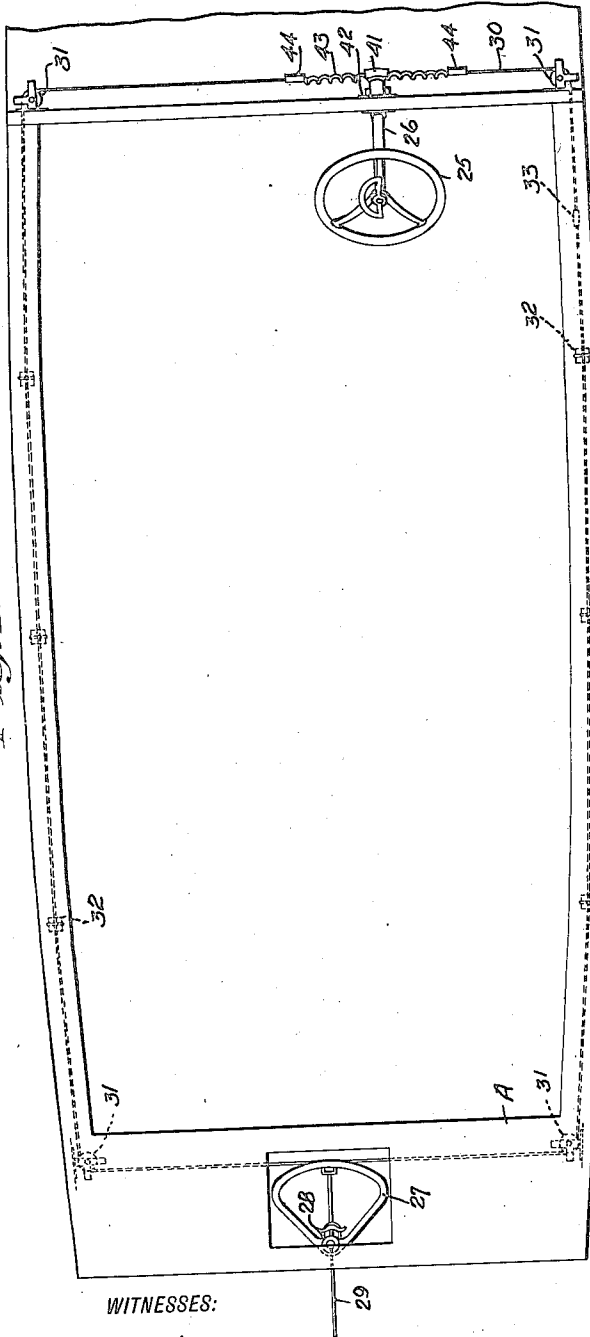


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Fig. 1.



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Fig. 9.

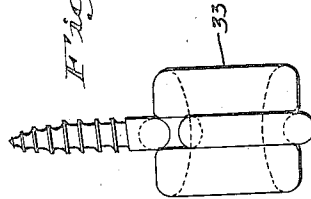


Fig. 8.

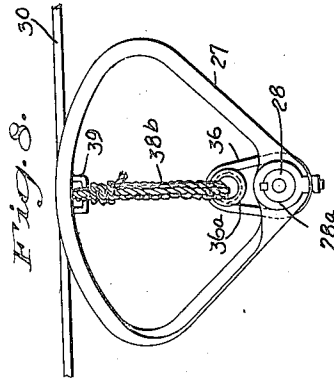
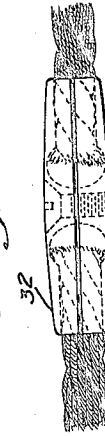


Fig. 10.



