

Nov. 27, 1956

L. H. J. BRACKX
MEANS FOR MOORING AND REFUELING
BOATS, SEAPLANES, AND THE LIKE

2,771,617

Filed Nov. 28, 1952

3 Sheets-Sheet 1

Fig. 1.

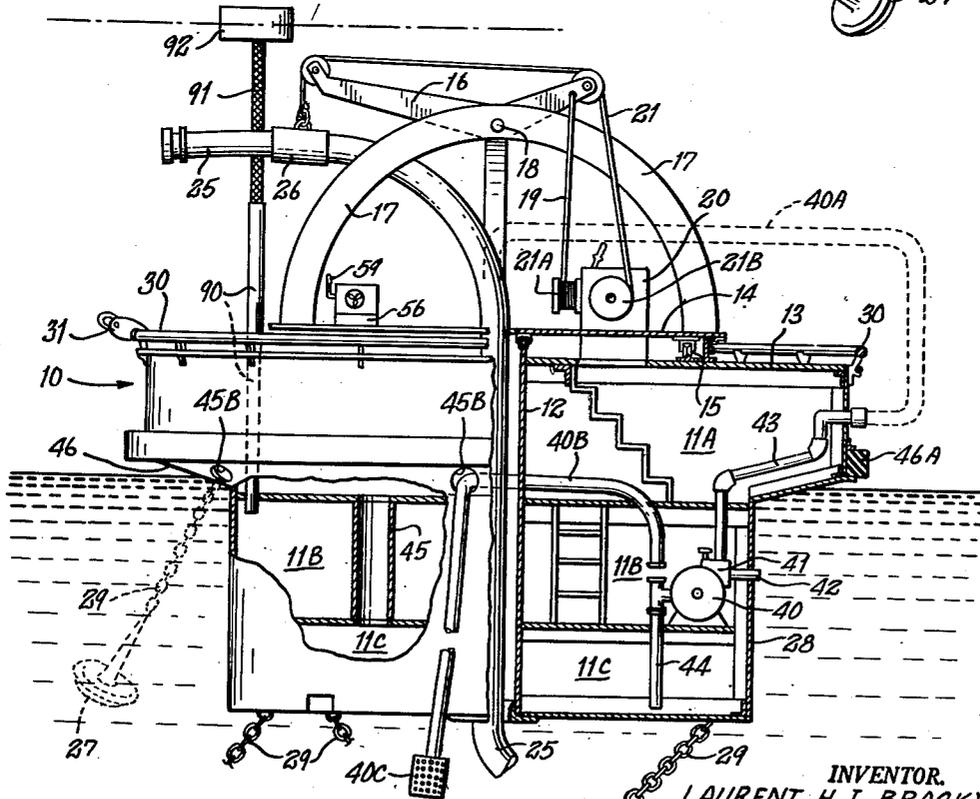
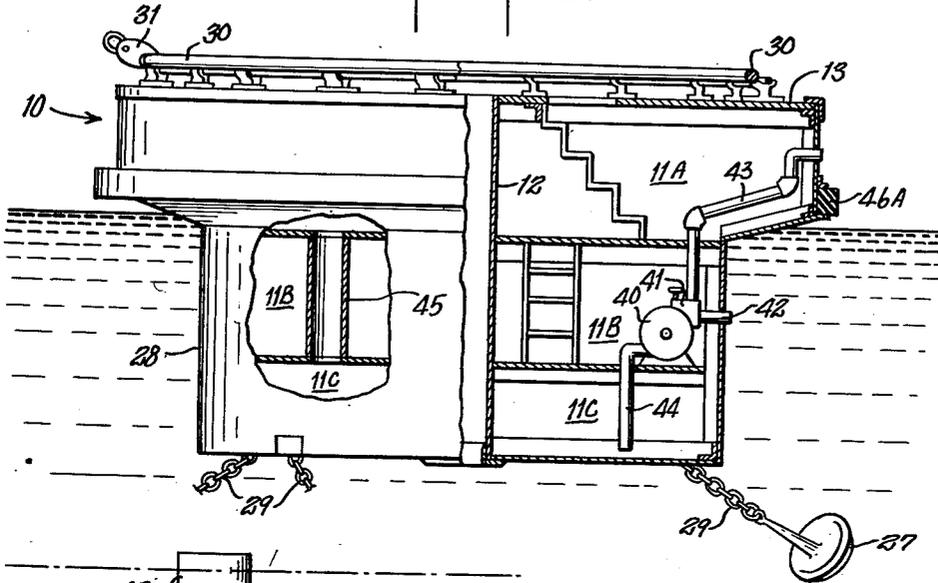


Fig. 2.

