

[54] **STRUCTURE OF CARGO OIL TANKS OF A TANKER**

[75] Inventor: **Minoru Tanaka**, Kamakura, Japan

[73] Assignee: **Nippon Kokan Kabushiki Kaisha**, Tokyo, Japan

[22] Filed: **Jan. 2, 1974**

[21] Appl. No.: **429,826**

3,356,060 12/1967 Field et al. 114/74 R
3,406,650 10/1968 Miller..... 114/77 R
3,499,410 3/1970 Field et al. 114/74 R

Primary Examiner—Trygve M. Blix
Assistant Examiner—Jesus D. Sotelo
Attorney, Agent, or Firm—Waters, Schwartz & Nissen

[52] U.S. Cl. **114/74 R**
[51] Int. Cl.² **B63B 25/02**
[58] Field of Search 114/72-83

[56] **References Cited**

UNITED STATES PATENTS

3,247,822 4/1966 Laskey et al. 114/78

[57] **ABSTRACT**

A center tank of cargo oil tanks of a tanker is supported by integral ring-shaped transverse webs at plural positions in the longitudinal direction of a tanker whereby the strength of the cargo oil tanks is increased, necessary blocks are simplified and the building time is shortened.

1 Claim, 2 Drawing Figures

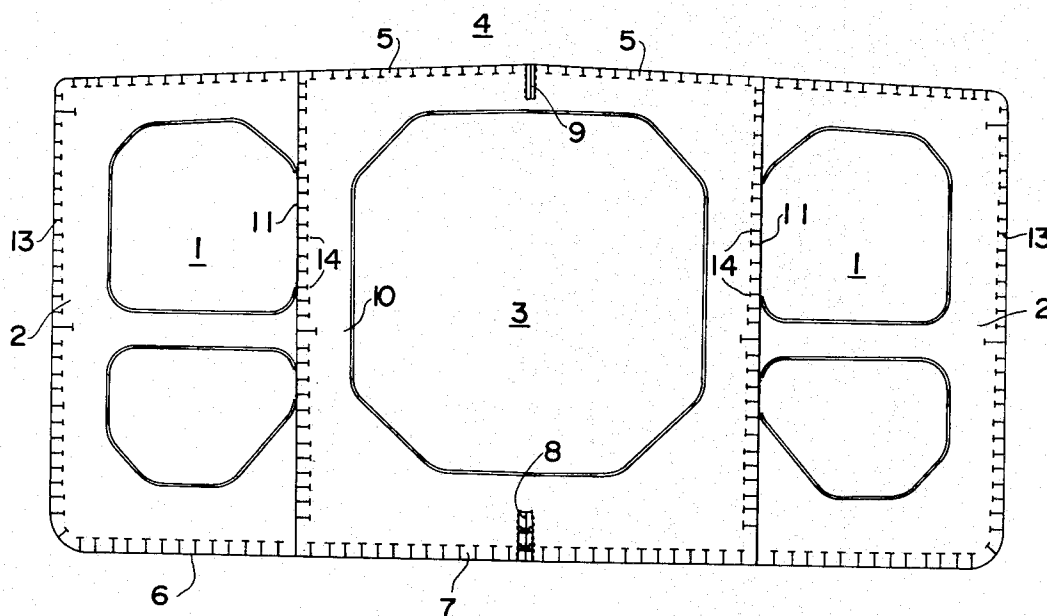


FIG. 1

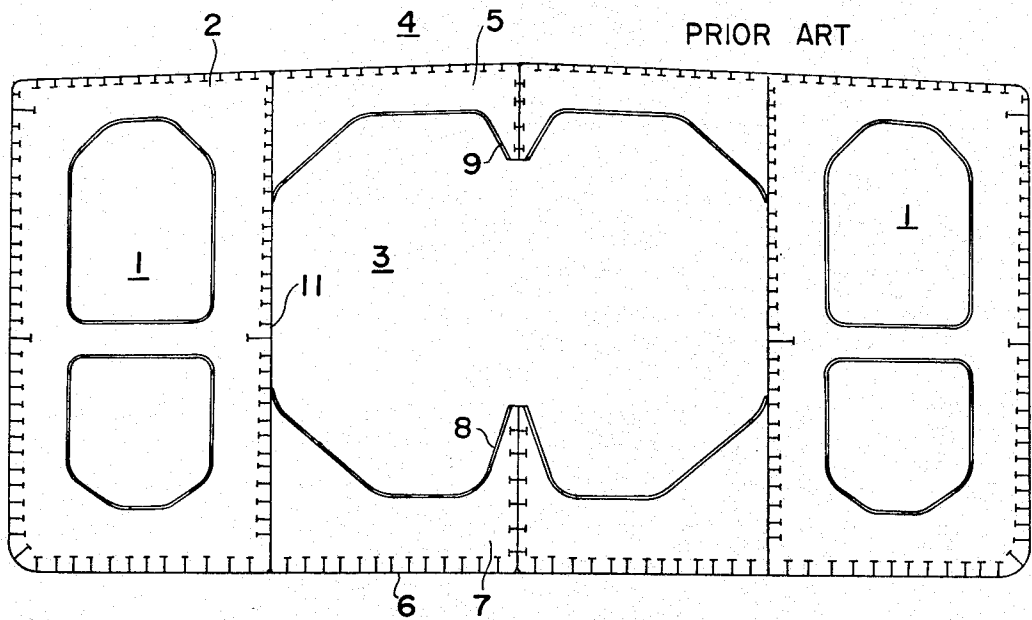
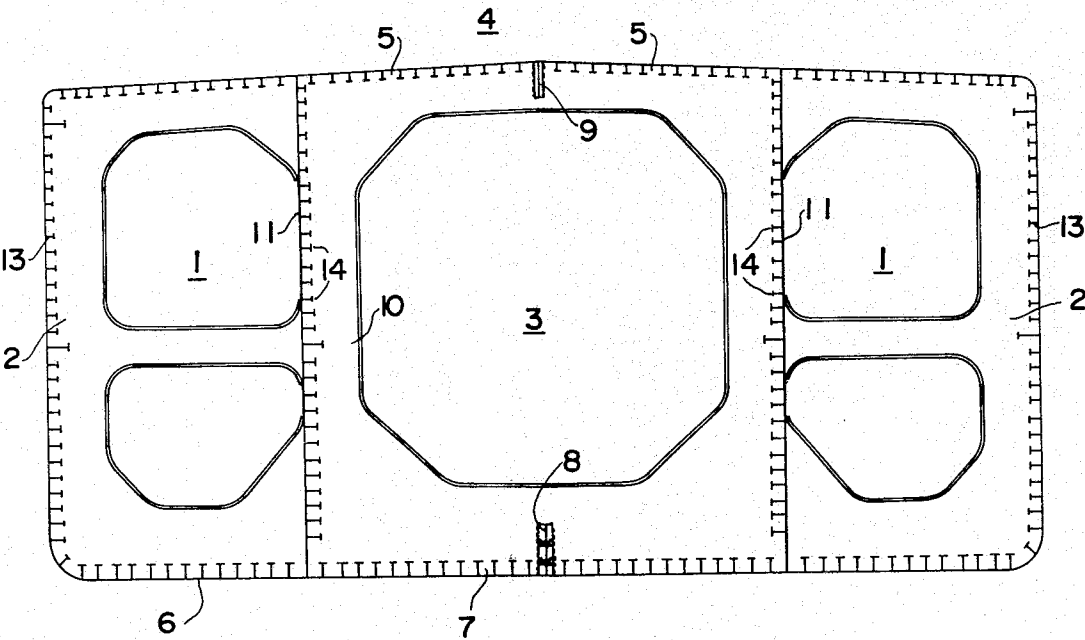


FIG. 2



STRUCTURE OF CARGO OIL TANKS OF A TANKER

BACKGROUND OF THE INVENTION

The present invention relates to the structure of cargo oil tanks of a tanker, and particularly to the structure wherein a center tank of cargo oil tanks is supported by means of a plurality of integral ring-shaped transverse webs whereby the building cost is reduced and labor is easily saved.

Recently, the size of ships has been growing larger and particularly in the field of tankers huge tankers of up to a million DWT (Deadweight tonnage) are being built.

However, various problems occur in the case where the ship structure is proportionally enlarged corresponding to the growth of the size of ships. These are especially the number of man-hours for assembly and the increase of weight of material.

In the conventional structure of ships, the depth of center girders, bottom transverse webs, and deck transverse webs become greater as the width of a center tank grows larger corresponding to the growth of the size of a ship. Therefore, the integral work within the shipbuilding yard often becomes impossible with regard to the limitation of the shipbuilding installation. In such cases, such steps that the blocks are subdivided and then assembled are obliged to be employed. As a result, the amount of work in the manufacturing process of the blocks increases since both the welding length and the cutting length increase and handling when assembling becomes difficult. This is the same in the final assembling process of the blocks and prolongation of building period is not available.

