March 10, 1964 K. BRÅTEN 3,124,094

STABILIZING ARRANGEMENT FOR POWER BOATS

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FIG. 1a.

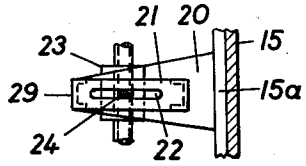


FIG. 3.

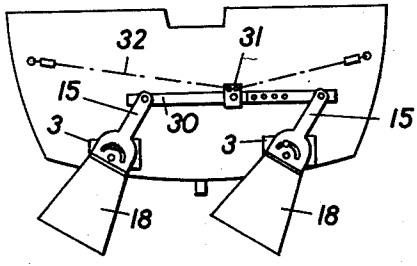


FIG. 1.

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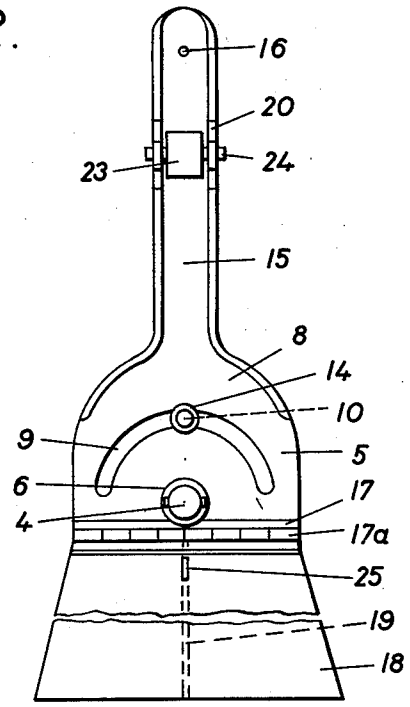
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FIG. 2.



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STABILIZING ARRANGEMENT FOR POWER BOATS

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This invention relates to a stabilizing device for boats.

The main object of the invention is to provide a device which may be used for stabilizing a power boat.

In accordance with the invention the device comprises at least one stabilizing fin which is positioned in a sloping relation to the water level surface and adapted to pivot about an axis substantially parallel to the longitudinal center axis of the ship.

In accordance with another feature of the invention the said sloping fin is also pivotable about an axis extending transversely of the normal direction of boat movement. The sloping fin has on its downwardly directed face a longitudinal vertical fin or rib. Such a vertical fin may also be mounted on the upwardly directed face of the sloping fin.

In smaller boats the steering device is preferably mounted on the stern portion or the transom of the boat so that it is entirely located behind the boat hull.

In greater boats the device may be positioned under the after portion of the vessel and the control and driving connections can be placed in a suitable well in the bottom of the ship. A stabilizing arrangement should preferably comprise two stabilizing attachments, one on each side of the longitudinal axis of the vessel.

From the above it appears that the sloping fin can be pivoted about two axes substantially crossing one another at a right angle, but not necessarily lying in one and the same plane.

It is a disadvantage of small power boats that the stern end of the boat has a tendency to be pressed down into the water when the speed is increased, particularly with a heavy load, or when the load is not distributed correctly. A suitable adjustment of the sloping angle of the fins will cause the stern of the boat to be lifted from the water so that the boat will be able to plane more easily. The stern end may also be lifted to some distance over the water surface. When the sloping fins are pivoted about the horizontal longitudinal axis in one or the other direction, the boat will move in an arc without causing the side of the stern nearer the center of the arc to be pressed down into the water. This is advantageous, as a rather small boat may be used in a rough sea and yet move at a high travelling speed.

The above and other objects and advantages of the invention will be more fully appreciated from the following description when taken in connection with the accompanying drawings, in which:

FIG. 1 is a vertical longitudinal section of a boat stern portion or transom equipped with a stabilizing attachment of the invention,

FIG. 1*a* is a side view of a holding bracket for the fin lifting mechanism of the attachment of FIG. 1,

FIG. 2 is a rear elevational view of the stabilizing and steering attachment, and

FIG. 3 shows the stern of the boat provided with a twin steering arrangement of the invention.

Referring to FIG. 1, a support plate 3 of metallic or plastic material is fixed by means of screws 2 on the transom 1 of a boat and a normally horizontal pivot 4 with its pivoting axis 4*a* extending in the longitudinal direction of the boat is supported on the lower portion of the plate 3. A guiding plate 5 having a hub 6 is pivotally fixed on the pivot 4. The hub 6 engages the pivot 4. The hub is provided with a grease nipple 6*a*. The lower edge 7 of the plate 5 extends substantially horizontally, and the upper portion 8 of the plate 5 has a semi-circular guiding slot 9 for a guiding pin 10 one end of which is firmly threaded into the supporting plate 3.

The outer end of the pin 10 has threads carrying a nut 11. A helical spring 12 pressing with one end against a washer 13 engaging the guiding plate 5 can be compressed more or less by means of the nut 11 and an intermediate washer 14 so that the friction force between the supporting plate 3 and the guiding plate 5 can be adjusted. The guiding plate 5 carries an upwardly elongated lever arm 15 reinforced with a rib 15*a*, and the lever arm 15 has in its upper end a hole 16 for connection with the steering wheel or handle of the boat.

As shown in FIGS. 1 and 2, the front edge of a plate-shaped fin 18 is hingedly connected by a pin 17*a* with the lower edge 7 of the guiding plate 5. In the normal driving position the fin 18 is downwardly and rearwardly. The front of the fin 18 is about as wide as the guiding plate but the fin width increases gradually rearwardly. The pivot connection can comprise one or more hinges 17. The fin 18 is pivoted about the pin 17*a* for changing of the angle between the fin and the water surface. If desired, the plate 18 may be lifted entirely from the water, for instance when the boat shall be transported on a trailer or the like. The underside of the fin 18 is provided with a longitudinal vertical fin 19 extending along the center line thereof.