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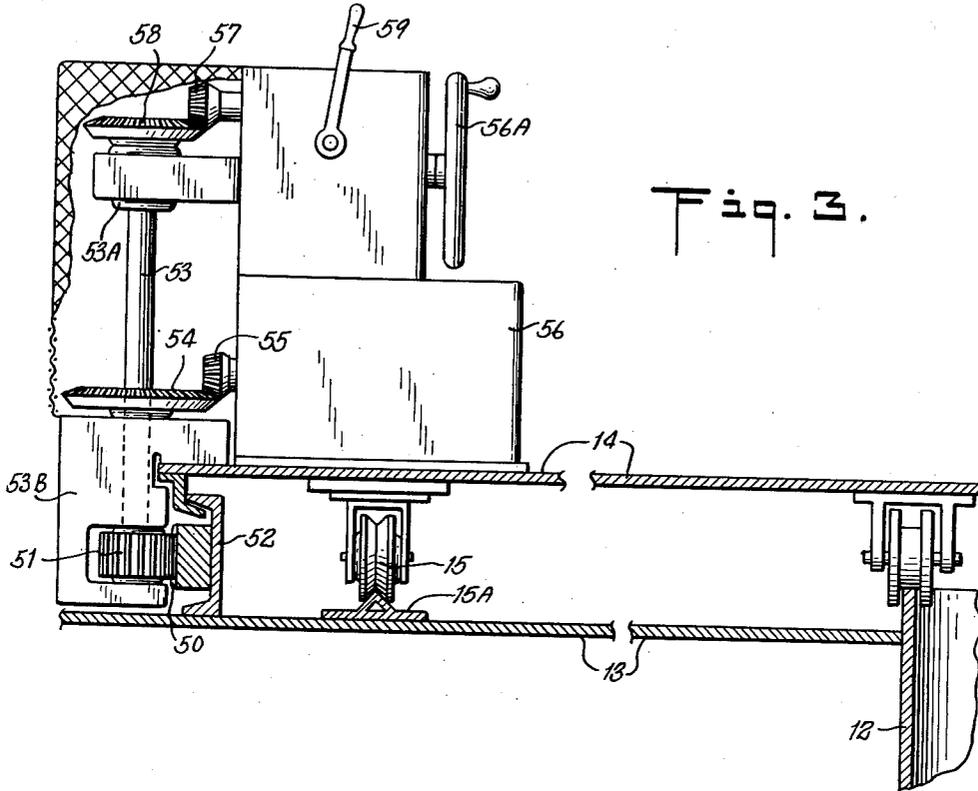


Fig. 3.

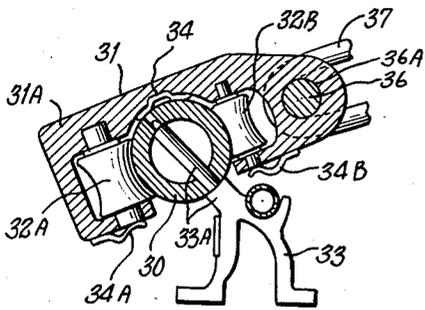


Fig. 4

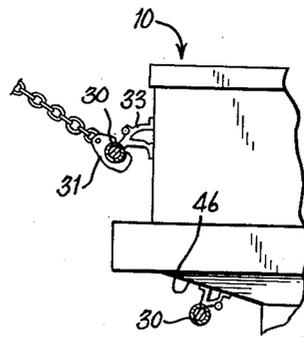


Fig. 5.

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Fig. 6.

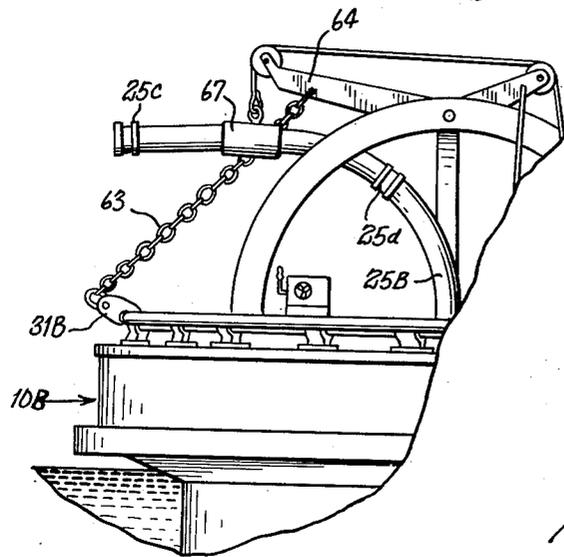
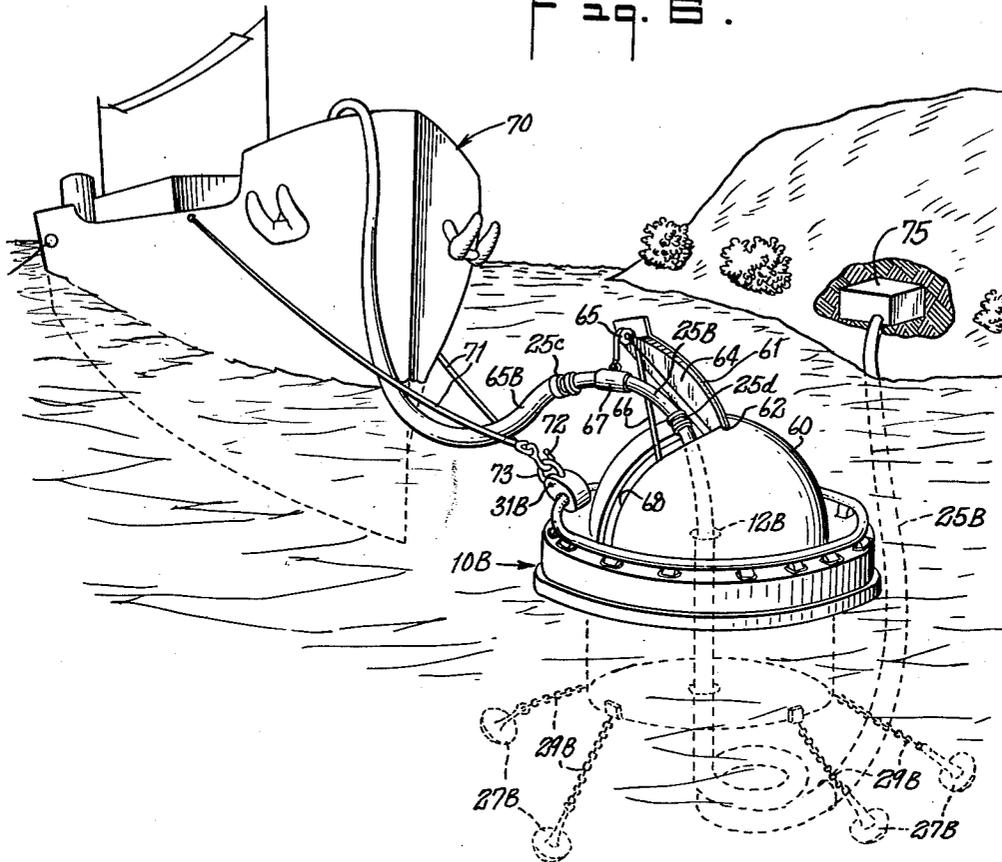


