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(54) **Sea vessel docking station**

(57) A system and method in which a buoyant central docking station captures, lifts and couples one or more other sea vessels is disclosed, wherein a flexible, modularized production system is quickly realized on a cost effective basis. The capabilities of a number of older, less expensive, readily available vessels are combined to achieve an effective FPSO substitute that allows lower producing fields to be explored and produced in a profitable manner. The time horizon between initiation and consummation of field operations is reduced, and older vessels that might otherwise be scrapped or retired are again made useful and seaworthy in a safe and profitable exploration and production environment.

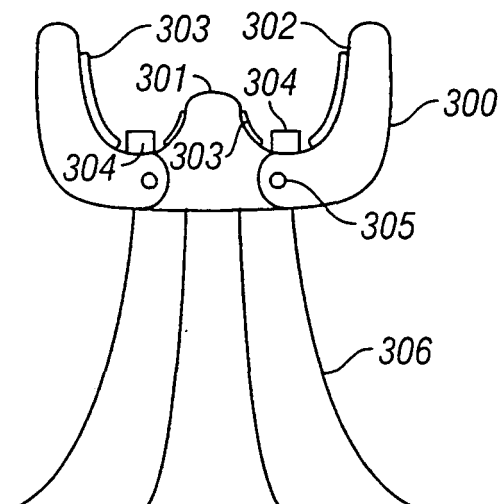


FIG. 3

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Description

Statement of Related Cases

[0001] The present application claims the benefit of prior provisional application no. 60/695,727, filed June 29, 2005.

Background of the Invention

[0002] The present invention relates generally to offshore oil and gas exploration and production systems, and in a specific, non-limiting embodiment, to a system and method of capturing, lifting and coupling a plurality of sea vessels using a centralized wet docking station, so that relative deck sizes are effectively increased, and equipment packages and other facilities are exchanged between the decks of captured vessels in a stable and efficient manner.

Background of the Invention

[0003] Innumerable systems and methods have been employed in efforts to find and recover hydrocarbon reserves around the world. At first, such efforts were limited to land operations involving simple but effective drilling methods that satisfactorily recovered reserves from large, productive fields. As the number of known producing fields dwindled, however, it became necessary to search in ever more remote locales, and to move far offshore, in the search for new resources. Eventually, sophisticated drilling systems and advanced signal processing techniques enabled energy companies to search virtually anywhere in the world for recoverable hydrocarbons.

[0004] Initially, deepwater exploration and production efforts consisted of expensive, large scale drilling operations supported by tanker storage and transportation systems, due primarily to the fact that most offshore drilling sites are associated with difficult and hazardous sea conditions, and thus large scale operations provided the most stable and cost-effective manner in which to search for and recover hydrocarbon reserves. A major drawback to the large-scale paradigm, however, is that explorers and producers have little financial incentive to work smaller reserves, since potential financial recovery is generally offset by the lengthy delay between exploration and production (approximately 3 to 10 years), and by the large capital investment required for conventional platforms and related drilling, production and transportation equipment. Moreover, complex regulatory controls and industry-wide risk aversion have led to standardization, leaving operators with few opportunities to significantly alter the prevailing paradigm. As a result, offshore drilling operations have traditionally been burdened with long delays between investment and profit, excessive cost overruns, and slow, inflexible recovery strategies dictated by the operational environment.

[0005] More recently, deepwater sites have been found in which much of the danger and instability usually present in such operations can be avoided. For example, off the coast of West Africa, Indonesia and Brazil, potential drilling sites have been identified where surrounding seas and weather conditions are relatively mild and calm in comparison to other, more volatile sites such as the Gulf of Mexico and the North Sea. These recently discovered sites tend to have favorable producing characteristics, yield positive exploration success rates, and admit to production using simple extraction and transportation techniques similar to those employed in dry land or near-shore operations.

[0006] However, since lognormal distributions of recoverable reserves tend to be spread over a large number of small fields, each of which yield less than would normally be required in order to justify the expense of a conventional large-scale operation, most such regions have to date been underexplored and underproduced relative to their potential. Consequently, many potentially productive smaller fields have already been discovered, but remain undeveloped due to economic considerations.

[0007] Currently, most deep water exploration and production operations are facilitated by means of a large, expensive floating production and storage offtake (FPSO) vessel, which is used to arrange and store essentially all of the facilities and equipment packages likely to be required aboard a single ship, with lesser vessels being employed only in support roles for purposes such as transporting crews back and forth from shore, delivery of new or replacement equipment packages, *etc.*

[0008] As seen in prior art Figure 1, for example, an FPSO system 100 similar to those presently being employed in the field is depicted, wherein the FPSO comprises a large deck surface (e.g., in excess of about 20,000 square feet) capable of accommodating useful operational structures such as a helicopter pad 101; officer, crew and control rooms 102; a water treatment facility 103; one or more fluid injection pumps 104; one or more oil, gas, sand and water separators 105; a gas treatment injection facility 106; a power generator 107; and a gas flare 108.

[0009] The FPSO has deck space for uploading additional equipment packages from other vessels on an as-needed basis, and serves as a central station for the entire exploration and production operation. In one common application, the FPSO is held in place during operations by a mooring system using a plurality of mooring lines (not shown) that are tied off to other vessels, mooring buoys, *etc.* In alternative embodiments, the FPSO is moored to a turret, so that it essentially revolves around a fixed point; and in a further embodiment, the FPSO is dynamically positioned, so that it is allowed to move in response to wave and swell actions, while still being held in position relative to the support vessels and drilling sites in the surrounding area.

[0010] A modern FPSO used to service subsea pro-

duction wells 110 and/or injection wells 111 will typically have a keel length of between about 900 and 1,500 feet, with a storage section 109 having a storage capacity of between about 500,000 barrels and about four million barrels disposed beneath the ship's deck surface. In vessels where the storage volume is essentially zero but all of the other facilities and equipment packages necessary for injection and production operations are present, the vessel is instead called a floating production unit (FPU).

[0011] While relatively effective in deepwater environments, those of ordinary skill in the art will appreciate that FPSO systems also have several major drawbacks. For example, a modern FPSO can take as long as eight to ten years from start-up to completion before it can be used at sea, and the total cost associated with manufacturing the vessel can run in excess of one billion dollars.

[0012] Moreover, since an FPSO is so large and expensive to manufacture, only very large field operations (e.g., those producing about 50,000 barrels a day or more) will economically justify an operator's investment in such a vessel. Consequently, a great many lesser fields (for example, fields have the capacity to yield only about 10,000 barrels a day) are known by explorers to contain reserves, but are not being worked by producers because the cost of production using an FPSO would exceed the profits that could be obtained from recoverable reserves.

[0013] Past efforts to provide simpler, less expensive vessel docking systems include U.S. Letters Patent No. 853,328 to Wiking, which discloses a pontoon-type floating dock, which captures and lifts one or more vessels so as to serve as an extension of an attendant dry dock. The Wiking system is deficient, however, in that it is useful "only for small vessels," lacks the buoyant capacity to capture and lift vessels of any significant size and weight (which is, of course, a critical aspect of any modern exploration and production system), and utterly fails to contemplate the coupling of multiple deck surfaces in order to form a larger, unified deck from which exploration and production operations can be carried out.

[0014] Similarly, U.S. Letters Patent No. 6,336,419 to Breivik discloses a barge having one or more docking stations formed at either end in which captive ships can be docked, but fails to appreciate the advantages of lifting and coupling two or more vessels so that their respective deck surfaces are combined into a larger, unitary surface from which exploration and production operations can be carried out with maximum efficiency and safety.

