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Ingham

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[54] **TILLER AND RUDDER ASSEMBLY**

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[52] **U.S. Cl.** **114/162,** 114/165

[51] **Int. Cl.** **B63h 25/06**

[58] **Field of Search** 114/165, 153, 128, 114/162, 130, 169, 172

[56] **References Cited**

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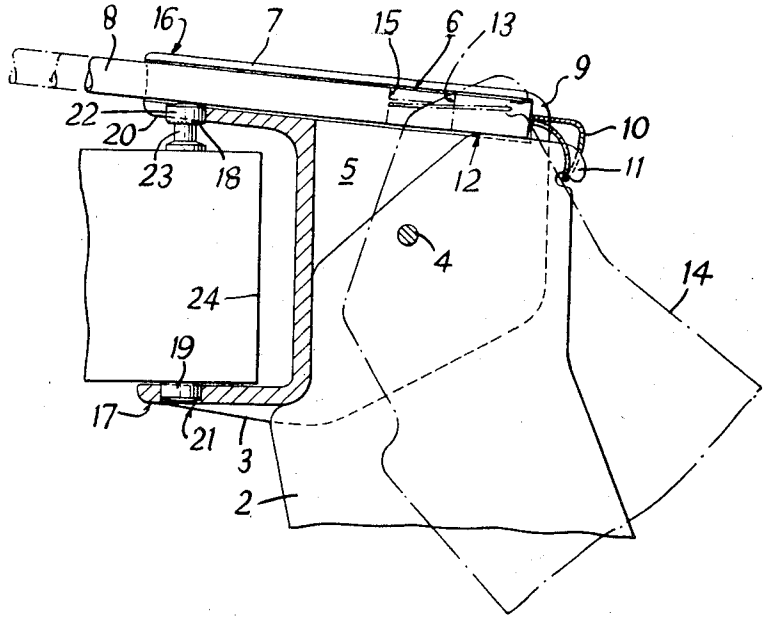
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[57] **ABSTRACT**

A marine craft steering assembly including a steering tiller and a rudder blade which are interconnected so that the rudder blade can be raised and lowered by longitudinal movement of the tiller the rudder blade being pivoted to a rudder stock in which the steering tiller is supported and can slide.

13 Claims, 3 Drawing Figures



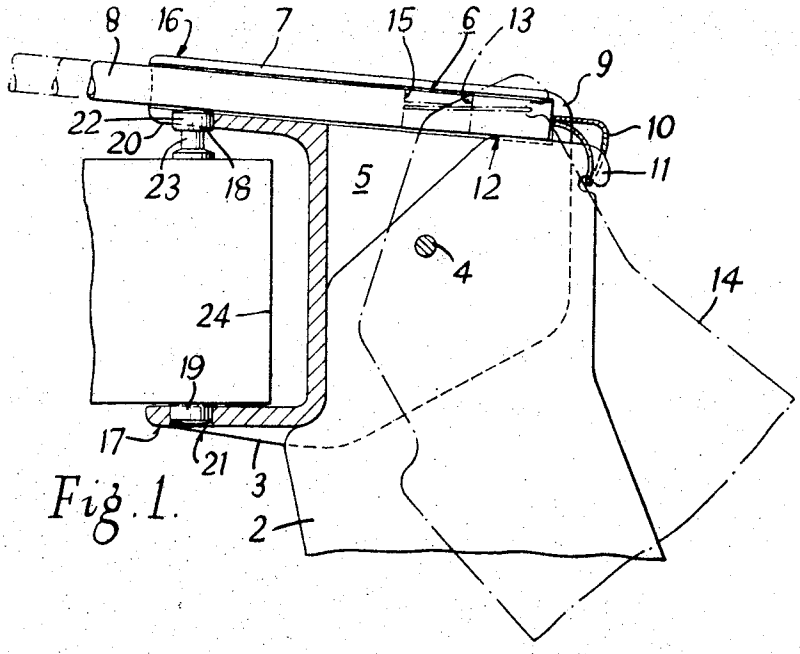


Fig. 1.

