

**IN THE UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF FLORIDA  
ORLANDO DIVISION**

CORRECT CRAFT, INC., a Florida  
corporation,

Plaintiff,

**CASE NO. 6:03-CV-1319-ORL-31-KRS**

vs.

**AMENDED COMPLAINT**

EPCO, INC. d/b/a GATOR TUFF,  
a corporation; and BAREWEST, INC.,  
a corporation,

Defendants.

**ACTION FOR INFRINGEMENTS OF UNITED STATES  
PATENTS RE 37,823; 6,374,762; and DES. 409,972.  
JURY TRIAL AND INJUNCTIVE RELIEF REQUESTED**

COMES NOW Plaintiff Correct Craft, Inc. ("Plaintiff") through its undersigned counsel, and for its complaint against Defendants Epco, Inc. d/b/a Gator Tuff ("Defendant Epco") and BareWest, Inc. ("Defendant BareWest") (collectively "Defendants") states:

**PARTIES, JURISDICTION AND VENUE**

1. Plaintiff is a Florida corporation with its principal place of business within this Judicial District and Division.
2. Upon information and belief, Defendant Epco is a corporation organized and doing business under the laws of a state other than Florida, with offices in Prosser, Washington; and Defendant BareWest is a corporation organized under the laws of a state other than Florida with offices in Lake Oswego, Oregon.

3. Upon information and belief, Defendants offer for sale throughout the United States, including within this Judicial District and Division, wakeboard towers for recreational tow boats. Upon further information and belief, these activities are carried out by this Defendant, *inter alia*, through an internet web site, sales through advertisements distributed throughout the United States and offers for sale at trade shows throughout the United States and in this Judicial District and Division.

4. As set out in greater detail in Counts One, Two and Three, this is an action by Plaintiff against both Defendants for infringements of Plaintiff's United States Patents RE 37,823; 6,374,762 and Des. 409,972.

5. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. 1338(a), and has *in personam* jurisdiction over the parties. Venue properly lies in this judicial district and division under 28 U.S.C. §1391(c).

#### **STATEMENT OF FACTS AS TO ALL COUNTS**

6. "Wakeboarding" is a recreational boating activity in which a participant standing upon a wakeboard is pulled behind a recreational tow boat and attempts to perform tricks across the wake of the boat.

7. On November 9, 1999, the United States Commissioner of Patents and Trademarks issued U.S. Patent 5,979,350 to Plaintiff for "Water Sport Towing Apparatus and Method". U.S. Patent 5,979,350 was reissued as U.S. Patent RE 37,823 on September 3, 2002. A true and correct copy of U.S. Patent RE 37,823 is appended as Exhibit 1.

8. U.S. Patent RE 37,823 has been assigned to Plaintiff.

9. On April 23, 2002, the United States Commissioner of Patents and Trademarks issued U.S. Patent 6,374,762. A true and correct copy of this patent is appended as Exhibit 2.

10. U.S. Patent and 6,374,762 has been assigned to Plaintiff.

11. Plaintiff offers non-exclusive licenses under the above-listed patents.

12. On May 18, 1999, the United States Commissioner of Patents and Trademarks issued U.S. Design Patent 409,972 for "Boat Tower". A true and correct copy of U.S. Patent Des. 409,972 is appended as Exhibit 3.

13. U.S. Patent Des. 409,972 has been assigned to Plaintiff.

14. Defendant has not obtained a license under Plaintiff's patents.

### **COUNT ONE**

#### **Action For Infringements of U.S. Patents RE 37,823 and 5,979,350**

15. This Count One is an action by Plaintiff against both Defendants to obtain monetary damages and injunctive relief for infringements by Defendants of Plaintiff's U.S. Patents RE 37,823 and 5,979,350.

16. Plaintiff here restates and incorporates by reference into this Count One the allegations of ¶¶1-11 and 14 above, inclusive.

17. Upon information and belief, Defendants have offered for sale, sold and/or distributed towers designed specifically for wakeboard use, and which infringe U.S. Patents RE 37,823 and 5,979,350.

18. The infringing activities of Defendants outlined in this Count One have been engaged in without authorization of Plaintiff.

19. Plaintiff is entitled to compensatory damages and injunctive relief for the infringing activities outlined in this Count One.

20. Upon information and belief, the activities of Defendants have been engaged in without a justifiable belief by Defendants that all of the relevant claims of U.S. Patents RE 37,823 and 5,979,350 are invalid or have not been infringed. Therefore, Plaintiff is entitled to an award of exemplary damages, attorneys' fees and costs of this action.

### **COUNT TWO**

#### **Action For Infringement of U.S. Patent 6,374,762**

21. This Count Two is an action by Plaintiff against both Defendants to obtain monetary damages and injunctive relief for infringements by Defendants of Plaintiff's U.S. Patent 6,374,762.

22. Plaintiff here restates and incorporates by reference into this Count Two the allegations of ¶¶1-11 and 14 above, inclusive.

23. Upon information and belief, Defendants have offered for sale, sold and/or distributed towers designed specifically for wakeboard use, and which infringe U.S. Patent 6,374,762.

24. The infringing activities of Defendants outlined in this Count Two have been engaged in without authorization of Plaintiff.

25. Plaintiff is entitled to compensatory damages and injunctive relief for the infringing activities outlined in this Count Two.

26. Upon information and belief, the activities of Defendants have been engaged in without a justifiable belief by Defendants that all of the relevant claims of U.S. Patent

6,374,762 are invalid or have not been infringed. Therefore, Plaintiff is entitled to an award of exemplary damages, attorneys' fees and costs of this action.

### **COUNT THREE**

#### **Action For Infringement of U.S. Patent Des. 409,972**

27. This Count Three is an action by Plaintiff against Defendant BareWest to obtain monetary damages and injunctive relief for infringements by Defendant BareWest of Plaintiff's U.S. Patent Des. 409,972.

28. Plaintiff here restates and incorporates by reference into this Count Three the allegations of ¶¶ 1-6 and 12-14 above, inclusive.

29. Upon information and belief, Defendant BareWest has offered for sale, sold and/or distributed towers designed specifically for wakeboard use, and which infringe U.S. Patent Des. 409,972.

30. The infringing activities of Defendant BareWest outlined in this Count Three have been engaged in without authorization of Plaintiff.

31. Plaintiff is entitled to compensatory damages and injunctive relief for the infringing activities outlined in this Count Three, as well as the additional damages provided in 35 U.S.C. §289.

32. Upon information and belief, the activities of Defendant BareWest outlined in this Count Three have been engaged in without a justifiable belief by Defendant BareWest that the claim of U.S. Patent Des. 409,972 is invalid or has not been infringed. Therefore, Plaintiff is entitled to an award of exemplary damages, attorney's fees and costs of this action.

**DEMAND FOR JURY TRIAL**

Plaintiff requests a trial by jury.

**PRAYER FOR RELIEF**

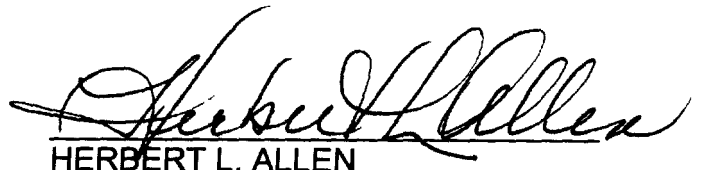
WHEREFORE, Plaintiff Correct Craft respectfully prays that this Honorable Court enter such preliminary and final Orders and Judgments as are necessary to provide the following relief:

- a. Under Counts One and Two, a preliminary and then permanent injunction enjoining Defendants from infringing U.S. Patents RE 37,823; and 6,374,762.
- b. Under Counts One and Two, an award of damages under 35 U.S.C. §284 in an amount adequate to compensate for Defendants' infringements, but in no event less than a reasonable royalty for the use made by Defendants of the inventions set out in Plaintiff's patents;
- c. Under Count Three, an award of monetary damages against Defendant BareWest under 35 U.S.C. §§284 and 289;
- d. Under Counts One, Two and Three, an award of exemplary damages, attorneys' fees and costs under 35 U.S.C. §285;

- e. An award of attorney's fees and costs under 35 U.S.C. §285; and
- f. Such other relief as the Court deems appropriate.

Date: \_\_\_\_\_

9/18/03



HERBERT L. ALLEN

Florida Bar No. 114126

BRIAN R. GILCHRIST

Florida Bar No. 774065

ALLEN, DYER, DOPPELT, MILBRATH  
& GILCHRIST, P.A.

255 So. Orange Ave., Suite 1401

Post Office Box 3791

Orlando, Florida 32802

Attorneys for Plaintiff

Tel: 407/841-2330

Fax: 407/841-2343





US00RE37823E

(19) **United States**  
 (12) **Reissued Patent**  
**Larson et al.**

(10) **Patent Number:** **US RE37,823 E**  
 (45) **Date of Reissued Patent:** **Sep. 3, 2002**

(54) **WATER SPORT TOWING APPARATUS AND METHOD**

(75) **Inventors:** **Borden M. Larson; William N. Snook, both of Orlando; Robert Todd, Winter Park, all of FL (US)**

(73) **Assignee:** **Correct Craft, Inc., Orlando, FL (US)**

(21) **Appl. No.:** **09/613,154**

(22) **Filed:** **Jun. 30, 2000**

**Related U.S. Patent Documents**

Reissue of:

(64) **Patent No.:** **5,979,350**  
**Issued:** **Nov. 9, 1999**  
**Appl. No.:** **09/036,826**  
**Filed:** **Mar. 9, 1998**

U.S. Applications:

- (63) **Continuation-in-part of application No. 29/078,494, filed on Oct. 27, 1997, now Pat. No. Des. 409,972.**
- (51) **Int. Cl.<sup>7</sup> ..... B63B 21/04; B63B 1/00; B63H 19/00**
- (52) **U.S. Cl. .... 114/253; 441/68; 440/33**
- (58) **Field of Search ..... 114/253, 89, 66, 114/65 R, 83, 384, 361, 242, 254; 440/34; 441/68**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,821,726 A 2/1958 Correll  
 3,034,470 A 5/1962 Vanderfelt et al.  
 D195,068 S 4/1963 Griparis  
 3,122,609 A 2/1964 Moore  
 3,336,894 A 8/1967 Eisner  
 3,503,358 A 3/1970 Moesly  
 3,724,595 A 4/1973 Green

3,802,374 A 4/1974 Brown  
 3,811,143 A 5/1974 Page  
 3,890,918 A 6/1975 Sell  
 3,925,836 A 12/1975 Simmonds  
 3,935,830 A 2/1976 Cox  
 3,949,698 A 4/1976 Sell  
 4,033,280 A 7/1977 Wood et al.

(List continued on next page.)

**OTHER PUBLICATIONS**

Alan Jones, A Star is Born, Boating World, Sep. 1997, pp. 33-34.

Seabrite Stainless Steel Marine Products, single page copy of brochure.

(List continued on next page.)

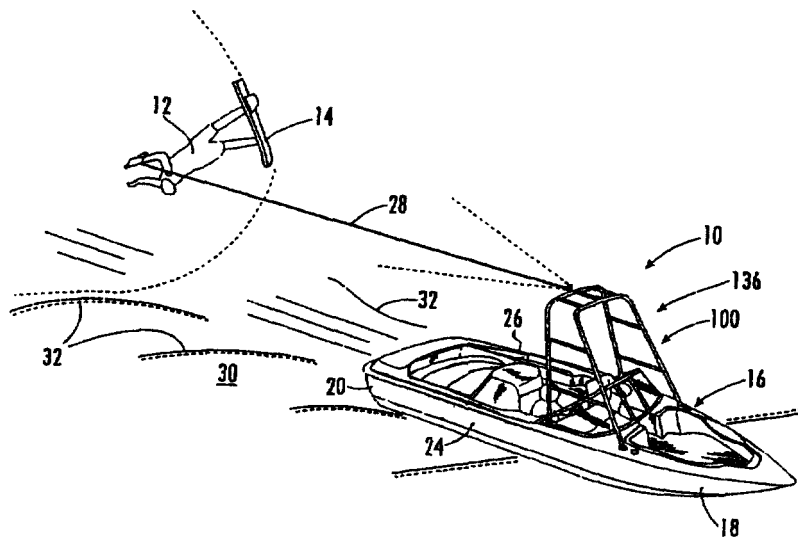
*Primary Examiner*—Stephen Avila

(74) *Attorney, Agent, or Firm*—Allen, Dyer, Doppelt, Milbrath & Gilchrist, P.A.

(57) **ABSTRACT**

The aerial performance characteristics of a performer using a water sport implement such as a wakeboard, and being towed by a vessel while maintaining stability of the vessel includes a first relatively rigid vertical support fitted to one side of the, a second relatively rigid vertical support fitted structure to an opposing side, and a horizontal bridging portion extending between upper extremities of the first and second vertically extending supports, at a height substantially above a level of the operator station for the vessel. A tow rope is attached to the horizontally extending bridging portion for towing the performer from the horizontally extending bridging portion while operating the vessel in a body of water. By pivotally attaching the first and second supports to the respective sides of the vessel, they can be rotated downwardly so that the vessel may pass underneath a bridge or into a boat house.

**49 Claims, 6 Drawing Sheets**



**US RE37,823 E**

Page 2

---

**U.S. PATENT DOCUMENTS**

4,163,529 A 8/1979 Krenzer et al.  
4,341,177 A 7/1982 Miyazaki et al.  
4,528,927 A 7/1985 Iizuka et al.  
4,561,375 A 12/1985 Paxton  
4,593,641 A 6/1986 Adams et al.  
4,641,597 A 2/1987 Paxton  
4,694,773 A 9/1987 Sparkes et al.  
4,893,577 A 1/1990 Jennings  
5,018,474 A 5/1991 Jellen  
5,050,517 A 9/1991 Kobayashi  
5,052,326 A 10/1991 Wiggen et al.  
5,105,754 A 4/1992 Collins  
5,215,025 A 6/1993 Talmor  
5,520,133 A 5/1996 Wiegert

5,520,139 A 5/1996 King et al.  
5,645,003 A 7/1997 Grinde  
5,669,325 A 9/1997 Feikema  
5,673,507 A 10/1997 Stokes, Jr.  
D395,866 S 7/1998 Fowler et al.  
5,787,835 A 8/1998 Remnant  
5,934,217 A 8/1999 Allsop  
5,943,977 A 8/1999 Womack et al.  
6,044,788 A 4/2000 Larson et al.

**OTHER PUBLICATIONS**

Photocopy of Police Resources Boat Photos.  
"Hit It" Water Sports Video, © 1996 (No Identifiable Publication Date).

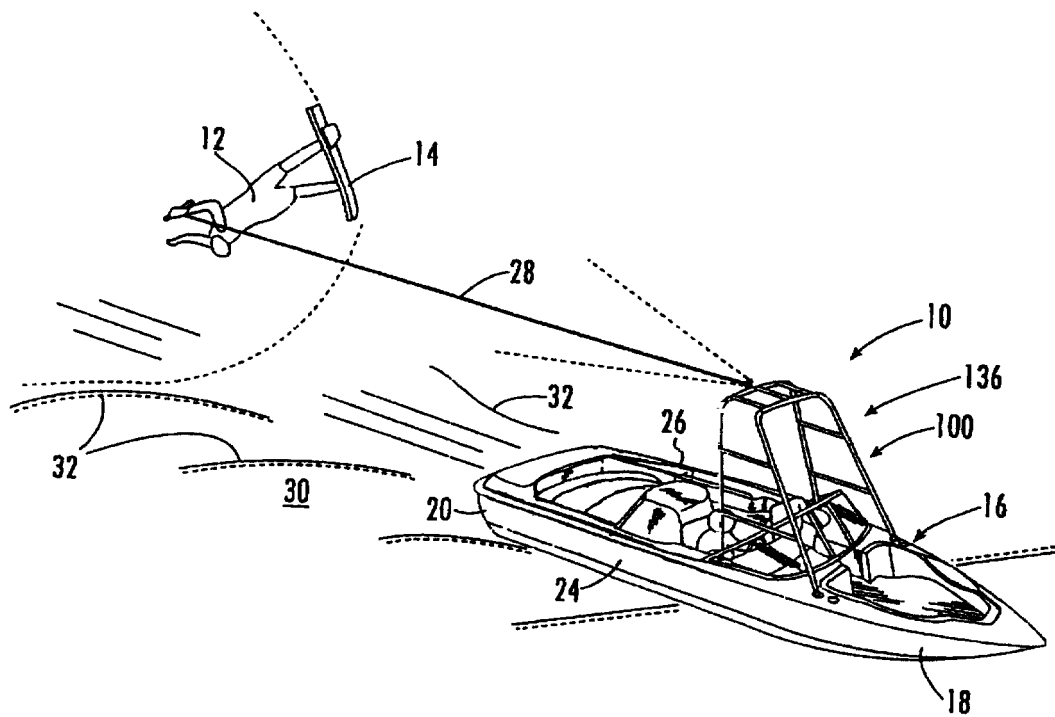


FIG. 1.

