

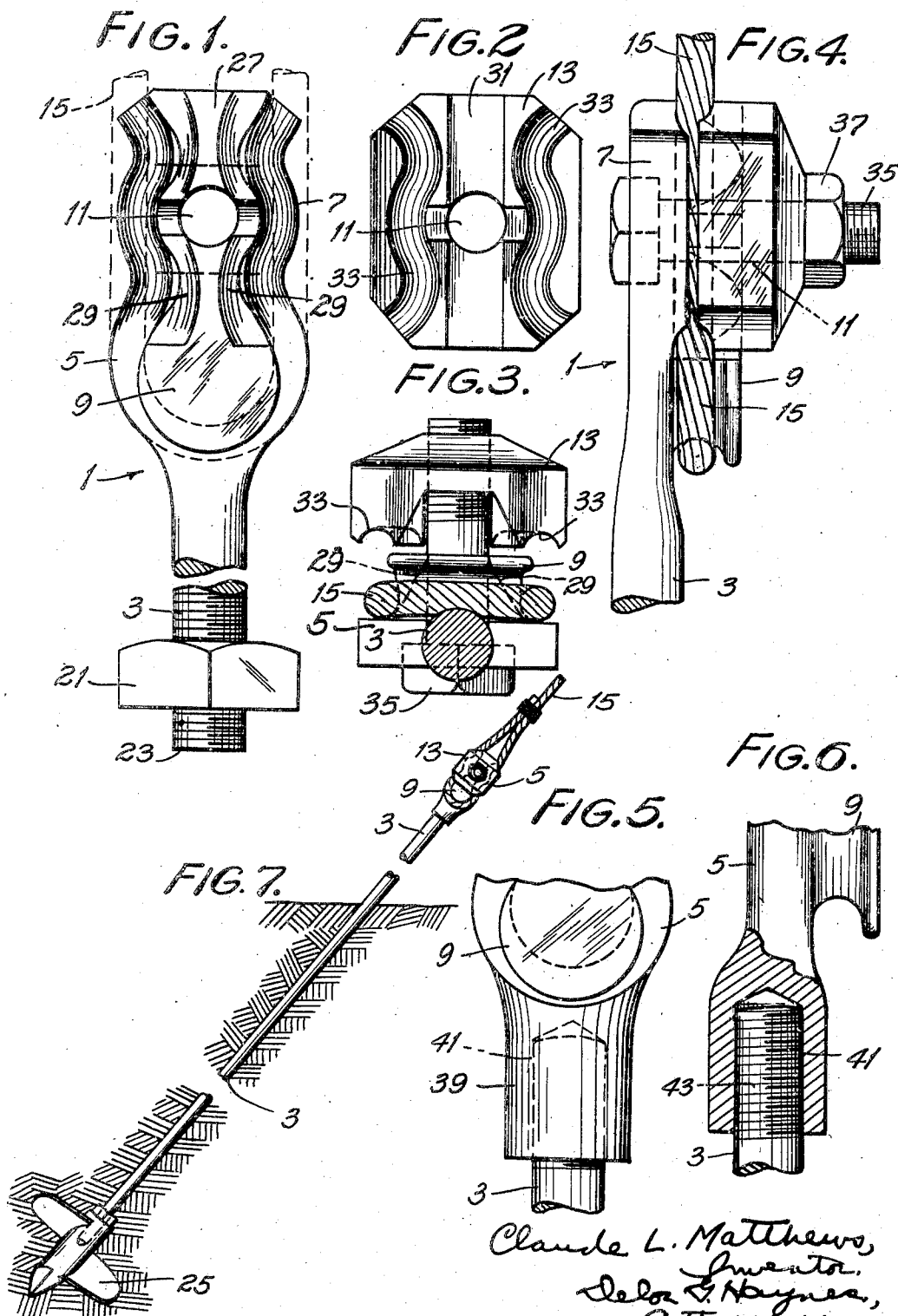
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CLAMP

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CLAMP

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This invention relates to clamps, and with regard to certain more specific features, to guy strand clamps.

