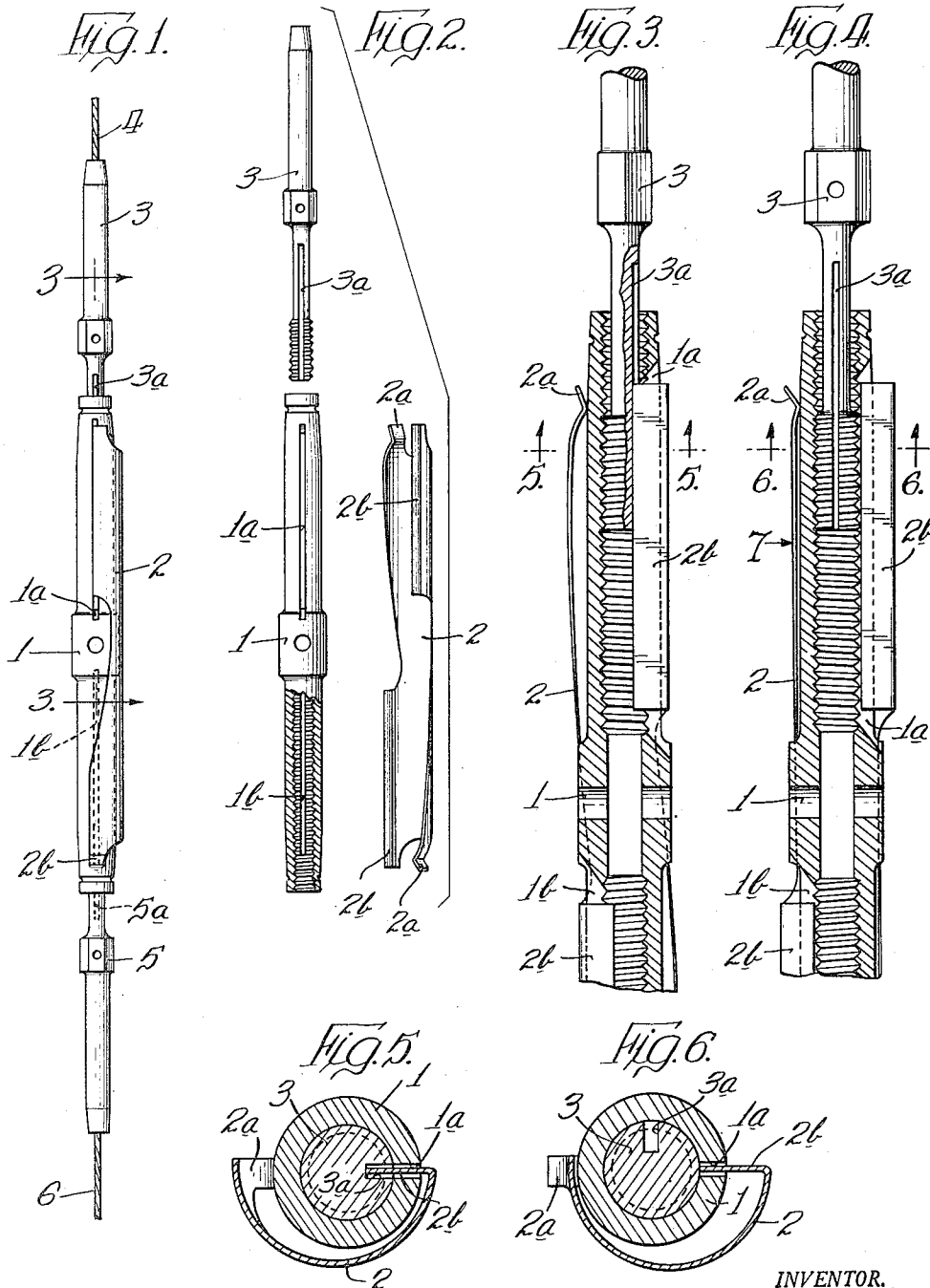
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TURNBUCKLE ASSEMBLY

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TURNBUCKLE ASSEMBLY

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4 Claims. (Cl. 287—60)

This invention relates to an improvement for safetying a turnbuckle and may be employed in any and all conditions where use of a turnbuckle is desired, especially, but not limited, to use in aircraft in connection with rigging, cable, or otherwise, which require adjustments.

