

E. T. REICHERT, JR.
COMPENSATING STEERING GEAR.
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1,022,207.

Patented Apr. 2, 1912.

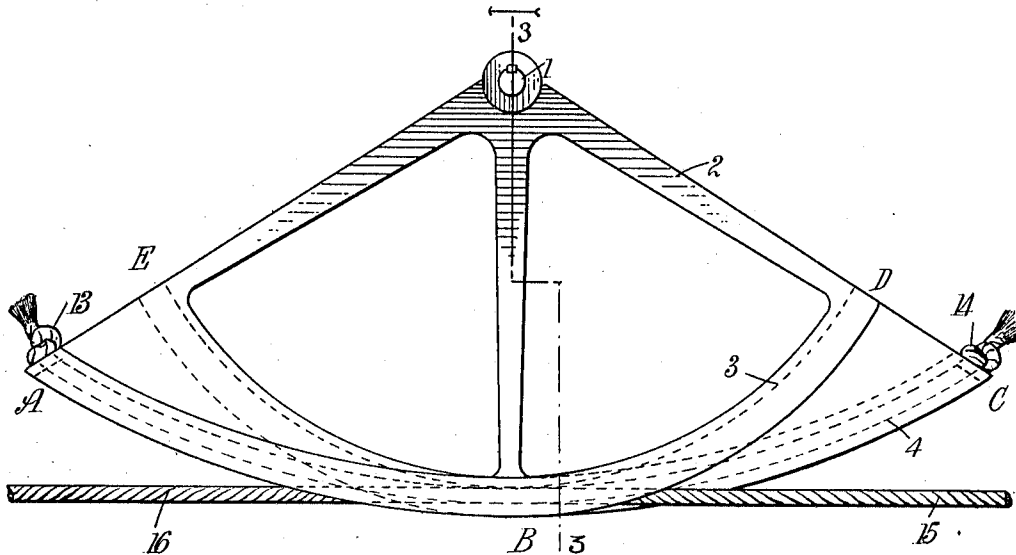


Fig. 1.

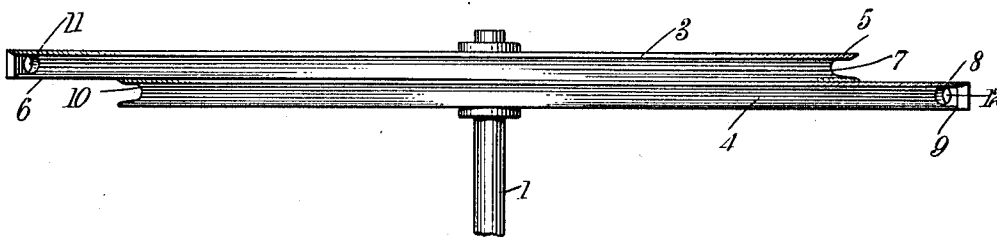


Fig. 2.

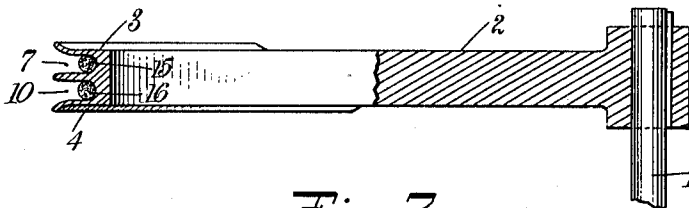


Fig. 3.

WITNESSES

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EDWARD T. REICHERT, JR., OF NEW YORK, N. Y.

COMPENSATING STEERING-GEAR.

1,022,207.

Specification of Letters Patent.

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Application filed October 27, 1911. Serial No. 657,061.

To all whom it may concern:

Be it known that I, EDWARD T. REICHERT, Jr., a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Compensating Steering-Gear, of which the following is a full, clear, and exact description.

My invention relates to improvements in steering gears, and the object thereof is to increase the leverage on the rudder and thereby decrease the strain on the tiller ropes, when the rudder is swung from central position to either side of the vessel to which it is attached. To this end I have designed a sector of special shape which is mounted upon the end of a rudder shaft or post, and which has the tiller ropes connected thereto at points on opposite sides of the same, to give the desired result.

Reference is to be had to the accompanying drawings forming a part of this specification, in which the same characters of reference indicate the same parts in all the views.

Figure 1 represents a top view of my invention; Fig. 2 is a front elevation thereof; and Fig. 3 is a vertical section on the line 3—3 of Fig. 1.

Referring particularly to the drawings, the numeral 1 represents a rudder shaft or post, and the numeral 2 indicates my improved sector-shaped attachment which is keyed on the upper end of the rudder post 1. This sector-shaped attachment 2 consists of an upper sector section 3 and a lower section 4, the sector 2 being shown as made in one piece, with the upper and lower sections 3 and 4 integral with each other; but it is obvious that I may make these sections separate and connect them together by screws or bolts if desired.

