compartment used as the ballast tank or the void space is provided on the outer side of the wing cargo tank, and in the number of tanks or compartments excluding the slop tanks, the number of the wing cargo tanks on one side is made larger than the number of the center cargo tanks.

[0043]

According to this method, the ship-type structure which can exert the aforementioned effects can be easily designed.

[0043a]

In view of the above, according to a first aspect of the present disclosure, there is provided a ship-type structure having a tank constitution, comprising: center cargo tanks and wing cargo tanks on both sides thereof symmetrically to a transverse direction; and ship-side-and-bottom compartments used as a ballast tank or a void space on an outer side of the wing cargo tanks, wherein in the number of tanks or compartments excluding slop tanks, the number of the wing cargo tanks on one side is made larger than the number of the center cargo tanks, wherein regarding the ship longitudinal direction, one of the ship-side-and-bottom compartments adjacent to one side of one of a plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a U-shaped compartment structure formed of a U-shaped compartment covering a lower side portion of the center cargo tank, and a lower side portion and an outer side portion of the wing cargo tank in communication, and one of the ship-side-and-bottom compartments adjacent to another side of the one of the

plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a J-shaped compartment structure formed of a pair of two J-shaped compartments, each covering the lower side portion of the center cargo tank, and the lower side portion and the outer side portion of the wing cargo tank in communication and having a ship-bottom longitudinal bulkhead on the lower side of the center tank; and regarding the ship longitudinal direction, the ship-side-and-bottom compartments are constituted by alternately arranging the U-shaped compartment structure and the J-shaped compartment structure.

[0043b]

According to a second aspect of the present disclosure, there is provided a method for designing a ship-type structure having a tank constitution, wherein center cargo tanks and wing cargo tanks on the both sides thereof are provided symmetrically to the transverse direction, ship-side-and-bottom compartment used as a ballast tank or a void space is provided on an outer side of the wing cargo tank, wherein in the number of tanks or compartments excluding the slop tanks, the number of the wing cargo tanks on one side is made larger than the number of the center cargo tanks, and wherein regarding the ship longitudinal direction, one of the ship-side-and-bottom compartments adjacent to one side of one of a plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a U-shaped compartment structure formed of a U-shaped compartment covering

a lower side portion of the center cargo tank, and a lower side portion and an outer side portion of the wing cargo tank in communication, and one of the ship-side-and-bottom compartments adjacent to another side of the one of the plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a J-shaped compartment structure formed of a pair of two J-shaped compartments, each covering the lower side portion of the center cargo tank, and the lower side portion and the outer side portion of the wing cargo tank in communication and having a ship-bottom longitudinal bulkhead on the lower side of the center tank; and regarding the ship longitudinal direction, the ship-side-and-bottom compartments are constituted by alternately arranging the U-shaped compartment structure and the J-shaped compartment structure.

Advantageous Effects of Invention

[0044]

According to the ship-type structure and a method for designing a ship-type structure according to the present invention, a compartment arrangement particularly resistant to ship-side damage is planned with as little increase as possible in the number of tanks which results in a cost increase, that is, in the surface area of the watertight bulkheads for partitioning the tanks, the tanker remains easy to use, the cost is kept competitive, and the compartment arrangement can be used as it is in a floating offshore storage structure, whereby a floating offshore storage structure that has reduced design

costs and shortened lead time can be provided inexpensively and quickly.