Fig. 7.

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2,771,617

MEANS FOR MOORING AND REFUELING BOATS, SEAPLANES, AND THE LIKE

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Application November 28, 1952, Serial No. 322,907

17 Claims. (Cl. 9-8)

This invention relates to a floating buoy and more particularly to a mooring buoy and refueling station for boats, seaplanes and the like.

A mooring buoy in general is an old device and generally constitutes a floating vessel that is securely anchored. The floating vessel is provided with rings or similar means for tying or mooring to. In the present invention there is provided a similar buoy or floating vessel that is to be securely anchored but the mooring means is entirely different from any of the prior art in that it is constructed as a circular track or ring affixed to the top of the buoy. A specially designed block is provided for mooring to this circular track, the block being free to roll around the track as the vessel being moored shifts with the wind. A further use of the same mooring buoy is to provide a central aperture or bore completely through the buoy to permit passing an under water hose line up through the buoy and thus provide an off shore refueling station.

The prior art illustrates various attempts along this line such as an English device that is a floating buoy in which the fuel is stored. The English buoy is anchored at the lower center of the buoy so that with the old type mooring to a davit the shifting of the moored vessel will actually rotate the buoy due to its central anchoring permitting it to thus rotate. Another prior art device contemplates the use of a small solid floating block with a central aperture through which a fuel hose may be passed. This serves as the attaching means to support and retain the fuel hose above the level of the water. A still further type of device developed in the prior art contemplates a conically shaped floating buoy that is provided with a single hawse pipe through the buoy but so formed that the anchoring means will be to one side of the buoy and not through the center of the buoy. In this device the mooring means is the usual type of stationary davit and in this particular buoy the refueling tank is stored in the buoy. A still further device illustrated in a Swedish patent contemplates a circular buoy that is anchored in a stationary position and in which a power line or telephone or telegraph line may be passed through the center of the buoy and by means of a rotatable collar on the upper surface of the buoy this power line may be passed to a vessel that is moored to this buoy by means of a pivotally supported mooring arm thus permitting the vessel to rotate about the buoy and be supplied with power by the cable. This particular mooring device is extremely weak due to the fact that the pull of the mooring is outward and upward and thus the entire stress will be produced on the pivotally supported center and not on the circular track as intended. A still further buoy developed in the prior art refers to a floating telegraph station wherein the buoy is anchored by a central anchorage permitting the buoy to rotate while a telegraph line is passed directly through the center of the buoy. There have been other attempts to utilize some of the principles involved in applicant's invention, namely, a French patent which is

not a floating buoy but rather is incorporated into a mast of a ship. This particular device is a refueling line for an aircraft and is so constructed that there is a turntable mounted on top of the mast and the hose line is connected to a winch so that the line may be payed out to a flying craft while it circles about the mast of the ship and thus used to refuel the flying machine. This invention contemplates an entirely different structure from applicant's device. A still further device developed in the prior art contemplates the manner for supplying electricity through an electrical connector that is swivelly mounted. This is incorporated in a rotatable gun mount and simply illustrates the manner of permitting complete 360° rotation while supplying current to the device and the principal involved could readily be applied to a swivel hose connection for refueling but this device does not provide any structure similar to applicant's device.

It is an object of this invention to provide a floating buoy that may be anchored for mooring a ship or floating vessel in which the buoy is generally wheel shaped on its upper extremity and provided with mooring means that will roll about the periphery of the wheel structure.

Another object of this invention is to provide a floating buoy that may be anchored in which the upper extremity is wheel shaped and in which the mooring block is attached to the periphery of the wheel to rotate about same and in which the buoy is provided with a central aperture passing through the buoy to permit passing an off shore hose line from under water through the central aperture to the deck of the buoy where it is available for connection to a moored vessel.

A still further object of this invention is to provide a hollow floatable buoy that may be anchored in a set position and in which the buoy is provided with a central aperture through which an under water hose may be passed to the deck of the buoy for connection to a moored vessel.

A still further object of this invention is to provide a hollow floatable buoy that may be anchored in a set position and in which the buoy is provided with a central aperture through which an under water hose may be passed from a supply source under water to the deck of the buoy for connection to a moored vessel and in which means are provided within the buoy to take on a water ballast for submerging the buoy or to pump out the water ballast to refloat the buoy.

A still further object of this invention is to provide a floating buoy that may be anchored in which the upper deck is wheel shaped and rotatable with relation to the body of the buoy and in which a circular track is provided on the upper deck and a mooring block is attached to the circular track for rotation about said track and in which means are provided within said buoy to permit rotating said deck to any desired degree of rotation with relation to the body of the buoy.

