United States Patent

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[54] **STABILIZER TRIM ATTACHMENT FOR POWER BOATS**
1 Claim, 4 Drawing Figs.

[52] **U.S. Cl.** **114/66.5**
[51] **Int. Cl.** **B63b 1/22**
[50] **Field of Search** ..... 114/66.5 (P)

[56] **References Cited**

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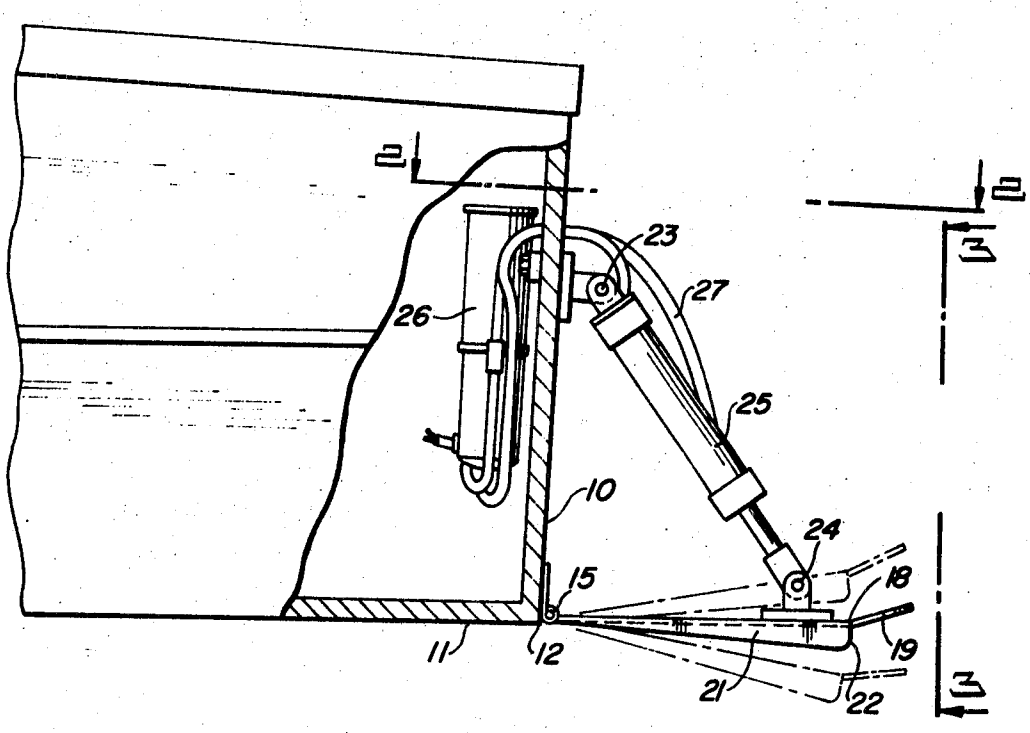
ABSTRACT: An attachment for a power boat which fits on the transom or stern of the boat and comprises a pair of trim tabs hinged at the transom and extending rearwardly therefrom, and which may be swung vertically simultaneously to different angular positions to trim the boat so that it operates at the proper attitude regardless of its loading. The tabs are so formed that they also bring about lateral stability as well as impart the proper attitude to the boat. Furthermore, the tabs are positively moved vertically up or down to their selected angular positions.



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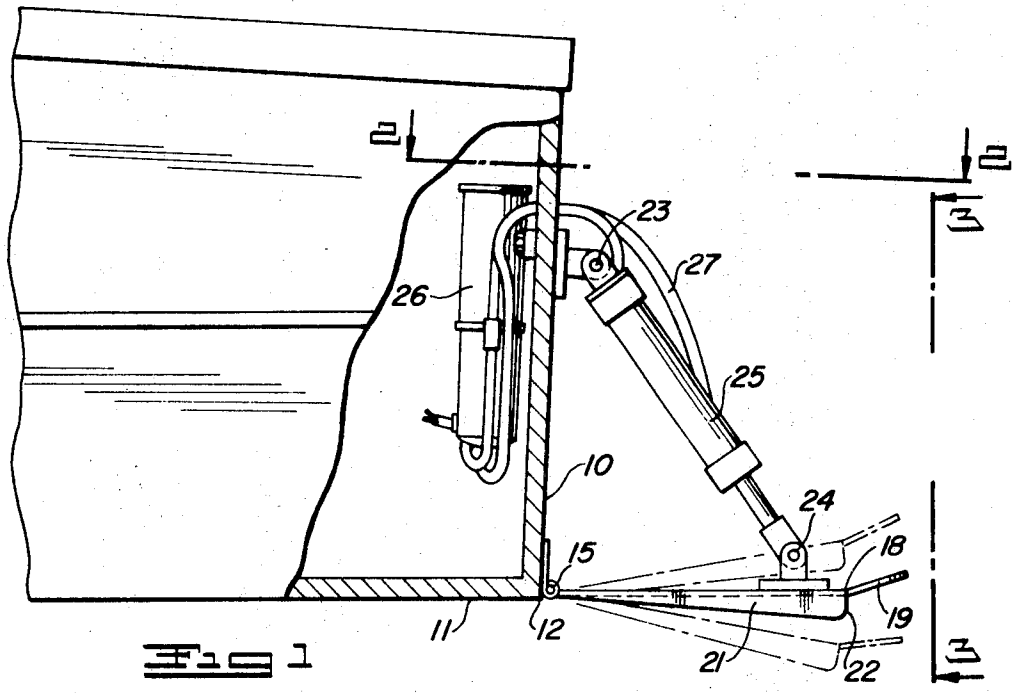

