

[54] **INFLATABLE TRANSOM SEALING ARRANGEMENT**

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[51] Int. Cl. .... B63h 5/06

[58] Field of Search ..... 115/34, 35, 36, 37, 38, 39, 115/40, 41, 42, 43; 114/227, 117, 201, 201 A

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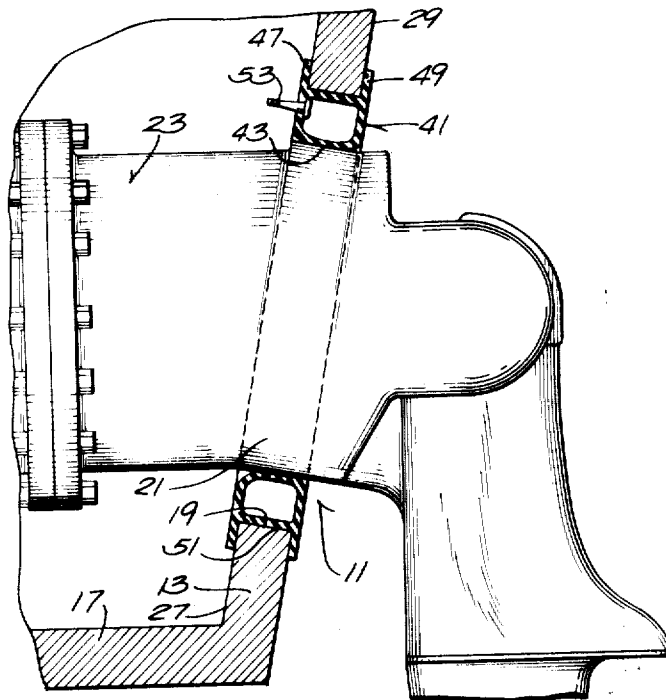
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[57] **ABSTRACT**

Disclosed herein is a boat hull with a transom having therein an aperture, together with a stern drive unit mounted on the boat hull and having a part extending through the transom aperture, and a seal extending between the transom and the part and comprising a member which is inflated so as to sealingly circumferentially engage both the part and the transom to prevent passage of water through the aperture and around the part into the hull.

Also disclosed herein is a method of sealing the transom of a boat having a stern drive unit extending through an opening in the transom and including the steps of placing an inflatable member around the circumference of the opening, inserting the stern drive unit part through an opening in the inflatable member, and inflating the member to sealingly engage the member with both the stern drive unit part and the boat transom. Alternatively, the inflatable member can be placed on the stern drive unit part and then the assembly of the stern drive unit and the inflatable member can be properly located in the transom opening prior to inflation.