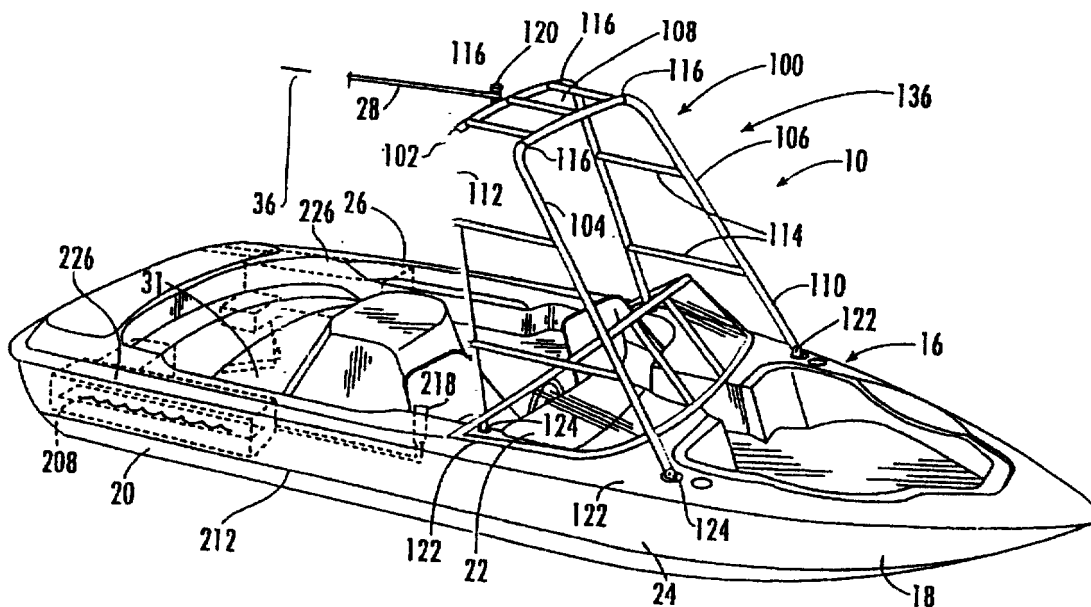


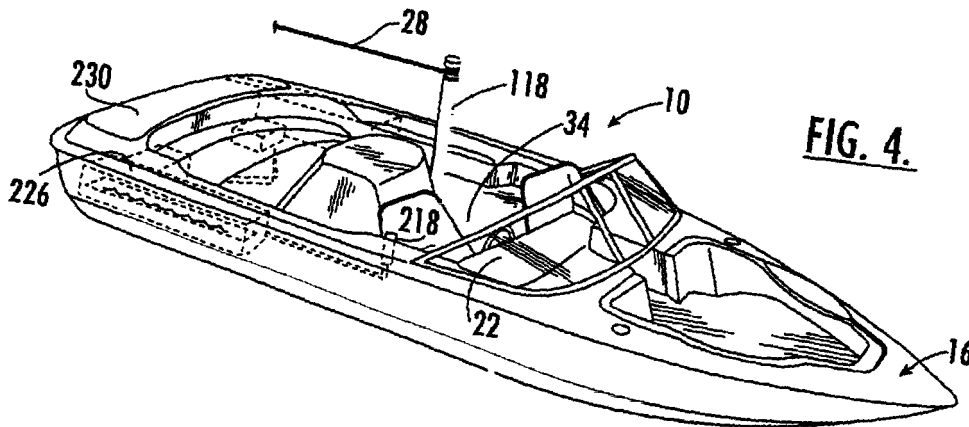
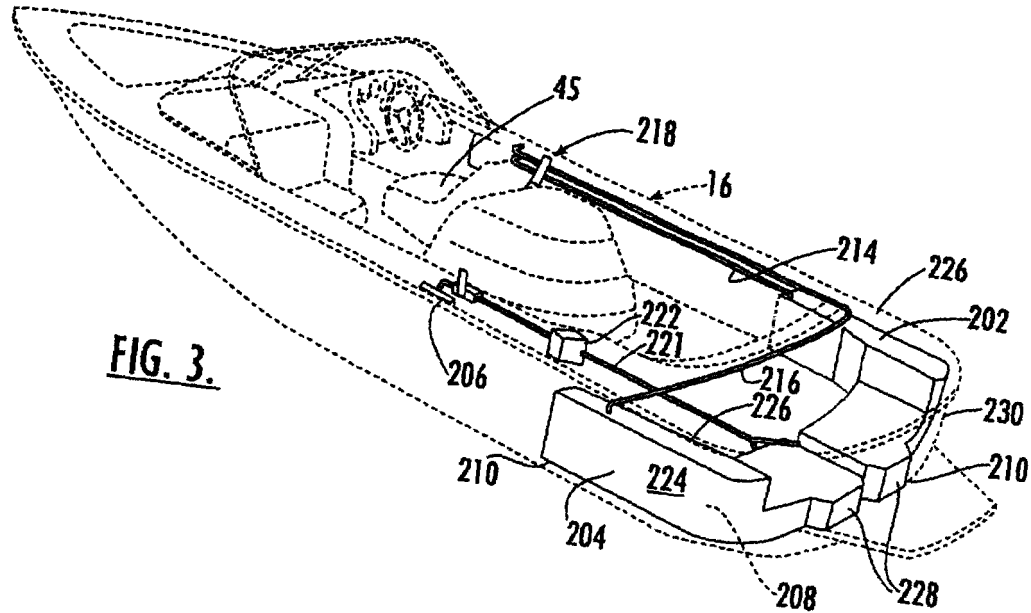
FIG. 2.

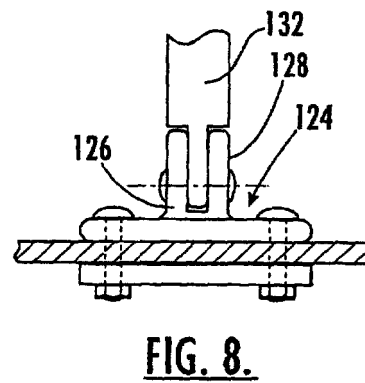
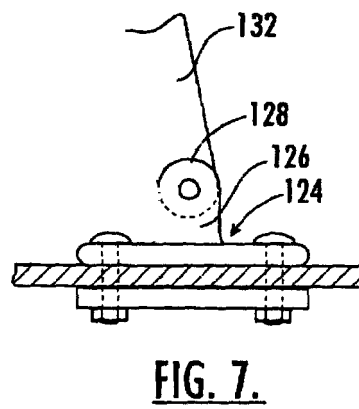
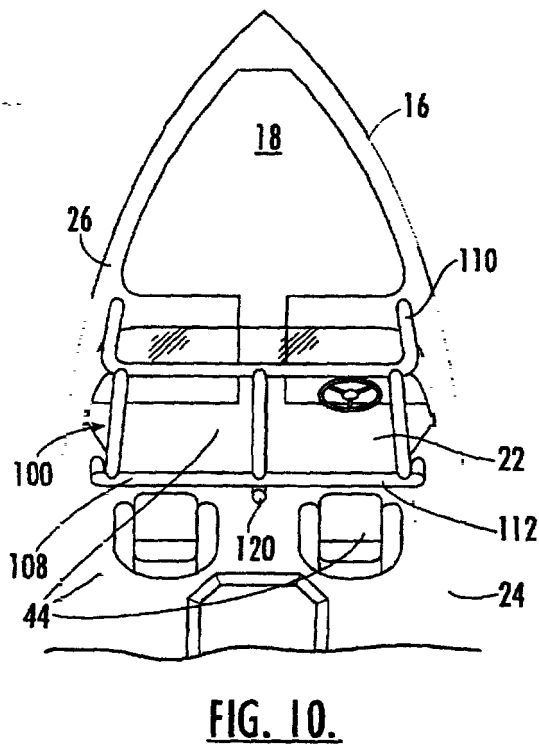
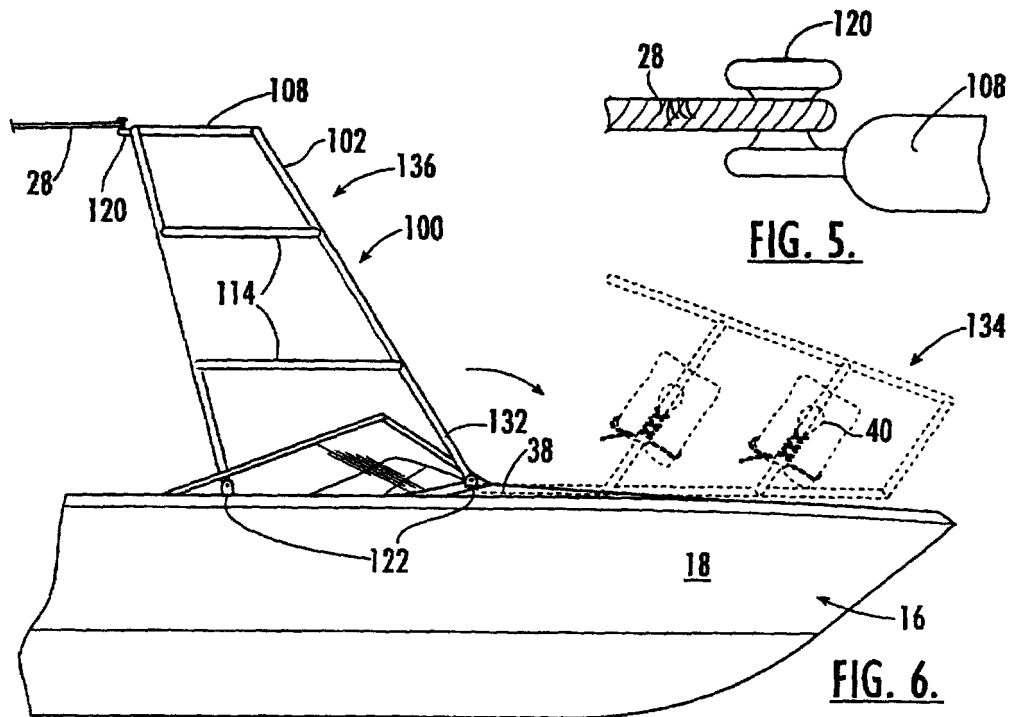
U.S. Patent

Sep. 3, 2002

Sheet 2 of 6

US RE37,823 E





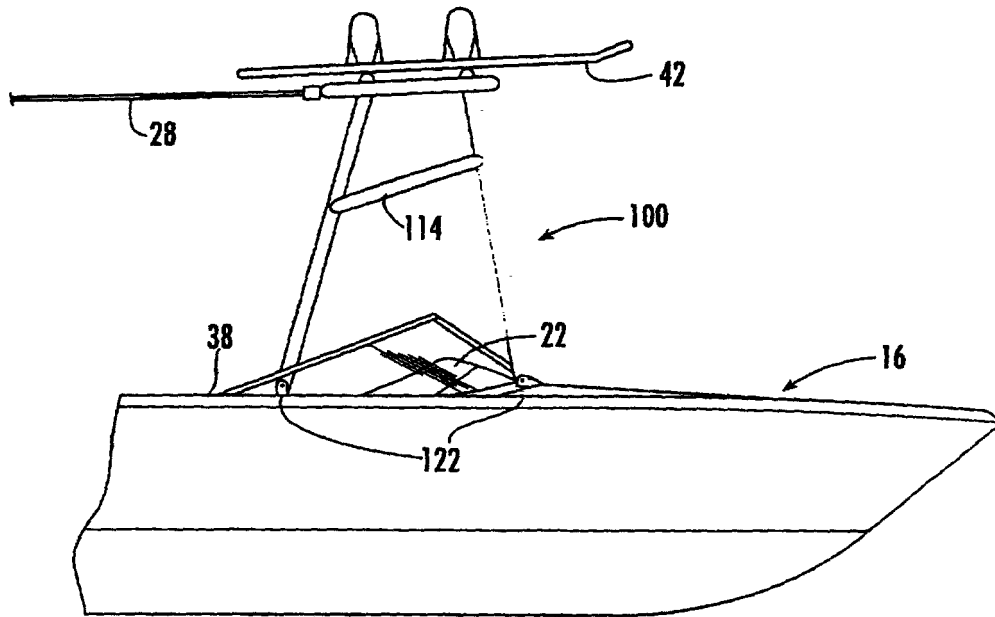


FIG. 9.

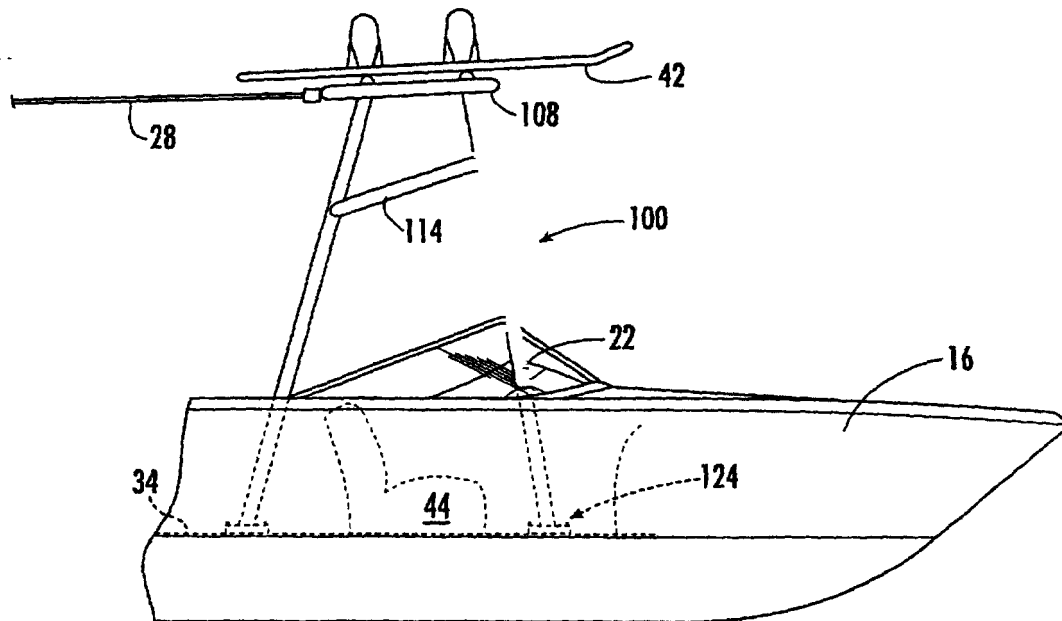
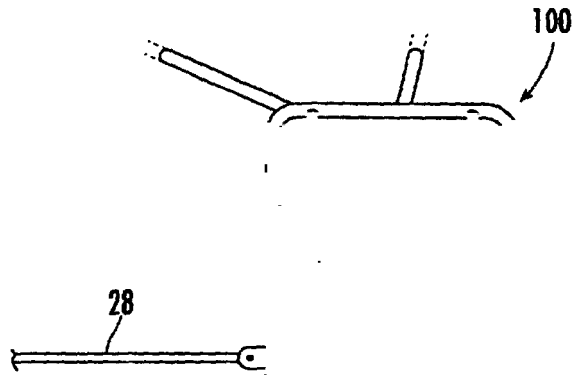
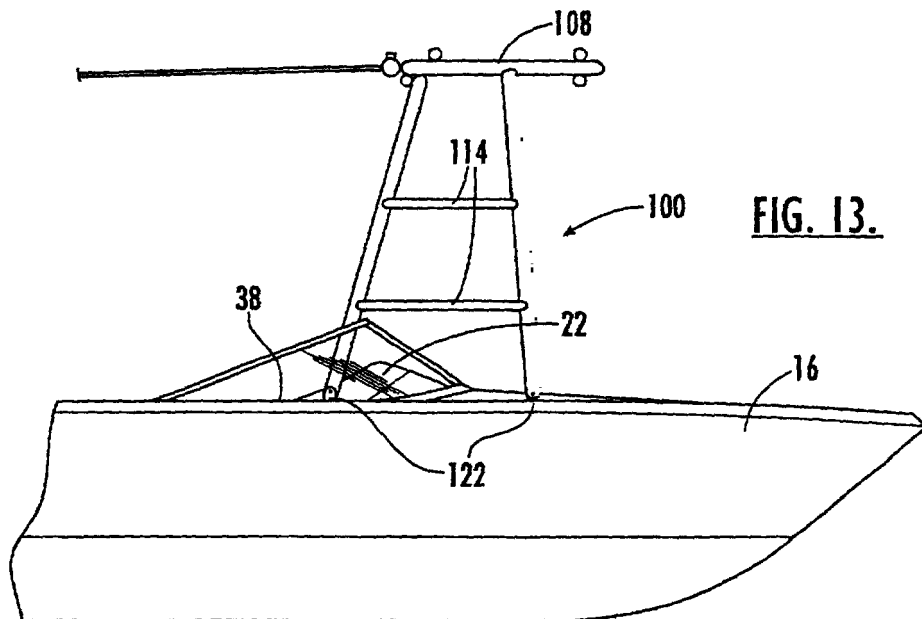


FIG. 11.

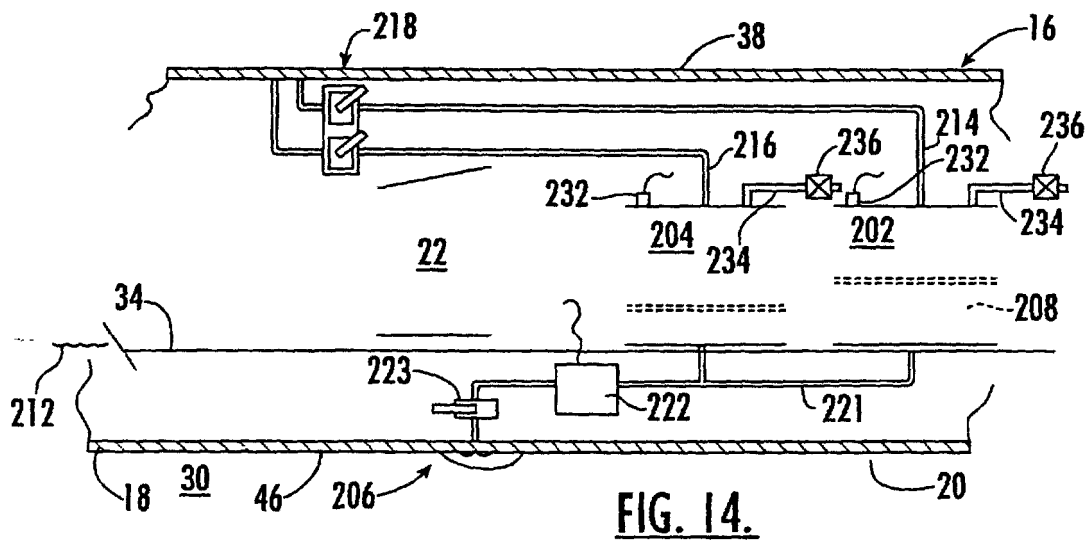


**FIG. 12.**



**FIG. 13.**





US RE37,823 E

1

## WATER SPORT TOWING APPARATUS AND METHOD

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in *italics* indicates the additions made by reissue.

### CROSS-REFERENCE TO RELATED APPLICATION

*This application is a Continuation-in-Part of application Ser. No. 29/078,494, filed Oct. 27, 1997 and issuing as U.S. Pat. No. Des. 409,972 on May 18, 1999, all of which are commonly owned and assigned.*

### FIELD OF INVENTION

The present invention generally relates to towing of a performer by a vessel, and more particularly to enhancing performance of the performer using a water sport implement while maintaining stability of the vessel.

### BACKGROUND OF THE INVENTION

Wakeboarding has become one of the fastest growing sports in the world. In the sport of wakeboarding, there is an ever increasing need for the tow boat to create a larger wake to ride. Unlike waterskiing, the performer on a wakeboard is looking for as large a wake as possible. Further, by anchoring the tow line at a high elevation above the boat deck, the greater the ability of the performer to lift higher into the air, whether with a ski or wakeboard.

Tow rope pylons are known in the art, such as those described in U.S. Pat. No. 4,893,577 to Jennings and U.S. Pat. No. 4,641,597 to Paxton. A typical skiing and wakeboarding pylon has a height of approximately three feet to eight above the floor of the boat. Pylon heights have increased to accommodate the ever increasing height of jumps across the wake by wakeboarders. The extended pylons run a cable from the top of the pylon to the bow of the boat as a guy wire. This wire interferes with movement inside the boat. Further, these extended height pylons have not satisfied wakeboarders with their performance. They do give the performer the ability to get bigger air on the jumps, but the extended pylons flex too much when the performer cuts away or to the wake. During these cuts, the boat heels to a point of instability for the boat and a hazard for all concerned. The guy wire provides support when the skier is pulling straight back, but offers less support when the skier is pulling from the side.

The simplest way to increase the size of the wake is to increase the amount of weight inside a boat. Typically, this has been done by adding lots of people. Alternatively, the industry's response has been to include water bladders in the boat or other weighting materials such as buckets filled with concrete, rocks, or sand.

In one bladder system, a liner is placed inside of a canvas sack or bag. Filling the liner full of water by use of a bilge pump with hoses, wires and clips, can add weight to the back of a boat. However, this process is awkward and cumbersome. Another attempt at adding weight to the back of a boat is believed to include two gates on a transom of a boat. A cable is pulled to open the two gates and thereby flood two tanks located behind the transom of the boat. The tanks are drained by opening the gates. This system required a four foot high boat hull, where typical sports towing boats have a transom or hull height of only thirty inches from bottom to top of the gunwale.

2

As described, by way of example with reference to U.S. Pat. No. 5,645,003 to Grinde, it is known to add water for ballasting, typically uniformly along the length of the boat or forward, as in U.S. Pat. No. 4,528,927 to Iizuka et al. for enhancing the planing of the vessel. Typically ballast pumps are used to control the amount of water within the ballasting, as described, by way of example, with reference to U.S. Pat. No. 5,215,025 to Talmor.