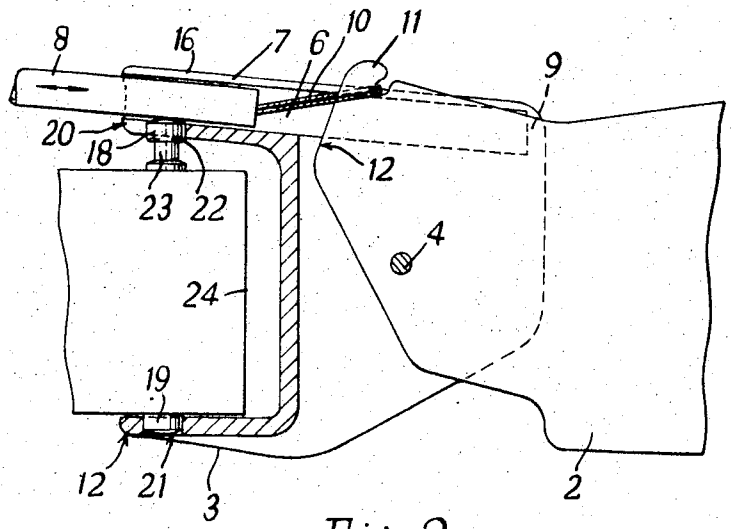


Fig. 2.

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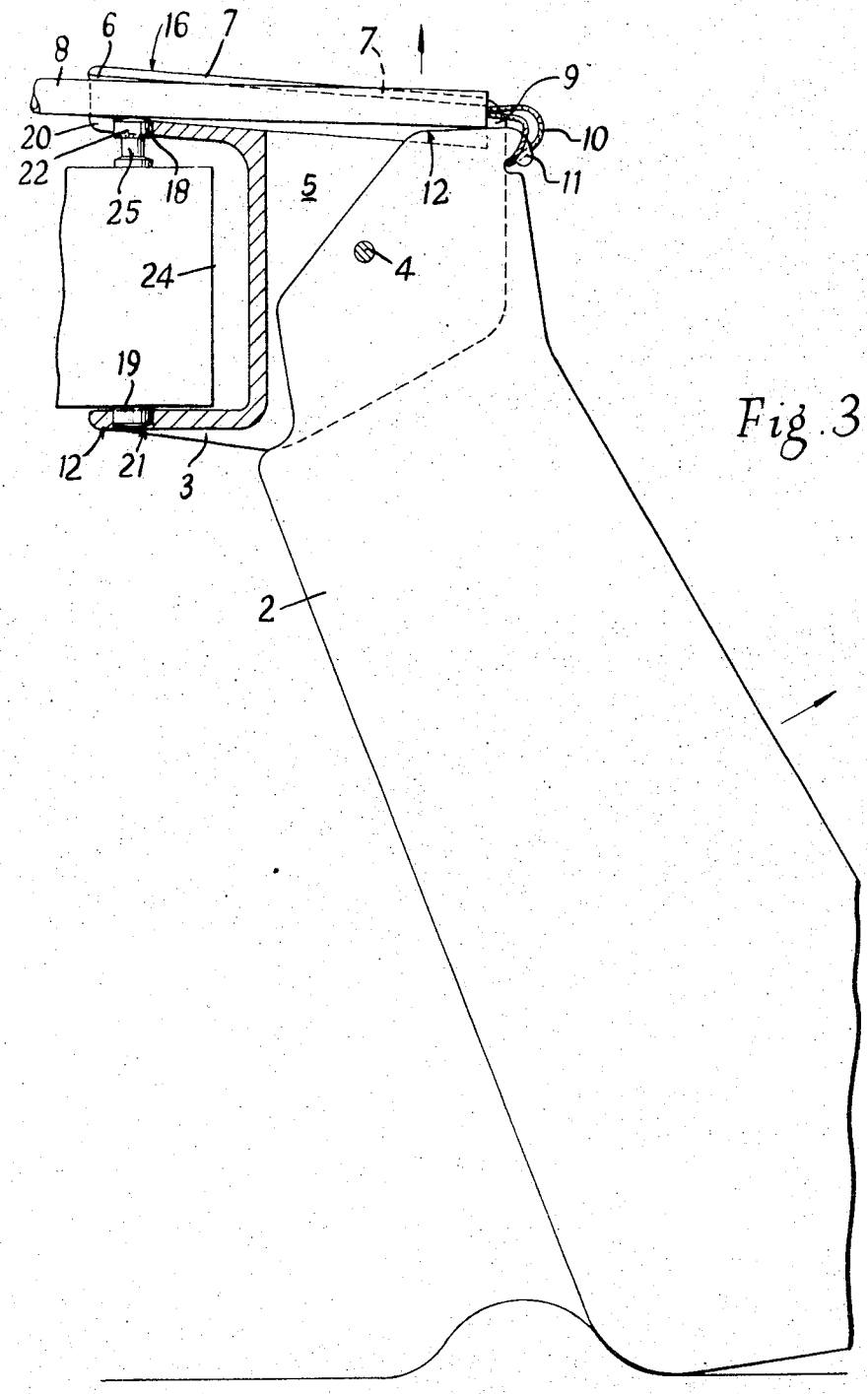


