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STEERING CONTROL ATTACHMENT

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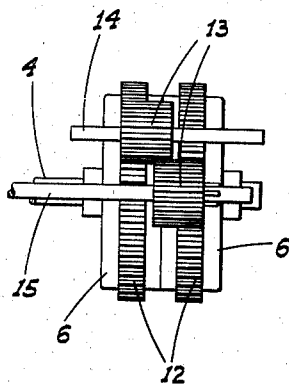
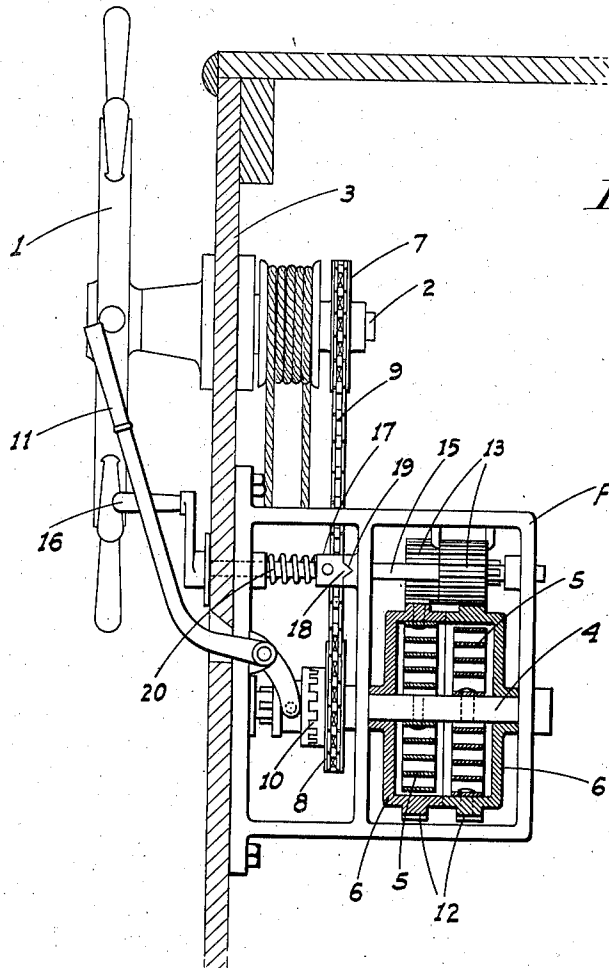


Fig. 2

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STEERING CONTROL ATTACHMENT

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This invention relates to devices for attachment to or incorporation with the steering mechanism of boats or airplanes and the like; my principal object being to provide a device which will maintain the steering wheel and hence the rudder, in the position relative to the craft in which it was initially set by the navigator, without manual pressure on the wheel being necessary to thus maintain the rudder set.

A further object is to provide a device for the purpose which while holding the rudder generally in a definite position, allows the same to yield or flex to one side or the other somewhat, thus avoiding the undesirable stiffness had when the rudder is immovably lashed.

A further object is to provide means for selectively and easily altering the degree of action of the flexing control means, as the roughness of the air or water may necessitate, so that the rudder under all conditions will have just the right amount of yieldability.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side view partly in section showing my steering control attachment as applied to the steering wheel of a motor boat.

Figure 2 is a fragmentary top plan view showing the tension controlling mechanism.

Referring now more particularly to the characters of reference on the drawing, 1 denotes a conventional boat steering wheel, mounted in fixed relation on a spindle 2 turnably supported in connection with a cabin or other bulkhead 3.

The control device comprises a shaft 4 parallel to and preferably offset from the spindle 2 and journaled in a suitable frame F secured on the bulkhead or other suitable place. Fixed at their inner ends on the shaft in oppositely wound relation are spiral springs 5 the outer ends of which are fixed in separate normally stationary housings 6 turnable on the shaft. The spindle 2 has a sprocket 7 fixed thereon and aligned with a similar sprocket 8 turnable on the shaft 4; a chain 9 connecting sprockets. The sprocket 8 is operatively connected in driving relation with the shaft 4 by a suitable clutch unit 10 therebetween, which is selectively actuated by suitable

means such as a control lever 11 projecting through the bulkhead 3 to one side of the steering wheel.

