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(54) **MAN OVERBOARD (MOB)—COMPACT POWERED RESCUE APPARATUS (CPRA)**

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B63H 11/12	(2006.01)
B63B 7/08	(2020.01)
B63B 34/52	(2020.01)
B63B 1/12	(2006.01)
B63B 34/10	(2020.01)
B63B 34/56	(2020.01)

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CPC ***B63C 9/04*** (2013.01); ***B63B 1/125*** (2013.01); ***B63B 7/082*** (2013.01); ***B63B 34/10*** (2020.02); ***B63B 34/52*** (2020.02); ***B63B 34/56*** (2020.02); ***B63H 11/12*** (2013.01); *B63C 2009/042* (2013.01)

(58) **Field of Classification Search**

CPC B63C 9/04; B63B 34/56; B63B 34/52; B63B 34/10

See application file for complete search history.

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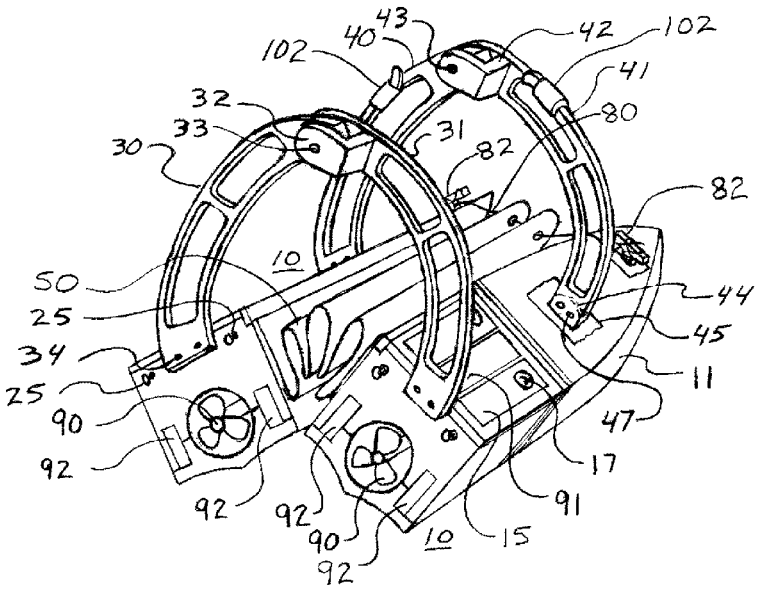
(57) **ABSTRACT**

Water rescue of an individual whether they be a man overboard (MOB) from a boat or someone close to shore requiring a water rescue by shore lifeguards, can easily become a dangerous and life-threatening situation within a few seconds.

The current invention offers a Compact Powered Rescue Apparatus (CPRA), a lightweight and compact powered watercraft that can be deployed from a moving boat in just seconds thanks to an innovative CO_2 inflation system. CPRA can be stowed on-board a vessel and automatically inflated in just seconds much like the compulsory life-raft or pre-inflated and ready to deploy immediately from shoreline lifeguard stations.

CPRA is a powered watercraft based on U.S. Pat. No. 5,643,029 Motorized Surf Boots (Powered Waterskis), a recreational watercraft. However, in this case the craft is made inflatable, configured with a portable stretcher for water search-and-rescue operations, and driven by battery powered electric marine thrusters.