Fig. 3.

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TILLER AND RUDDER ASSEMBLY

This invention relates to a steering assembly for a marine craft such as a sailing dinghy.

It is often desirable to be able to raise or lower the rudder blade of such a craft and it is an object of the present invention to provide an assembly which enables this to be done by the helmsman without his relinquishing his normal steering position and control.

According to the present invention a marine craft steering assembly includes a steering tiller and a rudder blade which are interconnected so that the rudder blade can be raised and lowered by longitudinal movement of the tiller the rudder blade being pivoted to a rudder stock in which the steering tiller is supported and can slide.

With this arrangement the rudder blade is preferably connected to the steering tiller by pivot means and these may include a flexible connecting member which may conveniently be provided by a loop or length of line.

The steering tiller may be carried in a guide groove, in the upper portion of the rudder stock, and may be arranged so that it can be moved to a position in which it locks the rudder blade in the lowered position.

The tiller may be arranged to move to release the rudder blade to allow it to rise when a predetermined force is applied thereto and the rudder blade may thus be provided with an abutment at its upper end which is engaged by the steering tiller when the tiller is in a predetermined longitudinal position in the rudder stock.

The rudder stock is preferably made from a material which deforms to allow the steering tiller when in the position in which it locks the rudder blade in the lowered position to move upwardly under a predetermined applied upward pressure and the stock may thus be made from a plastics material.

In any case, the rudder stock may be pivoted to the hull of the craft with which the assembly is used by releasable means which are locked in position by the steering tiller, and in order to achieve this the rudder stock may be provided with two relatively vertically displaced extensions which are releasably located on relatively vertically displaced pivot members on the hull, the steering tiller extending along at least part of the upper extension.

With this arrangement the extensions are preferably provided with axially aligned circular openings which are located on the pivot members the circular opening in the upper extension having an open gap at one side to allow the upper pivot member to pass into the circular opening, and the tiller locking the upper pivot member into its associated opening.

The upper opening may thus be key-hole shaped.

In a preferred embodiment the upper pivot member is provided by a boss having an enlarged head the thickness of the boss below the head being slightly less than the width of the open gap in the side of the upper opening, and the tiller when in position acting to locate the upper opening on the enlarged head.

The lower pivot member may be in the form of a downwardly projecting boss which is located in the circular opening in the lower extension when the upper opening is located on the enlarged head.

With this arrangement the pivot members can be located on the top and bottom of the hull.

The invention also includes a rudder stock for use with a steering assembly as set forth and including means for carrying the rudder blade so that it can pivot and the steering tiller so that it can slide longitudinally and so that the steering tiller and rudder blade are in suitably spaced relationship to enable them to be interconnected.

The invention may be performed in many ways but one embodiment will now be described by way of example and with reference to the accompanying drawings in which:

FIG. 1 is a cross sectional side elevation of a steering assembly for a marine craft and with the rudder blade in its lowered position,

FIG. 2 is a view of the arrangement shown in FIG. 1 but with the rudder blade in its fully raised position, and

FIG. 3 shows how the steering tiller will allow the rudder blade to rise when a predetermined pressure is applied to it.