[0015] There is, therefore, a need for a system and method of exploring and producing offshore wells in such a manner that the functions of two or more vessels can be combined to work the wells without interruption, and where a number of closely disposed sites can be worked simultaneously by a limited number of such vessels.

[0016] There is also a need for a system and method by which a centralized, floating docking station provides access to a number of associated deck surfaces flexibly capable of meeting the changing needs of operators dur-

ing exploration and production, so that the delay between operator investment and profit is minimized.

[0017] There is also a need to provide a substitute for existing floating production and storage offtake vessels that admits to safe and reliable transfer of equipment packages (e.g., drilling packages, testing packages, production packages, workover packages, etc.) between and amongst associated deck surfaces, and for secure vessel connections so that associated deck surfaces can be safely and easily connected and/or disconnected during operations.

[0018] There is also a need to provide a surface vessel arrangement wherein a plurality of associated deck surfaces are complementary in function, so that unnecessary delays and undesirable safety conditions are avoided throughout the entirety of exploration and production.

[0019] Finally, there is a need for vessel capturing, lifting and coupling systems that permit older, less expensive and more widely available exploration and production vessels to participate in offshore operations by serving as a platform from which equipment packages and extracted hydrocarbon reserves are loaded, stored and transported in a safe, efficient and well-organized manner.

Summary of the Invention

[0020] A wet docking station for exploring and producing offshore energy sites is provided, in which the wet docking station includes at least: a buoyant central docking station; an adjustable buoyancy chamber for adjusting the buoyancy of the buoyant central docking station; and at least one subordinate docking station for capturing and lifting at least one sea vessel.

[0021] A method of exploring and producing offshore energy sites using a wet docking station is also provided, in which the method includes at least: disposing a buoyant central docking station in communication with an adjustable buoyancy chamber, wherein said adjustable buoyancy chamber is used to adjust the buoyancy of said buoyant central docking station; and disposing the buoyant central docking station in communication with at least one subordinate docking station, wherein the subordinate docking station is used to capture and lift at least one sea vessel.

Brief Description of the Drawings

[0022] Figure 1 is a side view of a floating production and storage offtake vessel presently known in the prior art.

[0023] Figure 2 is a side view of an example wet docking station according to the invention.

[0024] Figure 3 is a rear view of a combined central stabilizer and bumper guard structure useful with the wet docking station depicted in Figure 2.

[0025] Figure 4 is the wet docking station depicted in Figure 3, shown after two vessels have been captured

within the docking station.

[0026] Figure 5 is a rear view of a portion of the docking station depicted in Figure 4, shown with two ships that have already been captured being lifted and pinched between a central divider and a plurality of side stabilizers.

[0027] Figure 6 is an elevated depiction of a wet docking station according to the invention.

[0028] Figure 7 is an elevated view of a wet docking station having additional storage capacity according to the invention.

[0029] Figure 8 is a rear view of a wet docking station used to load and offload equipment, material, supplies, *etc.*, between the decks of captured vessels.

[0030] Figure 9 is a front view of a wet docking station having additional storage capacity and additional deck surface for accommodating and storing equipment packages, technical facilities, *etc.*

[0031] Figure 10 is a top view of an alternative wet docking system according to the invention, in which a plurality of individual wet docks are coupled together.

[0032] Figure 11 is a front view of the wet docking station depicted in Figure 10, wherein vessels of different sizes are shown captured, lifted and coupled together, so that associated deck surfaces are combined into a single, unitary whole.

Detailed Description

[0033] The present invention is directed to an offshore docking system in which a number of multifunctional sea vessels are captured, lifted and coupled in a central "wet" dock using one or more adjustable buoyancy chambers. For the purposes of this application, a wet docking station is defined as a docking station capable of rising up from beneath sea level to capture and couple one or more vessels, so that greater deck and storage space, and a more flexible combination of facilities and equipment packages, is achieved.

[0034] The buoyancy chambers are generally disposed beneath the hulls of either the wet docking station or the vessels captured within the dock (or both), so that the buoyancy chambers are capable of transmitting a significant lifting force toward the bottom of the hulls; however, in some embodiments the adjustable buoyancy chambers are disposed within the hull of the docking station itself, with external buoyancy chambers being added to the system on an as-needed basis.

[0035] Once the captured vessels are lifted and secured within the central docking station, their deck surfaces are then coupled to one another, so that equipment packages, technical facilities, *etc.*, can be quickly transferred between the vessels in a safe and controlled manner, thereby reducing the risk of accidents and collisions, as well as establishing a large combined deck surface from which operations can be carried out. Consequently, project time horizons are reduced, and a flexible, modularized exploration and production system is achieved on a cost effective basis.

[0036] In the specific, non-limiting embodiment of the invention depicted in Figure 2, for example, a sea vessel docking station according to the invention comprises a rib shaped support hull or other central docking station 200; one or more adjustable buoyancy chambers 201, which are held or connected to the bottom of the docking station 200 by adjustment control means 202; and one or more vessel capturing stations 203 used to capture incoming vessels prior to lifting and coupling them together.

[0037] In practice, adjustable buoyancy chamber 201 and the vessel capturing stations 203 rise up from beneath the hull of a vessel and apply a significant lifting force, thereby lifting, supporting and pinching the vessel together in the arms of the docking station 200, so that a mutual deck surface can be established between the newly captured vessel and other, previously captured vessels in a safe and reliable manner.

[0038] In the depicted embodiment, the depth at which adjustable buoyancy chamber 201 is disposed beneath the wave surface is controlled by an adjustable control means 202, though in other embodiments adjustable buoyancy chamber 201 is disposed in direct communication with support hull 200. In still other embodiments, either (or both) of adjustable buoyancy chamber 201 and adjustment control means 202 are withheld from the system, and support hull 200 is instead equipped with one or more buoyancy chambers (such as an internal ballast system), so that the depth of the docking station is controlled by either flooding or evacuating the buoyancy chambers disposed in support hull 200 with a fluid, such as sea water, pneumatic pressure supplied from an outside source, *etc.*

[0039] During this process, the central docking station can be dynamically positioned with respect to surrounding vessels and buoys (not shown), fixed to a turret so that the station revolves around a mooring, or simply tied off to suction anchors 204 or the like using one or more sets of mooring lines 205.

[0040] As seen in the example embodiment depicted in Figure 3, portions of the central docking station 300 comprise a divider 301 disposed between the capturing stations, so that captured vessels cannot collide or transmit wave forces toward other vessels captured in the docking station 300. In other embodiments, outer portions of divider 301 and the inner portions 302 of the capturing stations are fitted with ship bumpers 303 or the like, so that captured vessels can be lifted and pinched against the bumpers 303 by, for example, tying off the vessel against the bumpers using ropes or chains, or by inwardly pivoting an arm of the station about a pivoting member 305.

[0041] In a further embodiment, captured vessels are lifted and held in place against the ship bumpers 303 by means of an adjustable buoyancy chamber 304. In cases where the captured vessels are of significantly different sizes, an adjustable buoyancy chamber 304 disposed in the capturing station can be used to lift the decks of the

vessels to a similar elevation, so that a mutual deck surface can be established between them, and equipment packages and the like can be transferred from ship to ship.