Among the several objects of the invention may be noted the provision of simplified means which provides for terminating a guy strand or the like in a taut position, and, if desired, without the use of slack taking devices; the provision of a device of the class described which provides a clamp having a minimum number of elements fastened directly to a terminating means; the provision of a device of the class described which provides for pulling the guy strand taut and clamping it in said taut position, said strand being definitely and positively held throughout the clamp, holding being effected along lines which are of a sinuous shape, positioned laterally to the direction of the applied clamping force; the provision of a device of the class described which provides an integral capstan around which a guy strand can be pulled taut before clamping is effected on the guy strand; and the provision of a device of the class described which is economical to manufacture and simple and positive in operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structure hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated several of various possible embodiments of the invention,

Fig. 1 is a top plan view of the invention with a top block portion of the clamp removed, the dotted lines showing a guy strand in position prior to clamping;

Fig. 2 is a plan view of the inner face of the top block portion which is removed from Fig. 1;

Fig. 3 is an end view of Fig. 1, with a guy strand in place, the top block portion and a bolt being shown ready for clamping action;

Fig. 4 is a side elevation of Fig. 1 with

the block of Fig. 2 in place, in which a guy strand is shown as clamped in place;

Fig. 5 is a fragmentary plan view of another form of the invention.

Fig. 6 is a side elevation of Fig. 5, parts being broken away; and,

Fig. 7 is a side elevation of the invention shown applied, for example, to a ground anchor.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

In the present specification and claims, the term "guy strand" is to be considered as exemplary of any strand serving any purpose in its installation, including wire, rope, cable and the like.

Heretofore difficulties have arisen in terminating guy strand at guy rods because of the stiffness of the strand (usually a wire strand) and because of the number of pieces of apparatus which were required in order to effect a fastening operation. The guy rods were provided with an eye for receiving the guy strand, which was slipped through the eye, turned back, and pulled taut by hand or by a slack puller. The guy strand was then fastened by a clamp affixed independently of the guy rod.

My invention combines in one unit the guy rod, the clamp and capstan means for looping the guy strand and pulling it taut before clamping action is effected.

Referring now more particularly to Fig. 1, in which is illustrated a guy rod or guy bolt adapted to be attached to a ground anchor pole or the like, numeral 1 shows a guy rod or guy bolt comprising a rod 3 with a clamp 5 formed integrally therewith. The rod 3 may be of any convenient type, and, as shown in Fig. 1, may comprise a threaded nut and bolt (21 and 23).

Figs. 5, 6 and 7 illustrate another method of jointing the clamping portion 5 to a guy rod or bolts. In this method the portion 5 has an extension 39 extending from the clamp 5 and having therein a threaded recess 41, adapted to threadingly receive a threaded end 43 of the guy rod or bolt 3. The clamp and the rod are joined by threading

the clamp 5 to the rod 3. This form of the invention permits of assembling the clamp and the rod or bolt in the field.

The preferred design and operation of the clamping portion 5 is similar to the one-bolt clamp set forth in the application of Theodore Birkenmaier, filed October 6, 1930, Serial No. 486,713, and as shown in Figs. 1 and 2 herein, this form of the clamp comprises a male base portion 7 on the clamping portion 5, and a female top block portion 13. It will be understood that an alternative design could be made that would have the female clamping member 13 made integral with the rod or bolt and the male member as a separate piece. A projection 27, on the male block, having sloping faces 29, is accommodated by a corresponding recess 31 in the female block 13. The faces of block portions 7 and 13 are also provided with lateral, wave-shaped or sinuous grooves 33, formed so as to be juxtaposed when the blocks are assembled as in clamping guy strand. The openings 11 in the blocks are provided to receive a threaded bolt 35, (Fig. 3) thereby providing means for drawing the blocks together.

It will be seen that when the guy strand 15 is laid over the sinuous grooves 35 (dotted lines, Fig. 1), the block 13 laid on the guy strand, and the bolts 35 applied through the oppositely disposed openings 11, only a small force is required to draw up the nut 37, thereby forcing the guy strand into the grooves 33. The sloping faces of the blocks form an inclined plane mechanism which provides a high mechanical advantage between the said blocks and the guy strand which is being bent to conform to the sinuous grooves. Any subsequent tendency of the guy strand to straighten under longitudinal stresses exerts a force which is not substantially in the direction of the axis of the bolt 35, and hence no great stress is imposed on the bolt. In fact, the nut 37 may be slightly loosened after it has been drawn up and effective holding action will still result.

To provide for the tightening of the guy strand 15 before clamping, an integral, raised capstan 9 is formed on the interengaging portion of clamping portion 5. The capstan is positioned back of the base portion 7, as is shown in Fig. 1, thus making it possible for the guy strand 15 to be looped over and brought into a taut position over the base portion 7. The capstan being integral provides increased strength, a reduced number of parts and a more economical and rugged construction.