Fig 1

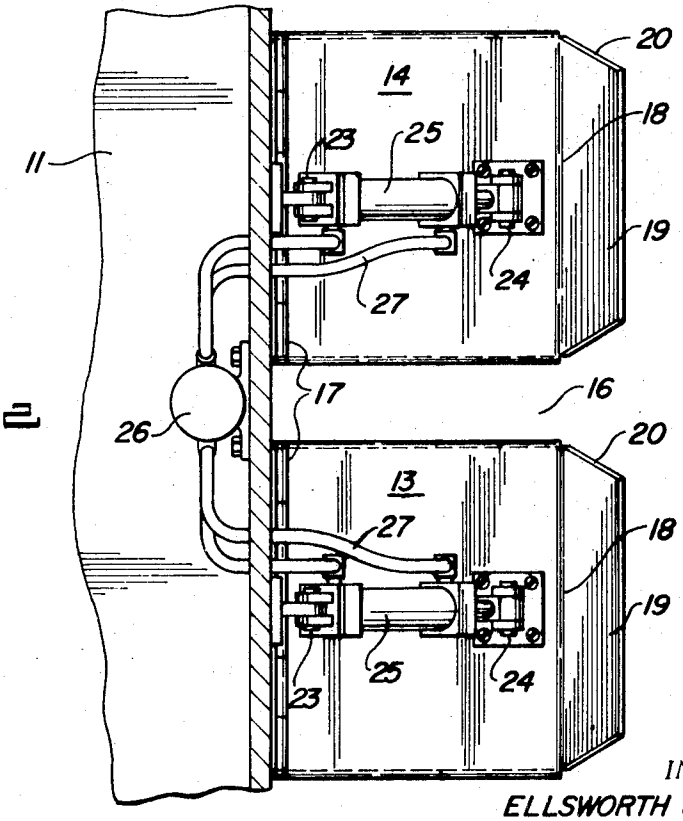

Fig 2

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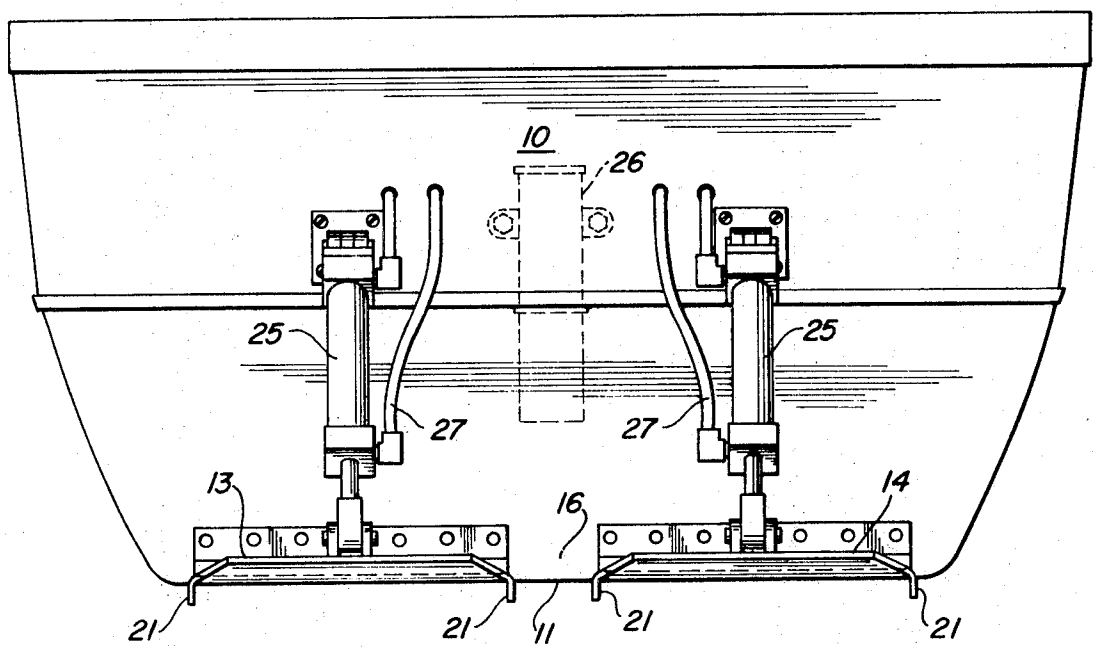