8 Claims, 3 Drawing Sheets



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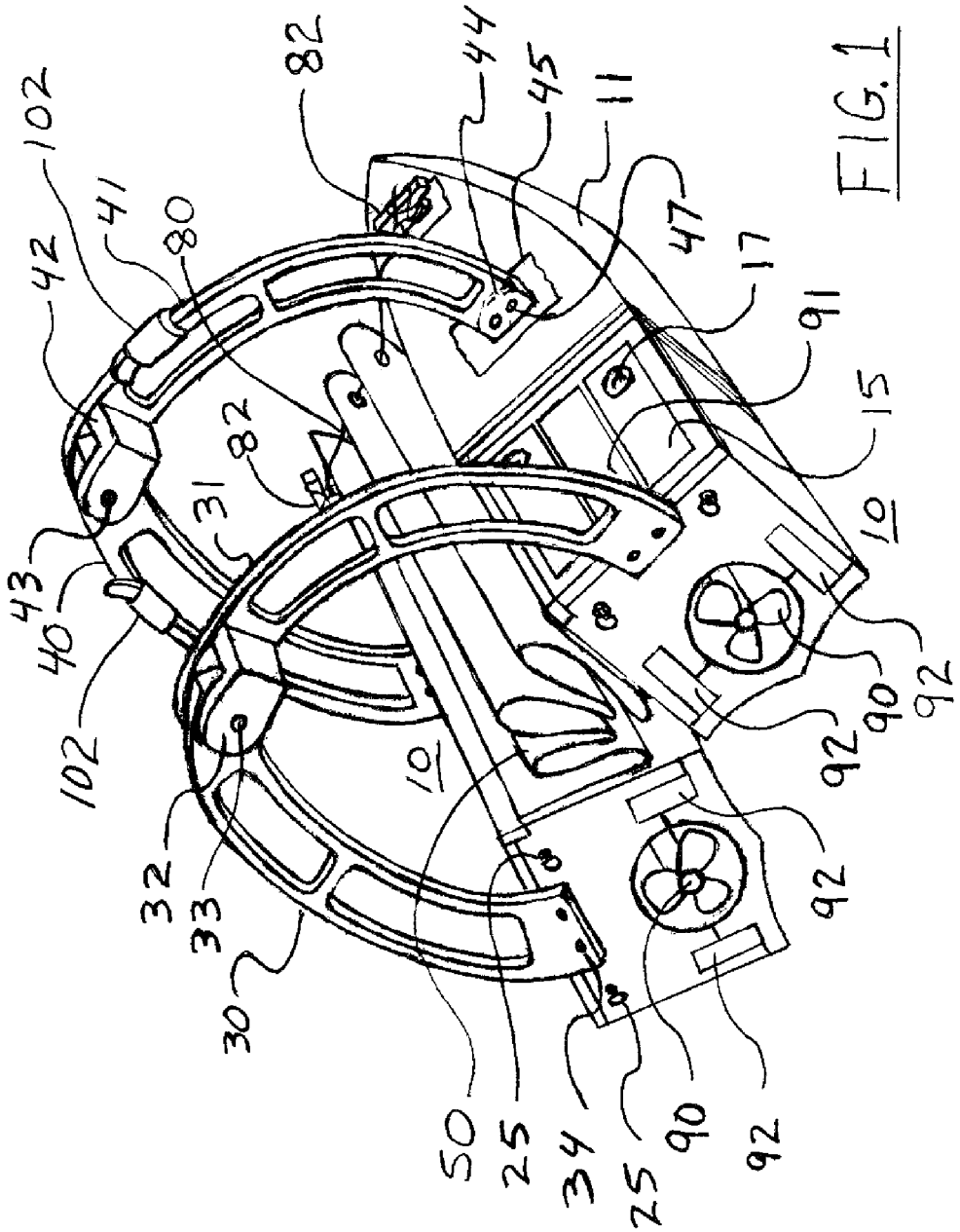
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FIG. 1

