United States Patent

Boome

[15] **3,698,343**

[45] **Oct. 17, 1972**

[54] **BOAT HULL**

[72] Inventor: **Martin W. Boome,** 12 Hampstead Court, Nova Scotia, Canada

[22] Filed: **Jan. 7, 1971**

[21] Appl. No.: **104,585**

[30] **Foreign Application Priority Data**

Feb. 3, 1970 Canada.....073,870

[52] **U.S. Cl.**.....**114/66.5 P**

[51] **Int. Cl.**.....**B63b 1/28**

[58] **Field of Search**.....114/66.5 P, 66.5 H

[56] **References Cited**

UNITED STATES PATENTS

3,450,090	6/1969	Best	114/62 X
2,832,304	4/1958	Elyosius et al.	114/66.5 H
2,773,467	12/1956	Bailey	114/66.5 H

FOREIGN PATENTS OR APPLICATIONS

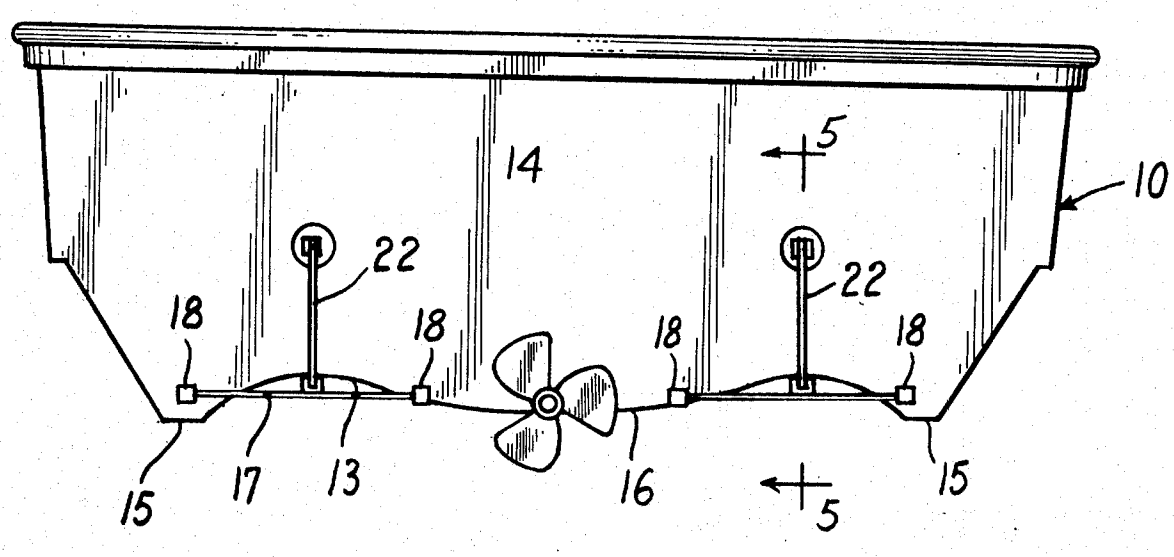
8,472	1908	Great Britain	114/66.5 P

Primary Examiner—Andrew H. Farrell
Attorney—Fetherstonhaugh & Co.

[57] **ABSTRACT**

The hull bottom is shaped to form a longitudinal air-water channel which in the stern portion of the hull is divided into two transversely spaced air-water passages open at the transom. A pair of trim tabs are horizontally pivoted on the transom in such position that streams of air-water from the passages flow over as well as under the trim tabs.

