Oct. 3, 1967 P. J. QUIMBY 3,344,452

CABLE ANCHORAGE

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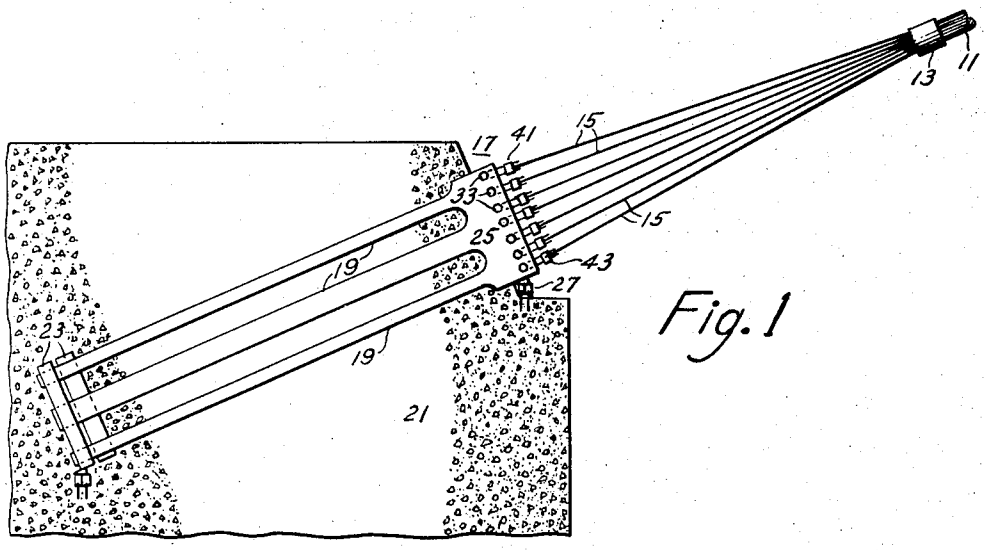
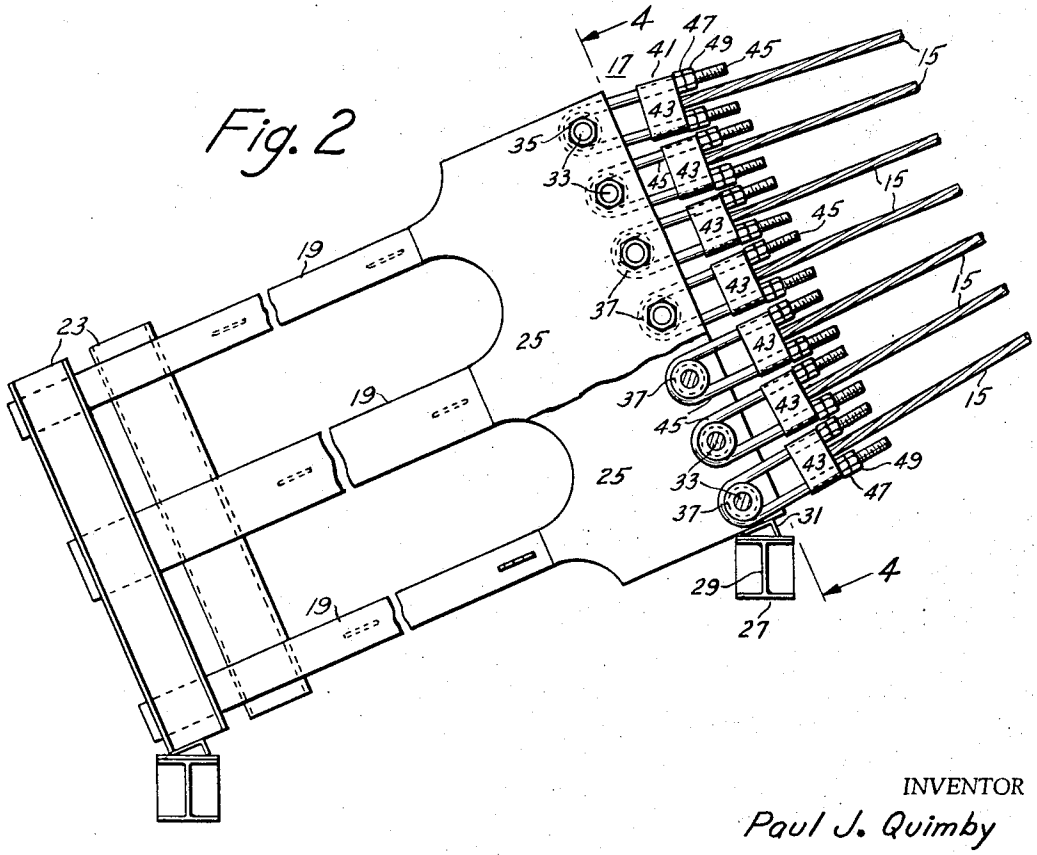