One purpose of the invention is to provide a positive mechanical means for safetying a turnbuckle barrel to its threaded terminal ends.

Another purpose is to provide a preformed sheet metal tempered spring, having its opposite end portions of arcuate cross sectional form whereby to embrace the cylindrical turnbuckle barrel; and to incorporate in such a spring a pair of radially extending keys that are maintained in locked position under tension with the aid of spring loaded tabs located at points opposite to the keys.

Another purpose is to provide a turnbuckle which, in response to manual pressure applied locally at the spring loaded tabs, will unlock the barrel with respect to its terminal ends.

Another purpose is to provide a turnbuckle assembly which permits quick, positive and manually simple adjustments, when required.

Other purposes will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawing wherein:

Figure 1 is a view in elevation of the complete assembly of parts comprised in the present turnbuckle;

Fig. 2 is an exploded view of the turnbuckle parts, except only one terminal end which is omitted from the view;

Fig. 3 is a fragmentary longitudinal sectional view of the assembly in locked position;

Fig. 4, which is a similar view, shows the assembly in unlocked position;

Fig. 5 is a transverse section, taken on line 5—5 of Fig. 3; and

Fig. 6 is a transverse section, taken on line 6—6 of Fig. 4.

In the drawing 1 indicates a hollow turnbuckle barrel provided in its opposite end portions with longitudinal key slots 1a and 1b. Embracing the turnbuckle barrel is a suitably tempered, elongated, sheet metal spring 2 having oppositely facing arcuate cross-sectional contours in its two end portions. Such a spring fitting is applicable to a conventional turnbuckle barrel and to its threaded terminal ends 3 and 5. The spring 2 is preformed with an inwardly extending radial flange 2b on each of its two end portions to serve as a key when the flange is placed in the barrel slot 1a and in a keyway 3a that is formed in the threaded terminal end 3. The flange 2b may be released, i. e., sprung out from the keyway 3a by depressing the spring at a point 7 in its side opposite the flange and which terminates in an inwardly bowed tab 2a. The description thus far is concerned with safetying or locking of one-half of the turnbuckle assembly, viz. the top half of the assembly as shown in Fig. 1.

The bottom half of the turnbuckle assembly includes the same spring 2 from which is inwardly extended a second radial flange 2b that serves as a key when placed in the barrel slot 1b and in the keyway 5a in the threaded terminal end 5. The flange 2b may be released from the keyway 5a by depressing the spring at the point 7 which is removed from an inwardly bowed tab 2a that is formed at one end of the spring 2. Each tab is spring

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loaded in that, when engaging the barrel, the longitudinally adjacent portion of the spring is tension-bowed so as to be normally spaced from the barrel. When this bow is flattened, in response to pressure, the tab bears heavily on the barrel and, in so doing, forces the flange 2b outwardly from the keyway 3a (or 5a) to free the associated terminal end for rotation relative to the barrel.

It should be noted that the relation between the upper half and the lower half of the turnbuckle barrel assembly in Fig. 1 is such that the key slots 1a and 1b are on opposite sides of the barrel 1 with respect to each other. This allows the arcuate spring, when placed in position as in Fig. 1, to embrace the barrel and be fastened and maintained in place without any other connection or method of fastening. Although Fig. 1 shows the parts 4 and 6 to be a cable, this may vary widely, e. g., a rod, shaft, wire, or series of wires, or any other continuous connecting means. What I am herein describing and showing is a convenient and efficient embodiment of my invention, which, however, is not to be construed as limiting me to my specific description and showing herein.

Figs. 3 and 5 are sectional views showing the threaded terminal end 3 in locked position. Fig. 3 shows the flanged edge 2b extending approximately the entire length of the threaded tap in the turnbuckle barrel 1 to provide for locking the threaded terminal end 3 in any position or at any depth therein. The threaded terminal end 3, therefore, may be screwed into the barrel 1 to its fullest utilization or capacity or to any fractional measurement thereof, with the same degree of effectiveness and efficiency of safetying or locking. This automatically provides a safetying through 360° rotation of the threaded terminal end 3 within the barrel 1, unless an overbalancing force be externally applied to the spring 2 at the point 7.