Means for pivoting the fin 18 about the axis of the pin 17, comprise a bracket 20 fixed on the upper portion of the lever arm 15 and having two substantially horizontal arms 21 (FIG. 1*a*) each provided with a horizontal slot 22. A sleeve 23 having a threaded bore carries two lateral bolts 24 guided in the slots 22 for movement against the action of two helical springs 27 located between the sleeve walls and abutments 29 arranged between the bracket arms 21. The springs are guided by pins 28 fixed on the sleeve and extending through holes in the abutments 29. The lower end of a two-piece linking rod 33, 33*a* is hinged to a bracket 25 on the fin 18, and the upper rod portion 33 is provided with threads 26 cooperating with the threads in the bore of the sleeve 23. The top of the rod 33 is provided with a turning handle 27 by means of which the slope of the fin 18 may be adjusted. The lower portion 33*a* of the adjusting rod carries a connector 34 rotatably engaging the upper portion 33 of the rod.

When the boat travels straight forward or along a curve, it is stabilized by pivoting of the guiding plate 5 with the fin 18 about the horizontal pivot 4 by means of the lever arm 15.

In a preferred embodiment of the invention two identical stabilizing attachments are located on opposite sides of the longitudinal center plane of the boat.

The upper ends of the lever arms 15 are linked by means of a bar 30, as shown in FIG. 3. The bar 30 is made of two pieces so that its length can be adjusted. The midportion of the bar has an eyelet 31 (FIG. 3) for a wire 32 or the like which is connected with the rudder tiller or steering wheel. The bar 30 causes the two devices to carry out identical pivoting motions about the axes 4*a*.

It should be understood that the invention is not limited to the embodiments shown in the drawings and described above as various changes may of course be made without departing from the scope of the invention.

What I claim is:

1. A stabilizer attachment for a boat comprising, in combination:

(*a*) a support;

(*b*) attaching means for attaching said support to a boat in a predetermined position;

(c) a plate shaped fin having two opposite major faces;

(d) pivot means interposed between said support and said fin for pivotal movement of said fin about two axes toward and away from a normal position in which the faces of said fin are directed upward and downward respectively, when said support is in said predetermined position, said axes being perpendicular to each other and normally horizontal; and

(e) means for pivoting said fin about one of said axes.

2. An attachment as set forth in claim 1, wherein said pivot means include a pivot member pivotally secured to said support for movement about the other one of said axes, said fin being pivotally atached to said pivot member for movement about said one axis.

3. An attachment as set forth in claim 2, wherein said other axis extends longitudinally of said boat when said support is attached to said boat by said attaching means in said predetermined position.

4. An attachment as set forth in claim 1, further comprising a rib member on the normally downwardly directed face of said fin, said rib member being elongated transversely of said one axis.

5. An attachment as set forth in claim 1, further comprising abutment means for limiting pivotal movement of said fin about said other axis.

6. An attachment as set forth in claim 5, wherein said abutment means include two abutment members, one abutment member being formed with an aperture and the other abutment member being arranged for movement in said aperture, one of said abutment members being secured to said support against movement about said other axis, and the other abutment member being connected to said fin for pivotal movement therewith about said other axis.

7. An attachment as set forth in claim 1, wherein said means for pivoting said fin include link means for connecting said fin to a portion of said boat upwardly spaced from said pivot means, said link means having two portions threadedly engaged for varying the length of said link means.

8. A stabilized boat comprising, in combination:

(a) a hull;

(b) a plate shaped fin having two opposite major faces;

(c) pivot means interposed between said hull and said fin for pivotal movement of said fin about two normally horizontal axes perpendicular to each other toward and away from a position in which the faces of said fin are directed upward and downward respectively, one of said axes being transverse of the normal direction of movement of said boat; and

(d) pivoting means for pivoting said fin about said one axis.

9. A boat as set forth in claim 8, wherein said pivot means include a pivot pin attached to said hull and having a normally horizontal axis extending in said normal direction of boat movement, a hub member engaging said pivot pin for movement about the axis thereof, said fin being hingedly secured to said hub member for movement relative thereto about a normally horizontal axis transverse of said normal direction of boat movement.

10. A boat as set forth in claim 9, further comprising cooperating abutment means on said hull and on said hub member for limiting pivotal movement of said hub member about the axis of said pivot pin.

11. A boat as set forth in claim 10, wherein said abutment means include a guide plate on said hub member, said guide plate being formed with an aperture, and an abutment member fastened to said hull and engaging said aperture.

12. A boat as set forth in claim 8, wherein said pivoting means include link means interposed between said fin and a portion of said hull normally upwardly spaced from said pivot means, said link means including two link members threadedly connected for varying the length of said link means when said link members are rotated relative to each other.

13. A stabilized boat comprising, in combination:

(a) a hull having a longitudinal axis;

(b) two plate shaped fins arranged on opposite sides of said axis, each fin having two opposite major faces;

(c) pivot means interposed between said hull and each fin for pivotal movement of said fin about two normally horizontal pivoting axes perpendicular to each other toward and away from a position in which the faces of said fin are directed upward and downward respectively, one of said pivoting axes being transverse of said longitudinal axis; and

(d) pivoting means for pivoting each of said fins about one of said pivoting axes thereof.

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