Fig. 1

Fig. 2



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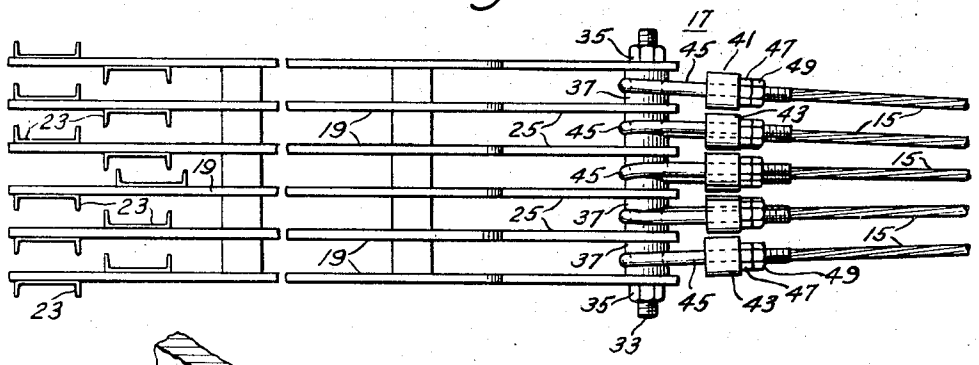
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Fig. 3



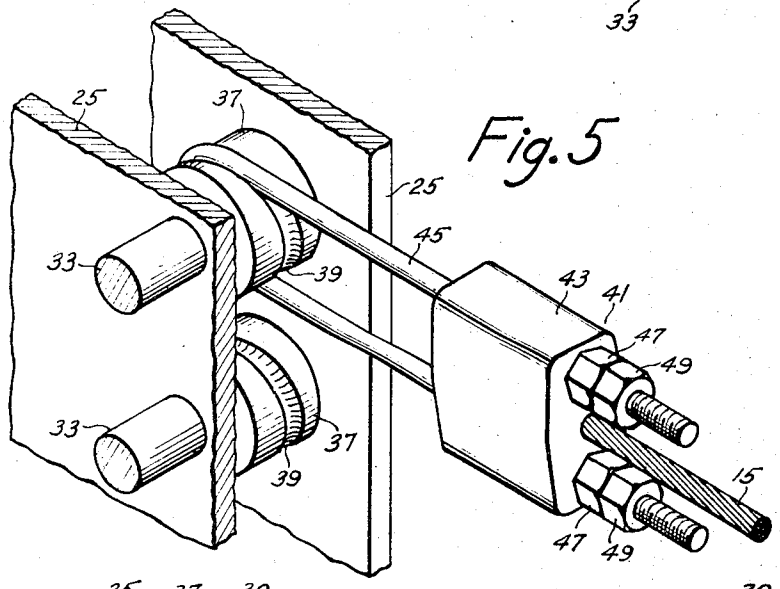


Fig. 5

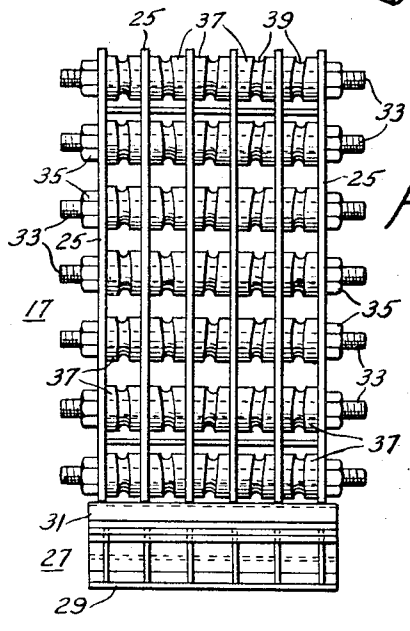


Fig. 4

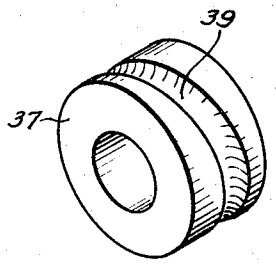


Fig. 6

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3,344,452

CABLE ANCHORAGE

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2 Claims. (Cl. 14—21)

This invention relates to multiple strand cable anchorages such as may be used to anchor suspension bridge cables, and particularly to the adjustment of such anchorages for the splay angle of the cable.

Where each individual strand of a multiple strand cable is individually anchored a considerable splay angle of the individual strands from each other is required near the anchorage so that the individual strands may be far enough apart at the anchorage to accommodate the necessary anchoring structure between them. It is therefore necessary to design the anchorage to accommodate the splay angle. This is ordinarily done by special structural elements that are designed to deflect the strands from straight and parallel alignment within the anchorage to the particular individual splay angles of the individual strand immediately outside the anchorage, or by special structural elements each of which is individually shaped to adapt the anchorage to the particular splay angle of an individual strand.

It is an object of the present invention to provide a simple, economical means for adjusting for splay angle in multiple strand cable anchorages without the use of special expensive anchorage structural parts to allow for the splay angle of each individual strand of the cable.

The present invention involves the use of a pre-rotatable spool, having an inclined strand-fitting groove about the periphery, as an anchorage element for each strand. Each spool is rotated when the cable is anchored until the inclination of its groove in the plane of the required adjustment is the same as the splay angle of the strand which is being anchored.

