# DESCRIPTION

Title of Invention: ~~LNG Tank Mounted on LNG Ship and~~ Method of Manufacturing ~~the Same~~Liquefied Natural Gas Carrier

## Technical Field

[0001]

The present invention relates to a method of manufacturing a ~~LNG tank for storing LNG~~ (liquefied natural gas~~), and is one that can be installed in, to say nothing of an ordinary LNG~~ carrier~~, a barge in a LNG-FPSO (Floating Production, Storage and Off-Loading system) in which a LNG liquefaction plant is mounted on the barge and in a FSRU (Floating Storage and Re-gasification Unit) in which a re-gasification plant is mounted on the barge and can be used for LNG storage~~.

## Background Art

[0002]

Types of tank structures of conventional LNG ships are roughly divided into a self-supporting spherical tank, a self-supporting prismatic tank (SPB) type, and a membrane tank. An independent spherical tank is a self-supporting spherical tank made of an aluminum alloy and is supported in a hold formed by a double hull, via a skirt extending from its equatorial portion. A thermal insulation work is done on an outer surface of the tank. Due to its spherical shape, the spherical tank has a disadvantage of not being capable of having a sufficient tank volume comparable to the size of the hull. The tank of this type little suffers damage even when its cargo sloshes at the time of heavy weather.

[0003]

The self-supporting prismatic tank is one in which a prismatic tank is housed in a hold having a double hull structure. A cold insulator is provided on an outer surface of the prismatic tank made of an aluminum alloy. Strength members for the prismatic tank are provided on an inner side of the tank. This type requires void space between the prismatic tank and an inner hull, which accordingly reduces volumetric efficiency of the tank. On the

other hand, having the strength members inside the tank, it has an advantage that sloshing of a liquid cargo does not easily occur.

[0004]

Next, regarding the membrane type, on an inner surface of a hold having a double hull structure, thin sheets (membranes) made of nickel steel or stainless steel are affixed, with a cold insulator therebetween, to form a LNG tank. This type has an advantage that almost all the volume of the hold can be used as a tank volume. On the other hand, it has a disadvantage that the membranes and the cold insulator are likely to suffer damage due to the sloshing of a liquid cargo. It also has a problem that a thermal insulation work, in particular, the welding of the membranes is complicated and it requires a long period for the construction.

Summary of Invention

Technical Problem

[0005]

It is an object of this invention to provide a method of manufacturing a ~~LNG tank mounted on a LNG~~ liquefied natural gas carrier, on which ~~or~~ a LNG tank is mounted~~barge~~, the LNG tank not easily suffering damage by sloshing of a liquid cargo at the time of heavy weather and in addition capable of being constructed in a short construction period.

Means for Solving the Problem

[0006]

According to a method of manufacturing a liquefied natural gas carrier~~the LNG tank~~ of this invention, the LNG tank assembled on land is mounted and fixed in a hold having a double hull structure. This LNG tank has a prismatic tank, and a heat insulator and a membrane are attached on an inner surface of the container. Strength members are attached on an outer surface of the prismatic tank in advance to reinforce the prismatic tank. After the LNG tank is mounted in the hold, the strength members are connected to the hull. Therefore, a characteristic lies in that the weight of a liquid cargo is not supported only by the prismatic tank but is supported by the prismatic tank and the hull structure together.

[0007]

In this LNG ship, the heat insulation and membrane work of the LNG

# CLAIMS

~~[Claim 1] A liquefied natural gas carrier comprising:~~

~~liquefied natural gas tanks installed in a hold having a hull structure having an inner hull and a shell plate, with space being provided between the liquefied natural gas tanks and the inner hull,~~

~~the liquefied natural gas carrier being characterized in that:~~

~~the liquefied natural gas tanks each have a prismatic tank, an inner surface of the prismatic tank being covered by a cold insulator and a membrane; and~~

~~the prismatic tank has a prismatic tank-side strength member for reinforcement on an outer surface, the prismatic tank-side strength member being coupled to an inner hull-side strength member attached on the inner hull.~~

~~[Claim 2] The liquefied natural gas carrier according to claim 1, wherein the liquefied natural gas tanks are installed in the single hold, being arranged from left to right in a width direction of the hold.~~

~~[Claim 3~~1.~~]~~ A method of manufacturing a liquefied natural gas carrier comprising:

a first step of forming a liquefied natural gas tank on land by assembling a prismatic tank ~~on whose outer surface~~with ~~a~~ prismatic tank-side strength members for reinforcement, which are arranged on transversely and longitudinally and welded on an outer surface of the prismatic tank so as to project outwardly therefrom ~~is attached~~ and by performing a thermal insulation barrier work on an inner surface of the prismatic tank;

a second step of forming a hold of a ship, the hold having a double hull structure having an inner hull and a shell plate;

a third step of mounting the liquefied natural gas tank in the hold of the ship, the third step being carried out after the second step; and

a fourth step of joining the prismatic tank-side strength members, which have been, in advance, arranged on transversely and longitudinally and welded to ~~attached on~~ the outer surface of the prismatic tank, to ~~an~~ inner hull-side strength members, which have been, in advance, welded to ~~attached on~~ the inner hull of the ship so as to project inwardly therefrom.