[0042] As seen in the example embodiments depicted in Figures 4 and 5, however, vessels of similar size and dimensions 401, 402 and 501, 502, respectively, can be captured and controlled in such a manner that adjoining deck surfaces are disposed in a relatively even and level plane without requiring a secondary buoyancy chamber to lift either vessel. In such embodiments, portions 400, 500 of the docking station will still comprise primary buoyancy chambers used for raising the station up from beneath the vessels and initiating the capturing process, and for sinking the station back into the sea so that captured vessels can be maneuvered away to make room for other, newly acquired vessels.

[0043] Turning now to the detailed, non-limiting embodiment depicted in Figure 6, a wet docking station 600 according to the invention is shown which illustrates how two or more vessels can be captured, lifted and coupled in the station so that a unitary, multifunctional, sea-worthy vessel is created for furthering an exploration and production operation.

[0044] A principle advantage of the system is that the total deck surface area of a smaller vessel 601 can effectively be increased by adding the deck surface area of a second, adjoining vessel 602 that has been captured, lifted and coupled to the first vessel 601. For example, if first captured vessel 601 has a working deck space of about 150 in length and about 50 feet wide, then the total available workspace on that vessel is about 7,500 square feet. Likewise, if second captured vessel 602 has a working deck space of about 200 feet in length and 70 feet wide, then the total available workspace is about 14,000 square feet. By lifting and coupling the two vessels together, however, a total available working deck space of about 21,500 square feet (7,500 plus 14,000) is achieved.

[0045] In this particular example embodiment, first captured vessel 601 is equipped with one or more of a power generator 603; a water treatment facility 604; a water injection package 605 with attendant water injection lines 617; and a crew housing and control unit 606. Those of ordinary skill in the art will appreciate, however, that virtually any number of other packages, production and storage units, stacks of riser or drilling equipment, *etc.*, can instead be disposed on the first vessel.

[0046] While such a vessel would be helpful for supporting an existing exploration and production project, it lacks many of the structures and technical packages necessary to initiate and complete an ongoing operation. For example, first captured vessel 601 lacks an oil and gas separator, gas compression and injection units, an oil treatment unit, and many other facilities and packages customarily found on floating storage and offtake vessels that might prove useful during operations. According to the invention, therefore, a second vessel 602 is captured,

raised to an essentially equal deck height as the first vessel, and then coupled to either the first vessel or the docking station so that personnel can safely and reliably enjoy the advantages of both vessels simultaneously, even as the two coupled vessels and the docking station proceed as a single, unitary whole.

[0047] In the depicted embodiment, for example, captured second vessel 602 further comprises a helicopter pad 607; a gas compressor 608 having attendant gas injection lines 616; oil, gas and/or water separators 609; a gas treatment unit 618; an oil treatment unit 610; a gas flare boom 611; and a plurality of oil production lines 615. In one embodiment, the vessel is controlled by ballasting at least part of the docking station down into the sea, and then floating the vessel over the docking station 600 so that it can be captured and raised to the deck height of the first vessel. Alternatively, at least part of the docking station 600 is ballasted down into the sea, moved beneath the hull of the vessel intended for capture, and then raised, so that the vessel is now securely held in the dock, and the facilities and packages disposed thereupon can be used by operators in conjunction with the facilities and packages disposed on the first captured vessel 601.

[0048] In this particular embodiment, since all of the technical facilities and equipment packages necessary to carry out operations in a typical exploration and production project are provided, it might not be necessary for any other vessels to be brought in with additional equipment in order to complete the operation. However, should it turn out that additional facilities or packages are in fact required, one (or both) of the vessels presently captured in the station can be released, and a third ship, a fourth ship, and so on, can be captured and employed to achieve the advantages of their technical configurations.

[0049] In this embodiment, the station releases a captured vessel by employing a protocol that is essentially the reverse of the capturing process. For example, if it is desirable to release second captured vessel 602 from the station for some reason, at least part of the station beneath the vessel is ballasted down until the vessel is free of the frictional forces holding the vessel between central stabilizer 613 and side docking ribs 614; the vessel is then moved out of the station under its own power, towed out of the station using a support vessel, or simply held in place using either a tethering system or dynamic positioning techniques while the station is moved out from under the vessel.

[0050] In the example embodiment of Figure 7, a barge-like storage tank 700 is equipped with a ribbed hull docking station comprising a central stabilizer 701 and a plurality of side stabilizers 702, which define a first vessel docking port 703 and a second vessel docking port 704, as described above with respect to various other embodiments. In this embodiment, however, a large fluid storage facility 705 is also provided, wherein about 500,000 barrels of fluid can be stored during production, and then discharged into a tanker when its storage capacity has

been reached or is otherwise convenient for operators. The entire docking station, or, alternatively, part of the docking station can be submerged beneath sea level 705 at any given time, so long as the station remains sufficiently stable to accommodate the lifting and coupling of captured vessels.

[0051] As mentioned, it may at times be desirable to replace or remove equipment packages disposed on one or more of the vessels captured in the station. Thus, Figure 8 depicts another embodiment of a sea vessel docking station according to the invention, wherein the system's improved loading and offloading capabilities are emphasized.

[0052] As in previous embodiments, an offshore wet dock 800, within which a plurality of vessels 801, 802 are captured, is provided, comprising two or more docking stations formed by a plurality of docking station inner surfaces 807, 808 and a plurality of lockable, pivoting side stabilizers 805, 806. The buoyancy of wet dock 800 is controlled by either an external buoyancy chamber, or by one or more internal ballast chambers used to either improve or retard the dock's buoyancy characteristics, depending on whether water or another fluid is being pumped into or evacuated from the ballast chambers. Those of ordinary skill in the art will appreciate that such ballast chambers satisfy the definition of the term "adjustable buoyancy chamber" within the context of claimed design.

[0053] In such embodiments, the functionality of secondary buoyancy chambers 809, 810 can be replaced by a more conventional, mechanical lifting system (not shown) without departing from the scope of the invention. Other presently contemplated methods of leveling captured vessels' decks include holding the height of one of the deck surfaces in a static position while raising the deck surface of a second vessel, and/or holding one of the deck surfaces at a static height and then lowering the deck surface of the other vessel. Since many ships already include ballast systems that admit to the raising and lowering of a deck surface by raising or lowering the profile of the entire vessel, it is also possible to utilize that functionality and avoid the need for a secondary lifting system contained within the docking station in order to level the deck surfaces of captured vessels.

[0054] In this particular embodiment, wet dock 800 is further equipped with a docking station connecting member 811, comprised of one or more vertical support members 812, a conveyer belt and roller assembly 813, and, in the depicted embodiment, a spool for winding and unwinding cable or chain, *etc.*, in response to winch system 814, 817, which feeds its line over pulley 816 so that cargo or equipment package 815 can be transferred from the deck of captured vessel 802 down onto the surface of conveyer belt and roller assembly 813. The cargo or equipment package can then be moved closer to the deck surface 818 of captured vessel 801, or else moved on board the deck surface 818 of captured vessel 801, so that operators can begin to use the equipment package

815 while captured vessel 802 is allowed to leave the docking station.

[0055] In a detailed example of this embodiment, captured vessel 802 has a testing package aboard that is useful in conjunction with an exploration package stored on vessel 801. By coupling the raised deck surface of vessel 802 with the lower deck surface of the docking station 800, the testing package is transferred down onto the deck surface of the docking station by means of an elevated winch and pulley system, a hoist, or a small crane or the like. Continuing the process, vessel 802 is then removed from the docking station, and a third ship is captured and raised in its place, so that additional equipment can be transferred onto the deck of docking station 800.

