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(54) Tanker.

(57) Tanker for carrying a bulk cargo which tanker comprises a hull comprising a bottom and double side walls of which each double side wall comprises an inner wall and an outer wall and defines an inner space closed at its lower end, and at least one centre cargo tank having a top wall, a bottom wall and side walls, wherein the bottom of the hull comprises the bottom wall of the cargo tank(s), the inner walls of the double side walls comprise the side walls of the cargo tank(s), and the double side walls extend below the bottom wall of the cargo tank(s).

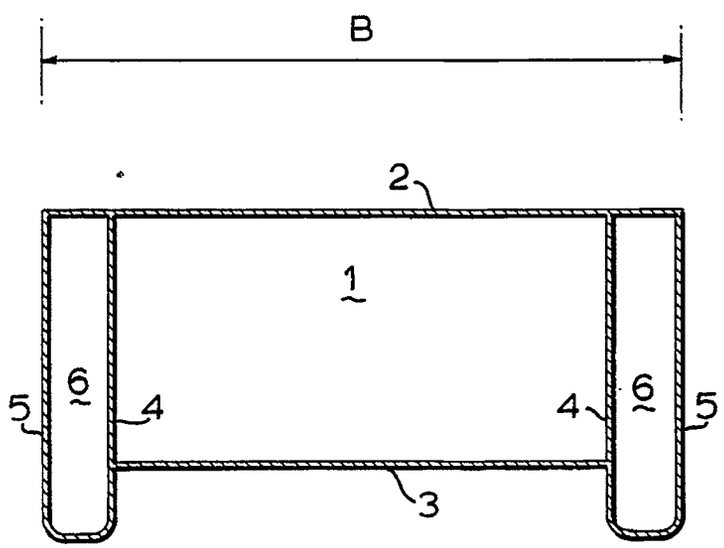

FIG.1

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The present invention relates to a tanker for carrying a bulk cargo, such as an oil.

Nowadays there is an increasing need to construct tankers in such a way that in case of wreck or other marine catastrophe leakage of cargo and thus environmental pollution is avoided or minimized.

For that purpose tankers have been built in the past with double bottoms and double sides, which brought about substantial increases in the prices of tankers. Further, double bottom constructions have the drawback that in case the bottom of a cargo tank is penetrated due to corrosion and/or erosion, oil may leak into the double bottom and generate a hazardous mixture of air and hydrocarbonaceous vapours, in case for instance oil is the cargo. Apart from the potential danger for explosion, there would be the requirement for gas detection and thorough ventilation of the double bottom before entry for routine structural inspections. Moreover, access to a double bottom also causes a problem. It must be either through a manhole in the bottom of the cargo tank which despite a bolted steel cover, introduces a source of leakage, or else through a vertical shaft which is led right up to the deck. Other concerns include the maintenance of the steel structure in double bottoms, in particular preservation of the anti-corrosive coatings which are required for the prevention of corrosion.

Object of the present invention is to provide a tanker of such a construction that environmental pollution is avoided or minimized in case of wreck or other marine catastrophe with a minimum increase of cost.

The present invention therefore relates to a tanker for carrying a bulk cargo which tanker comprises a hull comprising a bottom and double side walls of which each double side wall comprises an inner wall and an outer wall and defines an inner space closed at its lower end, and at least one centre cargo tank having a top wall, a bottom wall and side walls, wherein the bottom of the hull comprises the bottom wall of the cargo tank(s), the inner walls of the double side walls comprise the side walls of the cargo tank(s), and the double side walls extend below the bottom wall of the cargo tank(s).

In this way there is less likelihood that the cargo containment will be breached in the event of for instance a collision or grounding.

Preferably, the double side walls extend below the bottom wall of the cargo tank for a distance which is at least equal to B/50 wherein B represents the beam of the tanker. The likelihood that the cargo containment will be breached is then minimized.

More preferably, the double side walls extend below the bottom wall of the cargo tank for a distance which is at least equal to B/15, wherein B has the meaning as indicated hereinabove.