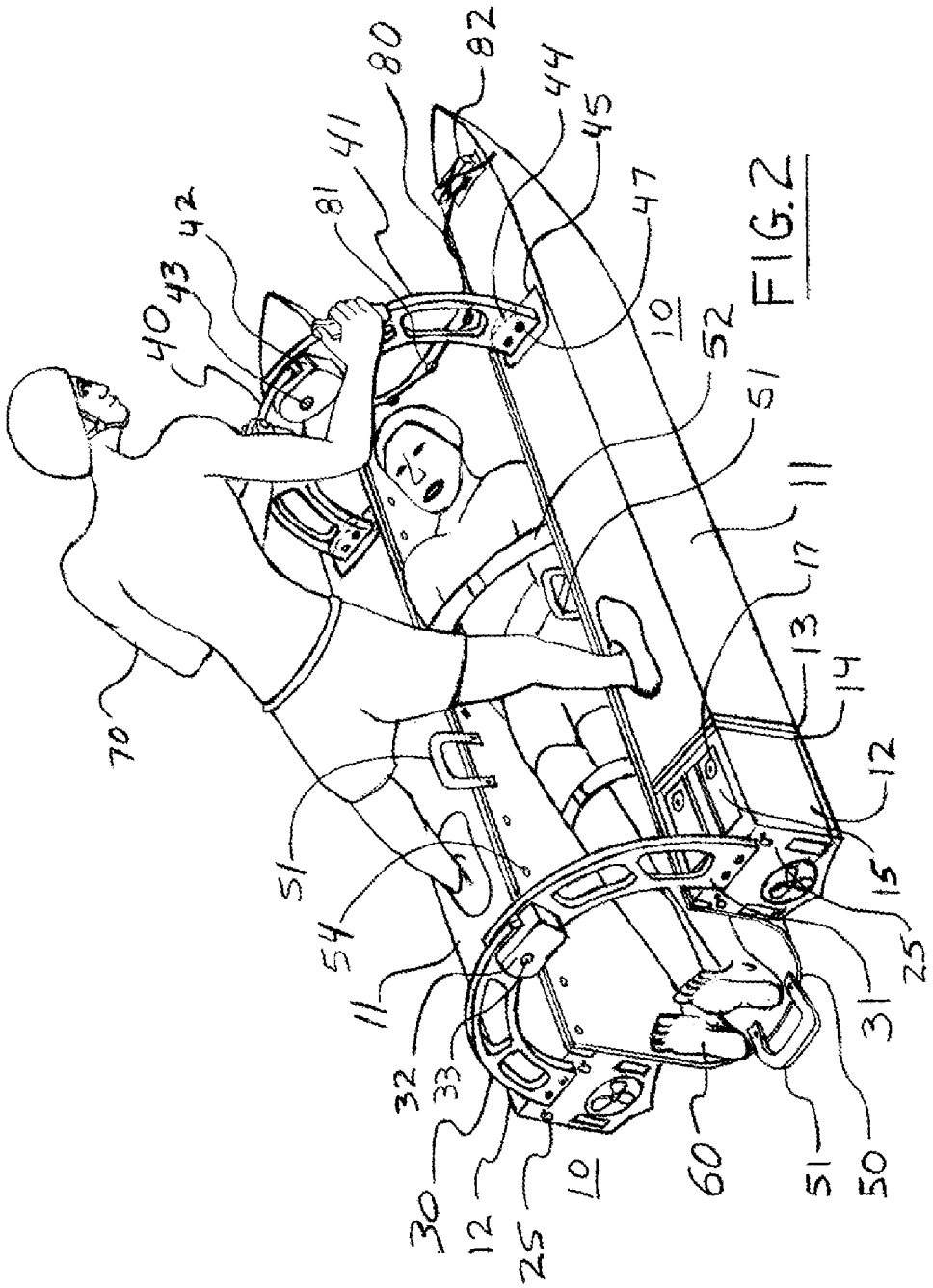
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FIG.2

