

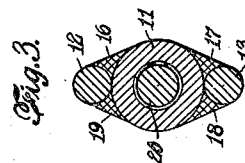
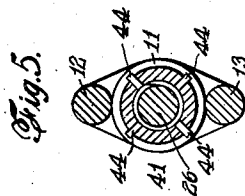
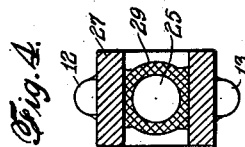
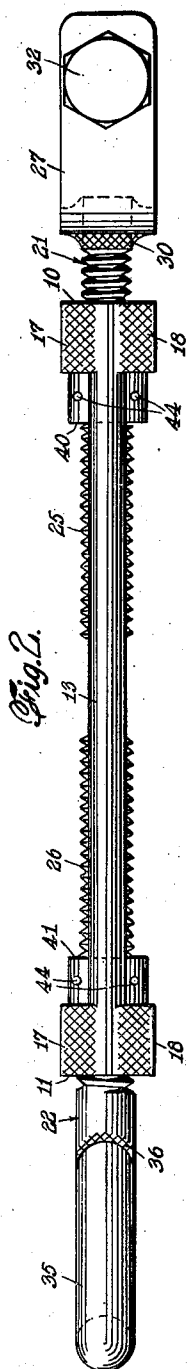
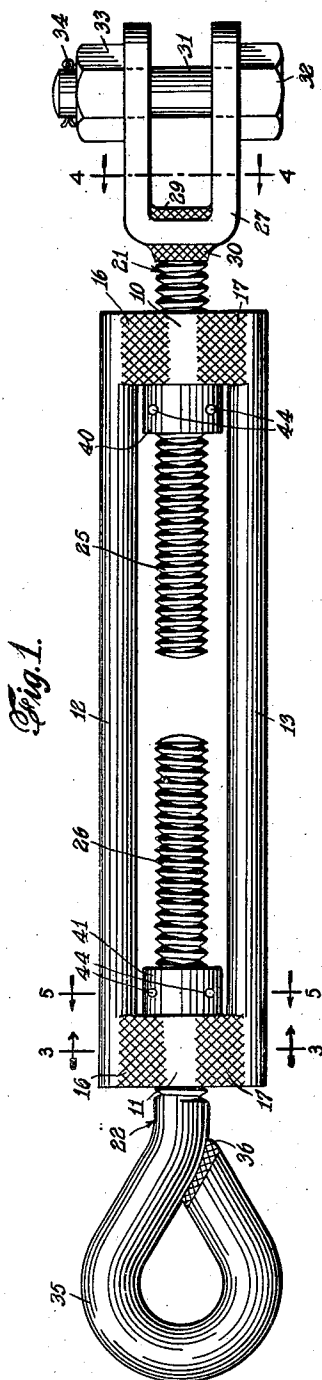
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TURNBUCKLE

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TURNBUCKLE

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1 Claim. (Cl. 287—60)

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This invention relates to turn-buckles. The general object of the invention is to provide a turn-buckle the body of which, instead of being made of steel forgings, is constructed without forging of standard steel bars united by welding-metal electrically deposited. The problem of so fabricating a turn-buckle body is difficult of solution within reasonable cost, because of the enormous strains that a turn-buckle may be required to sustain in the uses to which it may be put.

The turn-buckle hereinafter described attains the above objects by the employment of constructions and arrangements of parts which will be understood from the following description taken in connection with the accompanying drawing in which Fig. 1 is a plan view of a turn-buckle embodying the invention; Fig. 2 is an elevation of said turn-buckle; Fig. 3 is a sectional elevation on the line 3—3 of Fig. 1, showing the welded structure; Fig. 4 is a sectional elevation on the line 4—4 of Fig. 1; and Fig. 5 is a sectional elevation on the line 5—5 of Fig. 1.

Referring to the drawing, particularly to Figs. 1 and 2, it will be apparent that the body of the turn-buckle embodying the present invention consists of two axially-bored end portions, internally threaded respectively with right-hand and left-hand threads, and parallel reins connecting said end portions. In appearance, the body appears to be a homogeneous steel structure like a forging, but it is in fact a composite structure composed of four parts united by electrically deposited welding-metal, thereby producing a strong composite construction.

The composite construction of the turn-buckle body will be apparent from Fig. 3 which shows in cross-section how the reins are united with the end portions of the body. From Fig. 3, it will be apparent that the end portions of the body comprise axially-bored and internally threaded cylindrical members 10 and 11, against the cylindrical surfaces of which the reins 12 and 13 at their ends abut only on lines on diametrically opposite sides of the cylindrical members 10 and 11, thereby providing wedge-shaped spaces between the cylindrical members 10 and 11 and the reins 12 and 13; the said cylindrical members 10 and 11 and the reins 12 and 13 being united by welding-metal, indicated at 16, 17, 18 and 19, electrically deposited in the wedge-shaped spaces between the cylindrical members 10 and 11 and the reins 12 and 13. After the welding-metal 16, 17, 18 and 19 is applied, the outside surface is preferably ground smooth, with the result that the

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welding metal fills the wedge-shaped spaces between said end members and said reins to a plane tangent with the surfaces of the latter; the end portions of the body have the appearance of a homogeneous steel structure, as above mentioned.