In the arrangement shown in the drawings the steering assembly is for a sailing dinghy, the hull of which is indicated by reference numeral 1. The steering assembly comprises a rudder blade 2 which is pivoted to a rudder stock 3 by a pivot pin 4 which passes through the spaced cheeks 5 of the rudder stock 3 so that the blade 2 can be rotated in relation to the stock 3 to take up any of the positions shown in the drawings. The upper end of the rudder stock is formed with a groove 6 the sides of which are formed with inturned flanges 7 which thus provide, in effect, a sleeve. The groove 6 is dimensioned to accept a tubular steering tiller 8 which can slide into the rudder stock until it engages a stop 9 provided at the end of the groove.

The end of the tiller 8 is provided with a loop of line 10 which is passed over a catch 11 on the rudder blade 2.

When the rudder blade 2 is in the position shown in full lines in FIG. 1 the steering tiller 8 can be pushed into the groove until it engages the stop 9. The inner end of the steering tiller 8 extends over an abutment 12 formed at the upper end of the rudder blade 2 so that the rudder blade is locked in this lowered position. This is the position in which the rudder blade would normally be used when sailing and it cannot then float up which is a common fault with lifting rudder blades.

If the steering tiller is now pulled out of the rudder stock to the position in which its end is clear of the abutment 12 (as indicated by broken lines at 13) the rudder blade will be able to ride up if it strikes an under water obstacle. If it is desired to raise the rudder blade somewhat in order to maintain steering control in shallow water then it can be raised to the position shown in broken lines 14 by pulling the steering tiller 8 out of the stock to the position shown in broken lines at 15, the loop of line 10 thus acting as a pivot connection between the steering tiller 8 and the rudder blade 2.

FIG. 2 shows the rudder blade 2 in its fully raised position which is achieved by pulling the steering tiller outwards to its maximum extent and is the position in which the blade would be arranged for launching the boat and when the loop 10 would be slipped over the catch 11 by reaching through the slot between the flanges 7.

In order to lower the rudder from any of the positions shown it is merely necessary to push the steering tiller

into the groove 6, the flexible connection provided by the line 10 allowing the rudder blade to fall under gravity or the end of the tiller engaging the abutment 12 and by camming against the abutment causing the rudder blade to rotate as required and the blade eventually being locked down when the position indicated in FIG. 1 is reached, and the end of the tiller slides over the abutment 12.

FIG. 3 illustrates how the tiller 8 can rise out of the groove 6 if the rudder blade strikes an under water object when it is in its locked down position. The abutment 12 rises due to the rotation of the rudder blade about its pivot pin 4 and this forces the steering tiller 8 out of the groove 6 by deforming the inwardly projecting flanges 7. In order to allow this deformation the rudder stock 3 is made from a resilient plastics material such as nylon. The steering tiller can be easily returned to its normal position in the groove by pressing it back between the flanges 7 when the pressure on the rudder blade has ceased.

The sleeve provided by the groove 6 and flanges 7 ensures that there is some friction between the rudder stock and the tiller 8 and any position will be maintained as long as it is required. The tiller can be removed from the rudder stock merely by unfastening the loop of line 10 and withdrawing the tiller from the groove 6.

The rudder stock is provided with two vertically displaced extensions 16 and 17 which are releasably located on vertically displaced pivot members in the form of bosses 18 and 19 carried on the hull 1. The upper extension 16 is provided with a key-hole shaped opening 20, the key-hole shape thus providing an opening which is circular but with a gap in one side the gap extending right up to the end of the extension. The lower extension 17 is formed with a circular opening 21 which is dimensioned to accept the boss 19. The upper boss 18 has an enlarged head 22 and a portion 23 of reduced thickness, this portion 23 being of a width which is slightly less than the width of the gap provided by a narrow part of the key-hole shaped opening 20.