8 Claims, 6 Drawing Figures



PATENTED OCT 17 1972

3,698,343

SHEET 1 OF 3

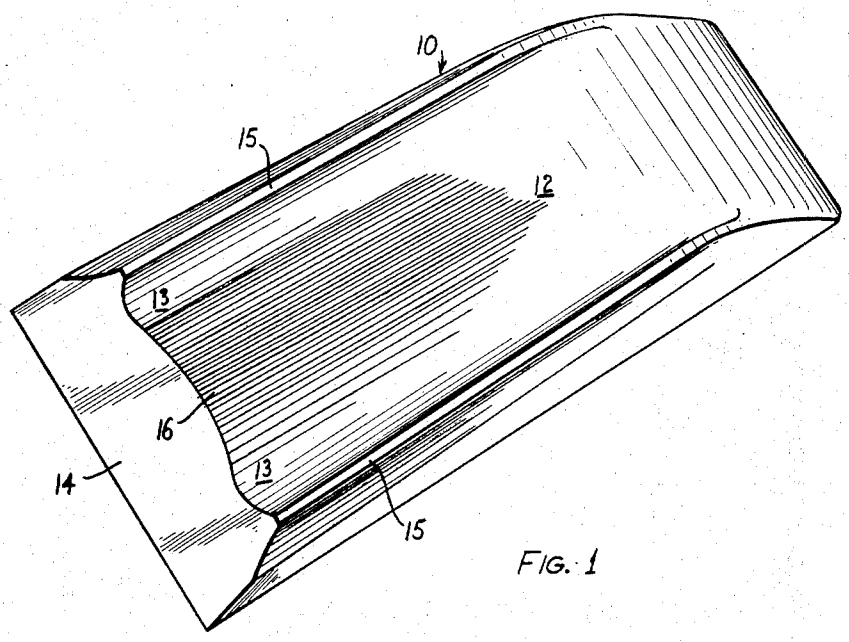


FIG. 1

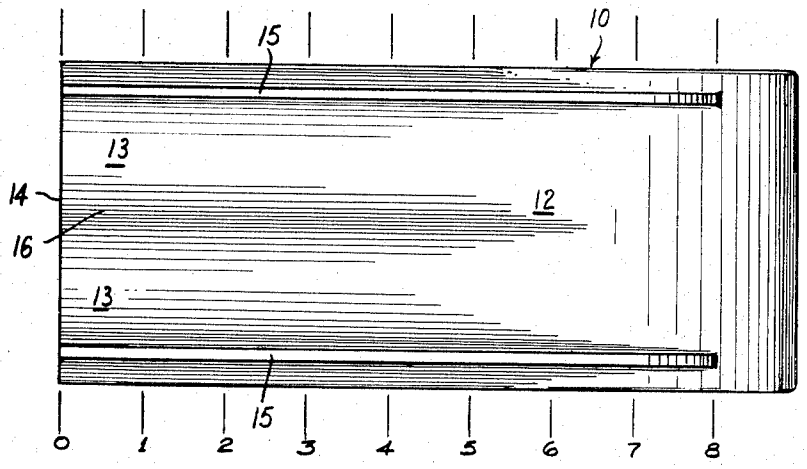


FIG. 2

INVENTOR
Martin W. BOOME

Fitzpatrick, Cella, Harper & Scinto
PATENT AGENTS

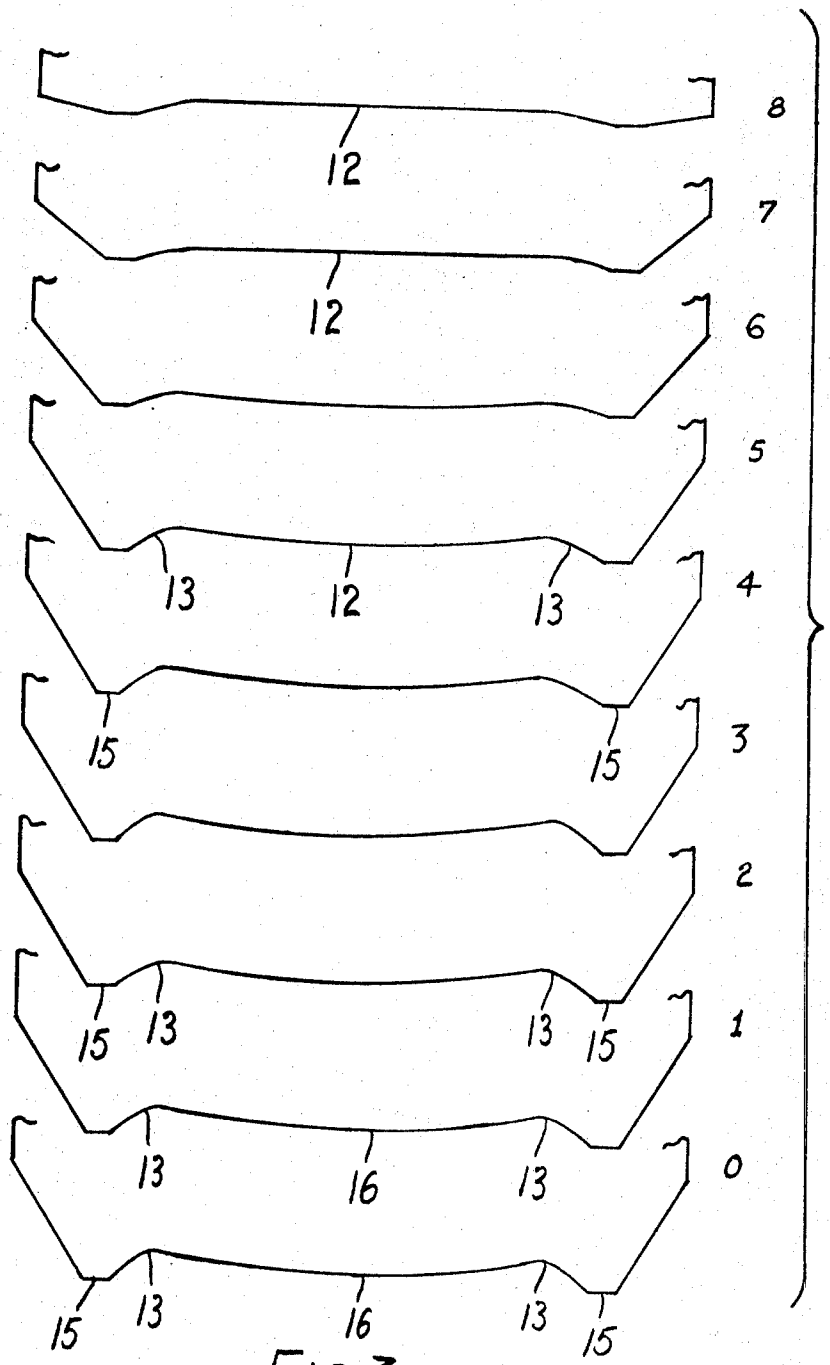


FIG. 3

INVENTOR
Martin W. BOOME

Fetherstonhaugh & Co.
PATENT AGENTS

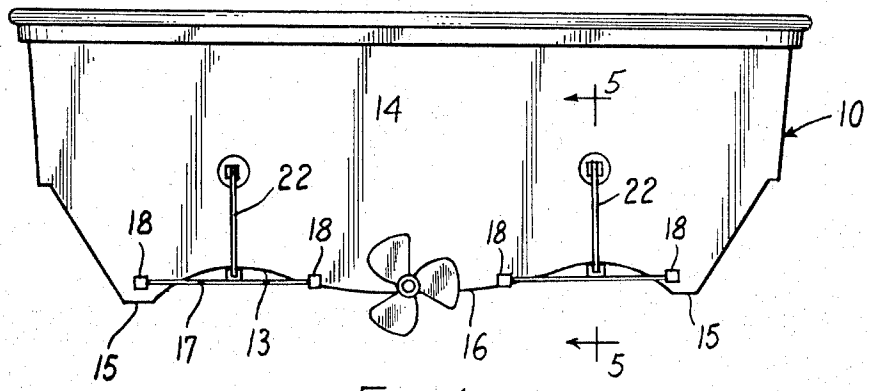


FIG. 4

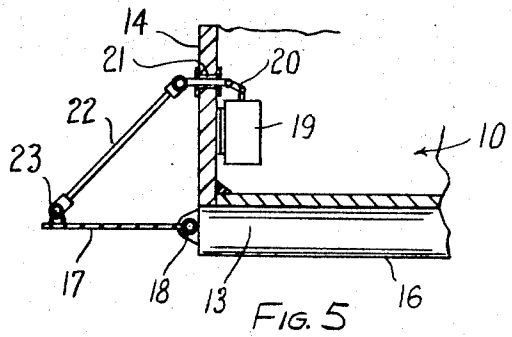


FIG. 5

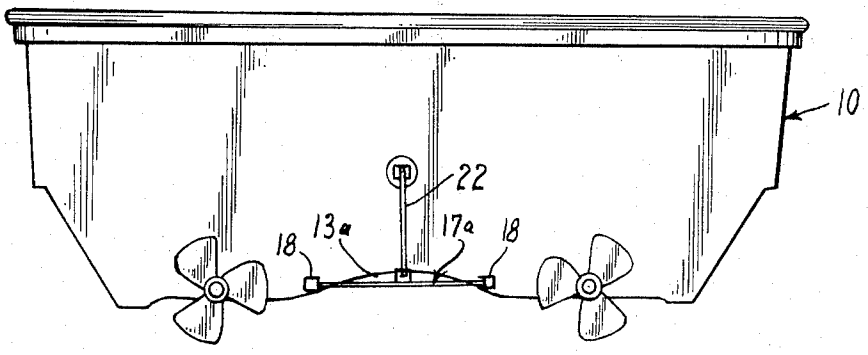


FIG. 6

INVENTOR
Martin W. BOOME

Fetherstonhaugh & Co.
PATENT AGENTS

BOAT HULL

This invention relates to new and useful improvements in boat hulls equipped with trim tabs at the stern thereof for the purpose of levelling the boat in water and raising or lowering the bow during operation, so that effective control is obtained particularly in rough water or at high speeds.

Although it is common in the art to provide trim tabs at the stern, such conventional trim tabs are usually mounted at or above the lower edge of the transom close to the water line, with the result that water upflowing past the bottom of the hull affects only the bottom surface of the trim tabs. Consequently, since the trim tabs are not disposed truly within the water stream, their efficiency is not fully realized in the conventional arrangement.

The principal object of the invention is to substantially increase the operating efficiency of and the control afforded by the trim tabs, this being attained by the provision of an especially shaped hull bottom which has two transversely spaced air-water passages in the stern portion thereof, and mounting the trim tabs on the transom