[0056] As seen in the example embodiment of Figure 9, a larger intermediate deck surface 907 disposed above the entirety (or part) of the docking station hull 900 will result in the creation of a large, stable platform surface having a total area greater than even the combined deck surfaces 908, 909 of the captured vessels 901, 902 from which additional operations can be carried out. In some embodiments, a portion of wet dock 900 is large enough to serve as a fluid storage container, which can be fully or partially submerged beneath sea level until such time as a transfer of stored fluids becomes either desirable or necessary (*e.g.*, in the case where the storage container becomes full of stored fluid during the course of operations).

[0057] In the example embodiment depicted in Figure 10, the general-purpose hull of the prior embodiments is replaced with a floating frame 1000, within which an individual vessel can be captured. Additional floating frames 1001, 1002, each of which house other captured vessels 1003, 1004, are then connected to the first floating frame 1000 using a known connecting means 1006 (*e.g.*, ship bumpers, connecting rods, *etc.*), so that the resultant structure becomes coupled into a single, modularized whole.

[0058] In some embodiments, the entire structure is supported by an external adjustable buoyancy chamber (not shown); in other embodiments, however, the structure is not supported by a separate buoyancy chamber, and instead relies on its own ballast and weighting systems to raise and lower the frames beneath desired vessels' hulls prior to capture.

[0059] In still other embodiments (see, for example, Figure 11), after the deck surfaces of the captured vessels 1103, 1104 are raised to a desired height, a mutual deck surface 111 or other, similar structure is fitted over the topmost surfaces of each ship. In this manner, the two vessels 1103, 1104 are coupled, so that necessary operations can be carried out while the system continues to safely perform at sea as a single unitary structure. For example, once the vessels 1103, 1104 have been coupled together, operators can thereafter use all of the various equipment packages (*e.g.*, drilling packages, testing packages, production packages, workover packages,

etc.) originally stored on the individual ships as if the packages were originally all present on a single FPSO.

[0060] In practicing the invention, a number of older, less expensive vessels can be used to duplicate the effectiveness of a far more costly, fully equipped, modern FPSO vessel, which in practice is often unavailable on short notice, or infeasible due to financial considerations. A principal advantage of the invention in this respect is that ships of any size, age and hull design can be captured and coupled in the docking station, while the docking station itself proceeds at sea, essentially performing as an integrated, unitary housing within which various ships are serviced. Since the captured ships collectively contain all of the equipment and design packages required to satisfy the many different needs of an exploration and production vessel, piecemeal assembly of the technical packages required for any particular operation is achieved, without the need for a large, expensive, exploration and production vessel that contains all of the equipment that might ever be useful in an operation irrespective of whether it is actually needed in the application at hand.

[0061] In short, the invention disclosed herein provides a unique system and method by which a central docking station can capture, lift and couple a plurality of sea vessels, so that a flexible, modularized production system is achieved on a cost effective basis. The capabilities of a number of older, less expensive vessels can be combined to achieve an effective FPSO substitute that allows lower producing fields to be explored and produced in a profitable manner. Time horizons between initiation and consummation of field operations are reduced, and older vessels that might otherwise be scrapped or retired are again made useful and seaworthy.

[0062] The foregoing specification is provided for illustrative purposes only, and is not intended to describe all possible aspects of the present invention. Moreover, while the invention has been shown and described in detail with respect to several exemplary embodiments, those of ordinary skill in the pertinent arts will appreciate that minor changes to the description, and various other modifications, omissions and additions may also be made without departing from either the spirit or scope thereof.

Claims

1. A wet docking station for exploring and producing offshore energy sites, the wet docking station comprising:

a buoyant central docking station;
an adjustable buoyancy chamber for adjusting the buoyancy of said buoyant central docking station; and
at least one subordinate docking station for capturing and lifting at least one sea vessel.

2. The wet docking station of Claim 1, wherein said adjustable buoyancy chamber further comprises a chamber that is externally disposed relative to said central docking station.

3. The wet docking station of Claim 1, wherein said adjustable buoyancy chamber further comprises a chamber that is internally disposed relative to said central docking station.

4. The wet docking station of Claim 1, wherein said adjustable buoyancy chamber further comprises a plurality of discrete inner chambers.

5. The wet docking station of Claim 1, wherein said adjustable buoyancy chamber further comprises at least one fluid intake port and at least one fluid evacuation port.

6. The wet docking station of Claim 1, further comprising a coupling member used to couple said at least one sea vessel to said central docking station.

7. The wet docking station of Claim 1, further comprising a coupling member used to couple a plurality of captured sea vessels to one another.

8. The wet docking station of Claim 7, wherein said coupling member further comprises an intermediate deck surface.

9. The wet docking station of Claim 1, wherein said at least one sea vessel further comprises an offshore energy exploration equipment package.

10. The wet docking station of Claim 1, wherein said at least one sea vessel further comprises an offshore energy production equipment package.

11. The wet docking station of Claim 1, wherein said at least one sea vessel further comprises at least one of a helicopter pad; a crew quarters; a ship control room; an oil separating unit; a gas separating unit; a water separating unit; a sand separating unit; a gas treatment unit; a gas injection unit; a power generating unit; and energy exploration and production equipment.

12. A method of exploring and producing offshore energy sites using a wet docking station, the method comprising:

disposing a buoyant central docking station in communication with an adjustable buoyancy chamber, wherein said adjustable buoyancy chamber is used to adjust the buoyancy of said buoyant central docking station; and
disposing said buoyant central docking station

in communication with at least one subordinate docking station, wherein said at least one subordinate docking station is used to capture and lift at least one sea vessel.

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13. The method of Claim 12, further comprising disposing an adjustable buoyancy chamber that is externally disposed relative to said central docking station.

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14. The method of Claim 12, further comprising disposing an adjustable buoyancy chamber that is internally disposed relative to said central docking station.

15. The method of Claim 12, further comprising disposing an adjustable buoyancy chamber having a plurality of discrete inner chambers.

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16. The method of Claim 12, further comprising disposing an adjustable buoyancy chamber having at least one fluid intake port and at least one fluid evacuation port.

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17. The method of Claim 12, further comprising disposing an adjustably buoyant central docking station having a coupling member used to couple said at least one sea vessel to said central docking station.

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18. The wet docking station of Claim 12, further comprising disposing a buoyant central docking station having a coupling member used to couple a plurality of captured sea vessels to one another.

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19. The method of Claim 18, further comprising disposing a buoyant central docking station having an intermediate deck surface.

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20. The method of Claim 12, further comprising equipping said at least one sea vessel with an offshore energy exploration equipment package.

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21. The method of Claim 12, further comprising equipping said at least one sea vessel with an offshore energy production equipment package.