SUMMARY OF THE INVENTION

The present invention has been developed to overcome the foregoing disadvantages. The present invention is characterized in that a center tank of cargo oil tanks of a tanker is supported by means of integral ring-shaped transverse webs whereby the strength of cargo oil tanks is increased, the shape of necessary blocks is simplified and the building period is shortened.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a sectional view showing the conventional structure of cargo oil tanks of a huge tanker; and

FIG. 2 is a sectional view showing the structure of cargo oil tanks according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the accompanying drawings, FIG. 1 shows a transverse section of a conventional large tanker wherein wing tanks 1 (on both boards) are supported by means of integral ring-shaped transverse webs 2 arranged on the circumference thereof, while a center tank 3 is supported by transverse webs 5 and 7 arranged under the deck 4 and on the bottom 6 respectively, and wherein said transverse webs 5 and 7 are supported by center line girders 8 and 9 extending along the center line in the longitudinal direction of the ship. These transverse webs 2, 5 and 7 are arranged at a number of positions in the longitudinal direction of the ship.

The disadvantages of the above-described conventional structure of the ship have been mentioned earlier.

An embodiment of the structure according to the present invention will now be described in detail with reference to FIG. 2. The structure of the wing tanks 1 is such that the transverse webs 2 are arranged on the circumference of the wing tanks 1 except on the side of longitudinal bulkhead 11 arranged in the longitudinal direction of the ship. On the circumference of a center tank 3, there are arranged a deck transverse web 5 and a bottom transverse web 7 as arranged in the conventional structure, and there are newly arranged center tank transverse webs 10 on both boards. These transverse webs 5, 7 and 10 are formed in integral ring-shape and integrated with the deck 4, the bottom 6 and the longitudinal bulkheads 11 respectively, resulting in a strong structure. These integral ring-shaped transverse webs are arranged at a number of positions in the longitudinal direction of the ship. Such structure makes it possible to shorten the spans of the transverse webs 5 and 7 and to reduce the supporting area of the center line girders 8 and 9 thereby remarkably improving the strength thereof at the same time. Therefore, it should be noted that the height of the structural members can be extremely reduced and that such structure can bring about preferable shapes from the standpoint of shipbuilding. Moreover, such structure can prevent the need for subdivision of the blocks. Longitudinal stiffeners 13, 14, are respectively disposed at the periphery of the transverse webs of the outboard and center tanks as shown in FIG. 2.

According to the structure of the transverse webs of the present invention where they are constructed in integral ring-shape, subdivision of the blocks is less necessary than in the case of the conventional structure, handling operation as well as welding length and cutting length is reduced in the manufacturing process of blocks, and the amount of work in the final assembling process of the blocks is also reduced. Moreover, since the depths of the transverse webs can be designed to be substantially lower than the conventional ones, the amount of material is reduced, which brings about reduction of the building cost and increase of the tonnage capacity of cargo oil. Under the recent requirements where the size of the wing tanks 1 is limited from the standpoint of the effluent of cargo oil when ships are stranded on a reef or collide with each other, there is a tendency that the width of center tanks is increasing. Therefore, it is needless to say that the present invention can overcome the problems caused by the above-said tendency and that it brings about a great benefit in the field of building of tankers.

What is claimed is:

1. Cargo oil tank structure of a tanker comprising a support structure for a center tank and for two outboard wing tanks one on each side of the center tank, said support structure including a deck transverse web under the deck, a bottom transverse web at the bottom, and transverse webs on either side of the center tank, said deck web, bottom web and transverse webs defining an integral ring shaped web structure surrounding the entire circumferential wall of the center tank, longitudinal bulkheads to which each of said side transverse webs are connected, lateral transverse webs secured to said bulkheads and extending outboard thereof to support said outboard wing tanks, said lateral transverse

3

webs for the support of the outboard wing tanks extending partially around said wing tanks and being secured to said longitudinal bulkheads to leave a section without lateral transverse web at said bulkheads, center line girders disposed at the center of the center tank support structure and connected respectively to said deck transverse web and said bottom transverse web, first longitudinal stiffeners at the periphery of said deck

4

and bottom transverse webs of the center tank support structure and at the inner wall of the longitudinal bulkheads on the side of the center tank, and second longitudinal stiffeners at the top and bottom of the lateral transverse webs of the wing tank support structure and the outboard lateral edges of said transverse webs of the wing tank support structure.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65