in such position that streams of air-water from such passages flow over as well as under the trim tabs, thus enabling both the upper and lower surfaces of the trim tabs to be affected by the air-water stream for much more efficient operation and better control than was heretofore possible.

With the foregoing more important object and features in view and such other objects and features which may become apparent as this specification proceeds, the invention will be understood from the following description taken in conjunction with the accompanying drawings, wherein like characters of reference are used to designate like parts, and wherein:

FIG. 1 is an underside perspective view of the boat hull in accordance with the invention;

FIG. 2 is a bottom plan view thereof;

FIG. 3 is a group illustration diagramatically showing cross-sections of the hull in the planes designated as 0, 1, 2, 3, 4, 5, 6, 7 and 8 in FIG. 2;

FIG. 4 is an end elevational view of the hull, taken from the stern, and showing the trim tabs of the invention applied to the transom; and

FIG. 5 is a fragmentary vertical sectional view, taken substantially in the plane of the line 5—5 in FIG. 4, and showing the trim tab actuating means;

FIG. 6 is an end elevation similar to FIG. 4 but showing a single air-water passage and a single trim tab.

Referring now to the accompanying drawings in detail, and more particularly to FIGS. 1–3, the boat hull designated generally as 10 is a barge-type hull, although this is not at all important from the standpoint of the invention and it is to be understood that for all practical purposes the forward portion of the hull may have the shape of the