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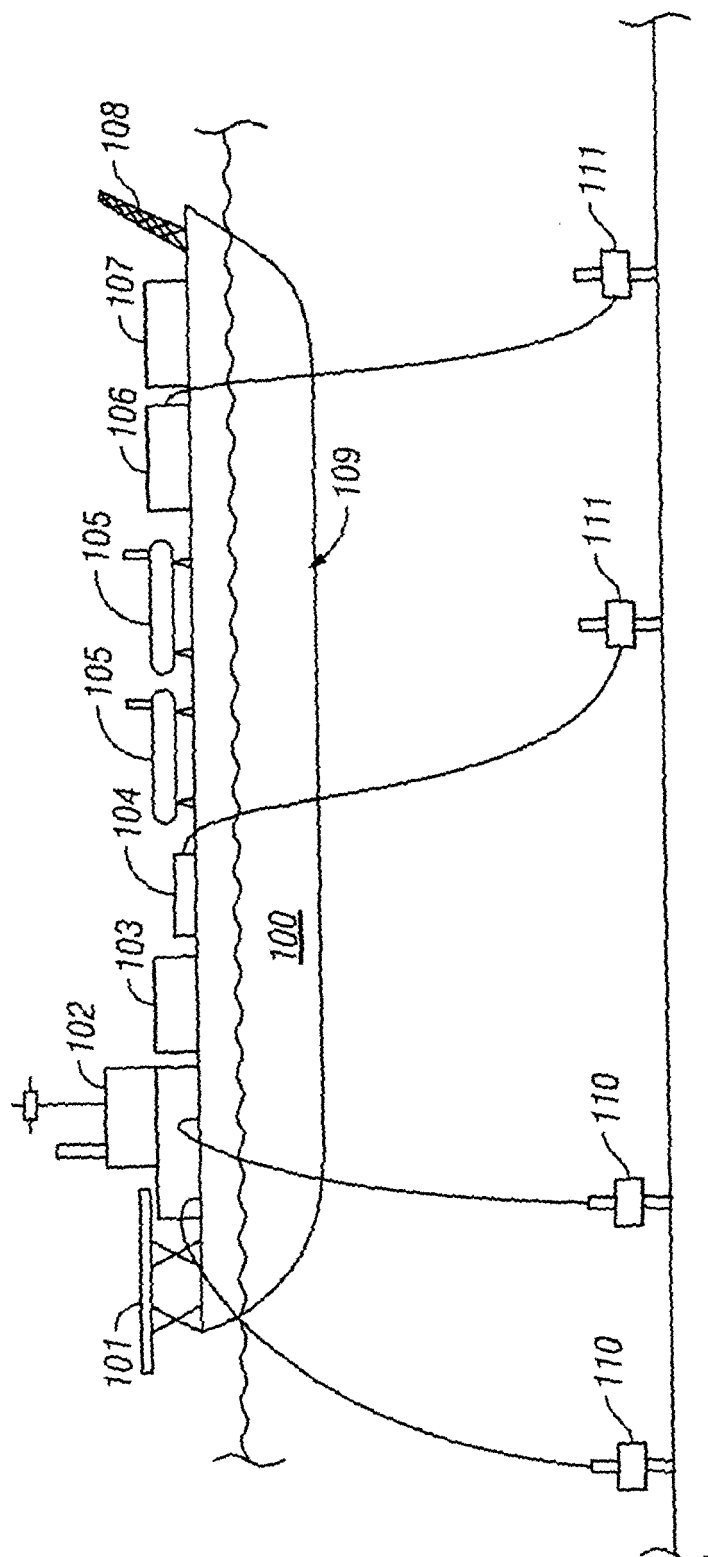


FIG. 1
(Prior Art)