**2 Claims, 3 Drawing Figures**



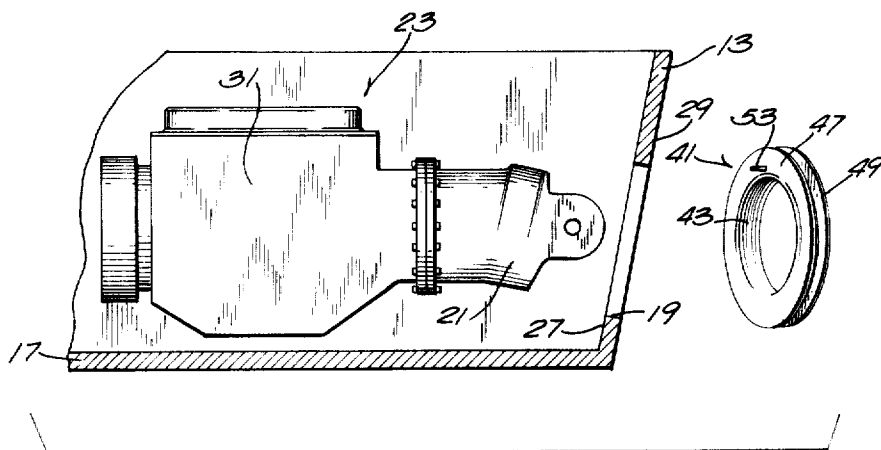


Fig. 2

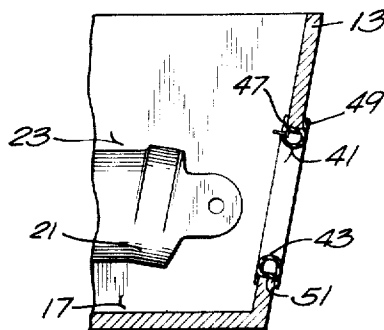


Fig. 3

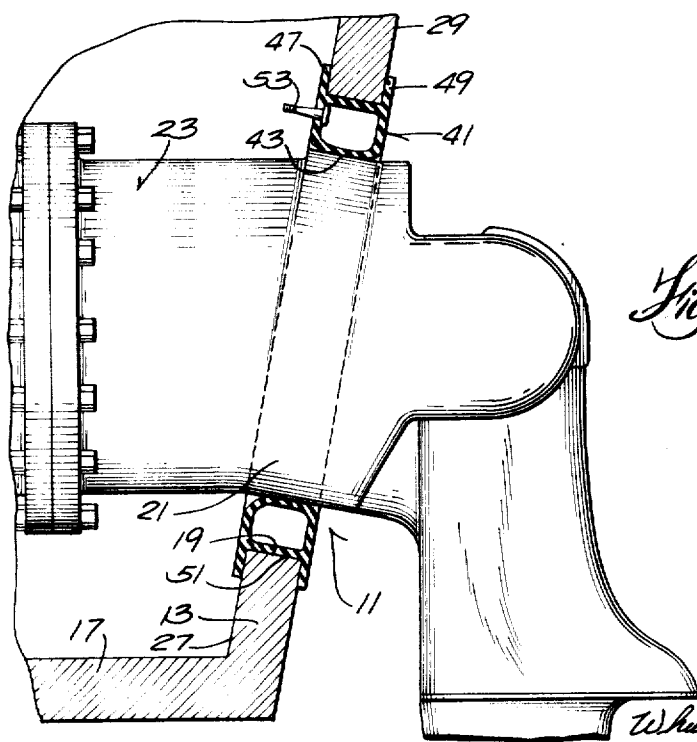


Fig. 1

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## INFLATABLE TRANSOM SEALING ARRANGEMENT

## BACKGROUND OF THE INVENTION

Boats which are propelled by stern drive units commonly have an aperture in the transom through which extends a part of the stern drive unit to afford transmission of power from an engine within the boat hull to a propulsion unit rearwardly of the transom. Projection of the stern drive unit through the transom has required a seal to prevent entry of water through the aperture into the boat hull. Various arrangements have been employed in the past for providing a seal between the stern drive unit and the boat transom to prevent such entry of water. All of such prior sealing arrangements have involved various parts, such as trims, castings, and screws, and were relatively expensive to employ and to remove when removal was required, as for instance, when removing the stern drive unit for repair or replacement.

Some examples of prior transom sealing arrangements include those disclosed in the Hansen U.S. Pat. No. 3,091,211, in the Petterson U.S. Pat. No. 3,175,530, and in my prior U.S. Patent No. 3,183,880.

## SUMMARY OF THE INVENTION

In accordance with the invention, a new and improved sealing arrangement is provided for the transom of a boat having a stern drive unit extending through an aperture in the transom. A sealing arrangement in accordance with the invention involves the use of an inflatable member which is tailored so that, when collapsed or non-inflated, the inflatable member can be readily located in proper position and so that after location in proper position, the inflatable member can be easily inflated so as to sealingly engage both the transom and the stern drive unit to prevent entry of water into the boat hull.

One disclosed sealing arrangement constructed in accordance with the invention includes a toroidal or doughnut shaped member which also includes spaced flanges adapted to engage the margin of the transom about the aperture.

One of the features of the invention resides in the capability of the disclosed arrangement for sealing the transom even though the stern drive unit is mounted independently of the sealing arrangement.

One of the principal objects of the invention is the provision of a transom sealing arrangement including a member which is inflatable to sealingly engage both a transom and a stern drive unit.

Another of the principal objects of the invention is the provision of a transom sealing arrangement for a stern drive unit powered boat, which arrangement includes a toroidal or doughnut shaped inflatable member.

Another object of the invention is the provision of a sealing arrangement as referred to in the preceding paragraph and in which the toroidal shaped member includes spaced parallel flanges adapted to receive therebetween the margin of the transom surrounding the aperture.

Another principal object of the invention is the provision of a new and improved sealing arrangement which is economical in construction and installation and which will provide reliable service over a long and useful life.

The sealing arrangement disclosed herein has the advantage of providing a neat appearing leak proof seal which will self-adjust to various transom angles and to dimensional variations in transom openings. Sealing compounds can be employed to the outer surface of the inflatable member to take care of reasonable imperfections in the margins of the transom around the opening. In addition, the seal will reduce motor noise and vibration transmission to the boat hull from the stern drive unit.

Other objects and advantages of the invention will become known by reference to the following description and accompanying drawings.