Advantageously, the cargo tank is of such a dimension that the H_1/H_2 ratio is at most 1 when the tank is filled with cargo, wherein H_1 represents the hydrostatic head on the bottom wall of the cargo tank due to the cargo in the tank and H_2 represents the hydrostatic head on the bottom wall of the cargo tank due to the outside water. Hence, in the event of the bottom wall of a cargo tank being ruptured, there will be an inflow of outside water to the cargo tank rather than an outflow of for instance oil into the outside water.

Suitably, the tanker comprises transitions, preferably curved transitions, between the bottom wall of the cargo tank and the inner walls of the double side walls extending below the bottom wall of the cargo tank.

Preferably, the hull comprises two or more double side walls whereby each inner space is closed at the front end and at the rear end.

Suitably, the inner walls of the double side walls are the side walls of the cargo tank.

The inner wall and outer wall of each double side may be arranged either parallel or at an angle to each other.

Advantageously, the inner and outer wall of each double side wall are arranged parallel with respect to each other.

Preferably, the double side walls of the tanker in accordance with the present invention may be arranged vertically or at an angle to the vertical, preferably they are arranged substantially vertical.

Preferably, the distance between the inner and outer wall of each double side wall is at most B/5, wherein B represents the beam of the tanker.

During transport of the bulk cargo the inner spaces defined by the double side walls may be empty, and after discharging the cargo from the tank(s) the inner spaces may be filled with water to function as balast tanks. Suitably, the double side walls are located along the complete cargo tank. Thus the inner spaces defined by the double side walls may be used either for the carriage of cargo or for the carriage of water ballast or may be left void.

The inner spaces and cargo tank(s) may be subdivided to any required extent, both transversely and longitudinally.

In Figure 1 a cross-section of a tanker in accordance with the present invention is schematically shown.

The tanker as depicted in Figure 1 having a beam B comprises a centre cargo tank 1 extending longitudinally for any convenient distance and having a top wall 2 and a bottom wall 3, and double side walls each comprising an inner wall 4 and an outer wall 5 and defining an inner space 6.

Claims

1. Tanker for carrying a bulk cargo which comprises a hull comprising a bottom and double side walls of which each double side wall comprises an inner wall and an outer wall and defines an inner space closed at its lower end, and at least one centre cargo tank having a top wall, a bottom wall and side walls, wherein the bottom of the hull comprises the bottom wall of the cargo tank(s), the inner walls of the double side walls comprise the side walls of the cargo tank(s), and the double side walls extend below the bottom wall of the cargo tank(s).

2. Tanker according to claim 1, wherein the double side walls extend below the bottom wall of the cargo tank for a distance which is at least equal to B/50 wherein B represents the beam of the tanker.

3. Tanker according to claim 2, wherein the double side walls extend below the bottom wall of the cargo tank for a distance which is at least equal to B/15, wherein B represents the beam of the tanker.

4. Tanker according to any one of claims 1-3, wherein the cargo tank is of such a dimension that the H_1/H_2 ratio is at most 1 when the tank is filled with cargo, wherein H_1 represents the hydrostatic head on the bottom wall of the cargo tank due to the cargo in the tank and H_2 represents the hydrostatic head on the bottom wall of the cargo tank due to the outside water.

5. Tanker according to any one of claims 1-4, wherein the tanker comprises transitions between the bottom wall of the cargo tank and the inner walls of the double side walls extending below the bottom wall of the cargo tank.

6. Tanker according to claim 5, wherein the transitions are curved.

7. Tanker according to any one of claims 1-6, wherein the inner walls of the double side walls are the side walls of the cargo tank.

8. Tanker according to any one of claims 1-7, wherein the hull comprises two or more double side walls whereby each inner space is closed at the front end and at the rear end.

9. Tanker according to any one of claims 1-8, wherein the inner wall and outer wall of each double side wall are arranged parallel with respect to each other.

10. Tanker according to any one of claims 1-9, wherein the double side walls are arranged substantially vertical.

11. Tanker according to claim 9 or 10, wherein the distance between the inner and outer wall of each double side wall is at most B/5, wherein B represents the beam of the tanker.