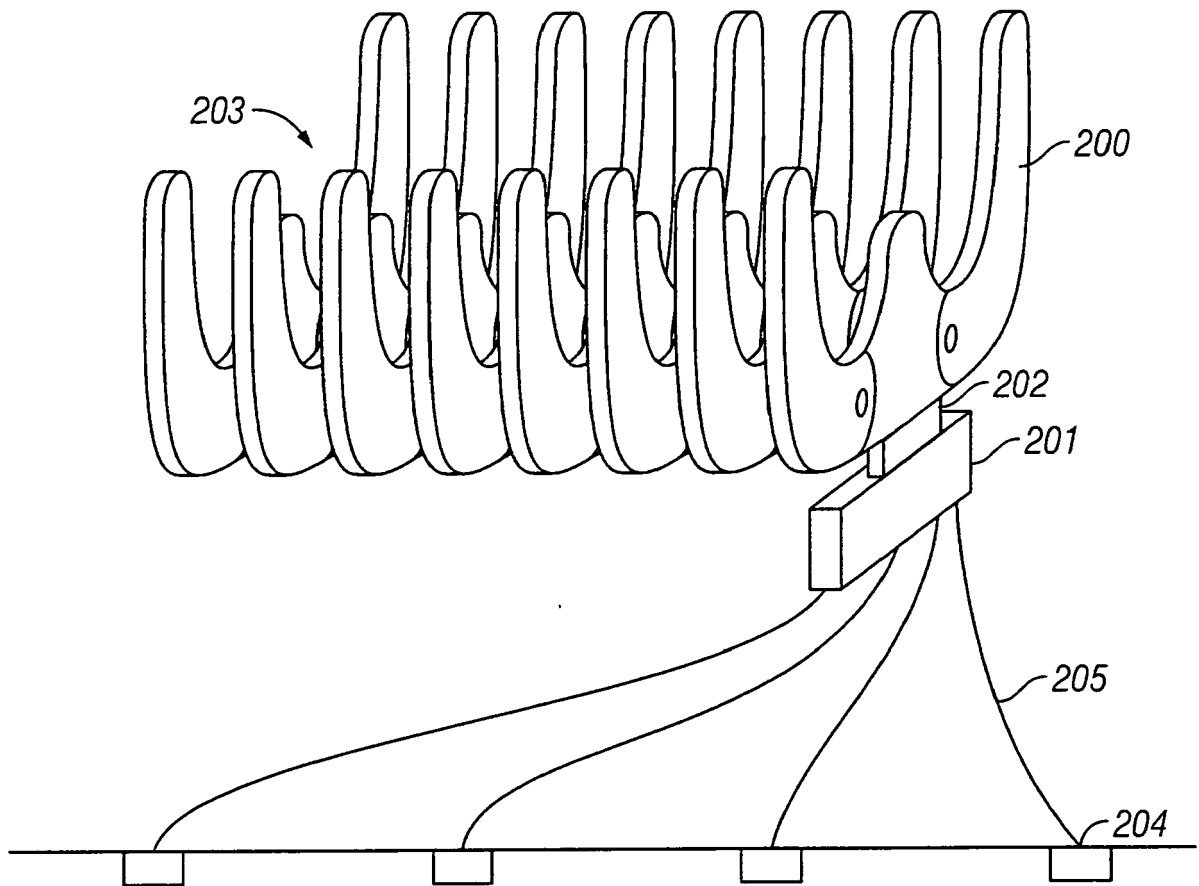


FIG. 2

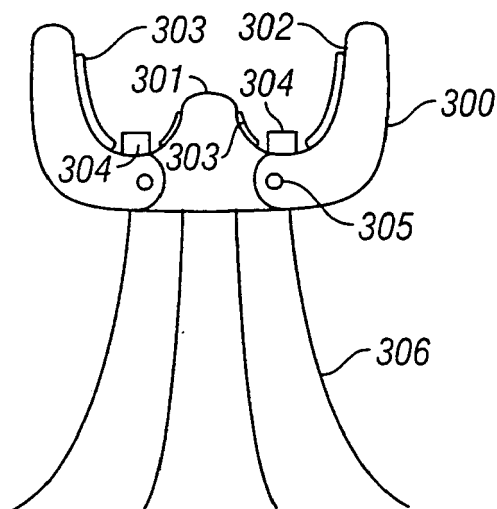


FIG. 3

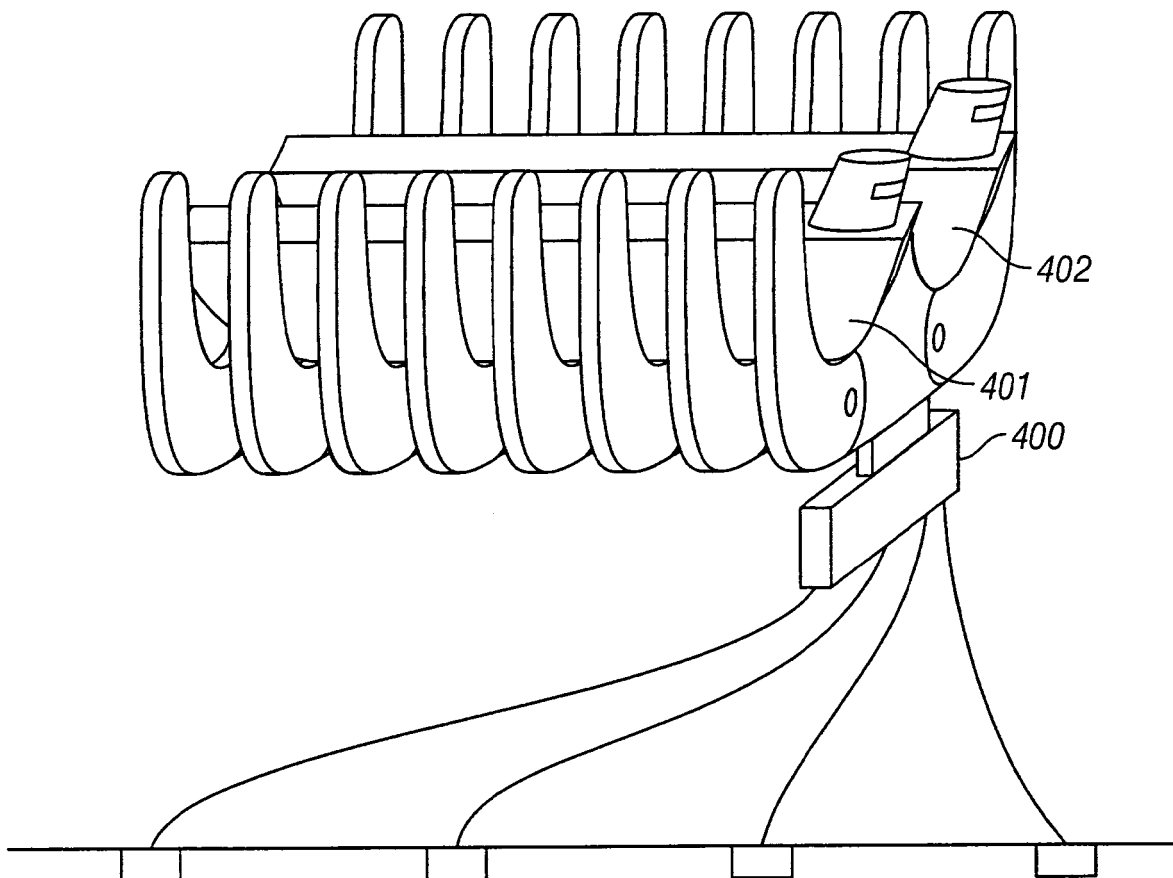


FIG. 4

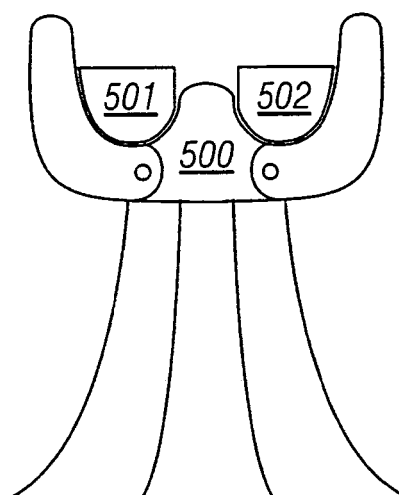