## DRAWINGS

FIG. 1 is a side elevational view, partially schematic, of an arrangement in accordance with the invention for sealing a marine propulsion stern drive unit part to the transom of a boat hull.

FIG. 2 is a schematic exploded view, principally in side elevation, of the components of the seal arrangement shown in FIG. 1.

FIG. 3 is a side elevational view showing the sealing arrangement of the invention in partial assembly.

## GENERAL DESCRIPTION

Shown in the drawings is an arrangement 11 embodying various of the features of the invention for sealing the transom 13 of a boat 17 against the entry of water through an aperture or opening 19 through which extends a part 21 of a stern drive unit 23. More particularly, shown in the drawings is a fragmentarily illustrated boat 17 having a hull with a transom 13 and including therein means defining an aperture 19 which is preferably circular and which is circumscribed by wall margins 27 and 29 on the inner and outer surfaces, respectively, of the transom 13. The boat 17 is adapted to be driven through the water by a stern drive unit 23 including an engine 31 which is located in the boat hull forwardly of the transom 13 and which can be mounted from the boat hull by means (not shown) independent of the sealing arrangement 11. Connected to the engine 31 or forming a portion thereof is a part 21 of the stern drive unit 23 which extends through the aperture 19 to the rear of the transom 13 for connection to other components which extend into the water and provide both for propulsion and steering. The part 21 can be a housing for a transmission or a rearwardly extending drive shaft or other components of a stern drive unit and preferably has a circular outer periphery.

In accordance with the invention, an inflatable seal is provided between the stern drive unit part 21 and the transom 13 of the boat hull. In the disclosed construction, the seal comprises an inflatable member 41 which, in general, is of hollow toroidal or doughnut configuration having a central opening 43 which receives the stern drive unit part 21. The inflatable member 41 also includes a pair of spaced parallel flanges 47 and 49 which extend tangentially in parallel relation to the plane of the torus and which are adapted to sealingly engage the inner and outer margins 27 and 29 of the transom 13 around the aperture 19. The outer surface of the torus shaped member 41 in the area between flanges 47 and 49 can be provided with a more or less cylindrical wall or surface 51 for full engagement with the cylindrical wall of the aperture 19. In addition, an air inlet valve 53, such as used in an automotive tire, is mounted on the inner side of the toroidal shaped inflatable member 41 to facilitate inflation of the member 41 for sealingly engaging both the stern drive unit part 21 and the boat transom 13.

In accordance with the method of the invention, the inflatable member 41, when in non-inflated condition, can first be located in the aperture with the surface 51 and flanges 47 and 49 in engagement with the boat transom 13. When thus arranged, the inflatable member 41 defines an opening through which the stern drive unit part 21 is then inserted. When the stern drive unit part 21 is stabilized relative to the boat hull, as for instance, by fixed mounting of the stern drive unit to the boat hull, the inflatable member 41 is then filled with pressure air or some other suitable gas to effect sealing engagement of the inflatable member 41 with each of the transom 13 and stern drive unit part 21. As a consequence, the seal member 41 will prevent entry of water through the aperture 19 and into the boat hull between the transom aperture 19 and the stern drive unit part 21.

If desired, the stern drive unit 23 can first be mounted on the boat hull with the part 21 extending through the aperture 19 and then the inflatable member 41 can be slipped over the part 21 and placed in proper relationship to the transom 13

before inflation thereof. Alternatively, the inflatable member can be located on the part 21 prior to assembly of the stern drive unit 23 to the boat hull.

The seal of the disclosed invention provides a very economical and reliable means for sealing the transom of a boat having a stern drive propulsion unit. The arrangement is particularly advantageous in connection with initial installation and subsequent removal of the part of the stern drive unit which extends through the transom.

Various of the features of the invention are set forth in the following claims.

What is claimed is:

1. A boat comprising a hull with a transom having therein an aperture and inner and outer margins surrounding said aperture, a stern drive unit having a part extending through said transom aperture and being bodily supported from said hull

independently of supporting connection between said transom and said part, and a seal extending between said transom and said part and comprising inflatable means including a member inflated so as to sealingly circumferentially engage said part and so as to sealingly circumferentially engage said transom about said aperture to prevent passage of water through said aperture and around said part into said hull, said inflatable member being generally in the shape of a hollow torus and including a pair of spaced, parallel, and tangentially outwardly extending flanges engaging the inner and outer transom margins around said aperture.

2. A boat in accordance with claim 1 wherein said inflatable member includes an inlet valve adapted to afford entry of air under pressure into said inflatable member.

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