It is typically thought that by simply adding more weight to the boat, the wake will become bigger and better. However, the shape of the wake is as important as the size. The perfect slope, length and hardness of the lip of a wake are also important to enable the performer to release from the wake and achieve a desired launch into the air. Further, it is important that wake control be done in a relatively rapid and timely manner, not available with use of a typical ballast pump.

### SUMMARY OF THE INVENTION

In view of the foregoing background, it is therefore an object of the present invention to improve the aerial characteristics of a performance by a performer using a water sport implement, such as a wakeboard or ski, by way of example, and being towed by a vessel while maintaining the stability of the vessel.

This and other objects, features, and advantages of the invention, are provided by a method aspect of the invention comprising the steps of providing a vessel behind which the performer is to be towed, the vessel including a bow, a stern and an operator station between opposing sides, and fitting a first relatively rigid vertical support structure to a first one of the sides and fitting a second relatively rigid vertical support structure to a second one of the sides, and then extending a generally horizontal bridging portion between upper extremities of the first and second vertically extending support structures, at a height substantially above the level of the operator station. A tow rope is attached to the horizontally extending bridging portion, and the vessel is operated in a body of water while towing the performer from the horizontally extending bridging portion.

In an alternate method, the first and second generally vertically extending support structures are pivotally attached to the respective sides of the vessel, so as to permit the first and second support structures to be rotated downwardly so that the vessel may pass underneath a bridge or into a boat house.

An apparatus of the present invention comprises a vessel behind which the performer is to be towed, the vessel including a bow, a stern and an operator station between opposing sides, a first relatively rigid vertical support structure fitted to a first one of the sides of the vessel, a second relatively rigid vertical support fitted structure to a second one of the sides of the vessel, and a generally horizontal bridging portion extending between upper extremities of the first and second vertically extending support structures, at a height substantially above the level of the operator station. A tow rope is attached to the horizontally extending bridging portion for towing the performer from the horizontally extending bridging portion while operating the vessel in a body of water.

In an alternate embodiment, the apparatus further comprises pivotally attaching means for attaching the first and second generally vertically extending support structures to the respective sides of the vessel, so as to permit the first and second support structures to be rotated downwardly so that the vessel may pass underneath a bridge or into a boat house.

## US RE37,823 E

3

In yet another embodiment, each of the first and second vertical support structures comprise a forward vertical support element and an aft vertical support element, and wherein the apparatus further comprises a plurality of transversely extending bars between each of the forward and aft vertical support elements.

## BRIEF DESCRIPTION OF DRAWINGS

A preferred embodiment of the invention as well as alternate embodiments are described by way of example with reference to the accompanying drawings in which:

FIG. 1 is a perspective view of a vessel and performer in accordance with the present invention;

FIG. 2 is an enlarged perspective view of the vessel of FIG. 1 with rear ballast tanks illustrated;

FIG. 3 is a partial perspective view of the ballast tanks carried within the vessel;

FIG. 4 is a perspective view of an alternate embodiment;

FIG. 5 is a partial side view of a towing element of the present invention;

FIG. 6 is a partial side view of the embodiment of FIG. 2 illustrating an operating erected position and a rotated storing position of a towing structure of the present invention;

FIG. 7 is a partial side view of an attachment portion of the towing structure of FIG. 6;

FIG. 8 is a partial front view of FIG. 7;

FIG. 9 is a partial side view of an alternate embodiment of FIG. 2;

FIG. 10 is a partial top plan view of the embodiment of FIG. 2;

FIG. 11 is a partial side view of an alternate embodiment of FIG. 2;

FIG. 12 is a partial top plan view of the embodiment of FIG. 11;

FIG. 13 is a partial side view of yet another embodiment of FIG. 2; and

FIG. 14 is a schematic of a ballast tank control system of the present invention.

## DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited by the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

Referring now initially to FIGS. 1-3, a preferred embodiment of the present invention is herein described, by way of example, by a water sports system 10 for improving aerial characteristics of a performance by a performer 12 using a water sports implement such as a wakeboard 14. The system 10 comprises a vessel 16 behind which the performer 12 is to be towed. The vessel 16 includes a bow 18, a stern 20, and an operator station 22 between opposing starboard and port sides 24, 26. A towing structure referred herein as a vertical support unit 100 is fitted to the vessel 16. The vertical support unit 100, as will be further described later in this

4

section, includes an upper portion 102 at a height above the level of the operator station 22 and is adapted for securing a tow rope 28 thereto. The tow rope 28 is attached to the upper portion 102 of the vertical support unit 100 for towing the performer 12, as illustrated again with reference to FIG. 1. The system 10 further includes a ballast assembly 200 which includes starboard and port ballast tanks 202, 204 fitted onboard and only aft, preferably within only the stern 20, extending from the transom toward amidships of the vessel 16, unlike typical ballast systems which fully extend bow to stern. Alternate embodiments include a single ballast tank. An extractor 206 is fitted to the hull of the vessel 16 and is in fluid communication with the body of water 30 within which the vessel operates for forcing water 208 into the ballast tanks 204, 202 and weighting down the aft portion of the vessel 16, thus lowering the vessel and controlling a wake 32 created by the vessel.

It is to be noted that various sized vessels will have varying length ballast tanks for extending the tank from the transom area to toward amidships to provide a desirable wake. Simply weighting down the vessel stern only proximate the transom leads to excess plowing of the vessel and an undesirable wake. Further, displacement boats having ballast from stern to bow, typically do not permit planing, desirable in a sports towing vessel. As a result, a certain amount of planing is to be maintained. By extending the ballast tank as herein described, an effective vessel performance and wake is achieved. Without deviating from the invention, alternate embodiments are now herein described.

With regard to the vertical support unit 100, reference being made again to FIG. 2, the vertical support unit comprises a first relatively rigid vertical support structure 104 fitted to the starboard side 24 of the vessel 16, a second relatively rigid vertical support structure 106 fitted to the port side 26, and a generally horizontal bridging portion 108 extending between upper extremities of the first and second vertically extending support structures at a desired height above the level of the operator station 22. In a preferred embodiment, the vertical support unit 100 forms a skeletal frame, as illustrated again with reference to FIG. 2, which has a forward relatively rigid U-shaped support structure 110 and an aft relatively rigid U-shaped support structure 112, both fitted across the beam of the vessel 16. Longitudinally extending rigid bars 114 are attached between the forward and aft U-shaped structures. In a preferred embodiment, the bars are generally horizontal and parallel to the floor 34 of the vessel 16, as illustrated with reference again to FIG. 2, by way of example. Such a frame transfers forces generated by towing the performer to the gunwales, by way of example, and provides a rigid anchoring of the tow rope to the vessel for improving over typical single tow bar devices referred to earlier in this specification. For convenience in shipping, the bridging portion 108 is separable from the vertical support structures 104, 106 at connections 116. In general, the preferred embodiment is made from generally rigid aluminum tubing with elements of the unit 100 welded to each other to form a generally rigid skeletal frame.

In yet another embodiment, and with reference to FIG. 4, the vertical support unit 100 comprises a pylon 118 extending from the floor 34 of the vessel 16 and having an upper portion adapted for securing the tow rope 28 thereto. As illustrated again with reference to FIG. 2, and illustrated further with reference to FIG. 5, a tow rope connecting element 120 is attached to the upper portion of the vertical support unit 100, preferably to the horizontal bridging port 108 of the aft U-shaped support structure 112 for attaching the tow rope 28 thereto. The tow rope connecting element is

## US RE37,823 E

5

mounted at a height 36 between 6' 3" and 7 feet above the floor 34 of the vessel 16, but it is expected that other heights will be selected by those skilled in the water sports arts. At this height 36, passengers on the vessel can comfortably walk under the U-shaped support structure 112 and the tow line 28 extending rearwardly from the boat for pulling the performer 12 while, at the same time, maintaining stability for the vessel 16 as the performer maneuvers around the vessel during the performance.

The skeletal frame is an improvement over the pylon by providing a generally more rigid unit 100 secured to four mounting locations 122 at sides 24, 26 of the vessel 16. In a preferred embodiment of the invention, the vertical support unit 100, as illustrated with reference again to FIG. 2, and to FIGS. 6-8, the system 10 further comprises attaching the vertical support unit 100 to vessel deck portions and gunwales 38, so as to permit the unit to be rotated when the vessel needs to pass underneath a bridge or into a boat house, by way of example. In a preferred embodiment, anchoring plates 124 are located about the operator station 22. The anchoring plates 124 each include a shaft 126 which terminates in a free end 128 having a through hole for receipt of a pivot pin or bolt 130. Removably and rotatably mounted on the anchoring shafts 126 are lower extremities 132 of the skeletal frame, as illustrated with reference again to FIGS. 7 and 8. As illustrated with reference to FIG. 11, an alternate arrangement includes mounting the plates 124 to the floor 34 of the vessel 16.

Trailing of the vessel is made more convenient with this rotating feature. In the event the overall height of the unit 100 needs to be reduced for trailing, for example, the unit 100 is rotatable to a position 134 shown in dotted lines in FIG. 6 or is removable entirely from the vessel 16. As illustrated again with reference to FIGS. 7 and 8, the pin or bolt 130 is removed from the appropriate anchoring plates 124 for rotating the unit 100 onto the forward deck of the vessel or aft at the convenience of the operator.

In addition, it is convenient to use portions of the unit 100 to stow various pieces of equipment such as a life vest 40 or wakeboard 42 and other equipment as illustrated with reference again to FIG. 6 and FIG. 9. Further, the convenient mounting of stereo speakers is also accomplished. Such equipment is also conveniently stowed out of the way when unit 100 is in the erect position 136 as earlier described with reference to FIGS. 1 and 2.

As illustrated with reference to FIG. 10, a clear line of sight is provided for individuals sitting in the seats 44 so as not to interfere with the steering of the vessel 16 or the maneuvering of passengers onboard. As illustrated, by way of example with reference to FIGS. 11-13, various embodiments for the unit 100 of the present invention are possible without deviating from the intent and value of the present invention.

As illustrated with reference again to FIGS. 2-3, and to FIG. 14, a preferred embodiment of the system 10 and the ballast assembly 200, a lower most portion 210 of each of the ballast tanks 202, 204 is preferably fitted at the waterline 212 of the vessel 16 when the tanks are empty, typically the floor 34 for towing vessels as herein described.

In preferred embodiments of the ballast tanks 202, 204 and with reference again to FIGS. 3 and 14, the ballast tanks are enclosed and each have an opening arranged through vent lines 214, 216 for venting air into and out of each of the enclosed tanks 202, 204 respectively. Further, an air control valve 218 is within easy reach by the vessel operator for manually controlling air venting to each of the ballast tanks.

6

It is anticipated that electrically, pneumatically or hydraulically operated control valves may be appropriate. The extractor 206, earlier described, includes a water scoop 220 positioned below the water line 212 and on the hull 46 of the vessel 16 for extracting the ballast water 208 from the body of water 30 as the vessel 16 moves through the body of water and delivering the ballast water 208 through a water intake line 221 connected between the scoop 220 and ballast tanks 202, 204. In an alternate embodiment, a two way pump 222 is placed within the line 221 and used for enhancing the extracting and dumping of the ballast water 208. Further, a shut off valve 223 is fitted within the line 221. As illustrated again with reference to FIGS. 2 and 3, the ballast tanks 204, 208 comprise starboard and port enclosed ballast tanks wherein each of the starboard and port enclosed ballast tanks comprises a generally L-shaped tanks having a first elongated leg 224 fitted beneath quarter gunwales 26 of the vessel 16 and a second leg 228 fitted along an inboard side of the transom 230.

As illustrated with reference again to FIG. 3, intermediate of the stern 20 and bow 18 is the operator's seat 45 within which the operator sits to control steering while viewing instruments. The air control valve 218 is within easy reach of the operator.

As illustrated again with reference to FIG. 14, the inlet line 221 leads to a water scoop 220 which collects the ballast water 208 as the vessel 16 is moved forward through the body of water 30. The water 208 collected in the scoop 220 is fed through the intake line 221 upon proper positioning of the valves 218, 223. If the shut off valve 223 is closed, no water 208 will be allowed to be fed into ballast tanks 202, 204. In addition, water 208, if already in ballast tanks 202, 204 will not be allowed to leave the tanks. However, if the water 208 is to be introduced into ballast tanks 202, 204, the shut off valve 223 must be opened and in addition, the respective air line control valve 218, independently controlling each of the air lines 214, 216 must be opened to allow air to escape from the ballast tanks as the water is being scooped up and fed into the tanks. Thus, if the air line control valve 218 is open, water 208 will be forced into ballast tanks 202, 204 as the boat is moving forward until the ballast tanks are full or the valves are closed. Excess water is forced through the air lines 214, 216 past the air line control valve 218 as one indication that the tanks are full. Alternatively, water level indicators 232 are used. Additionally, tank overflow tubes 234 fitted with one way check valves 236 deliver excess water overboard, as illustrated again with reference to FIG. 14. The overflow tubes 234 limit the maximum pressure in the tanks to a maximum static head. The check valves 236 stop air from flowing back in the tanks when the air control valve 218 is closed.

To remove the water 208 from the tanks 202, 204, the vessel comes to a stand still in a preferred method of dumping the ballast water. The shutoff valve 223 is then opened, with the opening of the air control valve 218 for allowing air into the air lines 214, 216. Through the forces of gravity, the water 208 flows out of the tanks 202, 204 through the intake line 221 and out through the opened shutoff valve 223 to the surrounding body of water 30.

Since the operator sitting in seat 45 has easy access to both valves 218, 223, the amount and shape of the wake 32, illustrated with reference again to FIG. 1, produced by the vessel 16 can be precisely controlled by the operator. By selectively shifting the ballast water 208 into and out of the tanks 202, 204, the wake 32 is produced to a controlled degree for optimum and desirable wakeboarding.

Accordingly, many modifications and other embodiments of the invention will come to the mind of one skilled in the

## US RE37,823 E

7

art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed, and that modifications and embodiments are intended to be included within the scope of the appended claims.

That which is claimed is:

1. A method for improving aerial characteristics of a performance by a performer using a water sport implement and being towed behind a vessel while maintaining the stability of the vessel, the method comprising the steps of:

providing a vessel behind which the performer is to be towed, the vessel including a bow, a foredeck aft of the bow, a stern, opposing sides extending from the bow to the stern, and an operator station positioned amidships

fitting a first relatively rigid vertical support structure to a first one of the sides and fitting a second relatively rigid vertical support structure to a second one of the sides, and then extending a generally horizontal bridging portion between upper extremities of the first and second vertically extending support structures, amidships and at a height substantially above the operator station;

pivotally attaching the first and second vertically extending support structures to the respective sides of the vessel and positioning the first and second vertically extending support structures for rotating to a generally horizontal position;

attaching a tow rope to the horizontally extending bridging portion; and

operating the vessel in a body of water while towing the performer from the horizontally extending bridging portion.

2. The method according to claim 1, wherein the fitting step comprises the steps of:

providing each of the first and second vertical support structures with a forward vertical support element and an aft vertical support element; and

fixedly attaching a longitudinally extending bar between each of the forward and aft vertical support elements for forming a skeletal frame.

3. The method according to claim 2, wherein the longitudinally extending bar attaching step comprises the step of attaching the bar generally parallel to the floor of the vessel.

4. The method according to claim 2, further comprising the step of rearwardly angling each of the forward vertical support elements.

5. The method according to claim 1, wherein the first and second one of the sides correspond to starboard and port deck portions, respectively.

6. The method according to claim 1, wherein the first and second one of the sides correspond to starboard and port floor portions, respectively.

7. The method according to claim 1, wherein the height above the level of the operator station is at least six feet above the vessel floor.

8. The method according to claim 1, wherein the bridging portion comprises a tow rope connecting element for attaching the tow rope thereto, and wherein the attaching step comprises the step of attaching the tow rope to the tow rope connecting element.

9. The method according to claim 1, wherein the fitting step includes the step of providing forward and aft U-shaped support structures and forming a skeletal frame from a combination of the first and second vertical support structures and the horizontal bridging portion.

8

10. The method according to claim 1, wherein the support structures and bridging portion are formed from aluminum.

11. The method according to claim 1, further comprising the step of attaching a plurality of anchoring plates to the vessel, and wherein the fitting step includes the step of fitting each of lower extremities of the vertical support structures to one of the plurality of anchoring plates.

12. A method for towing a performer using a water sport implement and being towed behind a vessel while maintaining the stability of the vessel, the method comprising the steps of:

providing a vessel behind which the performer is to be towed, the vessel including a bow, a foredeck aft of the bow, a stern, opposing sides extending from the bow to the stern, and an operator station positioned amidships;

fitting a first relatively rigid U-shaped support structure across the beam of the vessel, amidships, and extending substantially above the level of the operator station;

rearwardly angling the first U-shaped structure;

fitting a second relatively rigid U-shaped support structure to the sides and across the beam of the vessel, amidships, and extending substantially above the level of the operator station, the first U-shaped support structure forward of the second U-shaped structure with the operator station located in an area between fittings of the first and second U-shaped structures at the respective sides;

attaching a plurality of longitudinally extending bars between the U-shaped support structures so that the first and second support structures form a skeletal frame extending above the operator station;

attaching a tow rope to an upper portion of the skeletal frame; and

operating the vessel in a body of water while towing the performer.

13. The method according to claim 12, further comprising the step of pivotally attaching at least one of the U-shaped structures to the respective sides of the vessel, so as to permit the skeletal frame to be rotated downwardly onto a deck portion of the vessel.

14. The method according to claim 13, further comprising the step of downwardly rotating the skeletal frame onto the foredeck of the vessel.

15. The method according to claim 12, wherein the longitudinally extending bar attaching step comprises the step of attaching the bar generally parallel to the floor of the vessel.

16. The method according to claim 12, further comprising the step of attaching the U-shaped structures to starboard and port deck portions, respectively.

17. The method according to claim 12, further comprising the step of attaching the U-shaped structures to starboard and port floor portions, respectively.

18. The method according to claim 12, wherein the skeletal frame extends to a height above the level of the operator station that is at least six feet above the vessel floor.

19. The method according to claim 12, further comprising the step of attaching a tow rope connecting element to the upper portion of the skeletal frame for attaching the tow rope thereto, and wherein the attaching step comprises the step of attaching the tow rope to the tow rope connecting element.

20. The method according to claim 12, wherein the tower is formed from aluminum.

21. The method according to claim 12, further comprising the step of attaching a plurality of anchoring plates to the vessel, and wherein the fitting step includes the step of fitting

## US RE37,823 E

9

each of lower extremities of the U-shaped support structures to one of the plurality of anchoring plates.

22. A towing apparatus for improving aerial characteristics of a performer using a water sport implement, the towing apparatus comprising:

a vessel behind which the performer is to be towed, the vessel including a bow, a stern and an operator station positioned amidships between opposing sides;

a first relatively rigid vertical support structure fitted between the sides of the vessel at a point forward of the operator station;

a second relatively rigid vertical support structure fitted between the sides of the vessel aft of the first relatively rigid vertical support structure;

a generally horizontal bridging portion extending between upper portions of the first and second vertically extending support structures, at a height substantially above the level of the operator station; and

a tow rope attached to the horizontally extending bridging portion for towing the performer from the horizontally extending bridging portion while operating the vessel in a body of water.

23. The apparatus according to claim 22, further comprising attaching means for attaching the first and second generally vertically extending support structures to the respective sides of the vessel, the attaching means operable so as to permit the first and second support structures to be rotated downwardly so that the vessel may pass underneath a bridge or into a boat house.