A still further object of this invention is to provide a floating buoy that may be anchored in which the upper deck is wheel shaped and rotatable with relation to the body of the buoy and in which a circular track is provided on the upper deck and a mooring block is attached to the circular track for rotation about said track and in which means are provided within said buoy to permit rotating said deck to any desired degree of rotation with relation to the body of the buoy and in which a central aperture or bore passes through the upper deck and body of the buoy to permit passing an under water hose line to the deck of the buoy for connection to a moored vessel.

A still further object of this invention is to provide a floating buoy that may be anchored in which the upper deck is wheel shaped and rotatable with relation to the body of the buoy and in which a circular track is pro-

vided on the upper deck and a mooring block is attached to the circular track for rotation about said track and in which means are provided within said buoy to permit rotating said deck to any desired degree of rotation with relation to the body of the buoy and in which a central aperture or bore passes through the upper deck and body of the buoy to permit passing an under water hose line to the deck of the buoy for connection to a moored vessel and in which means are provided to pull said hose through the central bore and lift said hose to a predetermined elevated position.

A still further object of this invention is to provide a floating buoy that may be anchored in which the upper deck is wheel shaped and rotatable with relation to the body of the buoy and in which a circular track is provided on the upper deck and a mooring block is attached to the circular track for rotation about said track and in which means are provided within said buoy to permit rotating said deck to any desired degree of rotation with relation to the body of the buoy and in which a central aperture or bore passes through the upper deck and body of the buoy to permit passing an under water hose line to the deck of the buoy for connection to a moored vessel and in which means are provided to pull said hose through the central bore and lift said hose to a predetermined elevated position and in which a connecting link is provided to connect the mooring block on said circular track with the supporting block of the elevating means retaining said hose line to rotate the hose connection in the same relation as the mooring line to the moored vessel.

A still further object of this invention is to provide a floating buoy that may be anchored in which the upper deck is wheel shaped and rotatable with relation to the body of the buoy and in which a circular track is provided on the upper deck and a mooring block is attached to the circular track for rotation about said track and in which means are provided within said buoy to permit rotating said deck to any desired degree of rotation with relation to the body of the buoy and in which said deck is provided with a water tight dome cover.

A still further object of this invention is to provide a floating buoy that may be anchored in which the upper deck is wheel shaped and rotatable with relation to the body of the buoy and in which a circular track is provided on the upper deck and a mooring block is attached to the circular track for rotation about said track and in which means are provided with said buoy to permit rotating said deck to any desired degree of rotation with relation to the body of the buoy and in which said deck is provided with a bullet proof dome cover.

Other objects of this invention shall be apparent by reference to the accompanying detailed description and the drawings in which

Fig. 1 is a side elevational view partly in section of one embodiment of the floating buoy,

Fig. 2 is a side elevational view partly in section of another embodiment of the floating buoy,

Fig. 3 is a side elevation partly in cross section of a motor and associated gear train for rotating the deck of the buoy shown in Fig. 2,

Fig. 4 is a cross section of the rail and mooring block utilized in both Figs. 1 and 2,

Fig. 5 is a partial cross sectional view illustrating another embodiment of the mooring means illustrated in Fig. 1,

Fig. 6 is a perspective view of the anchored buoy and a vessel moored thereto and connected by means of a hose line to said buoy, and

Fig. 7 is a fragmentary view illustrating the connection between the rotatable mooring block and the fuel supporting block.

Referring to Fig. 1 there is illustrated a floatable buoy 10 which may be of any particular shape but in this embodiment is illustrated as being circular in shape.

The buoy 10 may be constructed of any buoyant material or as illustrated in this embodiment be constructed of a water tight hollow vessel with a hull 28. The buoy 10 in Fig. 1 is provided with a water tight hollow vertical shaft 12 centrally positioned and passing completely through the buoy 10. The buoy 10 is provided with a deck 13. The buoy 10 is also provided with a plurality of anchors 27 connected by means of chains 29 to the base of the hull 28 at spaced points around the hull. The deck 13 is also provided with a circular rail 30 positioned on the deck to encircle the deck adjacent to the outer edge. A block 31 is mounted to grip the rail 30 on opposite sides and be rotatable about the circular rail. Block 31 comprises a generally U shaped body portion 31A (Fig. 4) that is provided with a pair of concave rollers 32A and 32B each mounted in the opposite legs of the U shaped block. The rollers 32A and B are spaced apart at the same distance as the diameter of the rail 30 and with the block 31 mounted on a rail 30 the rollers 32A and B will provide a tight fitting gripping relationship although allowing an easy rolling action around the circular rail. A leaf spring 34 is positioned between the block 31 and the rail 30 to prevent vibration of the block and similar springs 34A and 34B are mounted at the ends of the U shaped legs to bear upon the roller ends to prevent vibration of the rollers 32A and B. One leg of the U shaped block is provided with an aperture 36A to permit mounting a transverse bolt 36. The bolt 36 is used to clamp an anchor chain or cable 37 to the block 31. Thus it is apparent that with the buoy 10 anchored by means of its chains 29 and anchors 27 it will remain in a predetermined position and is ready at all times for a ship to moor to. With the block 31 mounted on the rail 30 it is an easy matter for a ship to pass a chain or cable to the deck 13 where it may be quickly and easily bolted by means of the transverse bolt 36 to the block 31. The ship may then drift in any position, the buoy 10 permitting the moored ship to drift anywhere in 360° of rotation.