Brief Description of Drawings

[0045]

[Fig. 1] Fig. 1 is a plan view schematically illustrating

CLAIMS

1. A ship-type structure having a tank constitution, comprising:

center cargo tanks and wing cargo tanks on both sides thereof symmetrically to a transverse direction; and

ship-side-and-bottom compartments used as a ballast tank or a void space on an outer side of the wing cargo tanks, wherein

in the number of tanks or compartments excluding slop tanks, the number of the wing cargo tanks on one side is made larger than the number of the center cargo tanks,

wherein regarding the ship longitudinal direction, one of the ship-side-and-bottom compartments adjacent to one side of one of a plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a U-shaped compartment structure formed of a U-shaped compartment covering a lower side portion of the center cargo tank, and a lower side portion and an outer side portion of the wing cargo tank in communication, and one of the ship-side-and-bottom compartments adjacent to another side of the one of the plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a J-shaped compartment structure formed of a pair of two J-shaped compartments, each covering the lower side portion of the center cargo tank, and the lower side portion and the outer side portion of the wing cargo tank in communication and having a ship-bottom longitudinal bulkhead on the lower side of the center tank; and

regarding the ship longitudinal direction, the ship-side-and-bottom compartments are constituted by alternately arranging the U-shaped compartment structure and the J-shaped compartment structure.

2. The ship-type structure according to claim 1, wherein

a transverse bulkhead for side compartment partitioning the ship-side-and-bottom compartments with respect to a ship longitudinal direction is provided by being shifted by a preset distance with respect to the transverse bulkhead for wing cargo tank partitioning the longitudinal direction of the wing cargo tank.

3. The ship-type structure according to claim 1 or 2, wherein

the number of the ship-side-and-bottom compartments on one side is made larger than the number of the center cargo tanks.

4. The ship-type structure according to any one of claims 1 to 3, wherein

the number of the ship-side-and-bottom compartments on the one side is set to not less than the number of the wing cargo tanks on the one side in the number of the tanks or compartments excluding the slop tanks.

5. The ship-type structure according to any one of claims 1 to 4, wherein

the number of the wing cargo tanks on the one side is set to 1.5 times or more and 2 times or less of the number of the center cargo tanks in the number of the tanks or compartments excluding the slop tanks.

6. The ship-type structure according to any one of claims 1 to 5, wherein

a position in the transverse direction of a longitudinal bulkhead between the center cargo tank and the wing cargo tank is set, assuming a ship width at the position in a ship longitudinal direction thereof is Bs, within a range from "20% Bs" to "30% Bs" inside a side shell.

7. The ship-type structure according to any one of claims 1 to 6, wherein

in the ship-side-and-bottom compartment, a ship-bottom center compartment is provided on the lower side of the center cargo tank and between the ship-bottom longitudinal bulkheads and if the structure is used as the tanker, the ship-bottom center compartment is used as a compartment with the ballast water, while if the structure is used as the floating offshore storage structure, the ship-bottom center compartment is used as a compartment without the ballast water, wherein the ship-side-and-bottom compartment is the J-shaped compartment structure.

8. A method for designing a ship-type structure having a tank constitution, wherein

center cargo tanks and wing cargo tanks on the both sides thereof are provided symmetrically to the transverse direction, ship-side-and-bottom compartment used as a ballast tank or a void space is provided on an outer side of the wing cargo tank, wherein

in the number of tanks or compartments excluding the slop tanks, the number of the wing cargo tanks on one side is made larger than the number of the center cargo tanks, and

wherein regarding the ship longitudinal direction, one of the ship-side-and-bottom compartments adjacent to one side of one of a plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a U-shaped compartment structure formed of a U-shaped compartment covering a lower side portion of the center cargo tank, and a lower side portion and an outer side portion of the

wing cargo tank in communication, and one of the ship-side-and-bottom compartments adjacent to another side of the one of the plurality of transverse bulkheads for side compartment dividing the ship-side-and-bottom compartment is formed by a J-shaped compartment structure formed of a pair of two J-shaped compartments, each covering the lower side portion of the center cargo tank, and the lower side portion and the outer side portion of the wing cargo tank in communication and having a ship-bottom longitudinal bulkhead on the lower side of the center tank; and

regarding the ship longitudinal direction, the ship-side-and-bottom compartments are constituted by alternately arranging the U-shaped compartment structure and the J-shaped compartment structure.