FIG. 5

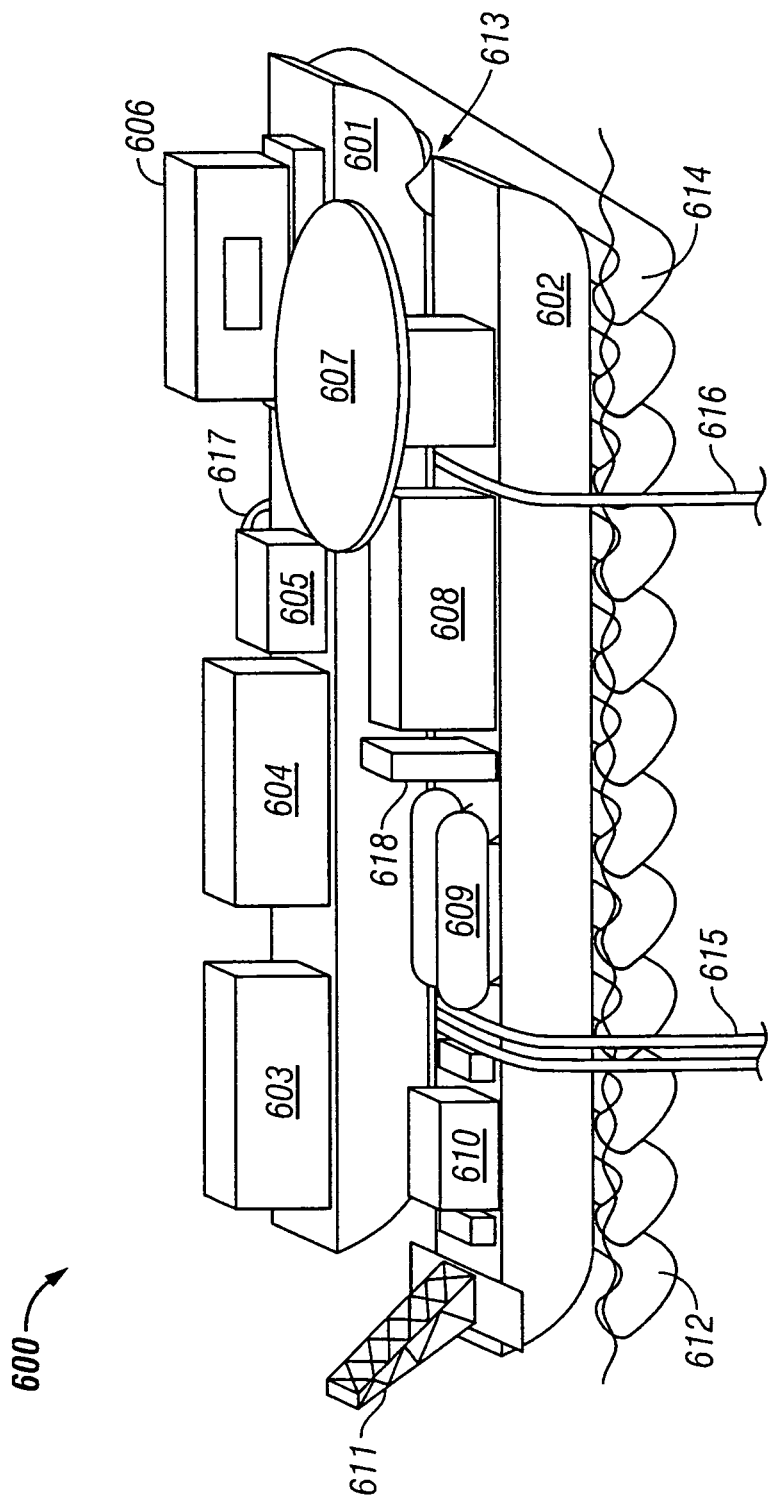


FIG. 6

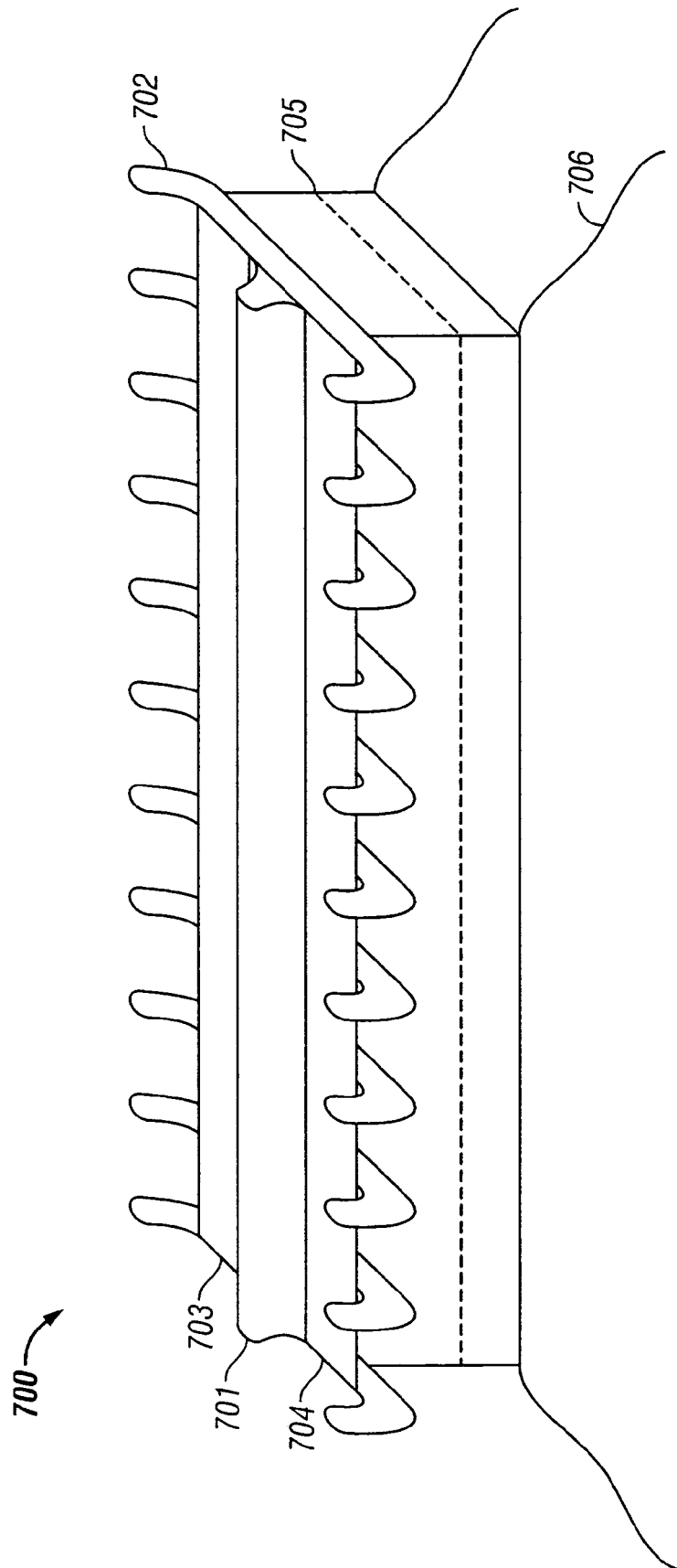


FIG. 7

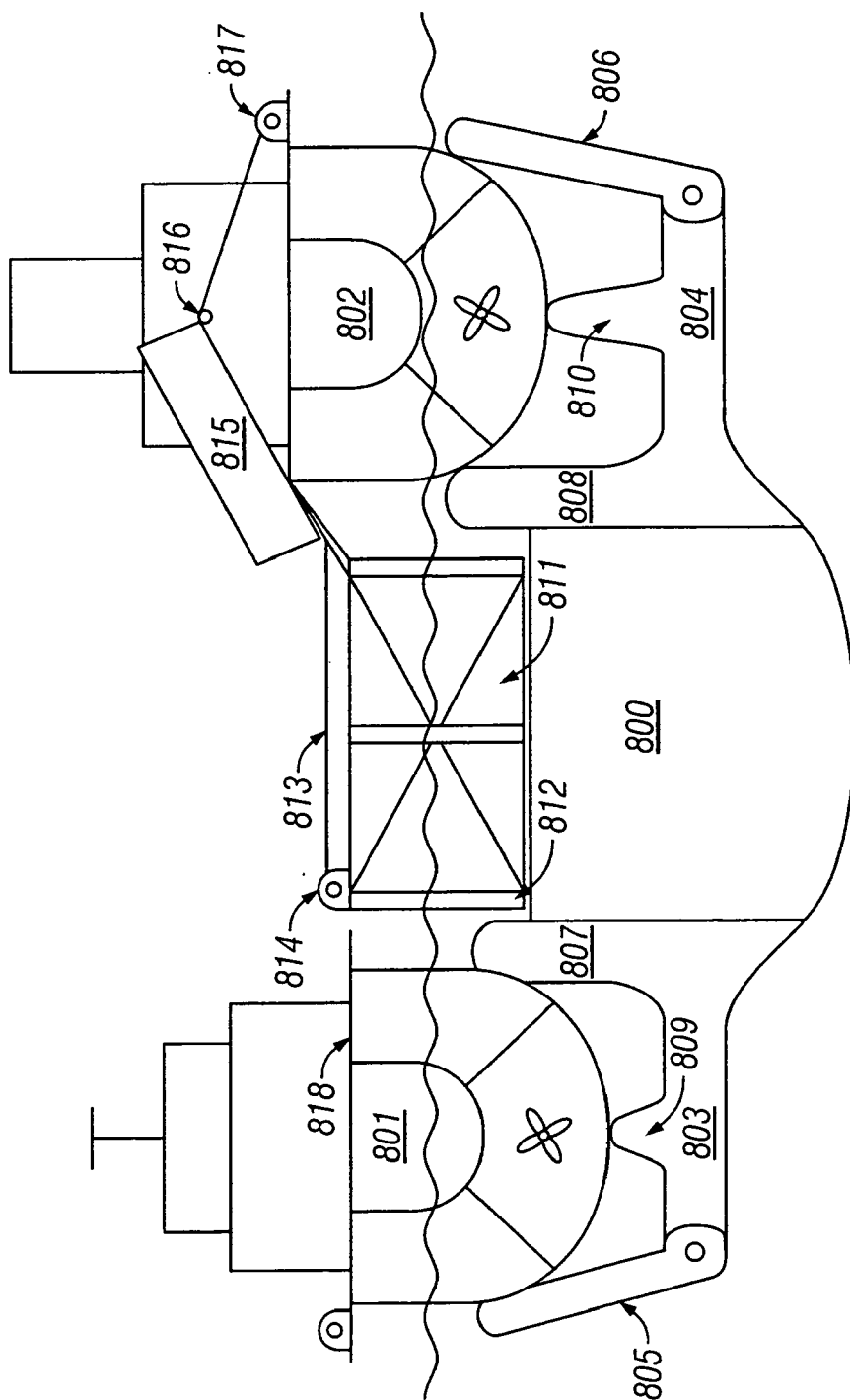


FIG. 8