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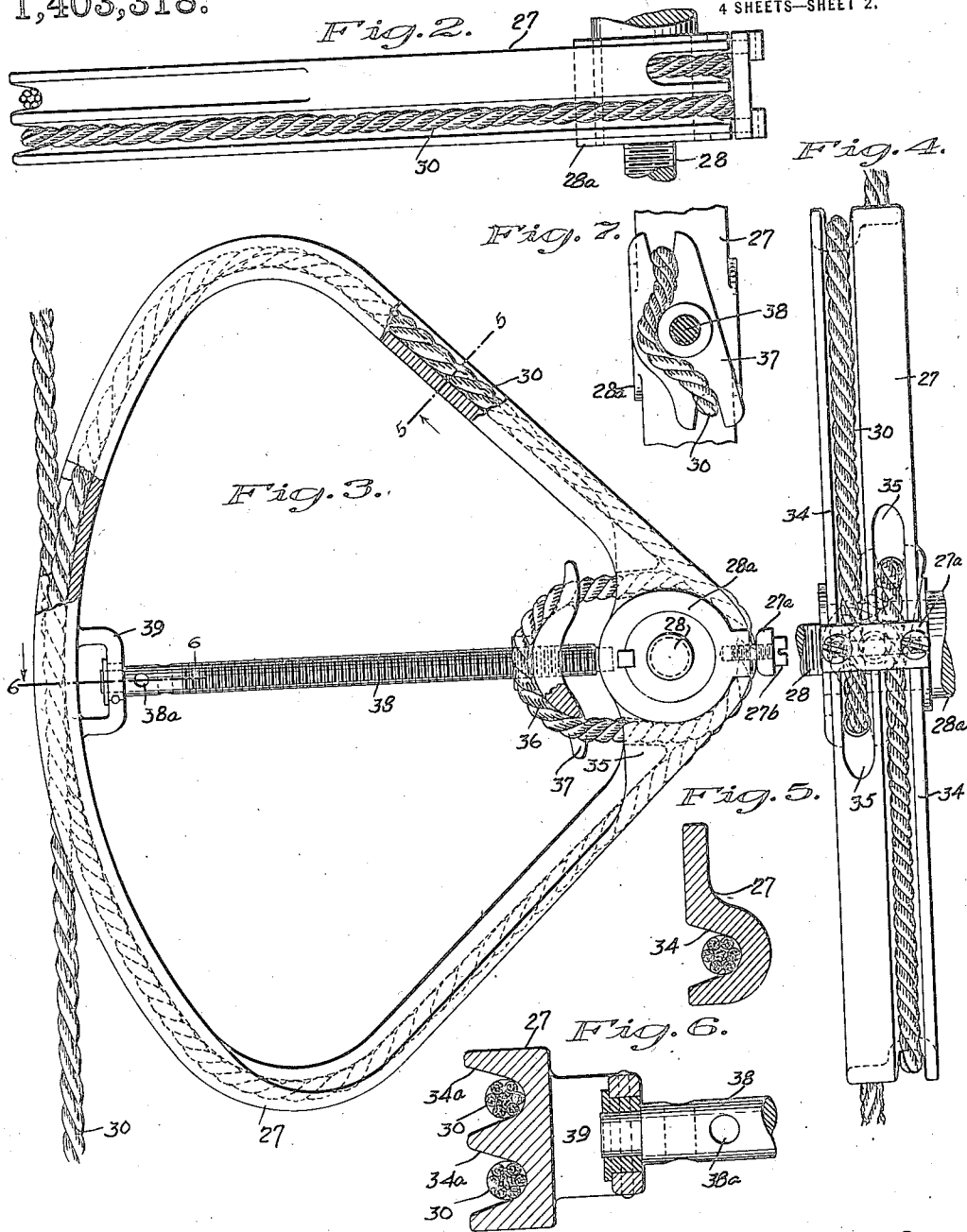
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STEERING GEAR.
APPLICATION FILED SEPT. 8, 1921.