conventional tapered bow. The important feature of the invention is that the bottom of the hull is especially shaped to provide a longitudinal air-water channel 21, which in the stern portion of the hull bottom is divided into two transversely spaced air-water passages 13, which are open at the transom 14 of the hull.

Preferably, the aforementioned hull bottom shape is obtained by providing the bottom along its side portions with a pair of longitudinal skid members 15 which define the air-water channel 12 therebetween and extend along the outside of the air-water passages 13 to the transom 14. At the inside the passages 13 are shown to be transversely separated by a depressed, convex center portion 16 of the stern region of the hull bottom, it being understood that as the boat moves through water, an air-water stream passes through the channel 12 in the forward portion of the hull bottom and then becomes divided to flow rearwardly through the two transversely spaced passages 13 in the stern portion, past the transom 14. Such division of the air-water stream is effected gradually by the progressive, rearwardly increasing prominence of the depressed center portion 16 of the hull bottom, which makes the passages 13 progressively more pronounced in the aft direction, as will be readily apparent from FIG. 3, so that by the time the divided air-water streams in the passages 13 reach the transom, they are well defined.

If desired, additional longitudinal skid members (not shown) may be provided in the hull bottom, inboard of and parallel to the skid members 15, such additional skid members being located approximately along the inside of the passages 13.