FIG 3

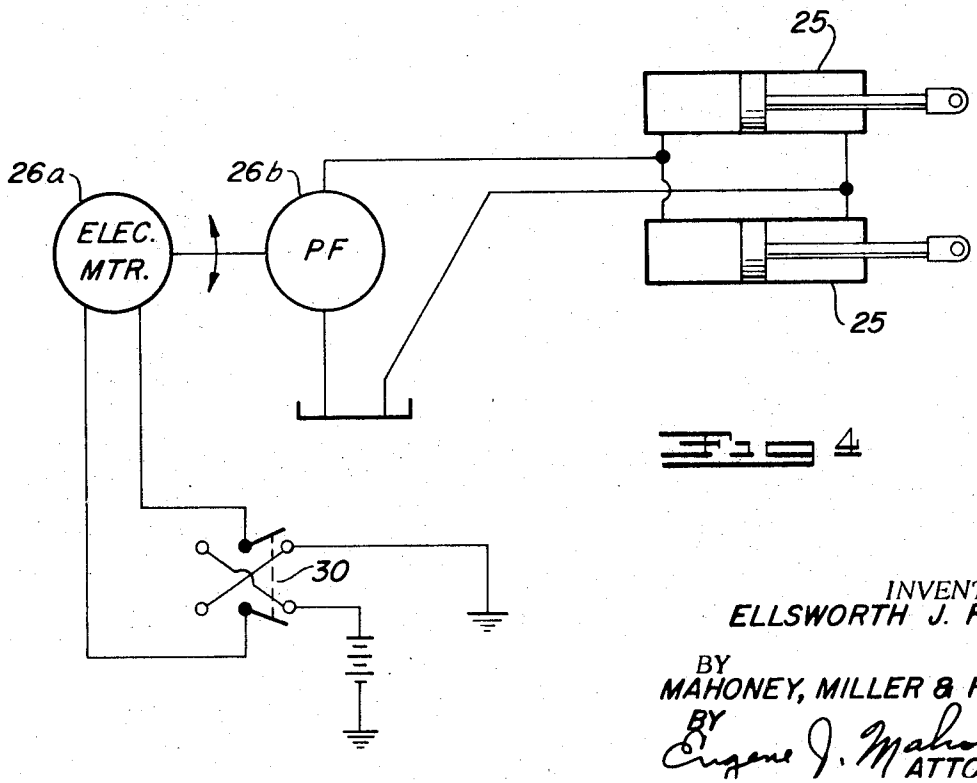

FIG 4

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STABILIZER TRIM ATTACHMENT FOR POWER BOATS

BACKGROUND OF THE INVENTION

Various trim tab attachments have been provided in the past for obtaining the proper attitude in the movement of the boats through the water under various loaded conditions. However, these prior art attachments have not included means for obtaining lateral stability. Also, the operating means for these tabs have not been positive in both directions to permit a definite selection of angular position of the tabs. According to the present invention, lateral stability is accomplished as well as positive selection of the angular position of the tabs in order to obtain the desired attitude of the boat under various loaded conditions.

In the accompanying drawings, I have illustrated a preferred embodiment of my invention and in these drawings:

FIG. 1 is a side elevational view of a portion of a boat at its stern, partly broken away, showing my attachment applied to the transom thereof.

FIG. 2 is a horizontal sectional view taken along line 2–2 of FIG. 1.

FIG. 3 is a rear view taken along line 3–3 of FIG. 1.

FIG. 4 is a schematic diagram of the hydraulic and electric control circuit for controlling the angular position of the trim tabs.