To terminate the guy strand 15 in a taut position, the guy rod 3 is secured to some anchoring means such as a pole, referring to Fig. 1, or to a ground anchor (Fig. 7). The rod is positioned so that it will substantially longitudinally align with the strand 15 as the strand is pulled taut. The clamping por-

tion 5 is threaded on to the rod 3 if it is not already threaded or otherwise fastened thereto. With the top portion 13 of the clamp 5 removed, the strand 15 is given a turn around the capstan 9, the strand being positioned in the vicinity of the sinuous grooves 33 (see dotted lines Fig. 1). The free end of the strand is now pulled, by hand or by a slack puller, to tighten the same by pulling it around the capstan 9. After the strand 15 has been sufficiently tightened, or before tightening, the top clamping block 13 is placed over the base block portion 7, the bolt 35 is applied through the holes 11 and the nut 37 is threaded on to force the two blocks together. Thus the strand 15 is forced into the sinuous grooves and finally takes the position shown in Fig. 4.

It will be seen from the above that a guy rod has been provided which has a clamp integrally and/or mechanically attached thereto. Moreover, a guy rod has been provided which substantially eliminates the necessity of means, other than is provided on the rod itself, for terminating guy strand.

The device herein described can be used on through bolts, eye bolts and in a variety of applications within the spirit of the claims. Its advantages include (1) increased strength, because of the integral formation of the capstan, which unlike some prior structures is not formed as a sheave, (2) reduction in number of parts with increased simplicity of construction and operation and decreased cost. The integral capstan requires no added assembly or machining step and hence its increased strength is better. The one-bolt clamp taken in combination with the above features results in a device of optimum characteristics.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A guy strand fastening device comprising a guy rod, a capstan formed integrally on one end of said guy rod adapted to receive a turn of the strand, clamping means comprising a base portion on said end and a top portion adapted to be juxtaposed on said base portion, pairs of sinuous grooves in the respective portions adapted to be juxtaposed, single bolt means for drawing said portions together, means providing a mechanical advantage for said bolt for forcing the strand to conform to said grooves as said portions are being drawn together, said clamping

device being adapted to clamp the strand in its turned position.

2. A guy strand fastening device comprising an anchor, a guy rod fastened at one end to said anchor, a capstan formed integrally on the free end of said guy rod adapted to receive a strand in a looped position thereby permitting tightening thereof, a clamping device also formed on said free end of said guy rod, comprising a base portion formed on said free end, a top portion, adapted to be juxtaposed on said base portion, sinuous grooves in the respective portions adapted to be juxtaposed, means for drawing said portions together, and means comprising an inclined plane mechanism adapted to force the strand to conform to said grooves as the portions are drawn together, said clamping device being positioned to clamp the strand in said looped position about the capstan.

3. In combination a clamp, a rod, said clamp comprising a base clamping portion integral with the rod, and a top clamping portion, interengaging sinuous portions on said clamping portions adapted to force a strand into bent position to be held and a capstan integrally formed with the engaging portion on the base clamping portion.

4. In combination a clamp and a rod, said clamp comprising a base clamping portion and a top clamping portion, said base portion having a female threaded portion for threadably receiving one end of said rod, single-bolt means for effecting a clamping action between said clamping portions, and a capstan formed integrally on said base portion.

5. In apparatus of the class described, a clamp comprising two clamping parts adapted to be fastened together, means for anchoring one of said parts, a capstan on said anchored part adapted to permit looping a strand therearound, means for drawing together said clamping parts and means associated with said parts adapted to force said strand into a sinuous shape, said last-named means permitting of prior pulling of said strand straight to and form said capstan and a subsequent bending of the same.

6. In apparatus of the class described, a clamp comprising two clamping parts adapted to be fastened together, means for anchoring one of said parts, a capstan formed integrally on said anchored part adapted to permit looping a strand therearound, means for drawing together said clamping parts and means associated with said parts adapted to force said strand into a sinuous shape, said last-named means permitting of prior pulling of said strand straight from said capstan, said sinuous shape lying in a plane substantially normal to said bolt.

In testimony whereof, I have signed my name to this specification this ninth day of December, 1930.

CLAUDE L. MATTHEWS.