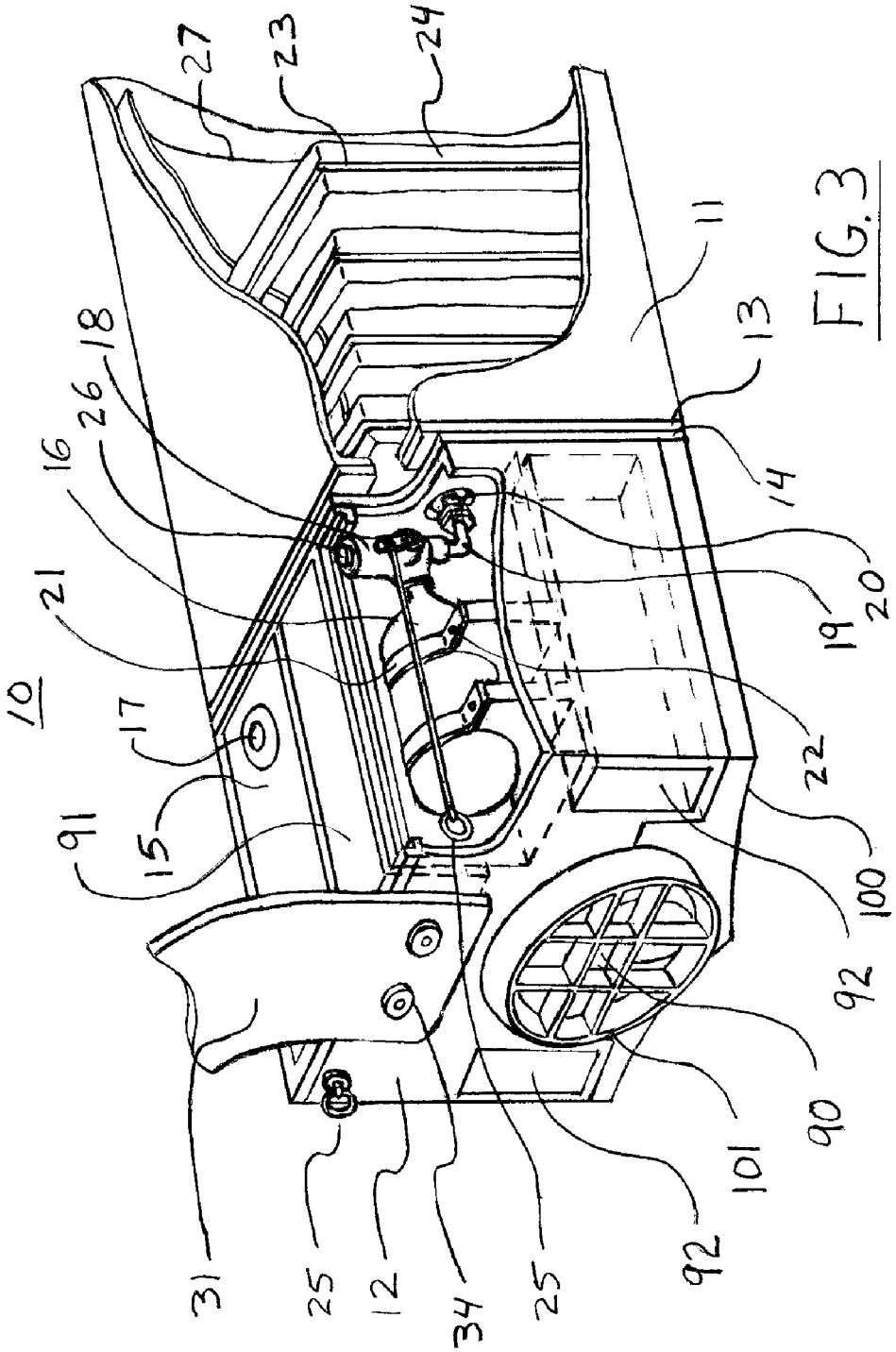
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FIG. 3

MAN OVERBOARD (MOB)—COMPACT POWERED RESCUE APPARATUS (CPRA)

BACKGROUND OF THE INVENTION

One of the most dangerous and life-threatening situations for boaters is the Man Overboard (MOB). Whether someone falls from a motorboat or a sailboat, or someone close to shore requires a water rescue by shore lifeguards, it can within seconds become a desperate situation for persons young or old, male or female. If the MOB or helpless swimmer is injured or even worse, unconscious, it is always an extremely difficult operation to retrieve them from the water without adding additional injury.

To aid in retrieving an MOB, the mandatory equipment that is carried on-board sail and motorboats consists primarily of a life ring or small floating buoy, either loose, or attached to a length of line or rope that is tied to the vessel, that can be tossed overboard to hopefully reach and provide flotation and retrieval of the MOB. However, these devices may only work for a conscious and uninjured MOB.

To provide retrieval for an unconscious or injured MOB, the quickest option, since time is of the essence, may be for other persons on-board to voluntarily jump overboard, swim to the MOB, and try to bring the MOB back to the boat. If the water is deathly cold, this may be impossible without the rescuer having first donned a proper diving suit, which will then consume even more precious time. Even with additional persons in the water trying to help, it still remains a very difficult operation to manipulate an unconscious or injured MOB out of the water and onto a boat, especially when there are waves or choppiness in the water.

In shoreline water rescue attempts, jet skis are typically positioned at lifeguard stations. However, deploying these jet skis may take over 20 seconds or longer to deploy due to the approximate 600 lbs. weight of sit-down type personal watercraft. Also, just like a boat, if someone is injured or unconscious, it still may be very difficult and perhaps impossible to gather a helpless drowning victim up and onto a personal watercraft. Even worse, either the rescuer or the person being rescued may even overturn the jet ski while trying, thus injuring both persons. Lifeguard's using jet skis for water rescue sometimes tow a floating mattress to use as a platform to perform a water rescue. Although here again, if the drowning victim is injured, it may be quite difficult to lift them up and onto the floating mattress.