24. The apparatus according to claim 22, wherein each of the first and second vertical support structures comprise a forward vertical support element and an aft vertical support element, and wherein the apparatus further comprises a plurality of longitudinally extending bars fixedly attached between each of the forward and aft vertical support elements thus forming a skeletal frame.

25. The apparatus according to claim 24, wherein the plurality of longitudinally extending bars are generally parallel to the floor of the vessel.

26. The apparatus according to claim 24, wherein the forward vertical support element is rearwardly angled for having its lower extremity forward of its upper extremity.

27. The apparatus according to claim 22, wherein the first and second one of the sides correspond to starboard and port deck portions, respectively.

28. The apparatus according to claim 22, wherein the first and second one of the sides correspond to starboard and port floor portions, respectively.

29. The apparatus according to claim 22, wherein the height above the level of the operator station is at least six feet above the vessel floor.

30. The apparatus according to claim 22, further comprising a tow rope connecting element attached to the bridging portion for attaching the tow rope thereto.

31. The apparatus according to claim 22, wherein the skeletal frame is formed from aluminum.

32. The apparatus according to claim 22, further comprising a plurality of anchoring plates attached to the vessel, and wherein each of the lower extremities of the vertical supports are fitted to one of the plurality of anchoring plates.

33. A towing apparatus for a performer using a water sport implement and being towed behind a vessel while maintaining the stability of the vessel, the vessel having a bow, a stern, opposing sides extending from the bow to the stern, and an operator station located amidships between the opposing sides, the towing apparatus comprising:

10

a first relatively rigid U-shaped support structure for fitting to the sides across the beam of the vessel at a point forward of the operator station and positioned amidships substantially above the level of the operator station;

a second relatively rigid U-shaped support structure for fitting to the sides across the beam of the vessel and positioned amidships substantially above the level of the operator station;

a plurality of bars extending between the U-shaped support structures so that the first and second U-shaped support structures in combination with the plurality of bars form a skeletal frame, and wherein the first U-shaped support structure is positioned forward of the second U-shaped support structure; and

tow rope attaching means fitted to the upper portion of the skeletal frame for attaching a tow rope thereto.

34. The apparatus according to claim 33 further comprising attaching means for attaching the skeletal frame to the vessel, so as to permit the skeletal frame to be rotated downwardly onto a deck portion of the vessel.

35. The apparatus according to claim 33, wherein the longitudinally extending bars are generally parallel to the floor of the vessel.

36. The apparatus according to claim 33, wherein the tow rope attaching means comprises a tow rope connecting element fixedly attached to the upper extremity of the skeletal frame.

37. The apparatus according to claim 33, further comprising a plurality of anchoring plates for attaching the skeletal frame to the vessel, and wherein each of lower extremities of the U-shaped supports is attached to one of the plurality of anchoring plates.

38. A method for improving aerial characteristics of a performer using a water sport implement and being towed behind a vessel while maintaining the stability of the vessel, the method comprising the steps of:

providing a vessel behind which the performer is to be towed, the vessel including a bow, a foredeck aft the bow, a stern, opposing sides extending from the bow to the stern, and an operator station positioned amidships between the bow and stern, aft of the foredeck;

attaching a rigid vertical bridging support structure at attachment points on each side of the vessel adjacent and substantially abeam the operator station, with a generally horizontal bridging portion of the vertical bridging support structure positioned substantially directly above the operator station;

attaching a tow rope to the bridging portion;

imparting sufficient structural strength to the vessel sides, the vertical bridging support structure, the horizontal bridging portion, and the attachment points so as to maintain structural integrity while transferring those rearward forces generated towing the performer to the vessel sides; and

operating the vessel in a body of water while towing the performer from the horizontal bridging portion.

39. The method for improving aerial characteristics of a performer using a water sport implement and being towed behind a vessel while maintaining the stability of the vessel, the method comprising the steps of:

providing a vessel behind which the performer is to be towed, the vessel including a bow, a stern and an operator station between opposing sides;

fitting a first relatively rigid vertical support structure to a first one of the sides substantially abeam the operator's

## US RE37,823 E

11

station, and fitting a second relatively rigid vertical support structure to a second one of the sides substantially abeam the operator's station, and then extending an elevated, generally horizontal bridge portion between the first and second vertically extending support structures, at a height substantially above the operator station;

attaching a tow rope to the horizontally extending bridging portion; and

operating the vessel in a body of water while towing the performer from the horizontally extending bridging portion.

40. The method according to claim 39, further comprising the step of pivotally attaching the first and second generally vertically extending support structures to the respective sides of the vessel, so as to permit the first and second vertical support structures to be rotated downwardly so that the vessel may pass underneath a bridge or into a boathouse.

41. A vessel and towing tower for permitting a towed performer to achieve improved aerial characteristics while transmitting rearward towing forces amidships to spaced sides of the vessel, comprising:

a vessel having a bow, a stern, opposing sides extending between the bow and the stern, a vessel operator station located amidships between the bow and the stern and a windshield forward of the operator station, a first portion of the windshield extending laterally across the vessel between the opposing sides;

a rigid towing tower including at least four spaced, generally vertically-extending legs, two of the legs comprising a forward leg pair, each leg of the forward leg pair removably attached to a corresponding side of the vessel at an attachment point forward of the laterally-extending first windshield portion, the other two legs comprising a rearward leg pair each of which is removably attached to a corresponding side of the vessel at an attachment point aft of the laterally-extending first windshield portion;

an overhead tow structure fitted with and supported by the forward and rearward leg pairs substantially above the operator station, the overhead tow structure including lateral and longitudinal members forming a rigid overhead frame;

a tow rope receiver fitted to an aft one of the lateral members of the overhead frame; and wherein the first and second leg pairs, the respective attachment points and the overhead tow structure are imparted with sufficient structural strength so as to maintain

12

structural integrity while transferring rearward forces generated by towing the performer to the vessel's sides.

42. The vessel and towing tower according to claim 41, further comprising:

other windshield portions extending along the sides; and wherein

each attachment point for the rearward leg pair is adjacent a corresponding one of the other windshield portions.

43. The vessel and towing tower according to claim 41, further comprising:

each side of the vessel having a generally horizontal deck portion forward of the laterally-extending windshield portion; and wherein

each attachment point of the forward leg pair is positioned on the horizontal deck portion of the corresponding side.

44. The vessel and towing tower according to claim 41, wherein each leg of the forward leg pair is angled upwardly and rearwardly toward the stern sufficiently to extend vertically over the operator station.

45. The vessel and towing tower according to claim 41, further comprising at least one support member extending between each leg of the forward leg pair rearwardly to a leg of the rearward leg pair which is attached to the same side of the vessel.

46. The vessel and towing tower according to claim 45, wherein the support member extends rearwardly in a plane generally parallel with the plane of the corresponding side.

47. The vessel and towing tower according to claim 46, further comprising plural rearwardly-extending support members between each leg of the forward leg pair and a corresponding leg of the second leg pair and lying in the plane generally parallel with the corresponding side.

48. The vessel and towing tower according to claim 41, wherein one leg pair and one of the lateral members of the overhead tow structure are formed together as a generally U-shaped support member.

49. The vessel and towing tower according to claim 48, wherein the first leg pair and a first one of the lateral members of the overhead tow structure together form a first generally U-shaped support structure, and wherein the rearward leg pair and a second one of the lateral members of the overhead tow structure together form a second generally U-shaped support structure.

\* \* \* \* \*





US006374762B1

(12) **United States Patent**  
**Larson et al.**

(10) **Patent No.:** **US 6,374,762 B1**  
 (45) **Date of Patent:** **\*Apr. 23, 2002**

(54) **WATER SPORT TOWING APPARATUS**

(75) **Inventors:** **Borden M. Larson; William N. Snook**, both of Orlando, FL (US)

(73) **Assignee:** **Correct Craft, Inc.**, Orlando, FL (US)

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) **Appl. No.:** **09/624,166**

(22) **Filed:** **Jul. 24, 2000**

**Related U.S. Application Data**

(63) Continuation-in-part of application No. 09/399,683, filed on Sep. 21, 1999, now Pat. No. 6,192,819, which is a continuation-in-part of application No. 09/036,826, filed on Mar. 9, 1998, now Pat. No. 5,979,350, which is a continuation-in-part of application No. 29/078,494, filed on Oct. 27, 1997, now Pat. No. Des. 409,972.

(51) **Int. Cl.<sup>7</sup>** ..... **B63B 21/04**

(52) **U.S. Cl.** ..... **114/253**

(58) **Field of Search** ..... 114/254, 253,  
 114/255, 361, 242

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,821,726 A	2/1958	Correll
3,034,470 A	5/1962	Vanderfelt et al.
D195,068 S	4/1963	Griparis
3,122,609 A	2/1964	Moore
3,336,894 A	8/1967	Eisner
3,503,358 A	3/1970	Moesly

(List continued on next page.)

**OTHER PUBLICATIONS**

Alan Jones, A Star is Born, Boating World, Sep. 1997, pp. 33-34.

Seabrite Stainless Steel Marine Products, single page copy of brochure.

Photocopy of Police Resources Boat Photos.

"Hit It" Water Sports Video, ©1996 (No Identifiable Publication Date).

Nordskog, Jerry, "Publisher's Letter," *Powerboat Magazine*, Sep. 1995, pp. 4, 92 (includes enlargement of one of the photographs on page 4).

87/88 Marine Catalog by Taco Supply, Division of Taco Metals, Inc., 1988, pp. 27, 34-35.

Four miscellaneous pages from *Powerboat Magazine*, Sep. 1995.

*Primary Examiner*—S. Joseph Morano

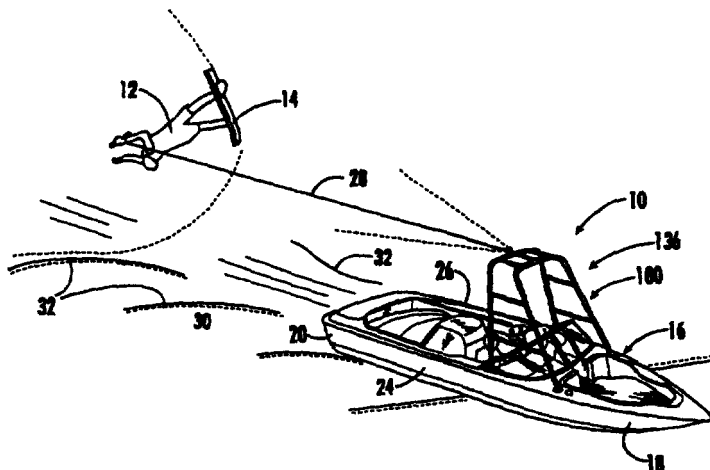
*Assistant Examiner*—Ajay Vasudeva

(74) *Attorney, Agent, or Firm*—Allen, Dyer, Doppelt, Milbrath & Gilchrist, P.A.

(57) **ABSTRACT**

The aerial performance characteristics of a performer using a water sport implement such as a wakeboard is enhanced by a towing apparatus which includes vertical supports rigidly attached starboard and port side gunwales of the vessel at a location generally outboard an operator station. A frame including rigid U-shaped bridging supports transversely extends across the beam of the vessel. The frame is pivotally fitted to a forward portion of the vertical supports for rotation from an operating position to a stored position on the deck of the vessel. The U-shaped bridging supports extend substantially above the level of the operator station. One of the U-shaped bridging supports is readily removably attached to the vertical support. A ball assembly is carried by detachable ends of the frame, while a socket assembly is carried by the vertical support. A shaft extends through the socket and has one end threaded for engaging a threaded bore of the ball. An opposing end of the shaft includes a knob for manipulating the shaft into and out of engagement with the ball for readily removable attachment of the ball with the socket and thus the frame with the vertical supports. As a result, the frame can be rotated downwardly onto the deck of the vessel, reducing the elevation of the vessel for passing underneath a bridge or into a garage when being carried by a trailer. A tow rope is attached to a horizontally extending bridging support portion for towing the performer.

**30 Claims, 9 Drawing Sheets**



Ex. 2

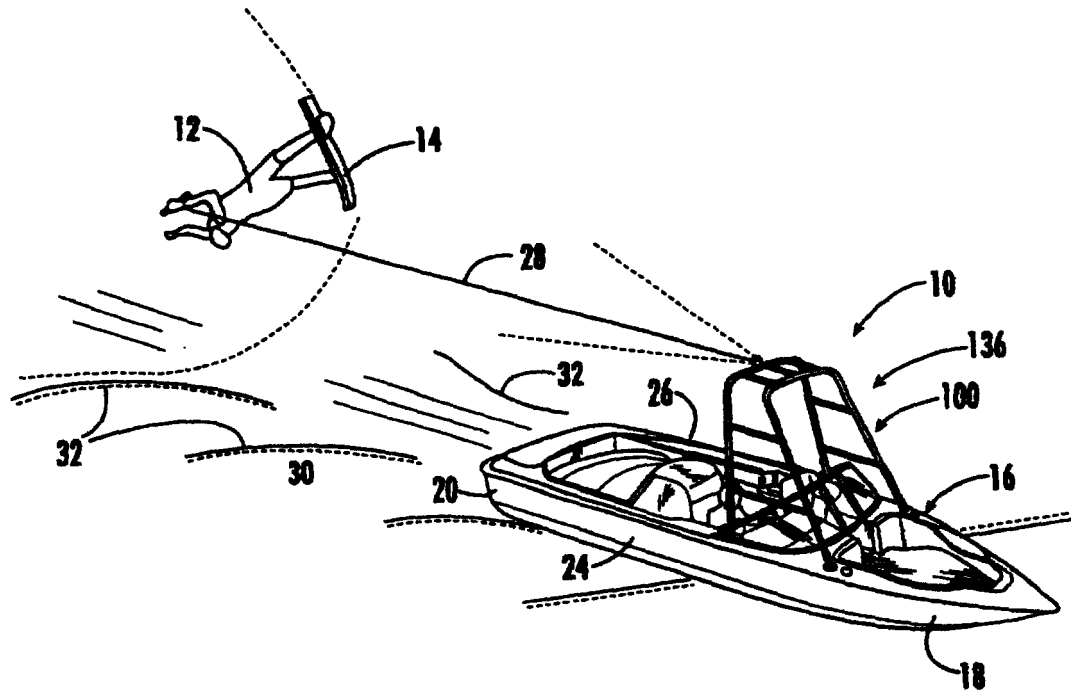
**US 6,374,762 B1**

Page 2

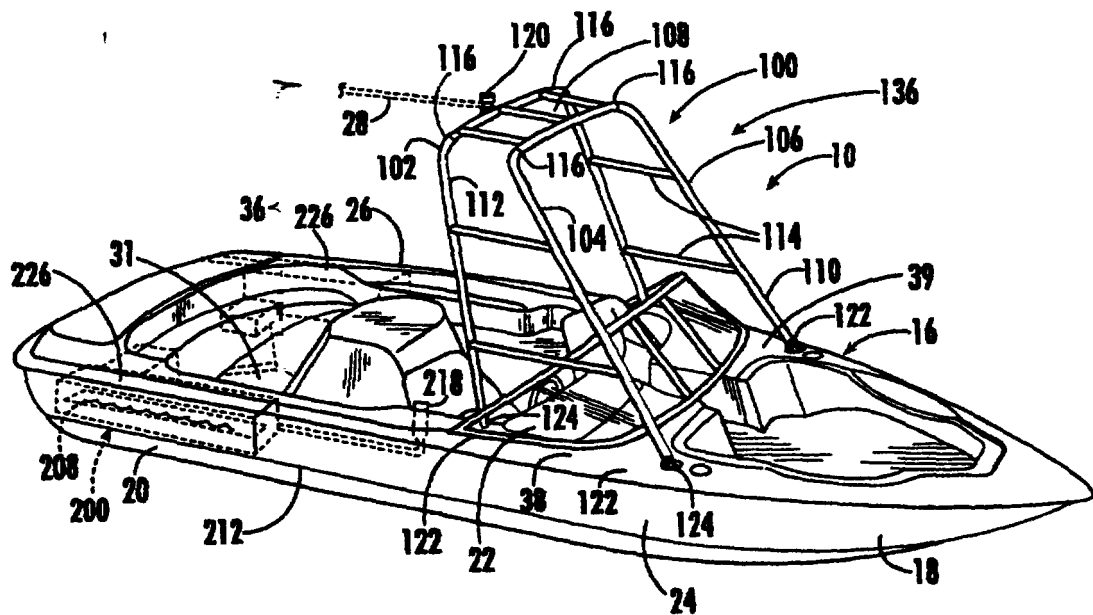
**U.S. PATENT DOCUMENTS**

3,724,595 A	4/1973	Green	5,050,517 A	9/1991	Kobayashi	
3,802,374 A	4/1974	Brown	5,052,326 A	10/1991	Wiggen et al.	
3,811,143 A	5/1974	Page	5,105,754 A	4/1992	Collins	
3,890,918 A	6/1975	Sell	5,215,025 A	6/1993	Talmor	
3,925,836 A	12/1975	Simmonds	5,417,178 A	5/1995	Harrelson, II	
3,935,830 A	2/1976	Cox	5,520,133 A	5/1996	Wiegert	
3,949,698 A	4/1976	Sell	5,520,139 A	5/1996	King et al.	
4,033,280 A	7/1977	Wood et al.	5,645,003 A	7/1997	Grinde	
4,163,529 A	8/1979	Krenzer et al.	5,669,325 A	9/1997	Feikema	
4,341,177 A	7/1982	Miyazaki et al.	5,673,507 A	10/1997	Stokes, Jr.	
4,453,482 A	6/1984	Barker	5,697,320 A	12/1997	Murray	
4,528,927 A	7/1985	Iizuka et al.	D395,866 S	7/1998	Fowler et al.	
4,561,375 A	12/1985	Paxton	5,787,835 A	8/1998	Remmant	
4,593,641 A	6/1986	Adams et al.	5,934,217 A	8/1999	Allsop	
4,641,597 A	2/1987	Paxton	5,943,977 A	8/1999	Womack et al.	
4,694,773 A	9/1987	Sparkes et al.	5,979,350 A	* 11/1999	Larson et al. ....	114/253
4,893,577 A	1/1990	Jennings	6,044,788 A	4/2000	Larson et al.	
5,018,474 A	5/1991	Jellen				