It will thus be seen that when the shaft 4 and spindle 2 are connected, the latter will be influenced by the opposed or counteracting springs, one or the other of which always becomes wound up with any rotation of the spindle. Hence such spring offers yieldable resistance to the turning of the spindle in the corresponding direction and also of course affects the movement of the rudder to which the steering wheel is connected.

In order to alter the tension of the springs when desired, so as to offer more or less resistance to the turning of the spindle 2 as operating conditions may deem advisable, I provide the following arrangement: disposed about the housing 6 are spur gears 12, separately meshing pinions 13 which in turn overlap and mesh with each other as shown in Fig. 2. One pinion is fixed on an idler shaft 14, while the other pinion is slidably splined on a separate shaft 15 which projects through the bulkhead and is there provided with a handle 16. In order to prevent retractive rotation of the shaft 15 after winding up the springs, I mount a collar 17 on said shaft and a lug or other projection 18 thereon which is pressed into releasable engagement with a notch 19 in an adjacent shaft bearing element by a compression spring 20 about the shaft.

To wind or unwind the springs therefore it is only necessary to pull out on the handle 16 to an extent sufficient to disengage the lug from the notch, and then rotate said handle the desired amount. Due to the gearing connections between the shaft 15 and the housings 6, it will be seen that with such rotation of the shaft 15, one housing will be turned in one direction while the other housing will be turned in the opposite direction and at the same speed. Both springs will therefore be simultaneously wound up or unwound according to the direction of rotation of the shaft 15. Upon releasing the handle 16 the pressure of the spring 20 and the rotation of the shaft due to the action of the springs 5, will again cause the lug 18 to reseat itself and hold the shaft 15, and consequently the pinions and housings 6, from further rotation.

In operation the clutch 10 is normally disengaged, allowing the steering wheel to be turned and the craft to be steered without interference or resistance. When the craft has been set on the desired course which is to be held for some time, the clutch is thrown in and the wheel may be released, with the assurance that the rudder,

even though capable of a certain amount of desirable flexing movement on account of wave action against the rudder, will generally maintain its set position and hold the craft on its proper course. When the course is to be changed it is an easy matter to release the clutch and again manipulate the steering wheel so as to bring the vessel about and set it on its new course.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. In combination with the turnable spindle of a steering mechanism, springs acting on said spindle to oppositely and yieldably resist rotation of the same in either direction, and normally inactive means separate from the steering mechanism operatively connected with the springs to alter the tension of the springs irrespective of rotation of the spindle.

2. In combination with the turnable spindle of a steering mechanism, springs acting on said spindle to oppositely and yieldably resist rotation of the same in either direction, and means operable at will and operatively connected to the springs to alter the tension of both springs simultaneously and in the same relation.

3. A steering control attachment for the turnable steering wheel of a steering mechanism comprising a shaft, releasable driving connections between the shaft and wheel, springs acting oppo-

sitely on said shaft to resist rotation of the same in either direction and means to selectively increase or decrease the tension of the springs simultaneously and to the same extent.

4. A steering control attachment for the turnable steering wheel of a steering mechanism comprising a shaft, releasable driving connections between the shaft and wheel, separate oppositely wound spiral springs about and secured at their inner ends on the shaft, members turnable about the shaft as an axis and on which the springs are secured at their outer end, and means to rotate said members simultaneously and in opposite directions.

5. A steering control attachment for the turnable steering wheel of a steering mechanism comprising a shaft, releasable driving connections between the shaft and wheel, separate oppositely wound spiral springs about and secured at their inner ends on the shaft, members applied to the outer ends of the springs to normally hold such ends immovable but capable of movement to wind and unwind the springs, and means to thus move said members.

6. A steering control attachment for the turnable steering wheel of a steering mechanism comprising a shaft, releasable driving connections between the shaft and wheel, separate oppositely wound spiral springs about and secured at their inner ends on the shaft, members turnable about the shaft as an axis and on which the springs are secured at their outer end, gears about said members concentric with the shaft, pinions separately meshing with said gears and also meshing with each other, and means applied to one pinion to rotate the same.

7. A structure as in claim 6, with means to normally prevent rotation of said one pinion.

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