Referring to Fig. 2 there is illustrated a similar type of buoy 10. However in this embodiment the deck 13 does not have the rail 30 mounted on the surface of the deck. Instead, the rail 30 is mounted on the extreme edge of deck 13 adjacent to the side of the buoy 10. Also in this embodiment an auxiliary rotatable deck 14 is provided. Deck 14 is mounted upon deck 13 by means of rollers 15 to be rotatable over the complete 360°. Referring further to Fig. 2 the vessel 10 may be constructed of water tight compartments. The upper portion of the buoy may be constructed with compartment 11A and in some instances where the buoy is extremely large this compartment may be used for crews quarters and office. The lower portion of the buoy may be divided into compartments 11B and 11C. Compartment 11C may be used for fuel or water and serves as a ballast while compartment 11B may be utilized for motors, pumps and the necessary gear. In this type of buoy, a pump 40 may be provided in compartment 11B. Pump 40 will be connected to a two way valve 41 and the valve in turn will be connected by a line 42 through the hull 28 to the exterior of the buoy, while the valve is also connected by a second pipe 43 through compartment 11A and through the upper extremity of the hull so that the outlet of pipe 43 will be into the air rather than the water. The pump 40 on the opposite side will be connected by a pipe 44 to compartment 11C. Thus with a power supply not illustrated, pump 40 will of course be connected to a motor (not shown) which in some instances will be an electric motor in other instances a gasoline or fuel driven motor. Thus it is apparent that pump 40 may be operated to drain the ballast of the buoy 10, that is, the compartment 11C may be filled or emptied as desired to increase or decrease the ballast of buoy 10. In a further embodiment of this invention, with compartment 11A and compartment 11C

connected by a pipe 45, it is possible to flood these compartments and cause the buoy 10 to be completely submerged to hide the buoy during times of war and yet a single operator may reverse pump 40 pumping out these compartments to raise buoy 10 when desired. The buoy 10 in some instances may have a substantial diameter, for example, 30 ft. at the bottom and 40 ft. at the top or deck level. The buoy is provided with out-flaring sides 46 to provide resistance to rocking in a light sea. The outer periphery of the buoy is provided with a bumper 46A to protect the hull of the buoy from any moored vessel. The buoy 10 in the event it is provided with living quarters and pump and gear will of course be provided with hatches through the decks and ladders or stair for easy access.

A still further embodiment of this invention as illustrated in Fig. 2 includes a hoist in the form of a crane or lever 16 supported on arched supports 17 having a pivot shaft 18. The lever 16 may be reciprocated by means of a cable 19 passing to a wind up drum 21A of a conventional winch 20. Winch 20 is also provided with a second wind up drum 21B. 21B is provided with a cable 21 which passes over pulleys at either end of the lever 16 and the end of cable 21 is attached to a collar 26. When a hose 25 is pulled through the center shaft 12 of the buoy, the hose 25 is mounted in the collar 26 and by means of cable 21 the hose 25 is readily lifted or maneuvered as required in connecting this hose to a similar hose from a moored ship. The winch 20 may similarly be driven by a motor (not shown) which may be an electric motor or a fuel driven motor as desired.

Referring to Fig. 2 wherein deck 13 supports an auxiliary rotatable deck 14, due to the shifting of a moored ship it is convenient to provide a means of rotating deck 14 with relation to deck 13 and the mechanism for providing this rotation is illustrated in Fig. 3 in which deck 13 is provided with an upright 52 which is formed circular to encompass the deck 13 although supported and affixed to deck 13. The upright 52 is provided with a pinion rack 50. As already stated before, deck 14 is supported by rollers 15 and in order that the rollers may be retained in a definite position, a track 15A may be provided for the roller 15 to mate with. Track 15A will necessarily be circular in plan view. Supported on deck 14 is a motor 56, motor 56 driving a pinion gear 55. The gear 55 is in turn meshed with a gear 54 that is mounted on and pinned to a vertical shaft 53, the vertical shaft 53 being supported by bearings 53A and B at either end thereof. Bearing 53A is supported by the housing structure mounted on motor 56 while bearing 53B is supported directly on deck 14. Shaft 53 below bearing 53B is provided with a pinion gear 51 that is aligned with and meshes with the rack 50. Shaft 53 at its opposite end above bearing 53A is provided with a gear 58 that meshes with a pinion gear 57. Gear 57 is mounted on a shaft (not shown) and this shaft is in turn connected through internal gearing to a hand crank 56A. A clutch lever 59 is provided so that the hand crank shaft may be engaged or disengaged as desired. Thus it is apparent that an operator standing on deck 14 may supply the necessary power (not shown) to motor 56 to operate motor 56 in either direction and as a consequence, with the motor 56 operating by means of the gears 55 and 54, gear 51 will rotate about the rack gear 50 carrying the rotatable deck 14 in a circular direction rolling upon the rollers 15 and track 15A. The degree of rotation will be under the control of the operator. Likewise, in the event the operator does not desire to move deck 14 to any appreciable distance of rotation, he may readily by means of lever 59 engage the hand crank 56A with gear 57 and by rotating crank 56A in either direction may readily move gear 51 to rotate on rack 50 and thus move deck 14 in either direction the desired degree of movement.