\* cited by examiner



**FIG. 1.**



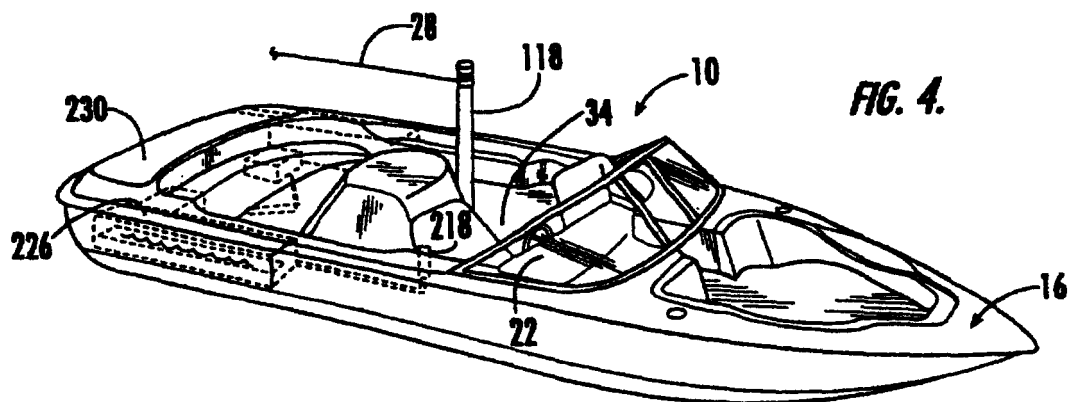
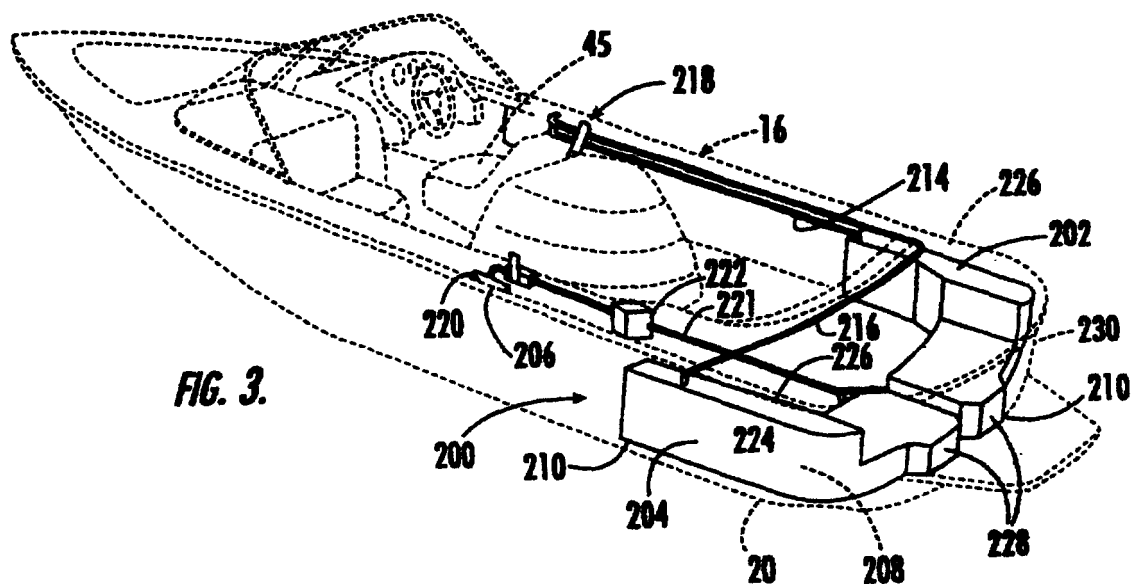
**FIG. 2.**

## U.S. Patent

**Apr. 23, 2002**

**Sheet 2 of 9**

US 6,374,762 B1

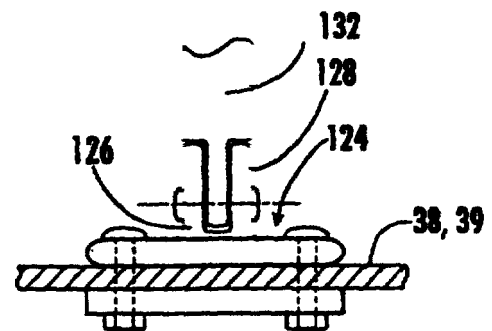
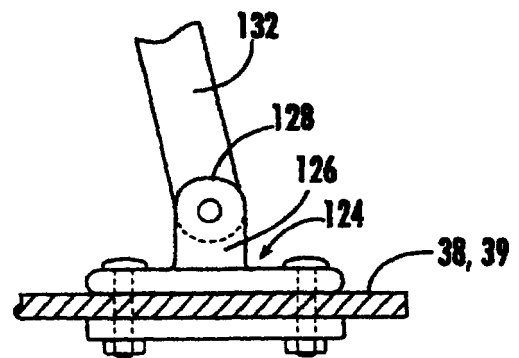
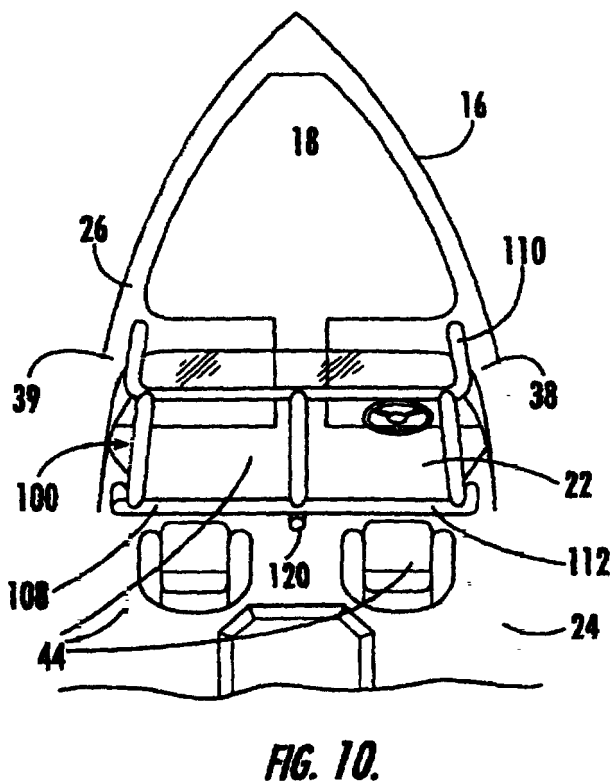
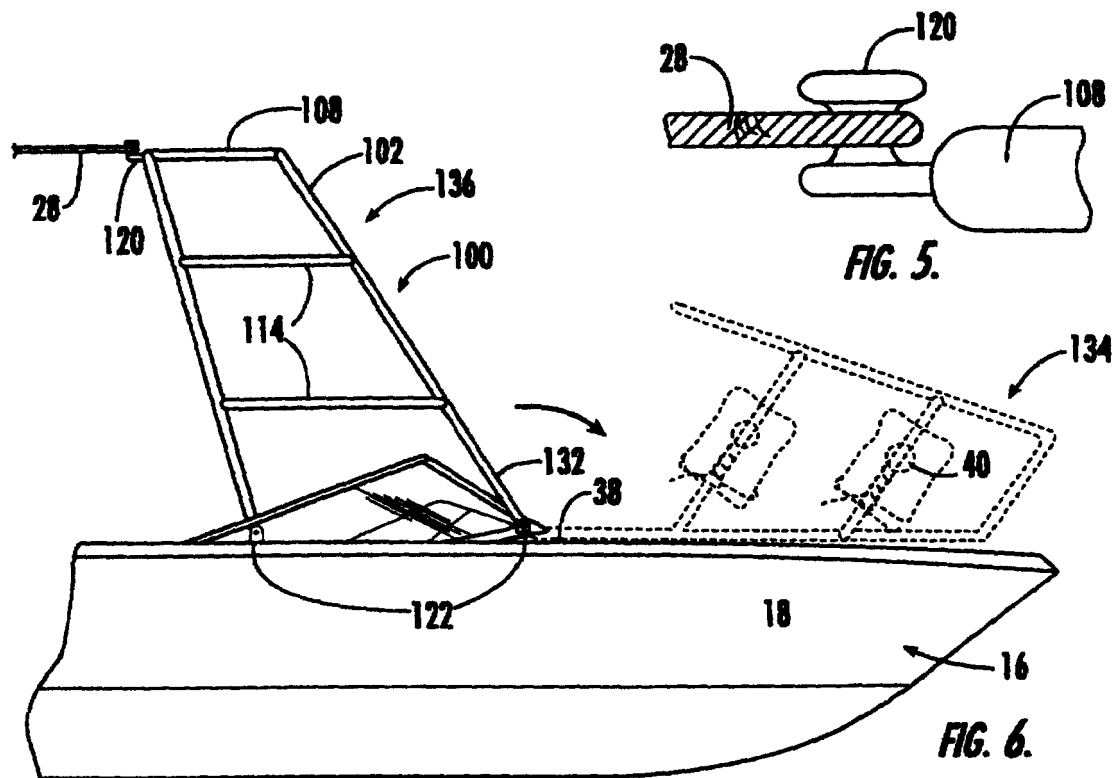


**U.S. Patent**

**Apr. 23, 2002**

**Sheet 3 of 9**

**US 6,374,762 B1**



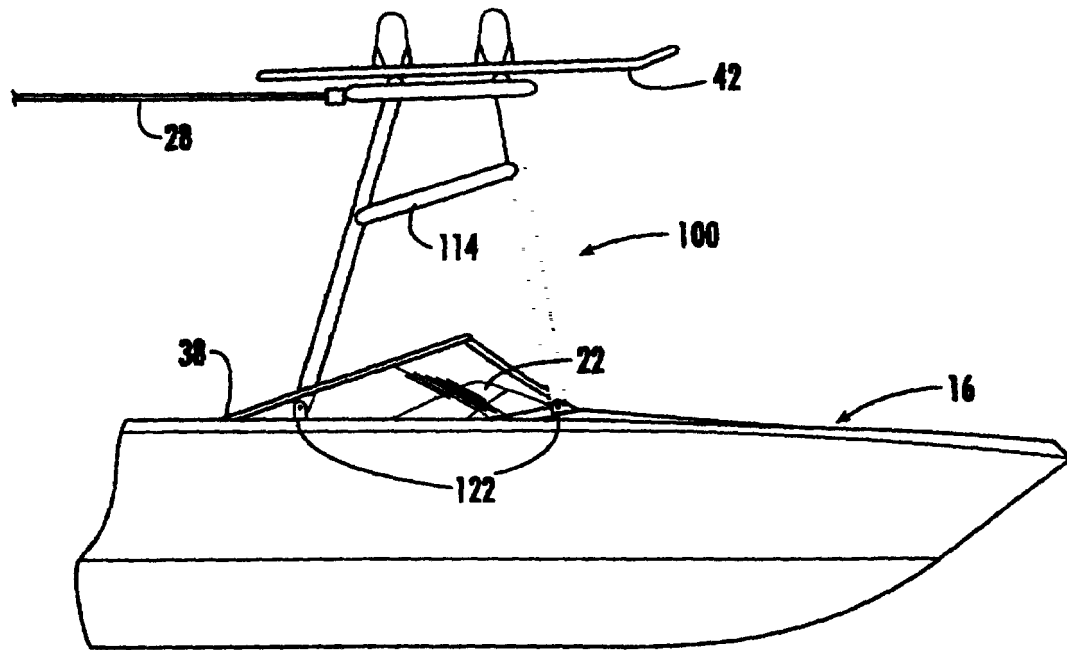


FIG. 9.

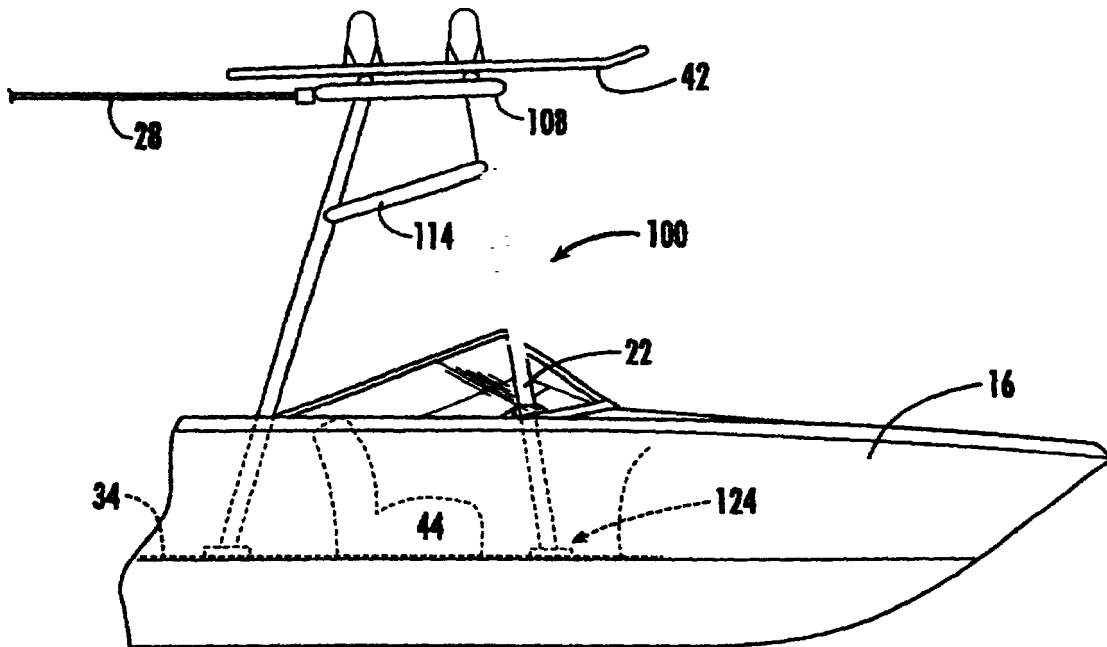


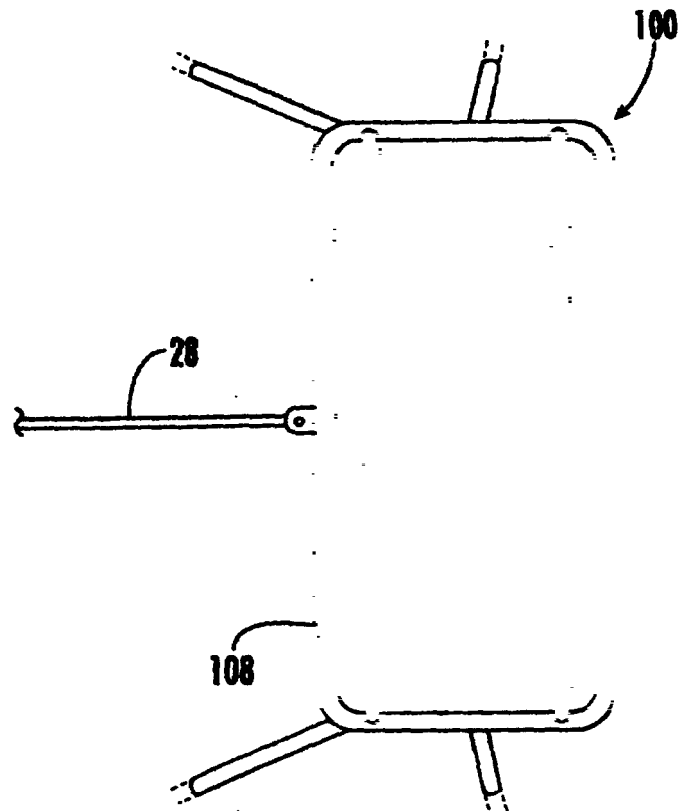
FIG. 11.

**U.S. Patent**

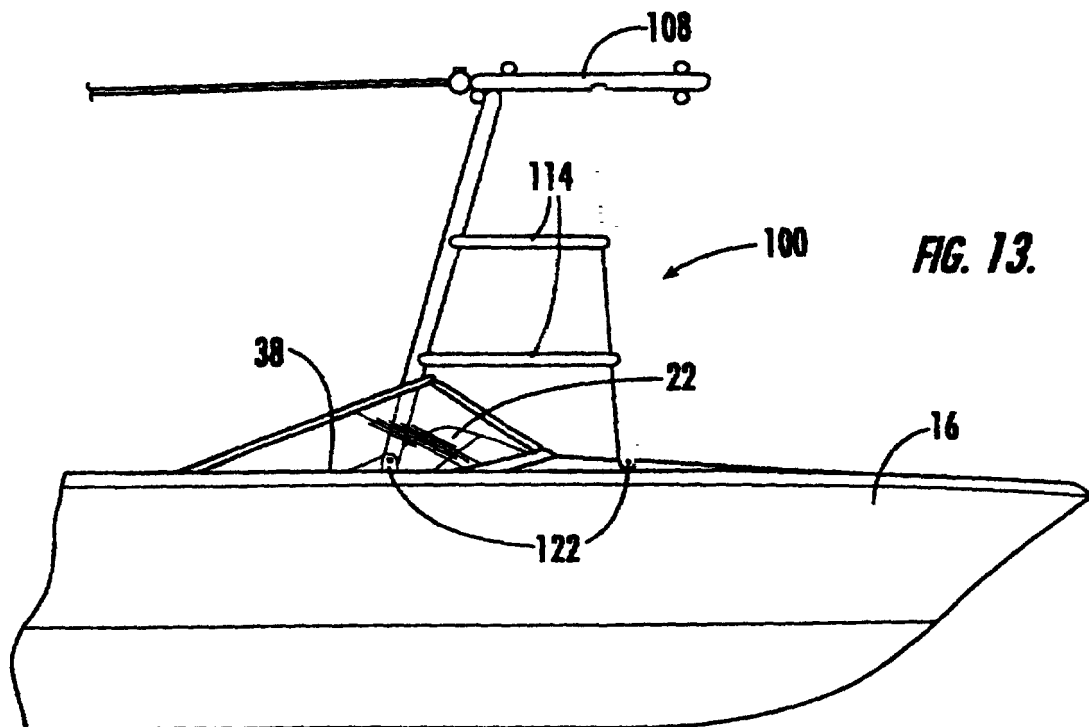
**Apr. 23, 2002**

**Sheet 5 of 9**

**US 6,374,762 B1**



**FIG. 12.**



**FIG. 13.**

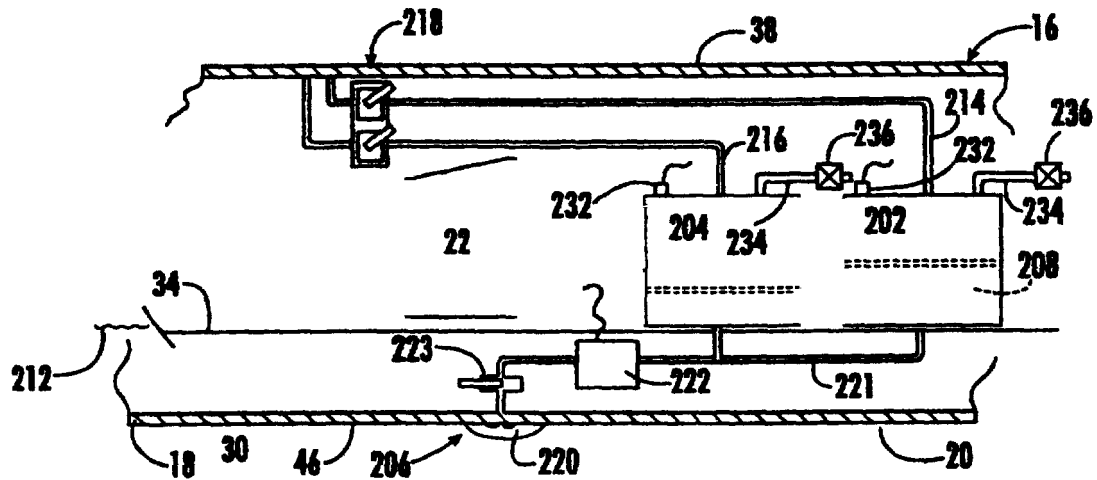


FIG. 22.