Two transversely spaced trim tabs 17 are disposed in a specific relation to the especially shaped hull bottom as already described, this being so that the trim tabs, which are hinged to the transom 14 by horizontal pivot means 18, are located directly within air-water streams flowing rearwardly through the passages 13 past the transom. In other words, the pivot means 18 of the trim tabs are located on the transom end of the skid members 15 and of the depressed center portion 16 of the hull bottom so that the pivot axis of the trim tabs is disposed in a horizontal plane which intersects the passages 13, as will be apparent from FIGS. 4 and 5. Consequently, with the pivot axis of the trim tabs being spaced downwardly from the roof of the passages 13, air-water streams from these passages will flow over as well as under the trim tabs, thus subjecting both the upper and lower surfaces of the the trim tabs to the air-water stream effect. In this manner the trim tabs are much more efficient in operation and much better control of the boat in water is obtained than is possible with conventional trim tabs which are affected by water flow only on their lower surfaces.

The trim tabs 17 may be raised and lowered about their pivots 17 in any suitable manner, as exemplified in FIG. 5 where each trim tab is actuated by a suitable power source 19 inside the hull 10, the power source being connected to articulated linkage 20 passing through an opening 21 in the transom 14. At the outside of the transom the linkage 20 is connected to a link 22 which is pivoted to the trim tab 17 as at 23, so that the trim tab may be raised or lowered by actuation of the power source 19. Manifestly, a separate power source and separate linkage are provided for the two trim tabs, so that they may be raised or lowered independently of each other.

With further reference to the hull bottom configuration, it may be noted that the hull sections in FIG. 3 are shown for illustrative purposes only and may be modified in any desired manner, as long as the shape of the hull bottom is such as to produce two transversely spaced air-water streams past the stern to flow both over and under the trim tabs.

The modification shown in FIG. 6 takes care of boat hulls in which two engines and propellers are employed for propulsion. In this application there would be provided on the under side of the hull a single air-water channel 13*a* located longitudinally on the centerline of the hull, and a single trim tab 17a would be provided aligned with the channel 13*a*.

The air-water channel 13*a* would extend forwardly from the rear of the hull in the same manner as the pair of channels 13 shown in FIG. 3.

What I claim is:

1. The combination of a boat hull having a bow portion and a stern portion and including a bottom and a transom, said bottom being shaped to provide in the stern portion a pair of transversely spaced longitudinal passages which are open at the transom and extend forwardly to open at the bow so that when the hull moves through water, a mixture of water and air flows rearwardly through said passages, and a pair of transversely spaced trim tabs pivoted to said transom in longitudinal alignment with and rearwardly of the respective passages, said trim tabs having a horizontal pivot axis disposed in a plane which intersects said passages in downwardly spaced relation from the roof of the passages so that the air-water mixture flowing through the passages flows over as well as under the trim tabs.

2. The combination as set forth in claim 1 wherein said hull bottom includes a pair of longitudinal skid members extending along the outside of the respective air-water passages, said passages being transversely spaced from each other at the inside thereof by a depressed center portion of the hull bottom.

3. The combination as set forth in claim 2, together with horizontal pivot means mounting said trim tabs on said transom, said pivot means being located at the transom end of said skid members and of said depressed center portion of the hull bottom.

4. The combination as set forth in claim 2, wherein said skid members also extend forwardly along the hull bottom and define between their forward portions a longitudinal air-water channel which in the stern region of the hull is separated into said transversely spaced passages by said depressed center portion of the hull bottom.

5. The combination as set forth in claim 1 together with means for raising and lowering said trim tabs about their horizontal pivot axis.

6. The combination as set forth in claim 1, together with a propeller at the stern of said hull, said propeller being disposed centrally in the space between said air-water passages.

7. The combination of a boat hull having a bow portion and a stern portion and including a bottom and a transom, said bottom being shaped to provide a central longitudinal passage which is open at the transom and extends forwardly to open at the bow so that when the hull moves through the water, a mixture of water and air flows rearwardly through said passage, and a transverse trim tab pivoted to said transom in longitudinal alignment with and rearwardly of said passage, said trim tab having a horizontal pivot axis disposed in a plane which intersects said passage in downwardly spaced relation from the roof of the passage so that the air-water mixture flowing through the passage flows over as well as under the trim tab.

8. The combination as set forth in claim 7, together with a pair of propellers at the stern of said hull, said propellers being spaced transversely to opposite sides of said central passage.

* * * * *