BRIEF SUMMARY OF THE INVENTION

It is an object of the current invention to provide a Compact Powered Rescue Apparatus (CPRA), that can be stowed on-board a vessel, much like the compulsory Life-Raft. The CPRA is a powered watercraft based on the U.S. Pat. No. 5,643,029 Motorized Surf Boots. However, as a new utility, the original recreational watercraft is transformed into a water rescue and lifesaving watercraft instead.

Some of the valuable features of the new utility include a portable stretcher, where the two poles or rails of a typical stretcher are suspended between the boards or hulls described in motorized surf boots patent, with a long piece of canvas or other suitable waterproof mesh material slung between them and partially submerged in the water. With the material of the stretcher partially submerged, this id the rescuer in not having to lift entirely out of the water or move around too much an injured casualty. In a water rescue operation, the rescuer will slowly guide the powered CPRA craft so that it straddles over the casualty, so that the casualty would be captured between the two buoyant skis, positioning the casualty directly underneath the rescuer, between the rescuer's legs. Then the rescuer will then immobilize the casualty by pulling up draw strings along the stretcher material that will elevate the head or other parts of the body as required. Body belts and other straps are included to fully immobilize the rescued individual in order to proceed with transporting them to safety. The arrangement of the rescuer and the immobilized casualty on the CPRA is such that the rescuer while in the correct riding position, will be positioned directly above the casualty, so that CPR or other medical treatments can be administered immediately, and in an effective manner. While the casualty is immobilized and perhaps being treated, the rescuer may then continue to control the CPRA as a powered transport craft and make way to safety, to the end that precious seconds are saved, potentially saving the victim's life.

Another valuable feature of the present CPRA invention is that it folds up into a compact configuration, is made from strong and lightweight materials, and with an innovative CO_2 inflation system can be quickly inflated and deployed within seconds from a moving boat or from shoreline lifeguard stations. From a stowed position at the transom of a boat, when needed, the CPRA can be dropped into the water as quickly as a life ring. Thanks to an innovative CO_2 inflation system CPRA can be deployed, automatically inflated, and ready to ride in just a few seconds. Dropping the CPRA overboard will automatically pull on a lanyard which actuates CO_2 inflation similar in operation to a typical inflatable life raft. Alternatively, the inflation system can be activated manually by pushing on dedicated buttons on each ski that directly actuates the CO_2 cylinder inflation valves. Once the pair of skis are inflated and buoyant within a few seconds, the rescuer/rider can then mount the craft, remove the tether line or rope from the boat's cleat and begin to make way for the MOB.

Thanks to its lightweight and portability beach lifeguards responding to a need to perform a water rescue will be able to deploy a CPRA in less time than it takes to deploy a typical jet ski which is commonly used today. A typical jet ski may take about 18 seconds or more to deploy, whereas the time to deploy the present CPRA invention could be less than 8 seconds. The time savings would be primarily due to the CPRA being a more lightweight craft, therefore not requiring the same amount of physical effort as compared to a jet ski in order to launch the watercraft from a sandy beach or other standby location.

Another novel feature of the present CPRA invention includes propelling the apparatus by a pair of battery powered electric marine thrusters, one fitted within each buoyant ski. Further assembled to each ski are D416,535 Propeller Shroud Defining Waterflow Ducts, and D424,503 Propeller Guard having Maneuvering Vanes, both previously issued USPTO design patents, which, when assembled together within the buoyant skis form a waterjet duct that totally encloses the propeller, thus providing a barrier of protection to prevent someone from accidently touching the propeller during operation.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

The features of the present CPRA invention will be more clearly understood from consideration of the following description taken in connection with the accompanying drawings, in which:

FIG. **1** is a rear isometric view of the present CPRA invention shown folded-up and un-inflated as would be in the stowed configuration.

FIG. **2** is a rear isometric view of the present CPRA invention shown in the deployed and inflated configuration with both the rescuer/rider on-board and a casualty immobilized in the stretcher below.

FIG. **3** is a rear isometric view of one of the buoyant skis of the present CPRA invention, showing a cut-away view of the inflation system and hidden lines representing the compartments for the propulsion system components as described further herein.