2. The method of manufacturing the liquefied natural gas carrier according to claim 1, wherein the liquefied natural gas tanks are installed in the single hold, being arranged from left to right in a width direction of the hold.

# DESCRIPTION

Title of Invention: Method of Manufacturing Liquefied Natural Gas Carrier

## Technical Field

[0001]

The present invention relates to a method of manufacturing a liquefied natural gas carrier.

## Background Art

[0002]

Types of tank structures of conventional LNG ships are roughly divided into a self-supporting spherical tank, a self-supporting prismatic tank (SPB) type, and a membrane tank. An independent spherical tank is a self-supporting spherical tank made of an aluminum alloy and is supported in a hold formed by a double hull, via a skirt extending from its equatorial portion. A thermal insulation work is done on an outer surface of the tank. Due to its spherical shape, the spherical tank has a disadvantage of not being capable of having a sufficient tank volume comparable to the size of the hull. The tank of this type little suffers damage even when its cargo sloshes at the time of heavy weather.

[0003]

The self-supporting prismatic tank is one in which a prismatic tank is housed in a hold having a double hull structure. A cold insulator is provided on an outer surface of the prismatic tank made of an aluminum alloy. Strength members for the prismatic tank are provided on an inner side of the tank. This type requires void space between the prismatic tank and an inner hull, which accordingly reduces volumetric efficiency of the tank. On the

other hand, having the strength members inside the tank, it has an advantage that sloshing of a liquid cargo does not easily occur.

[0004]

Next, regarding the membrane type, on an inner surface of a hold having a double hull structure, thin sheets (membranes) made of nickel steel or stainless steel are affixed, with a cold insulator therebetween, to form a LNG tank. This type has an advantage that almost all the volume of the hold can be used as a tank volume. On the other hand, it has a disadvantage that the membranes and the cold insulator are likely to suffer damage due to the sloshing of a liquid cargo. It also has a problem that a thermal insulation work, in particular, the welding of the membranes is complicated and it requires a long period for the construction.

Summary of Invention

Technical Problem

[0005]

It is an object of this invention to provide a method of manufacturing a liquefied natural gas carrier, on which a LNG tank is mounted, the LNG tank not easily suffering damage by sloshing of a liquid cargo at the time of heavy weather and in addition capable of being constructed in a short construction period.

Means for Solving the Problem

[0006]

According to a method of manufacturing a liquefied natural gas carrier of this invention, the LNG tank assembled on land is mounted and fixed in a hold having a double hull structure. This LNG tank has a prismatic tank, and a heat insulator and a membrane are attached on an inner surface of the container. Strength members are attached on an outer surface of the prismatic tank in advance to reinforce the prismatic tank. After the LNG tank is mounted in the hold, the strength members are connected to the hull. Therefore, a characteristic lies in that the weight of a liquid cargo is not supported only by the prismatic tank but is supported by the prismatic tank and the hull structure together.

[0007]

In this LNG ship, the heat insulation and membrane work of the LNG

# CLAIMS

1. A method of manufacturing a liquefied natural gas carrier comprising:

a first step of forming a liquefied natural gas tank on land by assembling a prismatic tank with prismatic tank-side strength members for reinforcement, which are arranged on transversely and longitudinally and welded on an outer surface of the prismatic tank so as to project outwardly therefrom and by performing a thermal insulation barrier work on an inner surface of the prismatic tank;

a second step of forming a hold of a ship, the hold having a double hull structure having an inner hull and a shell plate;

a third step of mounting the liquefied natural gas tank in the hold of the ship, the third step being carried out after the second step; and

a fourth step of joining the prismatic tank-side strength members, which have been, in advance, arranged on transversely and longitudinally and welded to the outer surface of the prismatic tank, to inner hull-side strength members, which have been, in advance, welded to the inner hull of the ship so as to project inwardly therefrom.

2. The method of manufacturing the liquefied natural gas carrier according to claim 1, wherein the liquefied natural gas tanks are installed in the single hold, being arranged from left to right in a width direction of the hold.