Referring to Fig. 4 there is shown the general construction of the rail 30. Rail 30 is retained in a particular position by the plurality of spaced supports 33. The supports 33 are bolted or welded directly to deck 13. Each support 33 is provided with an extended bolt-like arm 33A that is positioned at approximately 45° to the surface of deck 13. The arms 33A pass through rail 30 and anchors rail 30 in the position illustrated in Fig. 4. Thus it is apparent that with rail 30 supported on deck 13 that block 31 may be rolled around rail 30 to any position and thus provides the mooring means for a vessel to be moored to the buoy 10.

Referring to Fig. 5 there is illustrated a fragmentary view of one edge of the buoy 10 illustrating a further embodiment in which the rail 30 is mounted upon the side of the buoy 10. In this embodiment the same block 31 is provided and mounted on rail 30. It is apparent that with this mounting, deck 13 may be entirely clear.

Referring to Fig. 6 there is illustrated in perspective a ship 70 moored by means of cables 71 to a block 31B that is similar to block 31. Block 31B is provided with a ring 73 to permit a hook 72 to be attached, hook 72 in turn being attached to the cables 71 from the ship 70. In this embodiment the buoy 10B is similar to buoy 10 of Fig. 2 except that deck 14 is provided with a dome cover 60, cover 60 having a segment or slit opening 68 through which the hose 25B may be passed and through which a segment 61 of the dome cover 60 is hinged at the crown point 62 to support a beam 64 that is provided with a pulley 65. Thus a cable 66 may be passed from a winch as already described over pulley 65 to a supporting collar 67 through which the hose 65B is passed. This provides the means to raise and lower the extremely heavy hose as desired. It is apparent according to Fig. 4 that with a ship 70 moored to a buoy 10B and with a hose such as a refueling hose 25B running from a shore station 75 under water along the bottom and up through the center of buoy 10B, the hose may be coupled to a ship's hose for refueling the ship 70. Since this operation takes considerable time the wind may shift during the operation, such variation in position may be as much as 180° swing and in such instance the mooring permits the ship to easily swing to the new position and the hose supported in the manner illustrated provides plenty of loose flexible hose to adjust to the new position. However, in a further embodiment of this invention as illustrated in Fig. 7, a chain 63 is connected between the outer end of beam 64 and the block 31B so that as the block 31B is moved to a new position it will in turn pull the dome cover in the same direction of movement. With the dome 60 supported on a rotating deck 14 and with the deck 14 responsive to the slightest pull of the chain 63, the deck will rotate with the movement of block 31B and thus the supporting collar 67 will be moved in the same direction and the hose 25B will likewise be moved to the new position. Hose 25B is provided with two couplings 25C and 25D one on either side of the supporting collar 67. Either coupling and especially coupling 25D may be constructed as a swivel coupling to permit the distortion or rotation of the hose as the moored vessel swings about the buoy. The buoy 10B as illustrated in Fig. 6 will be anchored in the same fashion as the buoy described in Figs. 1 and 2 by means of anchors 27B and chains 29B. Thus it is apparent that with a fuel tank 75 located on the shore that an underwater hose line 25B may be laid along the bottom of the water extending out to an anchored buoy 10B. The hose 25B will be passed up through a central bore 12B in the buoy. The hose will be fitted to a coupling 25D and by means of the winch, cable and collar described the hose 25B may be manipulated to a desired position so that when a ship 70 is moored by means of cables 71 to a block 31B, the ship is quickly and easily tied and will be free to shift to any position in the 360° of the compass according to

the prevailing wind. While the ship 70 is so moored, a fuel hose may be passed from the ship and connected to coupling 25C. With the arrangement as described in Fig. 7, the shifting of the moored ship will in turn move the fuel hose and its supporting structure in a rotary movement to prevent distortion and damage to the fuel hose line. It is apparent that a refueling operation may continue for a long period of time unattended with this type of mooring. It is of course understood that the fuel or any other fluid to be loaded into ship 70 may be pumped from the tank 75 in the event the tank is lower than ship 70, or the fuel or fluid may run by gravity in the event the tank 75 is higher than ship 70. Although applicant has described dome 60 and beam 64 as rotatable by the pull of the ship 70 and block 31B in Fig. 6, it is apparent that in Fig. 2 the deck and superstructure may be of such exceptional weight that it is not easily rotatable by a mooring line pull and in such event as already described, the deck may be rotated by means of a motor 56 or the exact adjustment of the rotation of the deck to position the fuel line may be attained with a hand crank 56A.

Referring to Figs. 1, 2 and 5 it is apparent that rail 30 may be situated on deck 13 as shown in Fig. 1 or at the edge of deck 13 as shown in Fig. 2 or on the side or flared surface 46 of the buoy as shown in Fig. 5. The reason for the variations in the position of rail 30 are due to the diversity of the buoy. It may be used for mooring a dirigible or a floating ship or a floating seaplane or a submerged submarine. With the dirigible, ship or seaplane the shifting of the vessel is generally caused by the prevailing wind whereas with the submerged submarine, the shifting will be provided by the prevailing current or tide. The buoy is capable of refueling or supplying a fluid to any of the aforementioned vessels and according to one embodiment disclosed, the buoy is also capable of floating to complete a coupling operation with a surfaced submarine and capable of submerging with the submarine and still permit the fueling operation to continue. In this particular embodiment, chains 29 would not be permanently attached to the lower surface of the buoy but instead will be attached through portholes 45B in the outflaring sides 46 to permit taking up the slack in chains 29 as the buoy 10 is submerged and vice versa the chains 29 may be payed out as the buoy 10 is refloated or raised. It is also apparent that an operator may descend into the buoy closing and sealing the hatches and remaining in compartment 11B to operate pump 40. A further necessity for long periods of submersion may be in the form of a telescoping tube 90 extending from compartment 11B. In the event the buoy is submerged to a considerable depth it may be necessary to extend a hose 91 from tube 90 to a breathing float 92.