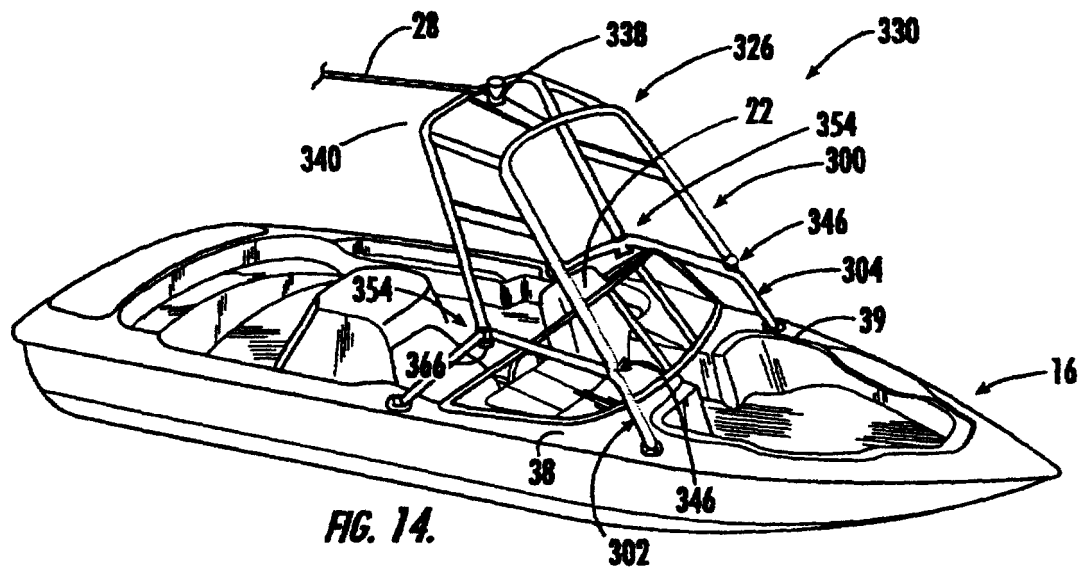
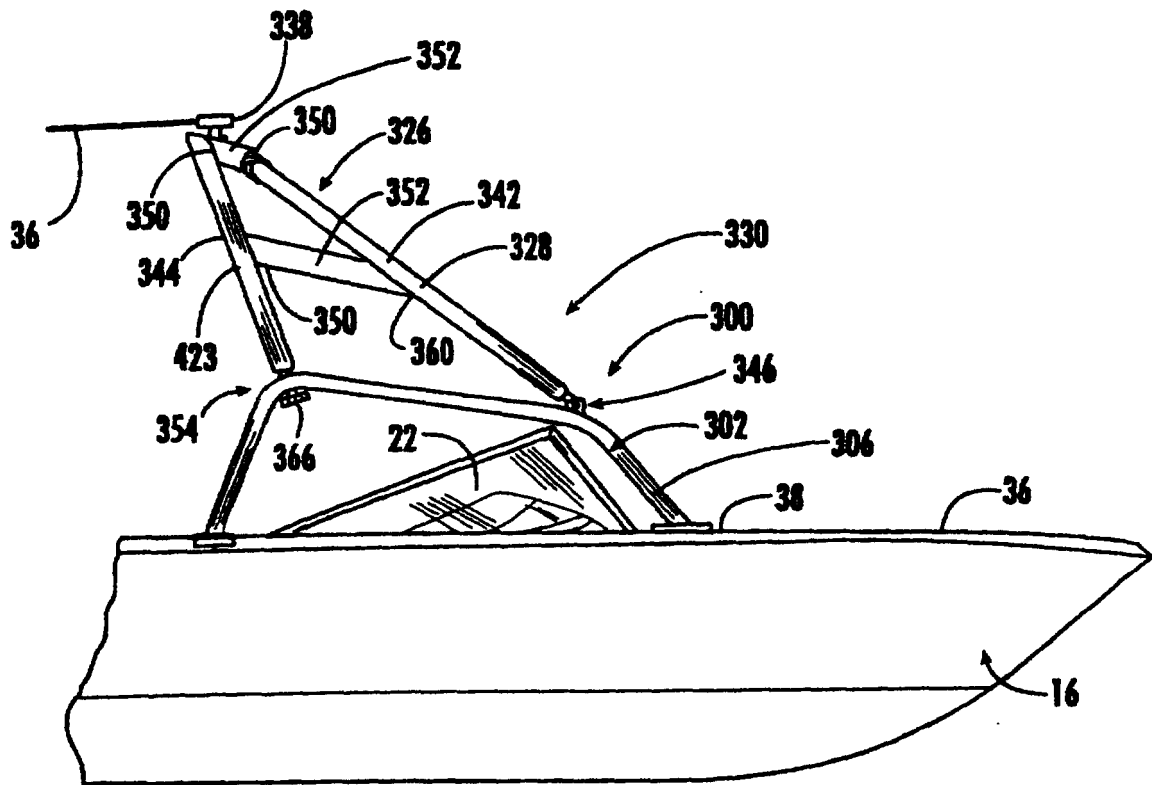
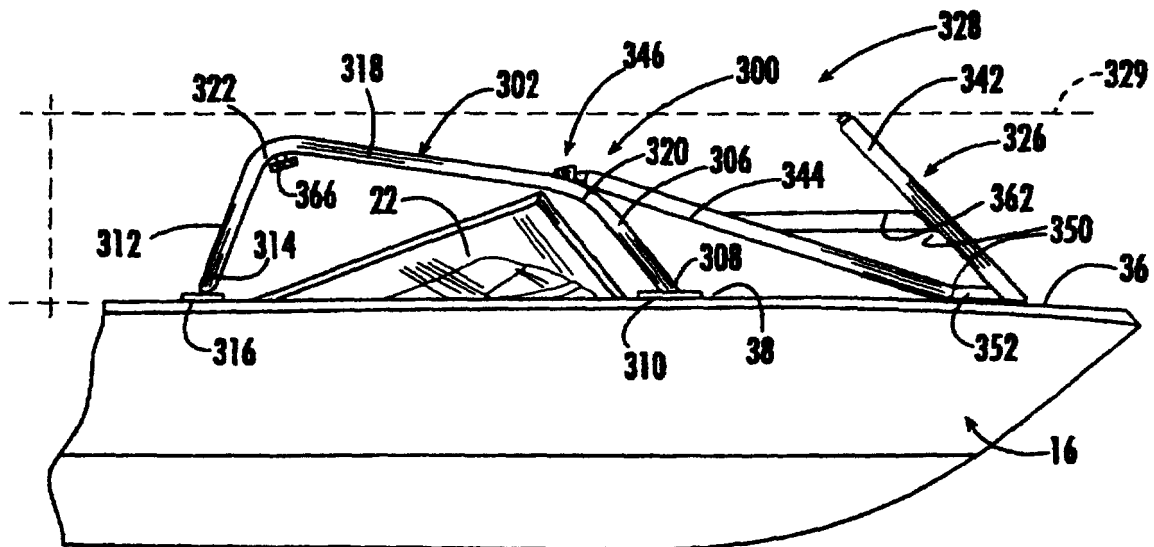


FIG. 14.





**FIG. 15.**



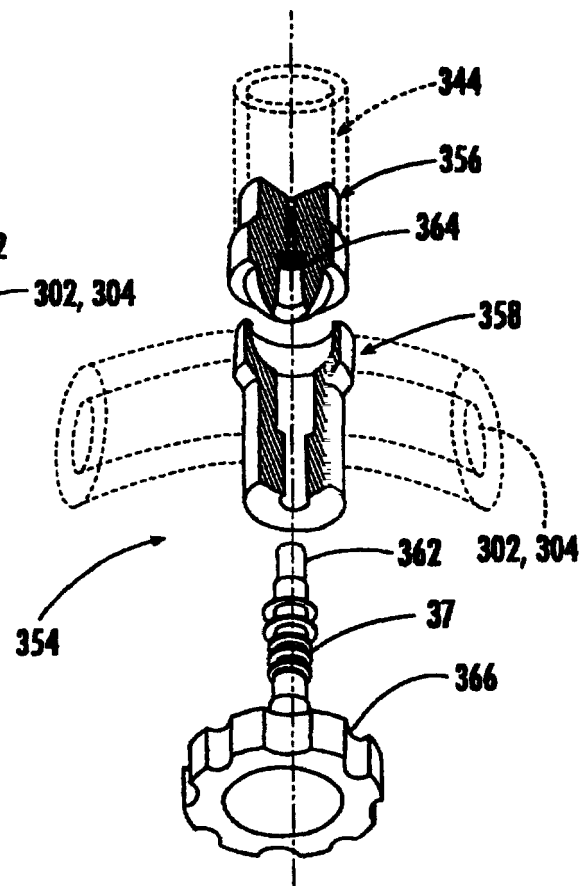
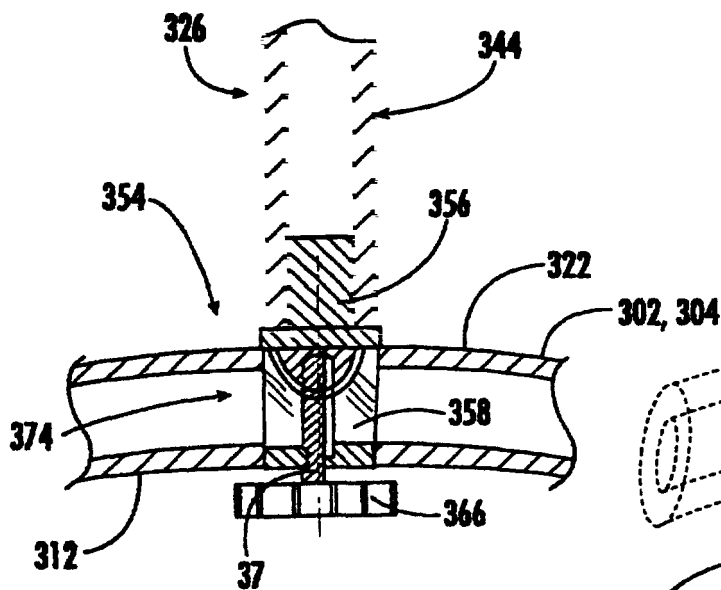
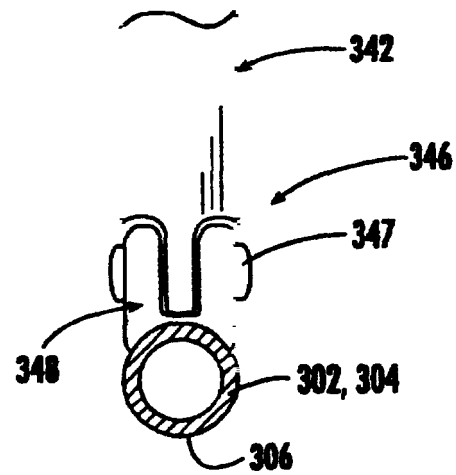
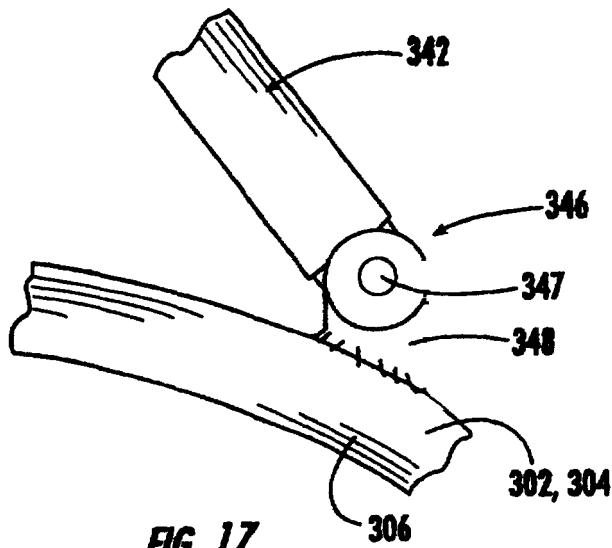
**FIG. 16.**

**U.S. Patent**

**Apr. 23, 2002**

**Sheet 8 of 9**

**US 6,374,762 B1**





US 6,374,762 B1

1

**WATER SPORT TOWING APPARATUS****CROSS REFERENCE TO RELATED APPLICATIONS**

This application is a continuation of and hereby incorporates by reference the disclosure of application Ser. No. 09/399,683 filed Sep. 21, 1999 now U.S. Pat. No. 6,192,819, which itself is a continuation-in-part of application Ser. No. 09/036,826 filed on Mar. 9, 1998 and issuing as U.S. Pat. No. 5,979,350 for "Water Sport Towing Apparatus And Method," which itself is a continuation-in-part of application Ser. No. 29/078,494, filed on Oct. 27, 1997 and issuing as U.S. Pat. No. Des. 409,972 for "Boat Tower, all of which are commonly owned and assigned with the present invention.

**FIELD OF INVENTION**

The present invention generally relates to towing of a performer by a vessel, and more particularly to enhancing performance of the performer using a water sport implement while maintaining stability of the vessel.

**BACKGROUND OF THE INVENTION**

Wakeboarding has become one of the fastest growing sports in the world. In the sport of wakeboarding, there is an ever increasing need for the tow boat to create a larger wake to ride. Unlike waterskiing, the performer on a wakeboard is looking for as large a wake as possible. Further, by anchoring the tow line at a high elevation above the boat deck, the greater the ability of the performer to lift higher into the air, whether with a ski or wakeboard.

Tow rope pylons are known in the art, such as those described in U.S. Pat. No. 4,893,577 to Jennings and U.S. Pat. No. 4,641,597 to Paxton. A typical skiing and wakeboarding pylon has a height of approximately three feet to eight above the floor of the boat. Pylon heights have increased to accommodate the ever increasing height of jumps across the wake by wakeboarders. The extended pylons run a cable from the top of the pylon to the bow of the boat as a guy wire. This wire interferes with movement inside the boat. Further, these extended height pylons have not satisfied wakeboarders with their performance. They do give the performer the ability to get bigger air on the jumps, but the extended pylons flex too much when the performer cuts away or to the wake. During these cuts, the boat heels to a point of instability for the boat and a hazard for all concerned. The guy wire provides support when the skier is pulling straight back, but offers less support when the skier is pulling from the side.

The simplest way to increase the size of the wake is to increase the amount of weight inside a boat. Typically, this has been done by adding lots of people. Alternatively, the industry's response has been to include water bladders in the boat or other weighting materials such as buckets filled with concrete, rocks, or sand.

In one bladder system, a liner is placed inside of a canvas sack or bag. Filling the liner full of water by use of a bilge pump with hoses, wires and clips, can add weight to the back of a boat. However, this process is awkward and cumbersome. Another attempt at adding weight to the back of a boat is believed to include two gates on a transom of a boat. A cable is pulled to open the two gates and thereby flood two tanks located behind the transom of the boat. The tanks are drained by opening the gates. This system required a four foot high boat hull, where typical sports towing boats have

2

a transom or hull height of only thirty inches from bottom to top of the gunwale.

As described, by way of example with reference to U.S. Pat. No. 5,645,003 to Grinde, it is known to add water for ballasting, typically uniformly along the length of the boat or forward, as in U.S. Pat. No. 4,528,927 to Lizuka et al. for enhancing the planing of the vessel. Typically ballast pumps are used to control the amount of water within the ballasting, as described, by way of example, with reference to U.S. Pat. No. 5,215,025 to Talmor.

It is typically thought that by simply adding more weight to the boat, the wake will become bigger and better. However, the shape of the wake is as important as the size. The perfect slope, length and hardness of the lip of a wake are also important to enable the performer to release from the wake and achieve a desired launch into the air. Further, it is important that wake control be done in a relatively rapid and timely manner, not available with use of a typical ballast pump. During periods of non-performance by a performer, there is a need to improve travel between performance locations, whether over water or by trailer, without having to disassemble and then reassemble pylons and pylon rigging.

**SUMMARY OF THE INVENTION**

In view of the foregoing background, it is therefore an object of the present invention to improve the aerial characteristics of a performance by a performer using a water sport implement, such as a wakeboard or ski, by way of example, and being towed by a vessel while maintaining the stability of the vessel.

This and other objects, features, and advantages of the invention, are provided by a method aspect of the invention comprising the steps of providing a vessel behind which the performer is to be towed, the vessel including a bow, a stern and an operator station between opposing sides, and fitting a first relatively rigid vertical support structure to a first one of the sides and fitting a second relatively rigid vertical support structure to a second one of the sides, and then extending a generally horizontal bridging portion between upper extremities of the first and second vertically extending support structures, at a height substantially above the level of the operator station. A tow rope is attached to the horizontally extending bridging portion, and the vessel is operated in a body of water while towing the performer from the horizontally extending bridging portion.

An apparatus of the present invention comprises a vessel behind which the performer is to be towed, the vessel including a bow, a stern and an operator station between opposing sides, a first relatively rigid vertical support structure fitted to a first one of the sides of the vessel, a second relatively rigid vertical support fitted structure to a second one of the sides of the vessel, and a generally horizontal bridging portion extending between upper extremities of the first and second vertically extending support structures, at a height substantially above the level of the operator station. A tow rope is attached to the horizontally extending bridging portion for towing the performer from the horizontally extending bridging portion while operating the vessel in a body of water.

In an alternate embodiment, the apparatus further comprises pivotally attaching means for attaching the first and second generally vertically extending support structures to the respective sides of the vessel, so as to permit the first and second support structures to be rotated downwardly so that the vessel may pass underneath a bridge or into a boat house. Improvements to the rotatable feature of the present inven-

US 6,374,762 B1

3

tion are provided by yet another preferred embodiment, wherein a towing apparatus comprises a vertical support rigidly dimensioned for rigidly attaching to a vessel at a location proximate an operator station of the vessel, a frame for extending upwardly from the vertical support to a height substantially above the level of the operator station, and attaching means for attaching the frame to the vertical support, the attaching means rigidly attaching the frame to the vertical support in an operating position for towing the performer, while permitting the frame to be rotated about the vertical support into a stored position on a deck of the vessel for reducing a height clearance of the vessel.

In one preferred embodiment, the coupling means comprise a ball and socket assembly carried by a first proximal end of the frame. The ball and socket assembly include a ball carried by the frame, a socket carried by the vertical support, and a shaft extending through the socket. The shaft has a distal end for engaging the ball and a proximal end for manipulating the shaft into and out of engagement with the ball for readily removable attachment of the ball with the socket and thus the frame with the vertical supports. A knob is attached to the proximal end of the shaft, and a compression spring carried by the shaft and positioned between the knob and the socket for biasing the proximal end away from the socket. A pivotal linkage assembly operable between the frame and vertical support is positioned for rotating the frame about the vertical support when the shaft is disengaged from the ball.

