United States Patent Application Publication	20250258424
Kind Code	A1
Publication Date	August 14, 2025
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Adjustable Underwater Camera System

Abstract

What is provided is an adjustable and specialized underwater observation system, crafted for the precise detection of fish, plant life and aquatic organisms. The system is designed specifically for mounting to a transom of an aquatic vehicle to ensure optimal submersion and stability. Complementing this system is a strategically positioned video display device that vividly presents the underwater imagery captured by the solid-state imager. This transom-mounted camera system provides an integrated and effective solution for immersive underwater exploration and observation.

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Family ID: **1000007746356**

Appl. No.: **18/438049**

Filed: **February 09, 2024**

Publication Classification

Int. Cl.: **G03B17/56** (20210101); **B63B17/00** (20060101); **G03B17/08** (20210101); **H04N7/18** (20060101); **H04N23/51** (20230101)

U.S. Cl.:

CPC **G03B17/561** (20130101); **B63B17/00** (20130101); **G03B17/08** (20130101); **H04N7/185** (20130101); **H04N23/51** (20230101); B63B2017/0054 (20130101)

Background/Summary

FIELD OF THE INVENTION

[0001] This application relates to underwater camera systems and more particularly to underwater camera systems connected to the transom of an aquatic vehicle, such as a canoe, boat, ship and/or yacht.

BACKGROUND OF THE INVENTION

[0002] For aquatic vehicle operators, viewing life underwater is a challenge without using some type of underwater camera system. Many underwater camera systems that are attached to aquatic vehicles suffer from vibration and/or camera movement which results in the loss of visual acuity of seeing underwater when the aquatic vehicle is moving. What is needed is an underwater camera system that helps to maintain visual acuity while the boat is moving at slow speeds.

BRIEF SUMMARY OF THE INVENTION

[0003] The present invention uses a novel and new bracket to attach a camera system to the transom of an aquatic vehicle such as a canoe, boat, ship and/or yacht. The camera system is adjustable on bracket by rotating the camera system and tightening the hex-end screws. The bracket provides flexibility in positioning the camera system on the back of an aquatic vehicle via the semi-circular slots or holes on the sides of the bracket.

[0004] The underwater camera system incorporates a waterproof body housing with a self-contained camera. This camera system ensures safe and dependable underwater video capture and adjustability. Users can easily mount the camera system on the transom of the aquatic vehicle, offering a dynamic solution for enhanced visibility in aquatic environments. The camera system can easily interface via a water-proof cable to one or more televisions or displays on a computer, a tablet and/or a phone to provide a seamless and protected viewing experience. Users can use the displays to see fish and aquatic plant life below the surface of the water.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIGS. **1**A and **1**B illustrate an underwater camera system mounted to the transom of an aquatic vehicle according to an embodiment of the present invention.

[0006] FIG. **2** illustrates an underwater camera system mounted to the transom of an aquatic vehicle according to an embodiment of the present invention.

[0007] FIG. **3** illustrates a perspective view of a bracket according an embodiment of the present invention.

[0008] FIG. **4** illustrates a front view of a bracket according to an embodiment of the present invention.

[0009] FIG. **5** illustrates a side view of a bracket according to an embodiment of the present invention.

[0010] FIG. **6** illustrates a bottom view of a bracket according to an embodiment of the present invention.

[0011] FIG. **7** illustrates a side view of the underwater camera system according to an embodiment of the present invention.

[0012] FIG. **8** illustrates a side view of the underwater camera system according to an embodiment of the present invention.

[0013] FIG. **9** illustrates a top view of the underwater camera system according to an embodiment of the present invention.

[0014] FIG. **10** illustrates a bottom view of the underwater camera system according to an embodiment of the present invention.

[0015] FIG. **11** illustrates a top perspective view of the underwater camera system according to an embodiment of the present invention.

[0016] FIG. **12** illustrates a bottom perspective view of the underwater camera system according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] FIG. **1**A shows one embodiment of an underwater camera system **100** which comprises a water-proof camera **105**, a three-sided or "U"-shaped bracket **110**, hex-end screws **115**, screws **120** for mounting the bracket **110** to the transom of a boat **125** and a cable **130**. The underwater camera system **100** is mounted to the transom is an area below the waterline of the aquatic vehicle. It is preferred the underwater camera system **100** is mounted somewhere in an area above the bottom of the aquatic vehicle and below the waterline of the aquatic vehicle. The underwater camera system live streams a video-feed of aquatic life below the aquatic vehicle to one or more displays on the aquatic vehicle.

[0018] The underwater camera **105** can be any commercially available camera that is water-proof and is capable of being submerged in water for extended periods of time. The underwater camera **105** may be contained in water-proof housing or the camera **105** may be water-proof itself. The underwater camera **105** and/or housing has to have at least two threaded holes on opposite sides of the housing that correspond to the semi-circular slots or holes on opposite sides of the bracket **110**, so that hex-end screws **115** can be inserted therein and securely hold the camera system **105** to the bracket **110**. The hex-end screws **115** could be hex screws with a special design that cannot be rotated without a tool that matches such special design. Alternatively, any screws could be used that would not loosen (or unscrew) through vibration.

[0019] The hex-end screws **115** can be tightened at different areas of the slots or holes **135**, **140** (see FIG. **3**) on opposite sides of the bracket **110**, so that the camera system **105** can be rotated to be perpendicular to the plane formed by the waterline, or at an angle as desired by the user. As shown in FIG. **1**A, the underwater camera **105** is mounted in the vertical direction which is perpendicular to a plane or axis formed by the waterline. There are two hex-end screws **115** on each side that pass through the semi-circular slots **135**, **140** (or holes) in the bracket **110** and are threaded or screwed into threaded holes in the underwater camera housing **105**.