The buoy 10 or 10B of Figs. 2 or 6 may perform various other functions in addition to mooring and providing offshore fueling or loading of fluid fuels. The buoy may (1) be used for unloading ships, tankers, barges, etc. in shallow waters as illustrated in Fig. 6. (2) The device as illustrated may also be used for transmitting and transferring fluids and comminuted materials from ship to shore or vice versa. (3) The buoy may also be used as a dredging means being provided with a suction pump and thus the buoy may be anchored in any desired spot where a dredging operation is to be performed. The hose from the shore to the buoy will be connected by means of an auxiliary hose 40A from deck 13 to line 43 or 42 as the case may be while the suction side of pump 40 will be connected to an auxiliary hose 40B which may be passed through the hull 28 by means of one of the portholes 45B. Hose 40B at its outer end will be provided with a suction head 40C. It is further apparent that in this embodiment the winch 20 and cable 21 and collar 28 may be utilized to support the auxiliary hose 40B. (4) The buoy may also

be used for diving and underwater operations. In this instance it may be preferable to reverse the hose 25 bringing it over the deck and down through the buoy where the buoy is to be submerged to a considerable depth. (5) The buoy may also be submerged and utilized as a pumping means for underwater oil wells. This removes the present difficulties in maintaining a rigid supporting structure for a pipe line from the underwater well to the surface in rough water. Instead, the buoy may be anchored at the bottom or in close proximity to the bottom and in a submerged condition will not be bothered by rough or choppy waters.

Although the buoy has been described and illustrated as circular, the floating vessel may be of any configuration as long as the track 30 is provided generally round or oval in plan to permit easy rotation of the block 31 about the periphery of the track 30. Thus it is conceivable that the superstructure including the track 30 may be mounted on a floating ship or a submersible vessel such as a submarine without departing from the spirit of this invention. It is also apparent that although the buoy has been illustrated with a central well to pass a hose line there-through, the line may be an air line with a flexible pipe or may be communication lines or power lines either taken alone or in combination. Various changes may be made to the general structure of the vessel without departing from the spirit of this invention and this invention shall be limited only by the appended claims.

What is claimed is:

1. An offshore buoy which includes a floating vessel having a clear deck disposed above the surface of the water, a circular pipe shaped mooring track in the form of a wheel supported and affixed to the circumference of said deck, a mooring block mounted by means of rollers to pivot around the periphery of said track and to be moveable about the circumference of said wheel shaped track and said deck, anchoring means provided to anchor said buoy in a predetermined non-shiftable non-rotatable position.

2. In a device according to claim 1 said floating vessel comprised of a plurality of water tight compartments, a fluid pump and power means mounted in one compartment, said pump connected on one side to the exterior of the buoy and connected on the other side to one or more other compartments, and means to regulate the degree of ballast in said buoy.

3. In a device according to claim 1 said floating vessel comprised of a plurality of water tight compartments, a fluid pump and power means mounted in one compartment, said pump connected on one side to the exterior of the buoy and connected on the other side to one or more other compartments, means to submerge said buoy below the surface of said water and means to refloat said buoy.

4. An offshore re-fueling buoy which includes a floating vessel having a clear deck disposed above the surface of the water, a circular pipe shaped mooring track in the form of a wheel supported and affixed to said deck, a mooring block mounted by means of rollers to pivot around the periphery of said track and to be moveable about the circumference of said track and said deck, anchoring means provided to anchor said buoy in a predetermined non-shiftable non-rotatable position, a hollow well or bore extending through the center of said buoy from the deck to the bottom of said buoy, a hose line or conduit extending through said hollow well or bore having its upper end disposed above said deck and means provided on deck for hoisting and supporting said upper end above said deck.

5. In a device according to claim 4 in which said track is supported and affixed adjacent to the outer circumference of said deck.

6. In a device according to claim 4 said floating vessel comprised of a plurality of water tight compartments, a fluid pump and power means mounted in one compart-

ment, said pump connected on one side to the exterior of the buoy and connected on the other side to one or more other compartments, means to moor a submersible craft with a freedom of drift about said floating vessel, means to submerge said buoy below the surface of the water and means to refloat said buoy.

7. In a device according to claim 4 said hose line through said well being connected by means of an auxiliary hose to the outlet side of a pump, said pump being connected on its suction side by means of an auxiliary hose through a port in said buoy to a suction head for dredging purposes.

8. An offshore buoy which includes a floating vessel having a deck disposed above the surface of the water, a circular pipe shaped mooring track in the form of a wheel supported and affixed to the circumference of said deck, a mooring block mounted by means of rollers to pivot around the periphery of said track and to be movable about the circumference of said track, anchoring means provided to anchor said buoy in a predetermined non-shiftable position, a hollow well or bore extending through the center of said buoy from the deck to the bottom of said buoy, a rotatable deck disposed above the surface of the buoy deck, said deck provided with a hoisting means, a hose line or conduit extending through said hollow well or bore having its upper end disposed above said deck, said hoisting means connected to the upper end of said hose line by means of a swivel connection, means to moor a boat to said buoy and means to connect the boats fuel hose to the hose supported by said elevating means.

9. In a device according to claim 8 a chain connected between said mooring block and said elevating means, means to rotate said dome with the movement of said mooring block.