#### BRIEF DESCRIPTION OF DRAWINGS

A preferred embodiment of the invention as well as alternate embodiments are described by way of example with reference to the accompanying drawings in which:

FIG. 1 is a perspective view of a vessel and performer in accordance with the present invention;

FIG. 2 is an enlarged perspective view of the vessel of FIG. 1 with rear ballast tanks illustrated;

FIG. 3 is a partial perspective view of the ballast tanks carried within the vessel;

FIG. 4 is a perspective view of an alternate embodiment;

FIG. 5 is a partial side view of a towing element of the present invention;

FIG. 6 is a partial side view of the embodiment of FIG. 2 illustrating an operating erected position and a rotated storing position of a towing structure of the present invention;

FIG. 7 is a partial side view of an attachment portion of the towing structure of FIG. 6;

FIG. 8 is a partial front view of FIG. 7;

FIG. 9 is a partial side view of an alternate embodiment of FIG. 2;

FIG. 10 is a partial top plan view of the embodiment of FIG. 2;

FIG. 11 is a partial side view of an alternate embodiment of FIG. 2;

FIG. 12 is a partial top plan view of the embodiment of FIG. 11;

FIG. 13 is a partial side view of yet another embodiment of FIG. 2;

FIG. 14 is perspective view of the vessel including an alternate preferred embodiment of a towing apparatus in keeping with the present invention;

FIG. 15 is a partial starboard side elevation view of the vessel and towing apparatus of FIG. 14 illustrating the towing apparatus in an operating position for towing a performer;

4

FIG. 16 is a view of the vessel and towing apparatus of FIG. 15 illustrating the towing apparatus in a stored position;

FIGS. 17 and 18 are partial side and front elevation views of a pivotal portion of the towing apparatus of FIG. 14;

FIGS. 19 and 20 are partial cross-section views of a coupling assembly of the towing apparatus FIG. 14, illustrating an attached position and a detached position, respectively, between a frame and a support;

FIG. 21 is an exploded, partial cross section view of a ball and socket assembly of FIGS. 19 and 20; and

FIG. 22 is a schematic of a ballast tank control system of the present invention.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited by the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

Referring now initially to FIGS. 1-3, a preferred embodiment of the present invention is herein described, by way of example, by a water sports system 10 for improving aerial characteristics of a performance by a performer 12 using a water sports implement such as a wakeboard 14. The system 10 comprises a vessel 16 behind which the performer 12 is to be towed. The vessel 16 includes a bow 18, a stern 20, and an operator station 22 between opposing starboard and port sides 24, 26. A towing structure referred herein as a vertical support unit 100 is fitted to the vessel 16. The vertical support unit 100, as will be further described later in this section, includes an upper portion 102 at a height above the level of the operator station 22 and is adapted for securing a tow rope 28 thereto. The tow rope 28 is attached to the upper portion 102 of the vertical support unit 100 for towing the performer 12, as illustrated again with reference to FIG. 1. The system 10 further includes a ballast assembly 200 which includes starboard and port ballast tanks 202, 204 fitted onboard and only aft, preferably within only the stern 20, extending from the transom toward amidships of the vessel 16, unlike typical ballast systems which fully extend bow to stern. Alternate embodiments include a single ballast tank. An extractor 206 is fitted to the hull of the vessel 16 and is in fluid communication with the body of water 30 within which the vessel operates for forcing water 208 into the ballast tanks 204, 202 and weighting down the aft portion of the vessel 16, thus lowering the vessel and controlling a wake 32 created by the vessel.

It is to be noted that various sized vessels will have varying length ballast tanks for extending the tank from the transom area to toward amidships to provide a desirable wake. Simply weighting down the vessel stern only proximate the transom leads to excess plowing of the vessel and an undesirable wake. Further, displacement boats having ballast from stern to bow, typically do not permit planing, desirable in a sports towing vessel. As a result, a certain amount of planing is to be maintained. By extending the ballast tank as herein described, an effective vessel performance and wake is achieved. Without deviating from the invention, alternate embodiments are now herein described.

With regard to the vertical support unit 100, reference being made again to FIG. 2, the vertical support unit

## US 6,374,762 B1

5

comprises a first relatively rigid vertical support structure 104 fitted to the starboard side 24 of the vessel 16, a second relatively rigid vertical support structure 106 fitted to the port side 26, and a generally horizontal bridging portion 108 extending between upper extremities of the first and second vertically extending support structures at a desired height above the level of the operator station 22. In a preferred embodiment, the vertical support unit 100 forms a skeletal frame, as illustrated again with reference to FIG. 2, which has a forward relatively rigid U-shaped support structure 110 and an aft relatively rigid U-shaped support structure 112, both fitted across the beam of the vessel 16. Longitudinally extending rigid bars 114 are attached between the forward and aft U-shaped structures. In a preferred embodiment, the bars are generally horizontal and parallel to the floor 34 of the vessel 16, as illustrated with reference again to FIG. 2, by way of example. Such a frame transfers forces generated by towing the performer to the gunwales, by way of example, and provides a rigid anchoring of the tow rope to the vessel for improving over typical single tow bar devices referred to earlier in this specification. For convenience in shipping, the bridging portion 108 is separable from the vertical support structures 104, 106 at connections 116. In general, the preferred embodiment is made from generally rigid aluminum tubing with elements of the unit 100 welded to each other to form a generally rigid skeletal frame.

In yet another embodiment, and with reference to FIG. 4, the vertical support unit 100 comprises a pylon 118 extending from the floor 34 of the vessel 16 and having an upper portion adapted for securing the tow rope 28 thereto. As illustrated again with reference to FIG. 2, and illustrated further with reference to FIG. 5, a tow rope connecting element 120 is attached to the upper portion of the vertical support unit 100, preferably to the horizontal bridging port 108 of the aft U-shaped support structure 112 for attaching the tow rope 28 thereto. The tow rope connecting element is mounted at a height 36 between 6' 3" and 7 feet above the floor 34 of the vessel 16, but it is expected that other heights will be selected by those skilled in the water sports arts. At this height 36, passengers on the vessel can comfortably walk under the U-shaped support structure 112 and the tow line 28 extending rearwardly from the boat for pulling the performer 12 while, at the same time, maintaining stability for the vessel 16 as the performer maneuvers around the vessel during the performance.

The skeletal frame is an improvement over the pylon by providing a generally more rigid unit 100 secured to four mounting locations 122 at sides 24, 26 of the vessel 16. In a preferred embodiment of the invention, the vertical support unit 100, as illustrated with reference again to FIG. 2, and to FIGS. 6-8, the system 10 further comprises attaching the vertical support unit 100 to vessel deck portions including starboard and port side gunwales 38, 39, so as to permit the unit to be rotated when the vessel needs to pass underneath a bridge or into a boat house, by way of example. In a preferred embodiment, anchoring plates 124 are located about the operator station 22. The anchoring plates 124 each include a shaft 126 which terminates in a free end 128 having a through hole for receipt of a pivot pin or bolt 130. Removably and rotatably mounted on the anchoring shafts 126 are lower extremities 132 of the skeletal frame, as illustrated with reference again to FIGS. 7 and 8. As illustrated with reference to FIG. 11, an alternate arrangement includes mounting the plates 124 to the floor 34 of the vessel 16.

Towing a trailer carrying the vessel is made more convenient with this rotating feature. In the event the overall

6

height of the unit 100 needs to be reduced during hauling of the vessel on a trailer, by way of example, the unit 100 is rotatable to a position 134 shown in dotted lines in FIG. 6 or is removable entirely from the vessel 16. As illustrated again with reference to FIGS. 7 and 8, the pin or bolt 130 is removed from the appropriate anchoring plates 124 for rotating the unit 100 onto the forward deck of the vessel or aft at the convenience of the operator.

Improvements to a preferred embodiment of the present invention are made to enhance the portability and storing of the vertical support unit 100, earlier described, and hereon initially illustrated with reference to FIGS. 14-16, wherein one preferred embodiment of a towing apparatus 300 comprises starboard and port elongate vertical supports 302, 304 rigidly attached to the starboard side and port side gunwales 38, 39, respectively, of the vessel 16 at a location generally outboard the operator station 22. Each of the vertical supports includes an upwardly extending forward portion 306 having a proximal end 308 rigidly mounted via a mounting plate 310 to the gunwale 38, 39, an upwardly extending aft portion 312 having a proximal end 314 rigidly mounted to the gunwale 38, 39 via a mounting plate 316, and a middle portion 318 extending between distal ends 320, 322 of the forward and aft portions. As further illustrated with reference again to FIGS. 15 and 16, the distal end 322 of the aft portion 312 extends to a higher elevation above the surface of the gunwale 38, 39 than does the distal end 320 of the forward portion 306. This permits an aft portion 423 of a frame 326 to be shorter in length than a forward portion 328 of the frame, allowing for a lower elevation of the frame when in a stored position 328, as illustrated with reference to the elevation line 329 of FIG. 16.

In an operating position 330, the frame 326 extends upwardly from and between the starboard and port elongate vertical supports 302, 304 to the height 36 substantially above the level of the operator station 22, as earlier described with reference to FIG. 2. An aft proximal end 332, 333 of the frame 326 is readily removable attached to each of the elongate vertical supports 302, 304, and a forward proximal end 334, 335 of the frame is pivotally attached thereto for rigidly securing the frame in the operating position 330, see FIG. 15, when the aft proximal end is attached, while permitting the frame to be rotated about the forward proximal end to the stored position 328, see FIG. 16, on the deck 336 of the vessel 16 when the aft proximal end of the frame is detached and rotated.

As illustrated with reference again to FIGS. 15 and 16, by way of example, a tow rope connecting element 338 is attached to a distal end 340 of the frame 326 for attaching the tow rope 28 thereto used in towing a performer from the frame while operating the vessel in a body of water. The distal end 340 is upwardly angled, allowing the distal end to lie generally flat onto the deck 36, with the tow rope connecting element 338 conveniently received within the open styled deck for the vessel herein described, by way of example. As earlier described, and as illustrated in the operating position 330 of FIG. 15, by way of example, with forward and aft U-shaped supports 342, 344, rearwardly angled and vertically extended, the aft support 344 is shorter in length than the forward support 342, allowing for the reduced elevation line 329 earlier described with reference again to FIG. 16.

By way of further detail, and as illustrated with reference to FIGS. 17-18, the forward U-shaped support 342 is pivotally attached at each of its ends to the starboard and port vertical supports 302, 304, at the forward distal ends of the upwardly extending forward portions 306. A pivotal

US 6,374,762 B1

7

linkage assembly 346 includes a pivot pin 347 operable with a mating fork assembly 348. As illustrated with reference to FIGS. 19-21, the aft U-shaped support 344 is readily removably attached to the distal ends 322 of the upwardly extending aft portion 312 of the vertical supports 302, 304. The forward U-shaped support 342 is rigidly attached to the aft U-shaped support 344 at multiple weld points 350 and with the use of attaching arms 352.

In a preferred embodiment, herein described by way of example, a coupling assembly 354 is operable between the frame 326 and the vertical supports 302, 304, and is described in detail with reference to FIGS. 19-21. The coupling assembly 354 comprises a ball element 356 attached to the proximal ends of the aft U-shaped support 344 and a socket element 358 carried by the distal ends of the upward extending aft portions 312 of the starboard and port vertical supports 302, 304. A shaft 360 extends through the socket element 358 and has a threaded distal end 362 for engaging a threaded bore 364 within the ball element 356. A knob 366 is attached to the proximal end 368 of the shaft 360 for manipulating the shaft into and out of engagement with the ball element 356 and for readily removing the ball element from engagement with the socket element 358, and thus the frame 326 from the aft portion of the vertical supports 302, 304. A compression spring 370 is carried by the shaft 360 and is positioned between the knob 366 and the socket element 358 for biasing the knob away from the socket element and thus avoid excessive movement of the shaft and knob when in a disengaged position 372, as illustrated again with reference to FIG. 20, illustrating the compression spring in an extended position. To rigidly secure the aft portion of the frame 326 to the aft portions of the supports 302, 304, the ball element 356 is guided into the socket element 358 in an indexing manner, and the threaded end 362 of the shaft 360 is manually engaged by pushing and turning the knob 366 to place the coupling assembly 354 into a secured position 374, as illustrated with reference again to FIG. 19, illustrating the compression spring in a compressed position. The pivotal linkage assembly 346 pivotally connecting the forward portion of the frame 326 to the forward portion of the vertical supports 302, 304 is positioned for rotating the frame about the vertical supports when the shaft 360 is disengaged from the ball element 357. A washer 374 is inserted between the socket element 358 and the compression spring 370. A snap ring 376 secures the shaft 360 within the socket element 358 and limits axial movement as further illustrated with reference to FIG. 20.

With such structures as herein described, it is convenient to use portions of the unit 100 to stow (i.e., store or attach) various pieces of ancillary equipment such as a life vest 40 or wakeboard 42 and other equipment, as illustrated by way of example, with reference again to FIG. 6 and FIG. 9. Further, the convenient mounting of stereo speakers is also accomplished. Such equipment is also conveniently stowed out of the way when unit 100 is in the erect position 136 as earlier described with reference to FIGS. 1 and 2.

As illustrated with reference to FIG. 10, a clear line of sight is provided for individuals sitting in the seats 44 so as not to interfere with the steering of the vessel 16 or the maneuvering of passengers onboard. As illustrated, by way of example with reference to FIGS. 2, and 9-14, various embodiments of the present invention are possible without deviating from the intent and value thereof.

As illustrated with reference again to FIGS. 2-3, and to FIG. 22, a preferred embodiment of the system 10 and the ballast assembly 200, a lower most portion 210 of each of the ballast tanks 202, 204 is preferably fitted at the waterline

8

212 of the vessel 16 when the tanks are empty, typically the floor 34 for towing vessels as herein described.

In preferred embodiments of the ballast tanks 202, 204 and with reference again to FIGS. 3 and 22, the ballast tanks are enclosed and each have an opening arranged through vent lines 214, 216 for venting air into and out of each of the enclosed tanks 202, 204 respectively. Further, an air control valve 218 is within easy reach by the vessel operator for manually controlling air venting to each of the ballast tanks. It is anticipated that electrically, pneumatically or hydraulically operated control valves may be appropriate. The extractor 206, earlier described, includes a water scoop 220 positioned below the water line 212 and on the hull 46 of the vessel 16 for extracting the ballast water 208 from the body of water 30 as the vessel 16 moves through the body of water and delivering the ballast water 208 through a water intake line 221 connected between the scoop 220 and ballast tanks 202, 204. In an alternate embodiment, a two way pump 222 is placed within the line 221 and used for enhancing the extracting and dumping of the ballast water 208. Further, a shut off valve 223 is fitted within the line 221. As illustrated again with reference to FIGS. 2 and 3, the ballast tanks 202, 204 comprise starboard and port enclosed ballast tanks wherein each of the starboard and port enclosed ballast tanks comprises a generally L-shaped tank having a first elongated leg 224 fitted beneath quarter gunwales 26 of the vessel 16 and a second leg 228 fitted along an inboard side of the transom 230.

As illustrated with reference again to FIG. 3, intermediate of the stern 20 and bow 18 is the operator's seat 45 within which the operator sits to control steering while viewing instruments. The air control valve 218 is within easy reach of the operator.

As illustrated again with reference to FIG. 22, the inlet line 221 leads to a water scoop 220 which collects the ballast water 208 as the vessel 16 is moved forward through the body of water 30. The water 208 collected in the scoop 220 is fed through the intake line 221 upon proper positioning of the valves 218, 223. If the shut off valve 223 is closed, no water 208 will be allowed to be fed into ballast tanks 202, 204. In addition, water 208, if already in ballast tanks 202, 204 will not be allowed to leave the tanks. However, if the water 208 is to be introduced into ballast tanks 202, 204, the shut off valve 223 must be opened and in addition, the respective air line control valve 218, independently controlling each of the air lines 214, 216 must be opened to allow air to escape from the ballast tanks as the water is being scooped up and fed into the tanks. Thus, if the air line control valve 218 is open, water 208 will be forced into ballast tanks 202, 204 as the boat is moving forward until the ballast tanks are full or the valves are closed. Excess water is forced through the air lines 214, 216 past the air line control valve 218 as one indication that the tanks are full. Alternatively, water level indicators 232 are used. Additionally, tank overflow tubes 234 fitted with one way check valves 236 deliver excess water overboard, as illustrated again with reference to FIG. 22. The overflow tubes 234 limit the maximum pressure in the tanks to a maximum static head. The check valves 236 stop air from flowing back in the tanks when the air control valve 218 is closed.

To remove the water 208 from the tanks 202, 204, the vessel comes to a stand still in a preferred method of dumping the ballast water. The shutoff valve 223 is then opened, with the opening of the air control valve 218 for allowing air into the air lines 214, 216. Through the forces of gravity, the water 208 flows out of the tanks 202, 204 through the intake line 221 and out through the opened shutoff valve 223 to the surrounding body of water 30.

## US 6,374,762 B1

9

Since the operator sitting in seat 45 has easy access to both valves 218, 223, the amount and shape of the wake 32, illustrated with reference again to FIG. 1, produced by the vessel 16 can be precisely controlled by the operator. By selectively shifting the ballast water 208 into and out of the tanks 202, 204, the wake 32 is produced to a controlled degree for optimum and desirable wakeboarding.

Accordingly, many modifications and other embodiments of the invention will come to the mind of one skilled in the art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed, and that modifications and embodiments are intended to be included within the scope of the appended claims.

That which is claimed is:

1. A method for providing a sports towing vessel and towing a wakeboard performer on a body of water with the sports towing vessel so as to improve the ability of the performer to achieve greater height during towing while maintaining the stability of the vessel, the method comprising the steps of:

providing the sports towing vessel having a bow, a stern, opposing starboard and port gunwales, an operator's station forwardly from amidships toward the bow and a windshield mounted between the gunwales in front of the operator's station;

fitting a rigid skeletal towing frame to the vessel for elevating a tow rope attachment point substantially above a level of the operator station, the skeletal towing frame fitting step including:

- a) attaching a first support to the starboard gunwale forward of the windshield;
- b) attaching a second support to the port gunwale forward of the windshield;
- c) forming each of the first and second supports in an angular relationship with the respective gunwales so as to extend vertically and rearwardly toward the stern;
- d) providing the first and second supports with sufficient length so that the vertical extremities thereof extend rearwardly across and over the windshield;
- e) attaching a third support to the starboard gunwale aft of the first support;
- f) attaching a fourth support to the port gunwale aft of the second support;
- g) spacing the third support from the first support, and the fourth support from the second support a sufficient distance to impart stability to the skeletal towing structure; and
- h) providing mechanical coupling means for coupling the upper portions of the first, second, third and fourth supports rigidly together;

fitting the tow rope attachment point with the mechanical coupling means; and

towing the wakeboard performer with the sports towing vessel by a tow rope attached to the tow rope attachment point.

2. The method recited in claim 1 further comprising, during the towing of the wakeboard performer, the step of storing ancillary equipment in a space between one or both pairs of the first and third supports, or the second and fourth supports.

3. The method recited in claim 2 wherein the step of storing ancillary equipment between the pairs of supports comprises the steps of:

10

fitting at least one horizontal bar between a pair of the supports; and

attaching the ancillary equipment to the horizontal bar.

4. The method recited in claim 1 further comprising, during the towing of the wakeboard performer, the step of storing ancillary equipment on the mechanical coupling means.

5. The method recited in claim 1 further comprising the step of extending the third and fourth supports more vertically from the respective gunwales relative to the angular relationship of the first and second supports with the respective gunwales.

6. The method recited in claim 1 further comprising the step of extending upper portions of the third and fourth supports forwardly toward the bow.

7. The method recited in claim 1, wherein the step of providing mechanical coupling means comprises the step of fitting a generally horizontal bridging portion between upper extremities of the first, second, third, and fourth supports.

8. The method recited in claim 1, further comprising the step of pivotally mounting a pair of the supports to the respective gunwales, so that the towing frame may be rotated downwardly along the gunwales.

9. The method recited in claim 1, wherein the step of attaching the first and third support to the starboard gunwale comprises the steps of:

fitting an elongated vertical support to the starboard gunwale; and

coupling the first and third supports to the elongated vertical support.

10. The method recited in claim 9, wherein the step of attaching the second and fourth supports to the port gunwale comprises the steps of:

fitting a second elongated vertical support to the port gunwale; and

coupling the third and fourth supports to the second elongated vertical support.