DETAILED DESCRIPTION OF THE INVENTION

In the embodiment of a Compact Powered Rescue Apparatus (CPRA) shown in FIGS. **1**, **2**, and **3**, and in particular to FIG. **3**, each of the boards originally discussed in the prior art of U.S. Pat. No. 5,643,029 continue to be shown as reference numeral **10**, however are now each arranged in sub-parts including first, a flexible outer skin material **11** which is made from any suitable material such as canvas, rubber, plastic or other compound. The outer skin **11** material may or may not be airtight. If not airtight then alternatively an Inner Bladder **27** can be inserted inside the Outer Skin **11** to perform as the inflatable medium. The rear facing end of the Outer Skin **11** is initially open, yet bonded to a rigid Frame **13**, which acts as a rim for the open side of Outer Skin **11**. The function of Frame **13** is to keep the ski cross-sectional shape defined in this area for the Outer Skin **11** while also providing an aperture to access the inside of it, as would be required for its construction. For inside the Outer Skin **11** are spaced numerous Rigid Battens **23** which are spaced parallel to each other and held in place by strips of Flexible Material **24**, which are bonded to the inside walls of the Outer Skin **11**. The Battens **23** act as a skeleton for the Outer Skin **11**, which when inflated will take on a predetermined hull-like or fattened ski shape. When the Outer Skin **11** is not inflated, it can be compressed accordion style, allowing for a small compact shape for storage in confined areas as shown in FIG. **1**. Continuing with the details shown in FIG. **3**, Frame **13** is mated to a rigid and solid Plate **14** which acts to close off the Outer Skin **11** completely. Plate **14** is attached to Frame **13** by any appropriate method which may include gluing, screwing, or latching. Attached rearward of Plate **14** is a rigid Housing **12** which provides a rearward extension of the hull-like shape of the buoyant ski **10**, and also provides the internal spatial volumes and compartments for the packaging arrangement of the inflation components and the propulsion components. The attachment of Plate **14** to Housing **12** can also be by gluing, screwing or latching as desired.

Also seen in FIG. **3**, in order to inflate the Outer Skin **11** or alternatively an inner Bladder **27**, commonly used CO_2 Cartridges **16** can be packaged symmetrically within housing **12** seen in FIG. **3** with one shown in the cutaway portion of the view and the other in a symmetric position hidden under the watertight Top Cover **15**. For each CO_2 cartridge **16** a commonly used CO_2 Release Valve **18** is fitted that includes a lanyard pull cable with pull ring **25** and also a manual push button **26**. Similar to that used to fill bicycle tires, the CO_2 Release Valve **18** also includes a free spinning valve stem connection, which is then screwed onto Tubing Fitting **19** and further connected to Valve Nipple **20** which is then screwed into Plate **14**, thus providing the filling port into the closed Outer Skin **11**. Alternatively, the Valve Nipple **20** can be part of Inner Bladder **27** and be simply inserted through Plate **14** and connected to Tubing Fitting **19**. The two methods previously considered for inflation of the Ski is similar in nature to deciding whether to choose tubeless tires or tires that have an inner tube, both having pros and cons with regard fit, form and function.

The CO2 Cartridge(s) **16** are held in place by Straps **21**, of which are attached by any appropriate Hardware **22**. A watertight Top Cover **15** is then assembled which includes a Flexible Element **17** that allows the push button **26** of the CO2 Cartridge Valve **18** to be actuated externally. The lanyard pull cable with pull ring **25** extends through the rearward side of the Housing **12**, so that the user can attach to the ring any length of additional tether line or rope required for aligning the proper deployment position for the CPRA from a stowed position on the stern or transom of a boat. This line or rope would be cleated to the aft of the boat, in order that once the CPRA is deployed and inflated, and the rider jumps onboard, the CPRA can be manually uncleated from the boat and the rider could begin to accelerate away from the boat towards the MOB.

The propulsion components also packaged within Housing **12** includes a commonly used Electric Marine Thruster **90** and its typically related components including an Electronic PC Board and electronics components, which are located in Compartment **91**, and Batteries which are located in Compartments **92**. In order to enclose the marine thruster **90** so that no person inadvertently touches the propeller, USPTO design patent D416,535 Propeller Shroud Defining Waterflow Ducts shown as numeral **100**, and D424,503 Propeller Guard having Maneuvering Vanes shown as numeral **101** are utilized.

As shown in FIG. **1**, the controls **102** to regulate the pair of marine thrusters will be similar to invention U.S. Pat. No. 5,643,029 Motorized Surf Boots, in the form of hand or thumb operated controls, one for each board **10**. Alternatively, in the present invention the hand operated thrust controls **102** may also be of the wireless type which has become commonplace, in that physical cables are not required. Thus, the thruster controls can be attached to connecting arms **40** and **41** which are further discussed below.