10. An offshore buoy which includes a floating vessel with an outflaring edge having a deck disposed above the surface of the water, a wheel shaped track supported and affixed to said deck, a mooring block mounted by means of rollers to said track and to be movable about the periphery of said track, a plurality of portholes positioned under the outflaring edge, a plurality of anchors and chains, said chains passed through said portholes and secured in said buoy, said buoy comprised of a plurality of water tight compartments, a fluid pump and power means mounted in one compartment, said pump connected on one side to the exterior of the buoy and connected on the other side to one of more other compartments, means to submerge said buoy, means to take up the anchoring chains to retain said submerged buoy in a predetermined position and means to pay out said anchoring chains when refloating said buoy.

11. An offshore buoy which includes a floating vessel with an outflaring edge having a deck disposed above the surface of the water, a wheel shaped track supported and affixed to said deck, a mooring block mounted by means of rollers to said track and to be movable about the periphery of said track, a hollow well or bore extending through the center of said buoy from the deck to the bottom of said buoy, a hose line or conduit extending through said hollow well or bore having its upper end disposed above said deck and means provided for supporting said upper end, a plurality of portholes positioned under the outflaring edge, a plurality of anchors and chains, said chains passed through said portholes and secured in said buoy, said buoy comprised of a plurality of water tight compartments, a fluid pump and power means mounted in one compartment, said pump connected on one side to the exterior of the buoy and connected on the other side to one or more other compartments, means to moor a submersible craft, means to connect said hose by means of a swivel connection to a hose line from said submersible craft, means to submerge said buoy, means to take up the anchoring chains to retain said submerged buoy in a predetermined posi-

tion and means to pay out said anchoring chains when refloating said buoy.

12. A floating buoy providing simultaneously a mooring buoy and refueling station for boats, seaplanes and the like comprising a hollow water tight vessel including a plurality of compartments, said compartments divided from each other and water tight to permit the use of one or more compartments as ballast fluid tanks, one compartment provided with a pump and power means, said pump connected to the exterior of the buoy by two pipes, one below water, one above the normal floating line of the buoy, said pump connected on its opposite side to the compartments that may be used as tanks, said buoy provided with a plurality of anchoring means connected to the lower portion of the buoy, said buoy provided with a central well through which a hose line may be passed from underwater to the deck of the buoy, a swivel connection provided on deck for hoisting one end of said hose line to a position above deck, said buoy provided with a round pipe shaped track that is circular to correspond with the shape of its upper deck, said circular track provided with a mooring block, said mooring block provided with rollers to permit said block to roll about the periphery of said track while retaining a gripping relationship with said track, means to anchor said buoy in a predetermined set position, means to moor a boat in any quadrant about said buoy by means of said block and means to connect a ship fluid hose to the hose supported in said buoy by means of a swivel connection.

13. An offshore refueling buoy which includes a floating vessel having a clear deck disposed above the surface of the water, a circular pipe shaped mooring track in the form of a wheel supported and affixed to the sides of the buoy above the water line when said buoy is in a buoyant but loaded condition, a mooring block mounted by means of rollers to pivot around the periphery of said track and to be moveable about the circumference of said track and said buoy, anchoring means provided to anchor said buoy in a predetermined non-shiftable non-rotatable position, a hollow well or bore extending through the center of said buoy from the deck to the bottom of said buoy, a hose line or conduit extending through said hollow well or bore having its upper end disposed above said deck, and means provided on deck for hoisting and supporting said upper end above said deck.

14. An offshore refueling buoy which includes a floating vessel having a clear deck disposed above the surface of the water, a circular pipe shaped mooring track in the form of a wheel supported and affixed to the outflaring sides of the buoy which may be retained below the water line, a mooring block mounted by means of rollers to pivot around the periphery of said track and to be moveable about the circumference of said track and said buoy, anchoring means provided to anchor said buoy in a predetermined non-shiftable non-rotatable position, a hollow well or bore extending through the center of said buoy from the deck to the bottom of said buoy, a hose line or conduit extending through said hollow well or bore having its upper end disposed above said deck, and means provided on deck for hoisting and supporting said upper end above said deck.

15. An offshore refueling buoy which includes a floating vessel having a deck disposed above the surface of the water, a round bar shaped mooring track in the form of a wheel supported and affixed to said buoy, a mooring block mounted to pivot around the periphery of said track and moveable about the circumference of said track, a rotatable structure disposed above the surface of the deck of the buoy, said rotatable structure including a second deck with a hoist supported thereon, anchoring means provided to anchor said buoy in a non-rotatable position, a tube extending through the center of the buoy and the deck of the rotatable structure, means to pick up a hose line or conduit with said hoist and raise same through said tube to a position above the deck of said rotatable structure.

16. In a device according to claim 15 in which the rotatable structure includes an enclosing housing for said hoist, said housing provided with an aperture through which the hose line may be extended.

17. An offshore refueling buoy which includes a floating vessel having a clear deck disposed above the surface of the water, a circular pipe shaped mooring track in the form of a wheel supported and affixed to said buoy, a mooring block mounted by means of rollers to pivot around the periphery of said track and to be moveable about the circumference of said track and said buoy, anchoring means provided to anchor said buoy in a predetermined non-shiftable non-rotatable position, a hollow well or bore extending through the center of said buoy from the deck to the bottom of said buoy, a hose line or conduit extending through said hollow well or bore having its upper end disposed above said deck, and means

provided on deck for hoisting and supporting said upper end above said deck.

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