With reference to the drawings, I have shown in FIG. 1, the stern portion of a power boat of the inboard motor type with the transom **10** and the bottom **11** converging at a lower corner **12**. The trim tabs of this invention are indicated generally at **13** and **14** and are hinged about a transverse axis, indicated at **15**, for vertical swinging movement. This axis is adjacent the corner **12**.

The tabs **13** and **14** are hinged side by side, but with a space **16** therebetween. If the attachment is used on an outboard motor type boat this spacing could be increased if necessary. Each tab is made of relatively stiff sheet metal with a straight forward edge which is hinged to the transom **10**, preferably by a piano-type hinge **17**. The rear edge of the tab is turned upwardly at a transverse joint **18** parallel with the front or leading edge of the tab so as to provide an upwardly and rearwardly projecting angular extension which stiffens the tab and provides for smoother flow of water over its rear edge. It will be apparent that due to the location of the hinge **17**, the main body of the tab is, in effect, an extension of the bottom of the boat being coplanar therewith. The extension **19** extends upwardly and rearwardly from the tab so as to reduce turbulence at the rear edge of the tab. It will be noted that the corners of the extension **19** are angled at **20** to further reduce turbulence.

To obtain lateral stability as the boat is passing through the water, each tab at each edge is provided with a depending stabilizing flange **21** which also reinforces the body of the tab to make it rigid. It will be noted that each flange **21** angles downwardly from the hinge **17**, where its edge is substantially flush with the bottom **11**, to its rear end **22**, at the joint **18**, where it depends from the body of the tab a substantial distance. Each depending flange **21** is in a vertical plane at a right angle to the flat plane of the body of the trim tab.

Each of the tabs **13** and **14** is moved up or down positively to a selected angular position by means of a double-acting

hydraulic ram or cylinder and piston unit **25**. This unit **25** is pivotally connected to the transom **10** at **23**, on its outer vertical surface, and to the tab at **24**, on its upper surface rearwardly of the hinge axis **15** and adjacent the joint **18**. The units **25** are preferably simultaneously activated by means of a combined motor and pump unit **26**, located within the boat, preferably mounted on the inner surface of the transom, being connected to the units **25** by the necessary flexible conduit **27**.

As the boat passes through the water, the proper attitude may be obtained by operating the switch **30** to select the proper angle on the two tabs **13** and **14** simultaneously. The switch **30** will be of the double-throw, double-pole type and will normally be held spring biased into "off" position. It will control a reversible motor **26*a*** of the unit **26** which will, in turn, control the reversible hydraulic pump **26*b*** of that unit. Driving the motor **26*a*** in one direction will actuate the rams **25** to swing the tabs **13** and **14** upwardly simultaneously and driving the motor in the other direction will actuate the rams **25** to swing them downwardly. As the boat is powered through the water, the water will pass beneath the flat bodies of the tabs **13** and **14**, which will provide planing surfaces, and then over the rearwardly and upwardly angled extensions **19** with a minimum of turbulence. The flanges **21** projecting downwardly into the water will create lateral stability. This is especially true at the center where water is passing through the space **16**, between the two tabs, which space is lined up with the keel or centerline of the boat and acts on both adjacent flanges **21** to obtain a high degree of lateral stabilization. Positive displacement of the tabs up or down, as described, may be obtained merely by moving the activating lever of the switch **30** in the proper direction. By using two separate tabs they can be spaced apart as desired and angularly related relatively depending upon the transverse contour of the bottom of the boat and the transom.

I claim:

1. In combination with a power boat having a bottom and a transom connected together at a joint at the stern of the boat; a pair of trim-tabs hinged to the boat adjacent said joint and on opposite sides of the centerline thereof;

said trim tabs comprising substantially flat body portions which are hinged at their forward edges to the boat and provide planing surfaces extending rearwardly from the boat bottom,

said tabs being spaced on each side of the centerline of the boat to provide a space therebetween, said tabs having stabilizing flanges which project from the planing surfaces of the tabs at both the inner and outer edges of the respective tabs, each tab having an upwardly angled extension at its rear edge,

and means for positively raising and lowering the hinged tabs, said means for positively raising and lowering the tabs comprising a double-acting hydraulic ram connected between each of said tabs and the transom of the boat, and means for activating both of said rams simultaneously in the same direction, said activating means comprising a single selector switch movable from a normal off position into contact with either of two contacts, said contacts being connected to a reversible electric motor which drives a reversible hydraulic pump that supplies actuating fluid to said rams.