The cylindrical members 10 and 11 preferably are cut from a round steel bar, and the reins 12 and 13 are cut from a round steel bar having a diameter considerably less than the diameter of the cylindrical members 10 and 11. However, it is obvious that the cylindrical members 10 and 11 and the reins 12 and 13 may be made from steel bars having cross-sections other than round, provided their shapes are such that the members 10 and 11 and the reins 12 and 13 can be arranged so as to abut only on a line, thereby leaving wedge-shaped spaces between said end portions and said reins adapted to receive the electrically deposited welding-metal which unites the members 10 and 11 and the reins 12 and 13 so as to make a strong body structure. Incidentally, it may be stated that we have discovered that a strong body structure does not result from the use of members and reins having rectilinear cross-sections, when said members and reins are laid together with their flat surfaces abutting and when they are united by electrically deposited welding-metal applied to the corner spaces thus provided by the surfaces of such members and reins.

As will be evident from the drawing, the turn-buckle therein shown has two stubs 21 and 22 having threaded portions 25 and 26 cooperating respectively with the threaded end portions of the body of the turn-buckle. Said stubs 21 and 22 are provided at their outside ends with formations facilitating their attachment to parts which are to be connected by the turn-buckle. As shown in the drawing, the formation on the stub 21 having the threaded portion 25 consists of a jaw 27 which may be made of flat steel of the necessary size, bent at the middle and provided with a hole adapted to receive the outer end of the stub 21; and, as shown in Figs. 1, 2 and 4, electrically deposited welding-metal indicated at 29 and 30 may be employed to rigidly secure the jaw 27 to the threaded portion 25 of the stub 21. A bolt 31 having a head 32 and a nut 33 locked in place by a cotter pin 34 are shown in the drawing cooperating with the jaw in a usual manner. The other stub 22 is shown as provided at its outside end with an eye 35 bent to the shape shown and preferably given a closed effect by electrically deposited welding-metal shown at 36. It will of course be understood that the stubs 21 and 22

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may be provided at their outer ends with other formations facilitating attachment to parts which are to be connected by the turn-buckle, for example, with an open hook; and that the construction of such formations forms no part of the present invention.

In some cases, it is desirable that means be provided for securing the parts of the turn-buckle in any position to which they may be adjusted in use. It is of course customary to apply lock-nuts to the threaded portions of stubs outside of the body of a turn-buckle, and to clamp such nuts against the outside of the ends of the body of the turn-buckle after the turn-buckle has been set to a desired position, in the hope thereby of preventing loosening of the turn-buckle. Experience has shown, however, that lock-nuts so located are not reliable, for the reason that they become loose and ineffective when the turn-buckle is subjected to vibration and turning strains on the stubs, since under such circumstances the stubs may unscrew and carry the lock-nuts away from abutting relation to the end of the turn-buckle body, thereby rendering the lock-nuts ineffective. Moreover, even when lock-nuts are applied to the threaded portions of the stubs within the body of the turn-buckle and are clamped against the inside of the ends of the body of the turn-buckle such lock-nuts may be ineffective in preventing loosening of the turn-buckle under severe conditions of vibration and twisting to which the turn-buckle may be subjected; since in such cases the threaded portions of the stubs may rotate in the nut and in the body of the turn-buckle as though the nut and body were one part.

In our efforts to solve satisfactorily the problem of securing the parts of the turn-buckle in any position to which they may be adjusted in use, we have provided the locking means shown in the drawing and about to be described which is highly satisfactory and positive in its action. Our locking means comprises threaded sleeves 40 and 41 which are internally provided with right-hand and left-hand threads adapted to cooperate respectively with the threaded portions 25 and 26 of the stubs 21 and 22; such sleeves 40 and 41

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being provided with a plurality of holes as shown. These holes not only facilitate rotation of the sleeves 40 and 41 into snug engagement with the inside faces of the end portions of the body of the turn-buckle, but are also adapted to receive pins 44, preferably of soft metal. After the turn-buckle has been adjusted to the position in which it exerts the desired tension on parts to which it may be attached, the threaded sleeves 40 and 41 may be set up snugly against the inside faces of the ends of the body of the turn-buckle, with any suitable tools, and the pins 44 may then be driven into the holes and into engagement with the threaded portions 25 and 26 of the stubs 21 and 22. Then, if loosening rotation of the stubs 21 and 22 tends to occur due to vibration and twisting strains, the threaded sleeves 40 and 41 are carried by the threaded portions 25 and 26 of the stubs into increasingly snug engagement with the inside faces of the ends of the body of the turn-buckle, thereby increasing the locking action of the sleeves 40 and 41. In this way, any loosening of the turn-buckle under even the most severe conditions of vibrations and twisting strains is effectively prevented.

By the construction which has been described and is hereinafter claimed we have contributed to the turn-buckle art an exceedingly strong turn-buckle which may be fabricated without forging from standard steel forms.

What is claimed is:

A turn-buckle body composed of two cylindrical axially-bored and internally oppositely-threaded end members which are spaced apart in axial relation to one another, cylindrical reins axially parallel with the threaded openings in said cylindrical end members and with the cylindrical surfaces of the end portions of said reins abutting on lines the cylindrical surfaces of said end members on opposite sides thereof, and welding metal united with said end members and said reins and filling the wedge-shaped spaces between the cylindrical surfaces thereof to a plane tangent with said cylindrical surfaces.

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