Thus, a pair of boards or buoyant skis each consisting of the novel component arrangement detailed above are then connected together with two sets of rigid Connecting Arms as shown in FIG. **1-2**; a forward set of Connecting Arms **40** and **41** and a rearward set of Connecting Arms **30** and **31**. Arms **40** and **41** are held together by a Clevis or Link **42** and allowed to rotate on a Pin or Bolt **43**. The lower end of each of the Arms **40** and **41** are connected to the top surface of each ski by Pins or Bolts **47** that pass through a Mount **44** fastened to the top of each ski **10** by any appropriate manner such as glue or screws or by use of another intermediate part such as a Base Patch **45**, that is then sewed and bonded to Outer Skin **11**. Arms **40** and **41** will also include hand grab features for the rider to hold onto as well as the Thruster Control Levers **102**. In a similar fashion the rear set of connecting links includes Arms **30** and **31** held together by a Clevis or Link **32** and allowed to rotate on a Pin or Bolt **33**. Each of the Arms **30** and **31** are attached to their respective Housing **12** by any appropriate attachment hardware **32**. Both the forward set of Connecting Arms **40** and **41** and rear set **30** and **31** are such that when they fold, they allow the pair of Boards **10** to fold together into a compact arrangement for storage. When the Water Rescue is required, both sets of Connecting Arms are spread open to a prede-

termined shape and locked into position either manually, or automatically by use of any commonly used cam, spring, or latch mechanism.

Further, as shown in FIG. **1-2**, a Mesh Sling **50**, acting as a portable stretcher, is attached to the inside surface each of the Buoyant Skis **10**, by the use of any number of Snaps or Eyelets **54** that can be easily connected or disconnected. Thus, when the CPRA is deployed for use, the Sling **50** is suspended just under the surface of the water. Once a Rescued Person **60** is positioned within the Sling **50**, the forward portion of the Sling **50** can be raised out of the water by pulling tight the Draw Lines **80** that attach to an eyelet **81** near the leading edge of the Sling **50** and cleating the Draw Lines **80** to a Cleat **82**, which is bonded to the forward portion of Buoyant Ski **10**. Thus, by raising the forward portion of the Mesh Sling **50**, the Rescued Person's **60** head and upper body can be raised above the water line. The Sling **50** includes any number of Grab Handles **51** for lifting, and any number of Straps or Belts **52** for securing the Rescued Person **60** in place.

Once the Rescuer **70** has retrieved and secured the Rescued Person **60**, into the Sling **50**, with the Straps **52**, he or she can proceed to navigate to a safe harbor as depicted in FIG. **2**. Alternatively, the Rescuer **70** can power the CPRA back to a boat and then disconnect the Sling **50** with the strapped-in Casualty **60** from the CPRA, to be lifted onboard the vessel or air lifted up and into a helicopter.

While there have been described what are considered to be a preferred embodiment of the invention described herein, it will be readily appreciated by those skilled in the art that modifications can be made without deviating from the scope of the teachings herein. For at least such reason therefore, resort should be had to the claims appended hereto for a true understanding of the scope of the invention.

I claim:

1. A compact powered rescue apparatus for transporting a driver of the compact powered rescue apparatus and a casualty comprising:

a flexible material attached between a first buoyant motorized ski and a second buoyant motorized ski, the flexible material positioned such that the casualty is able to be immobilized while being carried between the first buoyant motorized ski and the second buoyant motorized ski; and

wherein the first buoyant motorized ski is connected to the second buoyant motorized ski by a first connecting arm and a second connecting arm.

2. The apparatus of claim **1**, further comprising a gas inflation system.

3. The apparatus of claim **2**, wherein the gas inflation system is powered by a cartridge.

4. Thai apparatus of claim **3**, wherein the gas is CO2.

5. The apparatus of claim **1**, further comprising an inner bladder positioned in the first buoyant motorized ski and the second motorized ski.

6. The apparatus of claim **1**, wherein the first motorized ski and the second motorized ski include at least one: electric marine thruster, electronic control board, and battery operably connected to provide thrust to the first motorized ski and the second motorized ski.

7. The apparatus of claim **1**, wherein the first connecting arm and the second connecting arm fold.

8. The apparatus of claim **4**, wherein the gas is automatically released by a lanyard pull.

* * * * *