Patented Jan. 10, 1922.
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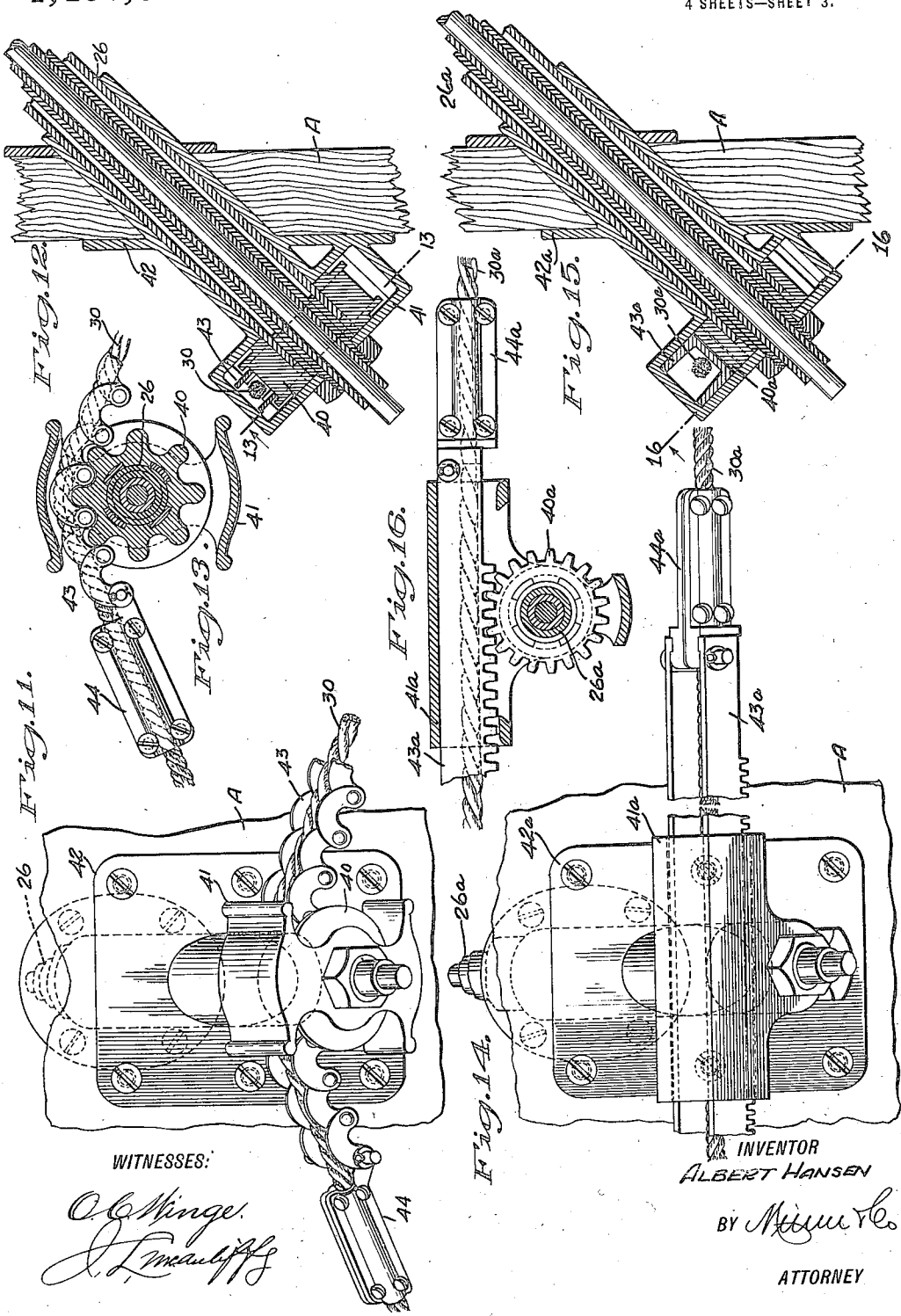
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1,403,318.

Fig. 19.