When the steering tiller 8 is removed from the groove 6 the rudder stock can drop because the enlarged head 22 of the boss 18 can rise into the groove 6, this movement previously being prevented by the presence of the steering tiller 8. With the stock 3 in this lower position the opening 21 in the lower extension 16 is clear of the boss 19 and the stock can be withdrawn from the upper boss 18 by pulling it aft, the reduced portion 23 of the upper boss 18 moving along the narrow part of the key-hole shaped opening 20. To place the rudder stock on the hull 1 before launching the boat it is therefore merely necessary to place the key-hole shaped opening 20 in line with the reduced portion 23 of the boss 18, move the stock forward until the head 22 of the boss 18 is in line with the circular portion of the key-hole shaped opening 20 and then lift the stock so that the lower boss 19 engages the opening 21 and the head engages the circular portion of the opening 20 and the position shown in the drawings is achieved. The steering tiller 8 is now pushed into the groove 6 to engage the upper end of the head 22 and prevent the stock dropping and the pivot members provided by the bosses 18 and 19 will thus allow the stock to pivot as required. The loop 10 is now slipped over the catch 11 so that the tiller is maintained in place with the rudder blade raised.

In an alternative arrangement the bosses 18 and 19 could be carried on a fitting on the transom 24 of the hull 1.

The construction of the rudder stock 3 has the advantage that it can be made from a single piece of material without the necessity for numerous extra fittings and it can, for example, be moulded.

What we claim as our invention and desired to secure by Letters Patent of the United States is:

1. A marine craft steering assembly comprising:
   - a steering tiller;
   - rudder blade;
   - a rudder stock;
   - means hinging said blade to said stock for rotation of said blade with respect to said stock in a vertical plane;
   - said stock having a portion supporting said tiller and allowing said tiller to slide in said supporting portion in only horizontal linear translation with respect to said stock;
   - means connecting said tiller to said blade; said connecting means being operable to pivot so as to rotate in a vertical plane with respect to said blade and said tiller;
   - said blade being operable to be raised and lowered responsive to horizontal linear translation of said tiller with respect to said stock.

2. A steering assembly as claimed in claim 1 in which said connecting means includes a flexible connecting member.

3. A steering assembly as claimed in claim 2 in which said flexible connecting member is provided by a loop or length of line.

4. A steering assembly as claimed in claim 1 in which said steering tiller is restricted in its movement only with respect to said stock to horizontal translation only by means of a guide groove in said supporting portion of said stock.

5. A steering assembly as claimed in claim 4 in which said steering tiller can be moved in said groove to a position above said rudder blade; and an aperture in said groove allowing said blade to pass through said aperture into contact with said tiller in said position; said tiller in said position engaging said blade and limiting the movement of said blade from moving from a predetermined lowered position.

6. A steering assembly as claimed in claim 5 in which said rudder blade is provided with an abutment at its upper end which is engageable by said steering tiller; said tiller operable to engage said abutment and by camming against said abutment forces said blade to move downwards when said tiller translates in a linear horizontal movement with respect to said stock past a predetermined longitudinal position.

7. A steering assembly as claimed in claim 6 in which said rudder stock is made from a material which deforms to allow said steering tiller when in the position in which it limits the upward travel of said rudder blade in said lowered position, to move upwardly under a predetermined applied upward force.

8. A steering assembly as claimed in claim 7 in which said rudder stock is made from a plastic material.

9. A steering assembly as claimed in claim 1 in which said rudder stock is pivoted to the hull of the craft by releasible means which are locked in position by said steering tiller.

10. A steering assembly as claimed in claim 9 in which said rudder stock is provided with upper and lower extensions which are relatively vertically displaced and which are releasibly located on relatively vertically displaced upper and lower pivot members on the hull, said steering tiller extending along at least a part of the upper extension.

11. A steering assembly as claimed in claim 10 in which said upper and lower extensions are provided with axially aligned circular openings which are located on said pivot members, said circular opening in said upper extension having an open gap at one side to allow the said upper pivot member to pass into said circular opening and said tiller locking said upper pivot member into its associated opening.

12. A steering assembly as claimed in claim 11 in which said upper pivot member is provided by a boss having an enlarged head the thickness of said boss below said head being slightly less than the width of the open gap in the side of the opening in said upper extension and said tiller when in position acting, to locate said upper extension on said enlarged head.

13. A steering assembly as claimed in claim 10 in which said pivot members are located on the top and bottom of the hull of the craft.

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