The present invention is an elevated boat tower that provides a vessel for the storage of compressed air therein. The device provides easy access and use of the compressed air within elongated and substantially hollow tube members connected at each end thereof to either the boat or other tube members. At least one air valve allows for compressed air to be selectively introduced into or released from within the boat tower.
BOAT TOWER WITH INTEGRAL AIR TANK
CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application 60/877,708, filed on Dec. 29, 2006, and incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

[0002] Not Applicable.

FIELD OF THE INVENTION

[0003] This invention relates to boat towers, and more particularly to a boat tower having a compressed air storage feature.

BACKGROUND OF THE INVENTION

[0004] Compressed air is a common need on boats. Compressed air is used for diving purposes and also for inflation purposes of devices such as inflatable toys and rafts. However, compressed air must be contained in a vessel to be under pressure greater than that of the atmosphere. Typically, compressed air for boats is stored in compressed air tanks. However, storage space on boats is limited and compressed air tanks are bulky and heavy items that take up precious boat space. Items used on boats are often custom designed to conserve space. Therefore, a need exists for a novel and efficient way to store compressed air on a boat. Such a need would further allow easy access.

[0005] Elevated boat towers fixed to boats for pulling water skiers, wake boarders, and the like have become popular in recent years. Such towers can provide the water sports enthusiast more lift due to an elevated tow rope, and can further provide additional stored energy when used in combination with a recoil device such as disclosed in our U.S. Pat. No. 7,234,408, issued on Jun. 26, 2007. Other boat towers are known for supporting electronics, radars and antennas, fishing rod holders, fishing lights, and the like. Elevated boat towers are attached to the outside of a boat and do not take up precious storage space in a boat. However, the frame members of such towers are typically hollow, and the space therein is not well utilized.

[0006] Therefore, there is a need for a compressed air vessel that utilizes the otherwise hollow tube members of an elevated boat tower to store compressed air. Such a need would allow compressed air to be stored in a boat tower, yet would still provide easy access and use of both. The present invention accomplishes these objectives.

SUMMARY OF THE INVENTION

[0007] The present device is a boat tower that includes a frame comprising a plurality of elongated tube members each having at least two ends. At least two of the ends are coupled to the boat at a boat attachment. At least one of the tube members is substantially hollow and sealed at each of its ends to form at least one gas vessel for storing compressed air. Each tube member is joined to at least one other tube member at a tube attachment. At least one valve is in fluid communication with the at least one gas vessel, such that gas may be selectively introduced into or released from within the at least one gas vessel.

[0008] In one embodiment, at least one of the tube attachments is a pivoting attachment. The pivoting attachment allows the height of the boat tower to be adjusted as desired. In a preferred embodiment, the pivoting attachment comprises a transverse aperture through one of the ends of each of two of the tube members. A pivot bolt traverses each aperture to pivotally attach each tube member to the other. The pivot bolt is selectively tightenable to rigidly fix the two tube members together.

[0009] In one embodiment, at least one of the tube attachments is an air-tight weld fixing two of the substantially hollow tube members together to allow fluid communication therein, such that the at least one gas vessel is formed by both such tube members.

[0010] In another embodiment, where at least two of the tube members are substantially hollow, an air conduit is disposed between and traversing each of the tube members to allow fluid communication therebetween. In another embodiment, the boat tower further includes at least one tow rope attachment attached to at least one of the tube members.

[0011] The present invention is an elevated boat tower to store compressed air. The device allows compressed air to be stored in a boat tower, yet still provides easy access and use of the compressed air. Further, in one embodiment, the present invention allows the boat tower height to be adjusted as needed for convenience. Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a perspective view of the invention, illustrating a pivoting boat tower;
[0013] FIG. 2 is a cross-sectional view of the invention, taken generally along lines 2-2 of FIG. 1, illustrating a gas vessel;
[0014] FIG. 3 is a cross-sectional view of the invention, taken generally along lines 3-3 of FIG. 1, illustrating an air conduit;
[0015] FIG. 4A is a cross-sectional view of the invention, taken generally along lines 4-4 of FIG. 1, illustrating a valve;
[0016] FIG. 4B is a cross-sectional view of the invention, taken generally along lines 4-4 of FIG. 1, illustrating an air compressor filling nozzle;
[0017] FIG. 5 is a cross-sectional view of the invention, taken generally along lines 5-5 of FIG. 1, illustrating an air-tight weld;
[0018] FIG. 6 is a cross-sectional view of the invention, taken generally along lines 6-6 of FIG. 1, illustrating a pivoting attachment; and
[0019] FIG. 7 is a perspective view of the invention, illustrating a non-pivoting boat tower.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] With respect to the drawings, FIGS. 1 and 7 illustrate a boat tower 10 for a boat 40. The boat tower 10 includes a frame 50 comprising a plurality of elongated tube members 60 each having at least two ends 62. At least two of the ends 62 are coupled to the boat 40 at a boat attachment 70. Preferably, the boat tower 10 is attached to the boat 40 using exactly four boat attachments 70. At least one of the tube
members 65 is substantially hollow and sealed at each of its ends 62 to form at least one gas vessel 30 (FIG. 2) for storing compressed air. Each tube member 60 is joined to at least one other tube member at a tube attachment 80.