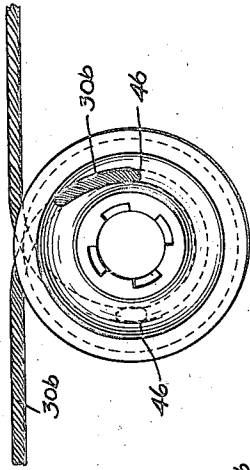


Fig. 18.

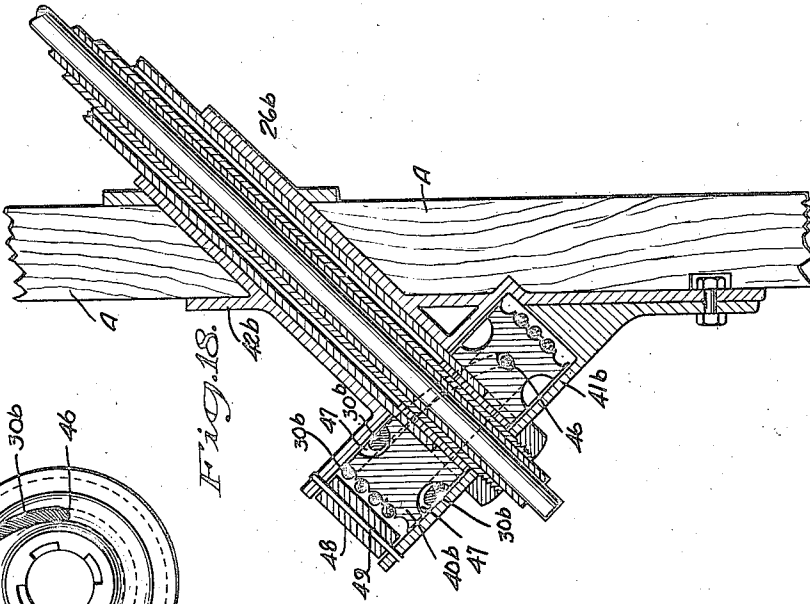
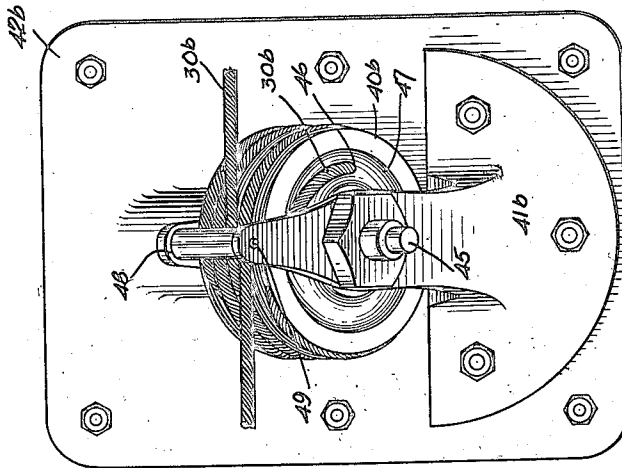


Fig. 17.



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UNITED STATES PATENT OFFICE.

ALBERT HANSEN, OF NEW YORK, N. Y.

STEERING GEAR.

1,403,318.

Specification of Letters Patent. Patented Jan. 10, 1922.

Application filed September 3, 1921. Serial No. 499,239.

To all whom it may concern:

Be it known that I, ALBERT HANSEN, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county of Bronx and State of New York, have invented a new and Improved Steering Gear, of which the following is a description.

My invention relates to a marine steering gear and more particularly is intended for embodiment in the steering gear of motor boats.

With the steering gear as usually employed in motor boats, for example, the cable running from the steering post to the quadrant on the rudder post has ends fastened at different places to parts of the gearing. When a cable because of undue wear at a given point, is weakened or frayed, the cable is discarded.

The general object of my invention is to provide a steering gear in which the cable runs endlessly through the quadrant and through the cable-actuating means operated by the steering post and is adapted to be shifted to take the worn portion away from a point of severe wear and present to the wear an unworn portion of the cable, thereby materially prolonging the life of the cable.