[0020] In alternative embodiments, one or more intervening holders could fit around the camera system and/or housing **105**. An intervening holder would be capable of being tightened around the camera system **105** using any of the ways known in the art so that the camera system **105** and the intervening holder would be virtually inseparable. The intervening holder would have the necessary threaded holes so that the intervening holder (and thus camera system **105**) align with the semi-circular slots or holes on the bracket **110**.

[0021] The underwater camera **105** is powered and controlled via the cable **130** by a television, a computer, a tablet or other display. As shown in FIG. **1**B, the cable **130** is attached to the underwater camera **105** and runs along the transom, through the hull, along the sides of the aquatic vehicle to the steering and control area of the vehicle. The computer (or other device) can drive the different features of the camera **105** such as light, focus and sharpness for example.

[0022] The width of the camera system **105** should fit inside the bracket **110** without overly bending the sides of the bracket **110** in the inward or outward direction. As shown in FIG. **2**, the bracket **110** is attached, coupled or connected to a transom of an aquatic vehicle. The length of the screws **120** should be smaller than the thickness of the hull. For example, if the hull is ¾ inch, the screws **120** should be ½ inch. The screws **120** should be attached, coupled or attached to the transom using water-proof installation as known to those skilled in the art.

[0023] FIG. **3** illustrates a front perspective view of the bracket **110** according to one embodiment of the present invention. The bracket **110** comprises two sides **150** which are molded, attached, connected or coupled at the bottom end to a common bottom **155**. Each of the two sides has two slots **135**, **140** at the top end or the end opposite the bottom. The slots **135**, **140** are partially semi-circular.

[0024] The bottom piece **155** comprises four circular holes **160**, arranged in a 2×2 pattern or

configuration where a screw **120** can be inserted therein and attached, coupled or connected to the transom. These screws **120** will hold the underwater camera system **100** to the aquatic vehicle **125**. In alternative embodiments, there are alternative ways to attach the underwater camera system **100** to the acquatic vehicle. For example, there can be more holes or holes that have alternative shapes as known in the art, such as semi-circular holes for example.

[0025] FIG. **4** illustrates a front view of the bracket **110** according to one embodiment of the present invention. Bracket **110** comprises two sides **150** and a bottom **155**, all formed or molded into one steel piece. Alternatively, the bracket can be made of any other metal or heavy-duty plastic, and should be covered with a coating to prevent rusting or degradation in salt water. The thickness of the bracket **110** should be durable and lasting for use in water.

[0026] FIG. **5** illustrates a side view of the bracket **110** according to one embodiment of the present invention. As shown in FIG. **5**, there are two semi-circular slots **135**, **140**, where one slot **135** faces the other slot **140**, like parentheses "(" and ")" for example.

[0027] FIG. **6** illustrates a bottom view of the bracket **110** according to one embodiment of the present invention. As shown in FIG. **6**, there are four circular holes **160** arranged in a 2×2 pattern.

[0028] FIGS. **7-12** illustrate the adjustable underwater camera system **100** in different views.

[0029] FIG. **7** illustrates a side view of the adjustable underwater camera system **100** according to one embodiment of the present invention. FIG. **8** illustrates a side view of the adjustable underwater camera system **100** according to one embodiment of the present invention. FIG. **9** illustrates a bottom view of the adjustable underwater camera system **100** according to one embodiment of the present invention, where the lens **165** of the camera system is shown. FIG. **10** illustrates a top view of the adjustable underwater camera system **100** according to one embodiment of the present invention, where the cable **130** of the camera **105** is attached thereto. FIG. **11** illustrates a top perspective view of the adjustable underwater camera system **100** according to one embodiment of the present invention. FIG. **12** illustrates a bottom view of the adjustable underwater camera system **100** according to one embodiment of the present invention.

[0030] While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to those skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope thereof. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Claims

1. An underwater camera system attached to a transom of an aquatic vehicle, comprising: a water-proof camera having at least two threaded holes on opposite sides of the camera; a "U"-shaped bracket having two semi-circular slots at each of the top ends of the bracket; and four hex-end screws that attach the "U"-shaped bracket to the water-proof camera, where one hex-end screw fits through one of the semi-circular slots in the "U"-shaped bracket and is threaded into one of the threaded holes in the camera.

2. The underwater camera system as in claim 1, further comprising a plurality of screws that fit through a plurality of holes in the bottom of the bracket and into the transom.

3. The underwater camera system as in claim 2, wherein the holes are circular.

4. The underwater camera system as in claim 2, wherein the holes are arranged in a 2×2 configuration.

5. The underwater camera system as in claim 2, wherein the holes are arranged in a configuration other than the 2×2 pattern.

6. The underwater camera system as in claim 2, wherein the underwater camera system is mounted below a waterline of the aquatic vehicle and above a bottom of the aquatic vehicle.

7. The underwater camera system as in claim 1, further comprising a cable, where one end of the

cable is connected to the water-proof camera.

8. The underwater camera system as in claim 5, wherein the other end of the cable is connected to one or more of a television, a computer display, a tablet display and a display.

9. The underwater camera system as in claim 7, wherein the cable is water-proof.

10. The underwater camera system as in claim 1, wherein the water-proof camera is capable of live-streaming a video-feed of aquatic life below the aquatic vehicle.