Figs. 4 and 6 are sectional views showing the threaded terminal end 3 in unlocked position. In Fig. 4 the flange 2b is shown as resting on the outer periphery of the threads of the threaded terminal end 3. The flange 2b is under spring compression due to the spring loaded tab 2a which is pressing against the barrel 1 on the opposite side of the barrel.

It should be specifically observed that if an external force is exerted at the point 7 of the spring 2, the threaded terminal end 3 is free to turn or rotate in either direction to the desired position or depth in the turnbuckle barrel 1. When the external force at the point 7 of the spring 2 is relieved, the spring loaded tab 2a again causes the flange 2b to be introduced or forced into the keyway 3a of the threaded terminal end 3 by means of a spring compression load. It will be noted that the flange 2b will be forced into the keyway 3a when the threaded terminal end 3 is rotated to the point that its keyway 3a registers with the slot 1a in the turnbuckle barrel 1.

It will be realized that whereas I have described and illustrated a practical means for safetying a turnbuckle barrel to threaded terminal ends, nevertheless many changes may be made in the size, shape, number, relation and disposition of the parts without departing from the spirit of my invention. The description and drawing herein should be taken as illustrative or diagrammatic of my invention rather than as limiting me to the specific showing herein.

The use of this method of safetying a turnbuckle barrel allows the user to assemble and disassemble and adjust the turnbuckle cable or rod assembly with ease and within a small fraction of the time required with a conventional lock-wired assembly.

The use of this device for safetying a turnbuckle barrel makes possible the assembling and disassembling and adjusting of the cable or rod, etc., within a minimum amount of time, is a positive and expeditious means of safetying, and eliminates the necessity for wrapping and unwrapping or winding and unwinding of a wire or a series of wires as is the case in the conventional lock-wire assembly.

The operation of the device has been fully expressed in the foregoing explanations of the drawing wherein it

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is indicated that the external exertion of force applied at the point 7 near the spring loaded tab 2a serves to unlock the flange 2b with respect to the keyway 3a of the threaded terminal end 3 in the upper half of Fig. 1 and the keyway 5a in the threaded terminal end 5 in the lower half of Fig. 1.

I claim:

1. In a turnbuckle assembly, a barrel having on each of its opposite sides a longitudinal slot, one in each end region thereof, two terminal ends in threaded connection with the barrel one at each of its opposite ends and each formed with a longitudinal slot adapted, in one rotative position of the terminal end, to register with the barrel slot proximate thereto, and an elongated pre-formed spring of sheet metal having oppositely facing arcuate contours on its two end portions and each embracing the proximate end portion of the turnbuckle barrel for releasable gripping engagement therewith, the spring in each end portion being flanged inwardly and radially to provide a key receivable within one barrel slot and, when the proximate terminal end is in the requisite rotative position relative thereto, to enter the slot thereof to lock the terminal end against rotation relative to the barrel.

2. A turnbuckle assembly according to claim 1 in which a tab is formed at each spring end oppositely of the proximate flange and inwardly bowed for bearing engagement with the barrel to press the longitudinally adjacent portion of the spring outwardly from the barrel in spaced relation thereto thereby to press the flange key oppositely of the tab into engagement with the registering slots of the barrel and terminal end, the arrangement being such that when a sufficient pressure is inwardly directed upon the said portion of the spring which is disposed outwardly from the barrel, the flange key oppositely thereto will be moved outwardly from its lock-

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ing position relative to the slot of the terminal end to free the latter for rotation.

3. In a turnbuckle including a barrel and a terminal member adjustably received therein in which the barrel and member are rotatable relative to each other, locking apparatus for preventing relative movement of the barrel and member comprising a key lock normally embracing the barrel and having an inwardly extending longitudinal tongue of appreciable length adapted to engage registering slots of appreciable length in the barrel and terminal member when said slots are aligned, the side of the key lock opposite the tongue normally being spaced from the barrel but having an inwardly directed spring portion bearing against the barrel for retaining said tongue in the slots, said opposite side of the lock being movable toward the barrel against the urging of the spring portion to withdraw the oppositely located tongue from engagement with at least the terminal member slot to permit relative movement of said member and said barrel.

4. The turnbuckle locking apparatus of claim 3 wherein said key lock is made of sheet metal and the tongue and spring are each formed from the sheet metal.

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