The means by which the above and other important objects are attained will clearly appear from the description of practical embodiments hereinafter given.

Reference is to be had to the accompanying drawings, it being understood that the drawings are merely illustrative of practical examples of the invention.

Figure 1 is a plan view of a portion of a boat at the cock pit with a steering gear embodying my invention installed;

Figure 2 is a side view of the quadrant;

Figure 3 is a plan view of the quadrant;

Figure 4 is a rear view of the quadrant, said view showing the quadrant as if turned through 90° from its normal position;

Figure 5 is a cross section on the line 5—5, Figure 3;

Figure 6 is a section on the line 6—6, Figure 3;

Figure 7 is an end elevation of a cable tensioning device shown in Figure 3, the tensioning screw being shown in cross section;

Figure 8 is a diagrammatic plan view of the quadrant with modified means to take up slack in the cable;

Figure 9 is a plan view of one of the cable guides or fair-leads;

Figure 10 is an end view of a clamp that may be employed for joining the ends of the cable instead of splicing;

Figure 11 is an elevation of the cable-actuating means operated by the steering wheel assemblage;

Figure 12 is a vertical section of the steering post assemblage and cable-actuating means operated thereby;

Figure 13 is a transverse section through the cable-actuating means as indicated by the line 13—13, in Figure 12;

Figure 14 is a view similar to Figure 11 but showing a modification of the cable-actuating means;

Figure 15 is a view similar to Figure 12 but showing the modified means illustrated in Figure 14;

Figure 16 is a section on the line 16—16, Figure 15;

Figure 17 is a view similar to Figures 11 and 14 but showing a further modification of the cable-actuating means;

Figure 18 is a vertical section through the cable-actuating means shown in Figure 17 and the operating means therefor;

Figure 19 is an elevation of the drum employed in the modification shown in Figures 17 and 18.

Referring at first more particularly to the form of the invention shown in Figures 1 to 7, the steering wheel 25 has the usual steering post assemblage 26 and the numeral 27 indicates the quadrant on the rudder post 28, 29 in Figure 1 indicating the rudder.

In accordance with my invention the cable 30 for turning the quadrant 27 by the turning of the steering wheel 25 is made endless instead of having ends made fast at one point or another about the cock pit in the boat A. Said cable runs in the illustrated example over sheaves 31 at the corners of the cock pit and through fair-leaders 32 or other guides. The numeral 33 indicates a clamp for the adjacent ends of the cable, the clamp being provided in lieu of splicing where men skilled in splicing are not available for the installation of the steering gear.

The quadrant 27 has grooves 34 at the sides, said grooves overlapping adjacent to the rudder post 28 and at the side of the quadrant opposite where the cable departs in opposite directions from the quadrant to the sheaves 31. From the overlapping

grooves 34^a adjacent to the rudder post 28 the cable 30 is led to the interior of the quadrant through holes 35 at each side of the hub 28^a of the quadrant and formed into a bight 36 which in the form shown in Figures 1 to 7 is engaged by a cleat 37 threaded onto a screw 38 disposed longitudinally in the quadrant at the medial line and having a bearing in the hub at one end and swivelled at the opposite end in a bracket or keeper 39 at the opposite side of the quadrant. The screw has a hole 38^a, Figures 3 and 6, in which any convenient implement may be placed for turning the screw and thereby moving the cleat 37 for taking up slack.

The hub 28^a has a keeper bar 27^a secured by screws 27^b or equivalent means to the quadrant 27 and overlying the overlapped ends of the cable 30 to prevent the latter from jumping from the grooves 34.

In Figure 8 is shown a lanyard 38^b employed in lieu of the screw 38 for taking up slack by tensioning the bight 36, said lanyard 38^b being passed through a thimble 36^a in the bight 36 and tied to the bracket 39.