In the figures:

FIGURE 1 shows a diagrammatic elevation of a cable anchorage according to the present invention.

FIGURE 2 shows in elevation a detail of the anchorage means according to the present invention.

FIGURE 3 is a top plan view of the detail of FIGURE 2.

FIGURE 4 is a vertical section with parts omitted of the detail shown in FIGURE 2, along the line 4—4 of FIGURE 2.

FIGURE 5 shows a detail of a portion of the anchorage.

FIGURE 6 is a detail of a rotatable spool of the present invention.

A multiple strand cable **11** is shown in FIGURE 1 splayed at splay saddle **13** from which individual cable strands **15** diverge to anchorage **17**. Anchor bars **19** are fixed in concrete base **21**, as shown, connected together and braced by concrete-bearing members **23** which are suitably composed of channel beams welded to anchor bars **19**. Anchor plates **25**, which may be integral with, or otherwise suitably attached to, anchor bars **19** across the top thereof, extend from concrete base **21** and are partially supported by shoe **27** which may suitably comprise an I-beam **29** and a bracket **31** resting on base **21** and partially supporting anchor plates **25**. A series of anchorage pins **33** pass at intervals through anchor plates **25** along the side away from anchor bars **19**. Seven anchorage pins **33** pass through each anchor plate **25** tying it to the remaining plates. Each anchorage pin is secured in the anchor plates **25** by nuts **35** threaded on the ends of the pins.

Between adjacent anchor plates **25** a spool **37** is threaded over each anchorage pin **33**. Each spool **37** has an inclined groove **39** machined about its periphery. The inclination of this groove from an angle perpendicular to the axis of the spool is the same or greater than the greatest splay angle which is to be encountered in the particular cable installation being anchored, or, more preferably, the greatest angle which is to be encountered in any normal cable anchorage employing that particular sized spool. It will be understood that the axis of the spool corresponds to the axis of the anchorage pin **33** passing through the spool. The spools **37** are preferably the same width as the desired distance between anchor plates **25**.

On the end of each strand **15** of cable **11** in FIGURES 1 through 3 and 5 is secured an anchorage fitting **41** comprising a socket bowl **43**. Socket bowl **43** will usually be of the zinc-poured type wherein the ends of the strand are broomed and inserted into a conical orifice in the socket bowl and molten zinc metal is then poured into the orifice and allowed to solidify around the broomed wires. As may be seen in the figures, socket bowls **43** are broader than they are thick. Each broad portion is pierced by cylindrical openings through which are passed U-bolts **45** which are secured in socket bowl **43** by nuts **47** and lock nuts **49**. The curved sections of U-bolts **45** are designed to be the correct size and shape to fit in the inclined grooves **39** in spools **37**.

Prior to the attachment of the strands **15** to anchorage **17**, socket bowls **43** will be already attached to the ends of the strands. U-bolts **45** are passed over spools **37** and the ends are passed through the cylindrical openings in the broad portions of socket bowls **43** and secured by nuts **47**. Spools **37** are then rotated until the angle of the groove with respect to a plane perpendicular to the axis of the spool is the same as the splay angle of the particular strand in the horizontal direction. Alternatively, the entire anchorage may be assembled prior to shipment to the job site, with spools **37** pre-set to their proper rotated positions.

After the inclination of the groove **39** is adjusted to the horizontal splay angle of the strand by rotating spool **37**, U-bolt **45** is seated in groove **39** at the rear of the spool and nuts **47** are drawn up until the strand is drawn tight with the desired tension. After the correct tension is attained in the strand, lock nuts **49** are rotated to lock nuts **47** in position.

It will be understood that the splay of the strands **15** in a vertical direction is adjusted for by pivoting of the anchorage fitting **41** about anchorage pins **33** and spools **37** in the normal manner. After anchorage fittings **41** and spools **37** are correctly adjusted, nuts **35** may be tightened to secure the entire assembly together and prevent spools **37** from rotating unless this has already been done in prior assembly as noted heretofore.

By the use of the present invention it is possible to adjust for the splay angles of structural cables at cable anchorages by the use of only one standard splay-angle-adjustment fitting and the necessity of fabricating or having on hand either a multiplicity of special and expensive strand-deflecting parts, or a number of different cable anchorage fittings, is thus avoided.

I claim:

1. A multiple strand cable anchorage adjustable for strand splay comprising:

(a) a plurality of spaced anchorage members,

(b) at least one pivot pin passing through the anchorage members,

(c) circumferentially grooved spools rotatably mounted over the pivot pin between the anchorage members,

(d) the circumferential grooves of at least some of the spools being inclined at an angle from a plane perpendicular to the axis of the spool.

2. A cable anchorage according to claim 1 additionally comprising:

(e) strand sockets arranged to be connected to the pivot pins through the spools mounted thereon between the anchorage plates by means of spool encircling connecting means fitting into the grooves of the spools,

(f) each spool being rotationally positioned so that the inclination of its groove in a plane oblique to the axis of the pivot pin substantially matches the angle of approach of the strand in this plane.

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BERNARD A. GELAKI, *Primary Examiner.*