12. Tanker substantially as described hereinbefore in particular with reference to Figure 1.

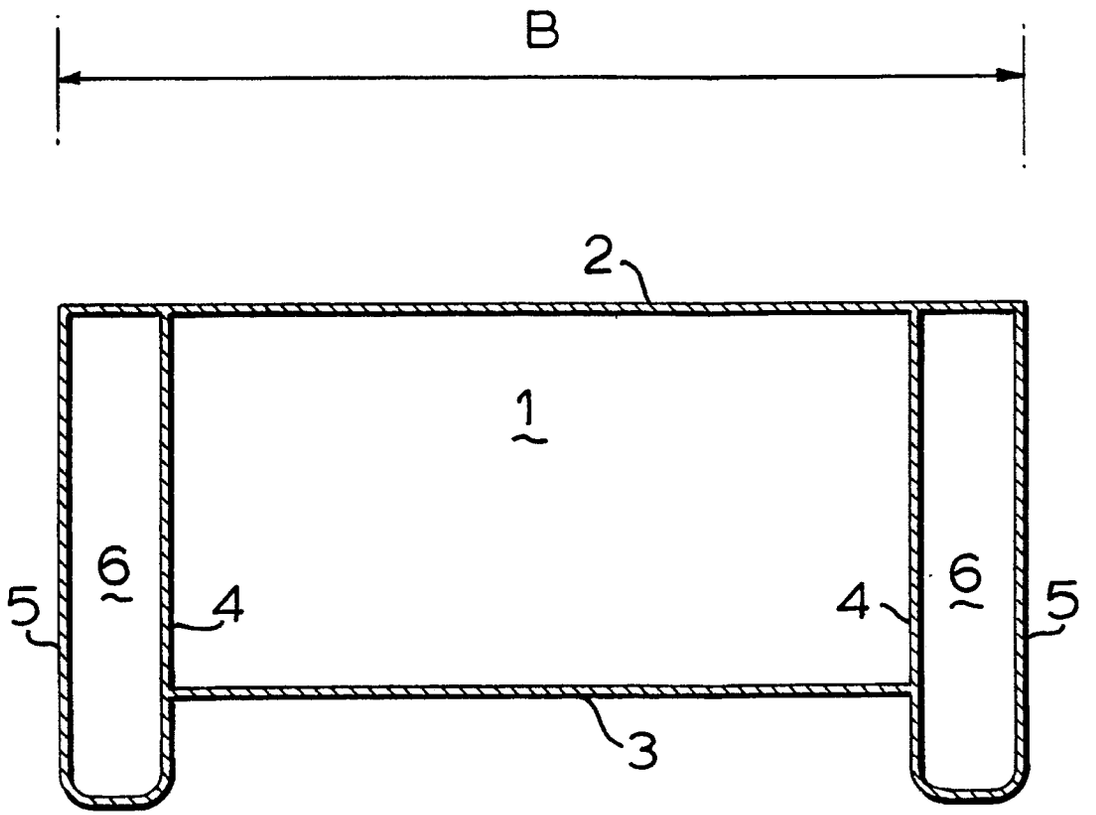

FIG.1

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EUROPEAN SEARCH REPORT

Application Number

EP 91 20 0694

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X,Y,A	US-A-2 348 783 (BRUNT) * page 1, left-hand column, lines 12 - 44; figures 2, 6 *	1-3,5,6,9, 10,12.,4., 7,8.	B 63 B 25/08 B 63 B 3/64 B 63 B 3/20 B 63 B 25/10
Y	GB-A-2 000 474 (CONWAY) * page 3, lines 21 - 114; figures 1-3 *	4.	
A	US-A-2 260 007 (DE CHIMANG) * page 2, left-hand column, line 4 - right-hand column, line 66; figures 1-3 *	1,2,5-12.	
A	FR-A-2 408 506 (VAN DER GIESSEN-DE NOORD) * page 3, line 20 - page 4, line 34; figures 1-5 *	1-3,5,6, 12.	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 63 B

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	06 August 91	DE SENA Y HERNANDORE

CATEGORY OF CITED DOCUMENTS

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