The means for actuating the cable 20 by the turning of the steering post assemblage 26 consists in the form shown in Figures 1, 11, 12 and 13, of a sprocket wheel 40 turning with the steering post, said sprocket wheel turning in a housing 41 integral with the bearing 42 for the steering post. The sprocket wheel 40 meshes with a length of chain 43 made up of arcuate links spaced to accommodate between them the cable 30 so that the cable extends longitudinally through said chain. On the length of chain 43 at each end is a suitable clamp 44 to firmly secure the chain to the cable 30 so that upon a movement of the chain in response to the turning of the sprocket wheel 40, the cable 30 will also be given movement for turning the quadrant 27. In the form shown in Figures 14 to 16 I employ in lieu of the chain actuating means a rack 43^a affording a longitudinal groove in which the cable 30^a is led, said rack having clamps 44^a to secure it to the cable and the rack meshing with a pinion 40^a on the steering post of the assemblage 26^a, there being a housing 41^a for the pinion and rack integral with the bearings 42^a.

In the form shown in Figures 17 to 19 a drum drive is employed for actuating the cable (30^b), there being a peripherally grooved drum 40^b turning in bearings afforded by the housing 41 integral with the bearing 42^b of the steering assemblage. For causing the cable 30^b to be positively moved by the turning of the drum 40^b, I produce holes 46 extending from the peripheral grooves of the drum to annular grooves or depressions 47 in the side faces of the drum and run the cable at each side through one of said holes 46 and return to the peripheral

grooves of the drum, the arrangement serving to cause the cable to be positively held against running movement; the arrangement, however, permits of the cable being manually moved in the holes 46.

With either of the constructions shown in Figures 11 to 15, the loosening of the clamps 44 or 44^a permits of the cable being moved about the cock pit to shift a given worn point thereon to position unworn parts of the cable at the points of greatest wear, thereby prolonging the life of the cable. A similar result may be obtained with the construction shown in Figures 17 to 19 by taking hold of the cable between the holes 46 at the grooves 47 so that the cable may be caused to run a given distance through the drum 40^b. The numeral 48 indicates a guard roller the trunnions 49 of which turn in integral brackets on the housing 41^b, the cable 30^b passing beneath said roller and the latter serving to prevent the cable from jumping from the peripheral grooves of the drum.

I would state in conclusion that while the illustrated examples constitute practical embodiments of my invention, I do not limit myself strictly to the mechanical details herein illustrated, since, manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. In a marine steering gear, cable-actuating means, a rudder quadrant and a cable extending endlessly through said quadrant and actuating means.
2. In a marine steering gear, cable-actuating means, releasable cable-gripping means associated with said actuating means, and a cable running endlessly through said quadrant and actuating means.
3. In a marine steering gear, a cable, actuating means therefor, a rudder quadrant, said cable running endlessly through said rudder and quadrant, and means engaged by said cable and movable to take up slack in the cable.
4. In a marine steering gear, a cable, actuating means therefor, a rudder quadrant, said cable running endlessly through said rudder and quadrant, and means disposed within the quadrant and engaging a bight of the cable, said last-mentioned means being movable to take up slack in the cable.
5. In a marine steering gear, a quadrant having grooved sides, the grooves overlapping adjacent to the axis of the quadrant, a cable running endlessly in said grooves, a slack take-up adjacent to the axis, said cable running to and about said take-up from said overlapped portions of the grooves, and cable-actuating means through which said cable runs endlessly.

6. In a marine steering gear, an endless cable, a steering post, a drum adapted to turn with the steering post, and a cable having a number of turns about said drum, the drum having lateral openings through which the cable also passes to normally hold the cable against displacement.
- 5 7. In a marine steering gear, a quadrant having grooves at the exterior, a cable extending in said grooves, the quadrant having openings through which the cable runs to the interior of the quadrant in the form of a bight, a cleat engaging the bight of the cable within the quadrant, and a screw to actuate said cleat for taking up slack in the cable. 10 15

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