11. A method for providing a sports towing vessel and towing a wakeboard performer on a body of water with the sports towing vessel so as to improve the ability of the performer to achieve greater height during towing while maintaining the stability of the vessel, the method comprising:

providing the sports towing vessel having a bow, a stern, opposing starboard and port gunwales, an operator's station forwardly from amidships toward the bow and a windshield mounted between the gunwales in front of the operator's station;

fitting a rigid skeletal towing frame to the vessel for elevating a tow rope attachment point substantially above a level of the operator station, the skeletal towing frame fitting step including:

- a) attaching a first support to the starboard gunwale proximate the windshield;
- b) attaching a second support to the port gunwale proximate the windshield;
- c) forming each of the first and second supports in an angular relationship with the respective gunwales so as to extend vertically and rearwardly toward the stern;
- d) providing the first and second supports with sufficient length so that the vertical extremities thereof extend rearwardly across and over the windshield;
- e) attaching a third support to the starboard gunwale aft of the first support;
- f) attaching a fourth support to the port gunwale aft of the second support;



## US 6,374,762 B1

11

g) spacing the third support from the first support, and the fourth support from the second support a sufficient distance to impart stability to the skeletal towing structure; and

h) providing a mechanical means for coupling the upper portions of the first, second, third and fourth supports rigidly together;

fitting the tow rope attachment point with at least one of the first, second, third and fourth supports;

attaching a tow rope to the tow rope attachment; and operating the sports towing vessel for towing the wakeboard performer.

12. The method recited in claim 11 further comprising, during the towing of the wakeboard performer, storing ancillary equipment in a space between one or both pairs of the first and third supports, or the second and fourth supports.

13. The method recited in claim 12 wherein the storing of ancillary equipment between the pairs of supports comprises fitting a horizontal bar between a pair of the supports and attaching the ancillary equipment to the horizontal bar.

14. The method recited in claim 11 further comprising, during the towing of the wakeboard performer, storing ancillary equipment on the mechanical coupling means.

15. The method recited in claim 11 further comprising extending the third and fourth supports more vertically from the respective gunwales relative to the angular relationship of the first and second supports with the respective gunwales.

16. The method recited in claim 11 further comprising extending upper portions of the third and fourth supports forwardly toward the bow.

17. The method recited in claim 11, wherein the step of providing mechanical coupling means comprises the step of fitting a generally horizontal bridging portion between upper extremities of the first, second, third, and fourth supports.

18. The method recited in claim 11, further comprising the step of pivotally mounting a pair of the vertical supports to the respective gunwales, so that the towing frame may be rotated downwardly along the gunwales.

19. The method recited in claim 11, wherein the step of attaching the first and third support to the starboard gunwale comprises the steps of:

fitting an elongated vertical support to the starboard gunwale; and

coupling the first and third supports to the elongated vertical support.

20. The method recited in claim 19, wherein the step of attaching the second and fourth supports to the port gunwale comprises the steps of:

fitting a second elongated vertical support to the port gunwale; and

coupling the third and fourth supports to the second elongated vertical support.

21. A method for providing a sports towing vessel and towing a wakeboard performer on a body of water with the sports towing vessel so as to improve the ability of the performer to achieve greater height during towing while maintaining the stability of the vessel, the method comprising the steps of:

providing a sports towing vessel having a bow, the stern, opposing starboard and port gunwales, an operator's station forwardly from amidships toward the bow and a windshield mounted between the gunwales in front of the operator's station;

fitting a rigid skeletal towing frame to the vessel for elevating a tow rope attachment point substantially

12

above a level of the operator station, the skeletal towing frame fitting step including:

a) extending a first elongate member forward to aft along the starboard gunwale, proximate a starboard portion of the windshield, and fixedly attaching opposing ends thereof to the sports towing vessel;

b) extending a second elongate member forward to aft along the port gunwale, proximate a port portion of the windshield, and fixedly attaching opposing ends thereof to the sports towing vessel;

c) rotatably attaching a first support to the first elongate member;

d) rotatably attaching a second support to the second elongate member;

e) forming each of the first and second supports in an angular relationship with the respective gunwales so as to extend vertically and rearwardly toward the stern;

f) providing the first and second supports with sufficient length so that the vertical extremities thereof extend rearwardly across and over the operator station;

g) removably attaching a third support to the first elongate member aft of the first support;

h) removably attaching a fourth support to the second elongate member aft of the second support;

i) spacing the third support from the first support, and the fourth support from the second support a sufficient distance to impart stability to the skeletal towing structure; and

j) providing mechanical coupling means for coupling the upper portions of the first, second, third and fourth supports rigidly together;

fitting the tow rope attachment point with the mechanical coupling means; and

towing the wakeboard performer with the sports towing vessel by a tow rope attached to the tow rope attachment point.

22. The method recited in claim 21 further comprising, during the towing of the wakeboard performer, the step of storing ancillary equipment in a space between one or both pairs of the first and third supports, or the second and fourth supports.

23. The method recited in claim 22 wherein the step of storing ancillary equipment between the pairs of supports comprises the steps of:

fitting at least one horizontal bar between a pair of the supports; and

attaching the ancillary equipment to the horizontal bar.

24. The method recited in claim 21 further comprising, during the towing of the wakeboard performer, the step of storing the ancillary equipment on the mechanical coupling means.

25. The method recited in claim 21 further comprising the step of extending the third and fourth supports more vertically from the respective first and second elongate members relative to the angular relationship of the first and second supports with the respective gunwales.

26. The method recited in claim 21 further comprising the step of extending upper portions of the third and fourth supports forwardly toward the bow.

27. The method recited in claim 21 wherein the step of providing mechanical coupling means comprises the step of fitting a generally horizontal bridging portion between upper extremities of the first, second, third, and fourth supports.

28. The method recited in claim 21, further comprising the step of pivotally mounting a pair of vertical supports to the

US 6,374,762 B1

13

respective gunwales, so that the towing frame may be rotated downwardly along the gunwales.

29. The method recited in claim 21, wherein the step of attaching the first and third vertical support to the starboard gunwale comprises the steps of:

fitting an elongated vertical support to the starboard gunwale; and

coupling the first and third vertical supports to the elongated vertical support.

14

30. The method recited in claim 29, wherein the step of attaching the second and fourth vertical supports to the port gunwale comprises the steps of:

fitting a second elongated vertical support to the port gunwale; and

coupling the third and fourth vertical supports to the second elongated vertical support.

\* \* \* \* \*





US00D409972S

**United States Patent** [19]

Todd

[11] Patent Number: Des. 409,972

[45] Date of Patent: \*\* May 18, 1999

[54] BOAT TOWER

5,669,325 9/1997 Feikema ..... 114/343

[76] Inventor: Robert Todd, 1635 Minnesota Ave.,  
Winter Park, Fla. 32789

Primary Examiner—Kay H. Chin

Attorney, Agent, or Firm—William M. Hobby, III

[\*\*] Term: 14 Years

[57] CLAIM

[21] Appl. No.: 29/078,494

The ornamental design for a boat tower, as shown and described.

[22] Filed: Oct. 27, 1997

## DESCRIPTION

[51] LOC (6) Cl. .... 12-06

[52] U.S. Cl. .... D12/318

[58] Field of Search ..... D12/300-318;  
114/343, 210, 251

FIG. 1 is a top rear right side perspective view of my new boat tower;

FIG. 2 is a right side elevation;

FIG. 3 is a left side elevation;

FIG. 4 is a top plan view;

FIG. 5 is a rear elevation;

FIG. 6 is a front elevation; and,

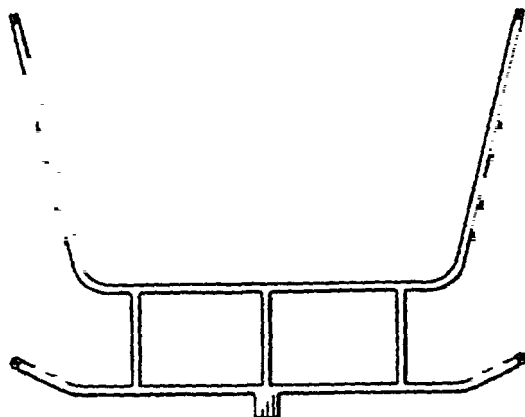
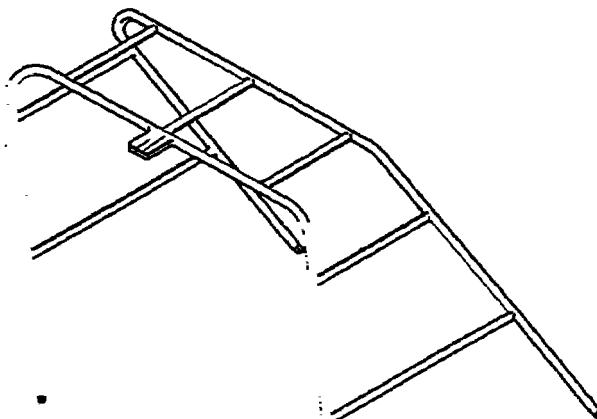
FIG. 7 is a bottom plan view.

[56] References Cited

## U.S. PATENT DOCUMENTS

D. 395,866	7/1998	Fowler et al.	.....	D12/317
3,935,830	2/1976	Cox	.....	114/210
4,593,641	6/1986	Adams et al.	.....	114/343

1 Claim, 2 Drawing Sheets



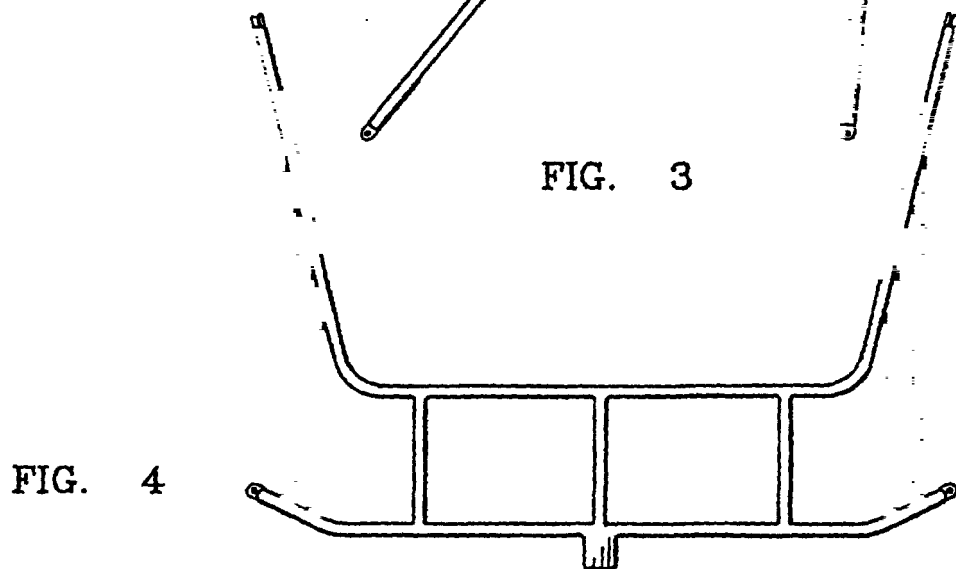
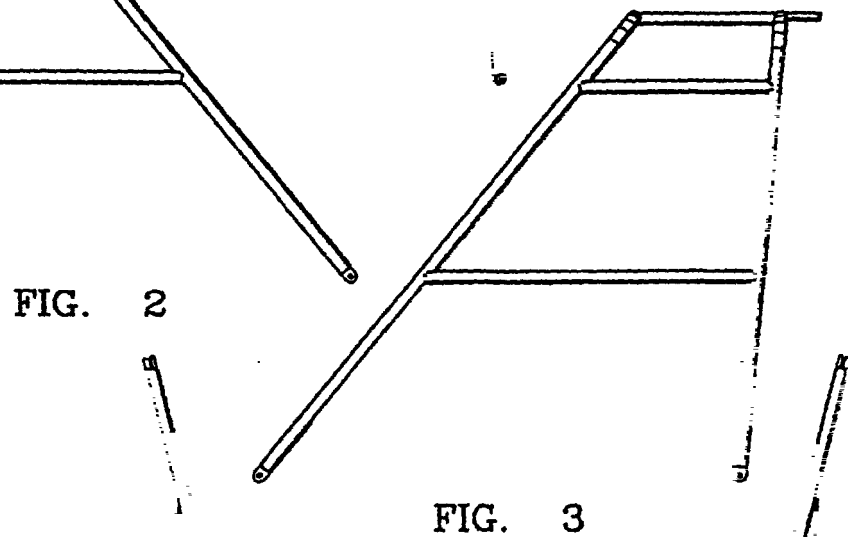
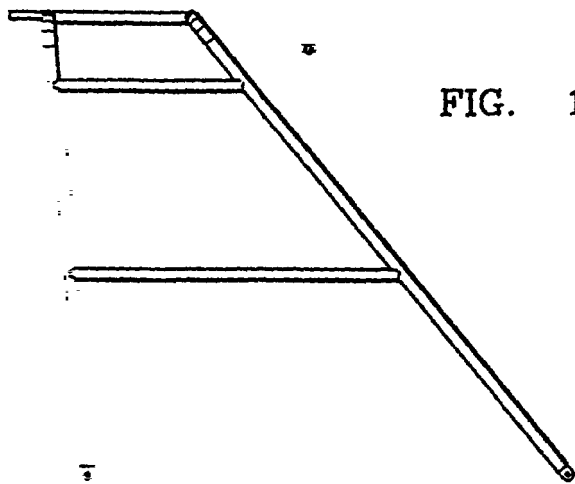
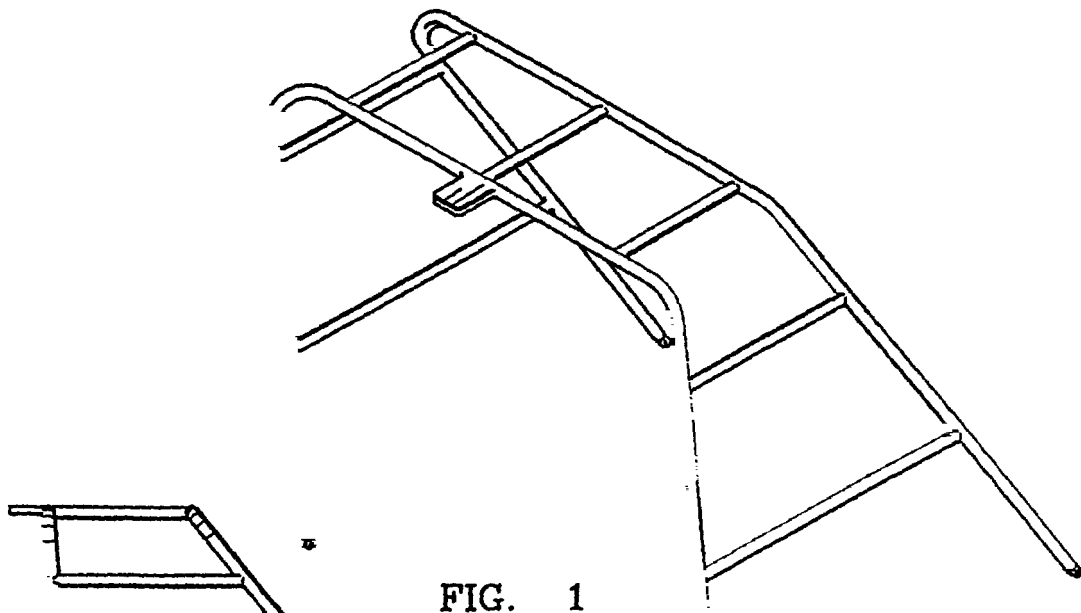
Ex. 3

**U.S. Patent**

**May 18, 1999**

**Sheet 1 of 2**

**Des. 409,972**



U.S. Patent

May 18, 1999

Sheet 2 of 2

Des. 409,972

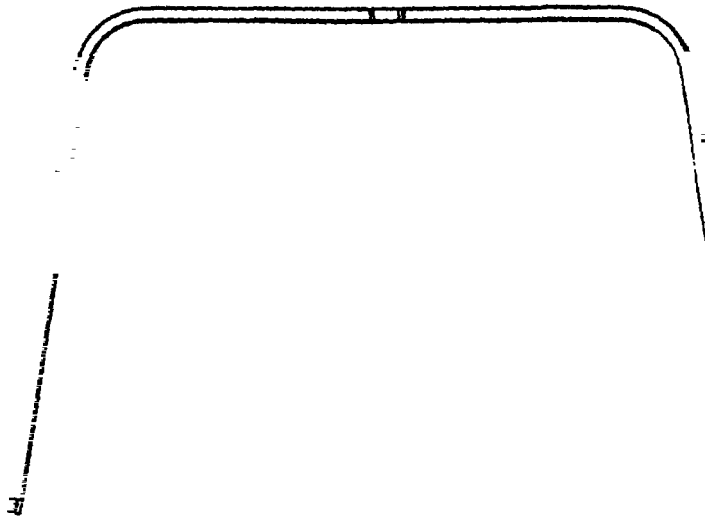


FIG. 5

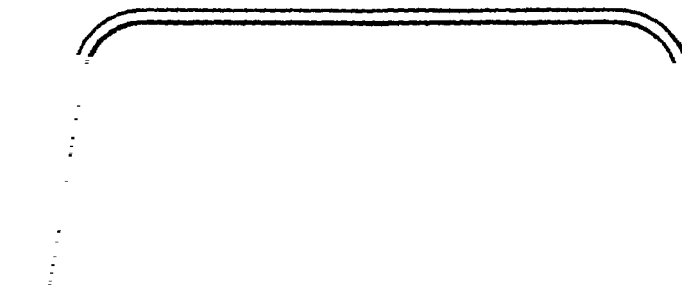


FIG. 6

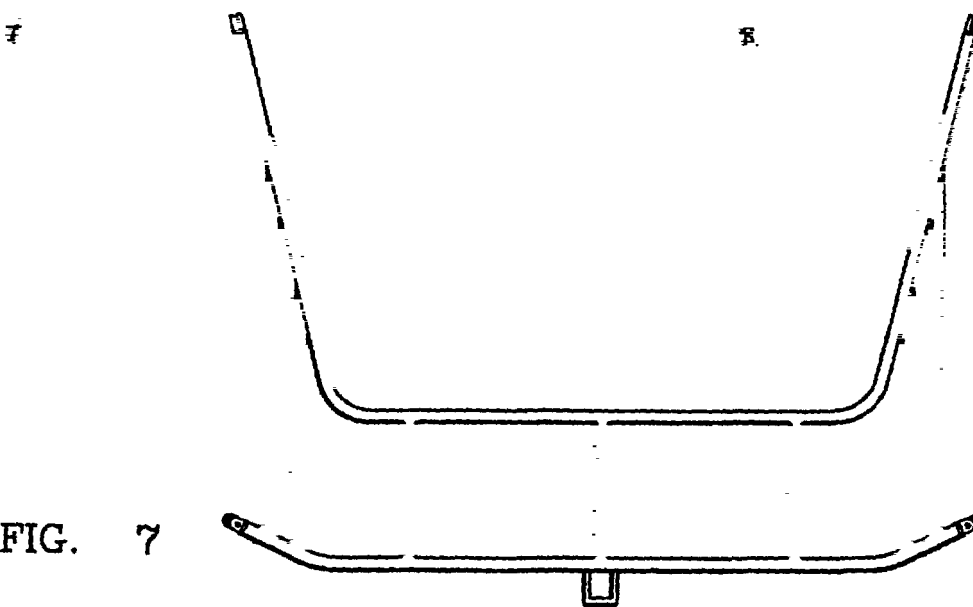


FIG. 7