[0021] The tube members 60 are preferably made from a light weight, durable material with enough strength to withstand the pressure of containing air under pressure, such as aluminum, but can also be formed from any suitable rigid material, such as other metals or rigid plastic, if desired. The material for the tube members 60 would also preferably be well suited to remain durable and strong under repeated exposure to both fresh water and salt water conditions, preferably aluminum, though other well suited materials can be used, if desired.

[0022] As illustrated in FIG. 4A, at least one valve 90 is in fluid communication with the at least one gas vessel 30, such that gas 20 may be selectively introduced into or released from within the at least one gas vessel 30. In one embodiment, the valve 90 is a tire inflation type valve 95 with a protective cap 92 (FIG. 4A). In another embodiment illustrated in FIG. 4B, an air compressor filling nozzle 98 is used with the valve 90 to add compressed air to the boat tower 10.

[0023] In one embodiment as illustrated in FIGS. 1 and 6, at least one of the tube attachments 80 is a pivoting attachment 82. The pivoting attachment 82 allows the height of the boat tower 10 to be adjusted as desired. In a preferred embodiment illustrated in FIG. 6, the pivoting attachment 82 comprises a transverse aperture 83 through one of the ends 62 of each of two of the tube members 60. A pivot bolt 84 traverses each aperture 83 to pivotally attach each tube member 60 to the other. The pivot bolt 84 is selectively tightening to rigidly fix the two tube members 60 together.

[0024] In one embodiment illustrated in FIGS. 5 and 7, at least one of the tube attachments 80 is an air-tight weld 88 fixing two of the substantially hollow tube members 65 together to allow fluid communication therein, such that the at least one gas vessel 30 is formed by both such tube members 65. FIG. 7 further illustrates a non-pivoting embodiment of the boat tower 10. This embodiment provides a stronger structure for the boat tower 10 but does not provide the benefits of height adjustment.

[0025] In another embodiment illustrated in FIGS. 1 and 6, where at least two of the tube members 65 are substantially hollow, an air conduit 100 is disposed between and traversing each of the tube members 65 to allow fluid communication therebetween. The air conduit 100 is preferably made from a flexible durable strong material, such as rubber tubing, but other suitable material can be used, if desired. This embodiment allows fluid communication between tube members 65 that are connected via a pivoting attachment 82. In the embodiments shown in FIGS. 1 and 7, the boat tower 10 further includes at least one tow rope attachment 110 attached to at least one of the tube members 60.

[0026] While a particular form of the invention has been illustrated and described, it will be apparent that various modifications can be made without departing from the spirit and scope of the invention. For example, the boat tower 10 can be attached to the boat 40 with different number of boat attachments 70 depending on the design of the boat tower 10 and the shape of the boat 40. Also, different types of valves 90 can be used depending on the needs for compressed air. Accordingly, it is not intended that the invention be limited, except as by the appended claims.

What is claimed is:

1. A boat tower for a boat, comprising:
   a frame comprising a plurality of elongated tube members each having at least two ends, at least two of the ends coupled to the boat at a boat attachment, at least one of the tube members being substantially hollow and sealed at each of its ends to form at least one gas vessel, each tube member joined to at least one other tube member at a fluid attachment:
   at least one valve in fluid communication with the at least one gas vessel, such that gas may be selectively introduced into or released from within the at least one gas vessel.

2. The boat tower of claim 1 wherein at least one of the tube attachments is a pivoting attachment.

3. The boat tower of claim 2 wherein the pivoting attachment comprises a transverse aperture through one of the ends of each of two of the tube members, and a pivot bolt traverses each aperture to pivotally attach each tube member to the other, the pivot bolt being selectively tightening to rigidly fix the two tube members together.

4. The boat tower of claim 1 wherein at least one of the tube attachments is an air-tight weld fixing two of the substantially hollow tube members together to allow fluid communication therein, such that the at least one gas vessel is formed by both such tube members.

5. The boat tower of claim 1 wherein at least two of the tube members are substantially hollow, and wherein an air conduit is disposed between and traversing each of the tube members to allow fluid communication therebetween.

6. The boat tower of claim 1 wherein the valve is a tire inflation valve.

7. The boat tower of claim 1 further including at least one tow rope attachment attached to at least one of the tube members.

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