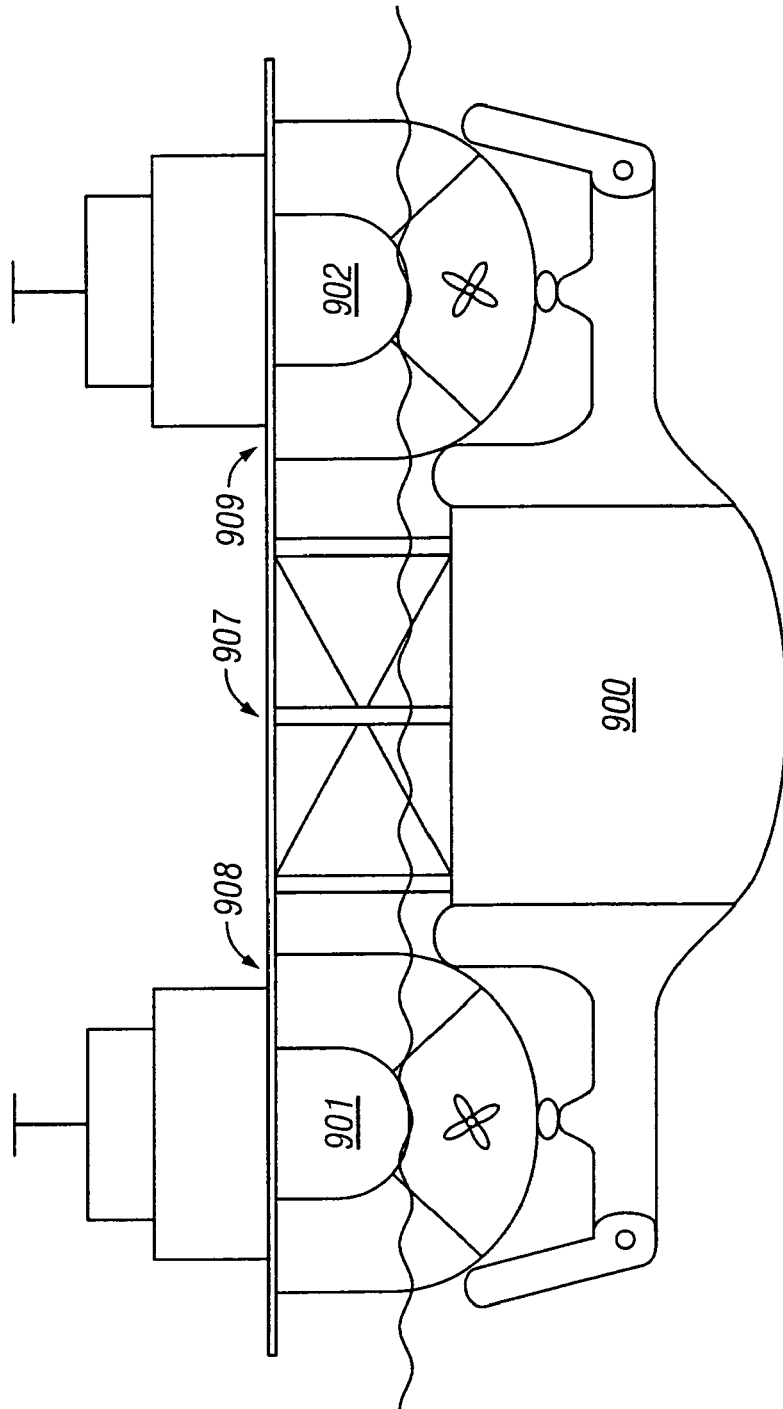


FIG. 9

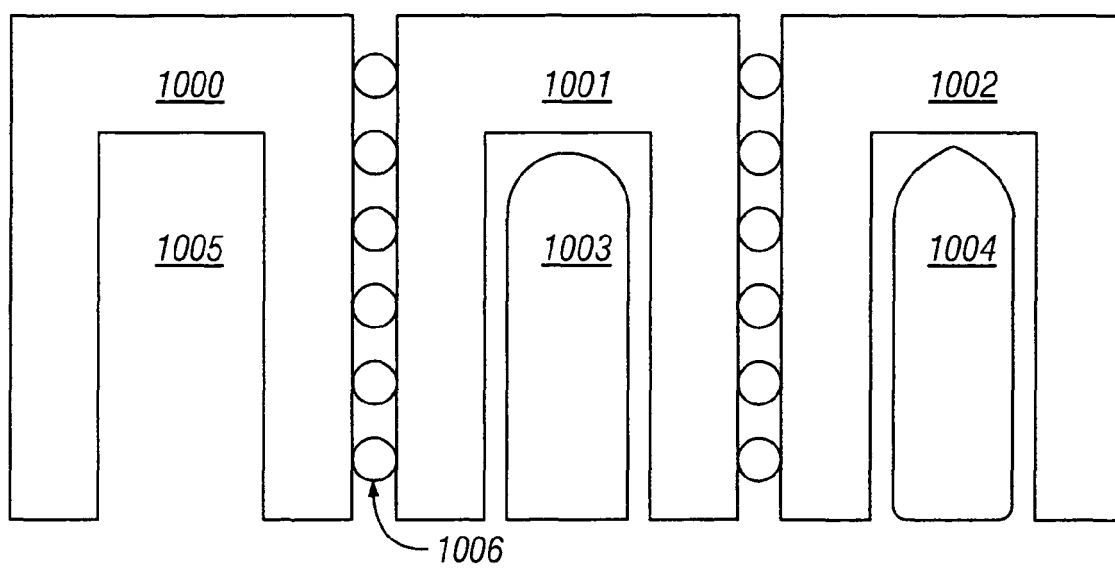


FIG. 10

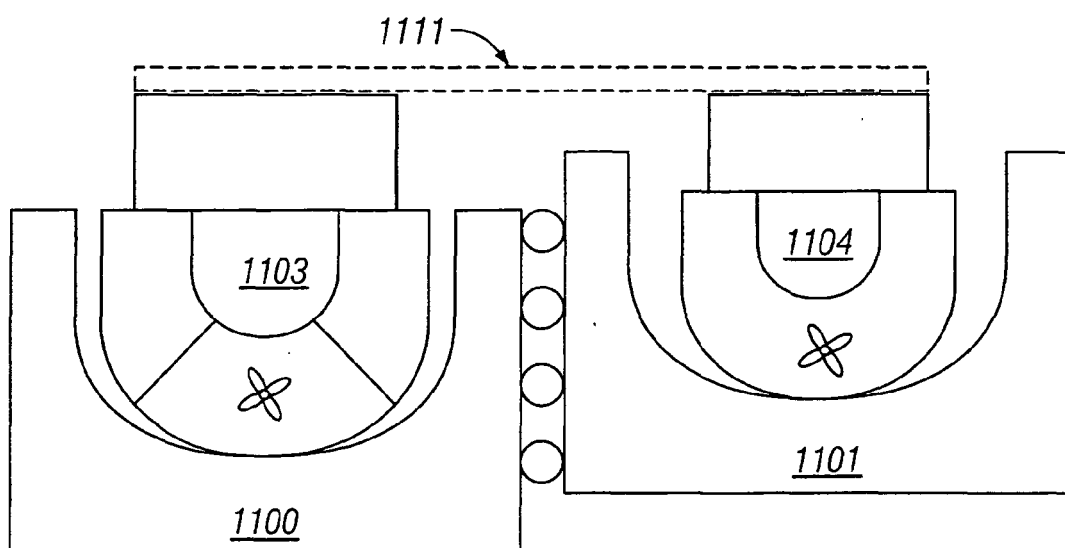


FIG. 11



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