Each of the sections 3 and 4 has its radial sides of unequal length, and the material between the ends of these radial sides is shaped to form a groove, as shown in Fig. 2 of the drawings. The upper section 3 has its shorter radial side on the right and its longer radial side on the left, and the lower section 4 is so located with respect to the upper section that the shorter radial side of the lower section coincides with the longer radial side of the upper section, and the shorter radial side of the upper section coin-

cides over its entire length with the longer radial side of the lower section.

The upper section 3 has a groove 7 formed in the face of its curved side, this groove being located between upper and lower flanges 5 and 6. The lower section has a similar groove 10 in the face of its curved side, this groove being flanked by upper and lower flanges 8 and 9. The end of the groove 7 is closed at the left end, as shown, but the closed end thereof has an aperture 11, and the right end of the groove 10 is closed, as shown, the closed end being perforated as shown at 12. These perforations are to permit the ends of the steering or tiller ropes 15 and 16 to pass therethrough, the upper rope 15 lying in the upper groove, and the rope 16 in the lower. The rope 15 has a knot 13 in its end to prevent it from being drawn entirely through the aperture 11; and the rope 16 has a knot 14 to prevent it from being drawn through the aperture 12. These knots serve to secure the ropes to the sector sections, so that when either rope is pulled, the sector 2 will be drawn with it.

The curved sides of the sector sections 3 and 4, from the end of the short radial side to the center, are so arranged as to be the arc of a circle. The curved side of the upper section 3 from the right-hand side to the center and the curve of the lower section 4 from the left-hand side to the center thus represent a continuous circular arc from one side of the attachment to the other, as shown by E B D. The curve from the center of each section outward to the long side will not be the arc of a circle, this curve being indicated by the letters B A for the upper section 3 and B C for the lower section 4.

The curves A B D and E B C will be smooth curves from one end to the other, so that the action of the attachment will be easy and without jerks or shocks when the rudder is to be operated in either direction to increase the leverage and decrease the strain on the tiller ropes which operate the same.

From the above description and drawings it will be seen that if the rope 15 be pulled, the sector 2 will be moved counterclockwise, and as the post 1 and the sector 2 revolve, the effective length of the lever arm of the rope 15 about the center of the post 1 will increase. This is because the distance of successive points along the curve

B A from the center of movement marked by the shaft 1, increases as one passes from B in the direction of A. When the sector is swung over by the rope 15 in this way the lever arm operated by the tiller rope 15 increases, and this causes the strain on the rope 15 to decrease. Hence, the danger of breaking the rope 15 is avoided. This is an important result, as it often happens in motor-boating that a sudden turn becomes necessary to avoid a collision. With a sector having a true circular edge the sudden throwing over of the rudder to one side or the other imposes a strain on the rope large enough to break it, but in my construction the lever arm increases to such an extent that the strain on the rope is eased sufficiently to avoid the tiller rope snapping, even when the wheel is thrown over at a rapid rate. A similar result follows when the rudder is operated in the other direction, by pulling upon the tiller rope 16.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In an improvement of the kind described, the combination of a pair of sector sections having their radial sides unequal, said sector sections being superposed, with the short side of one coinciding with the long side of the other and being rigidly connected together, and a pair of tiller ropes secured to each of said sections adjacent the end of the longer side thereof.

2. In an improvement of the kind described, the combination of a pair of sector sections rigidly connected together, each of said sections having its radial sides unequal, and one section being superposed upon the other section, with the short side of one coinciding with the long side of the other, each of said sections having a groove in the side connecting the radial sides, and a tiller rope for each section received in said groove and secured to the section adjacent the end of the longer side of the section.

3. In an improvement of the kind described, the combination of a pair of sector sections rigidly connected together, the

radial sides of said sections being unequal in length, said sections being superposed upon each other, with the shorter side of one coinciding with the longer side of the other, the extremities of the unequal radial sides of each section being united by a curved side, each of said curved sides having a groove formed therein, and a pair of tiller ropes, one received by each of said grooves and connected to the corresponding sector section at the end of the longer radial side thereof.

4. In an improvement of the kind described, a sector having a pair of converging radial sides and having means adjacent the point of intersection of said sides for mounting the said sector upon a shaft or post, and having a pair of grooves formed in the side joining the said radial sides and extending longitudinally of said last-named side, each of said grooves curving continuously from one end to the other and having one end thereof located nearer to the point of intersection of said radial sides than the other end.

5. In an improvement of the kind described, a sector having a pair of converging radial sides and having means adjacent the point of intersection of said sides for mounting said sector upon a shaft or post, and having a pair of grooves formed in the side connecting the radial sides together and extending longitudinally of said side, each of said grooves curving continuously from one end to the other and having one end nearer to the point of intersection of said radial sides than the other end, said grooves being so located with respect to each other that the end of one of said grooves which is nearer to the point of intersection of the radial sides will be adjacent the end of the other of said grooves which is farther from the intersection of said radial sides.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD T. REICHERT, Jr.

Witnesses:

HERBERT W. HAMMATT,
ARTHUR HOFFMAN.