

PATENTS FORM NO. 3.

JDB/DLM/PLA/P.8067

P A T E N T S A C T S , 1 9 4 9 t o 1 9 6 1

COMPLETE SPECIFICATION

"Improvements in or relating to floatable assemblies."

WE, HIJOS DE J. BARRERAS, S.A., a Spanish Body Corporate of Tomas A. Alonso, 100, Vigo, Spain., do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:-

(2)

This invention relates to a floatable assembly, to components thereof and to a method of constructing the floatable assembly.

The invention is particularly concerned with a drilling rig which is, in use, partly submerged in water but is also concerned with other floatable assemblies such as catamaran vessels.

Frequently, shipyards do not have sufficient space for construction of conventional drilling rigs and this can cause problems. The present invention aims to eliminate, or at least mitigate such problems.

According to a first aspect of the present invention, there are provided components for a floatable assembly, which components comprise a first floatable unit comprising a platform and a second floatable unit, the units being floatable into positions relative to one another, wherein a desired connection between the units can be effected by introducing ballast material into means for containing ballast material of the first unit and/or discharging ballast material from means for containing ballast material of the second unit, the arrangement being such that the platform surface of the first unit is above water level when the desired connection has been made.

According to a second aspect of the present invention there is provided a method of constructing a floatable

(3)

assembly, which method comprises floating a first unit into a first position relative to a second unit which is floating, and thereafter introducing ballast material into means for containing ballast material of the first unit and/or discharging ballast material from means for containing ballast material of the second unit such that the first unit moves, relative to the second unit, into a second position relative to the second unit, the first unit being connected to the second unit whilst the first unit is in said second position relative to the second unit, the arrangement being such that the platform surface of the first unit is above water level when the desired connection has been made.

According to a third aspect of the present invention there is provided a floatable assembly whenever constructed by the method of the preceding paragraph.

An embodiment of the first aspect of the present invention provides components of a floatable assembly wherein the first unit comprises elongate members which extend from the underside of the platform in a direction substantially perpendicular with the platform surface whereby the first unit can float with the underside of the platform above water level. Preferably the first unit comprises two elongate members which are each parallelepipeds. Desirably the second unit comprises at least two column members which each extend in a substantially vertical direction when the second unit is floating, the column members being interconnected by a connecting member and each column member having a buoyancy tank connected thereto.

23
and, conveniently, each buoyancy tank is connected to a corresponding end of each column member, the buoyancy tanks being capable of receiving ballast material.

An embodiment of the second aspect of the present invention provides a method of constructing a floatable assembly wherein the first unit is constructed by building two elongate parallelepipedal members in respective building berths which are separated by a substantially horizontal platform, and building a platform which is connected to respective ends of the elongate members, which ends are remote from the floor of the respective berths. Preferably, during the construction of the first unit, the elongate members are each supported on block members over which the elongate members can slide. Desirably the second unit is constructed by building a buoyancy tank in each of two building berths which are separated by a substantially horizontal platform, and thereafter building column members which are connected to respective buoyancy tanks and which extend in a substantially vertical direction and, conveniently, the buoyancy tanks and respective column members are floated and then interconnected by a connecting member. Conveniently, ballast material is introduced into each buoyancy tank prior to the floating thereof and preferably, sufficient ballast material is introduced into the buoyancy tanks, after floating thereof, whereby only top portions of the column members are disposed above water level.

(24)

Thus, the invention provides a method of constructing a floatable assembly by building components of the assembly separately, then floating the components out to sea and connecting the components there. Drilling or other equipment may be fitted on the platform of the first unit either before or after floating the same.

For a better understanding of the present invention and to show how the same may be carried into effect reference will now be made, by way of example, to the accompanying drawings in which:-

FIGURE 1 shows a diagrammatic cross-sectional view of one component of a floatable assembly of the present invention, part of the component being shown in building berths,

FIGURE 2 shows a diagrammatic cross-sectional view of the component shown in Figure 1, the component being afloat,

FIGURE 3 shows a diagrammatic cross-section view of another component of a floatable assembly of the present invention and,

FIGURE 4 shows each of the components of Figure 1 and Figure 3, prior to coupling thereof.

Referring now to the drawings, a parallelepipedal elongate member 3 is built in each of two building berths, which are separated by a horizontal platform 2. A platform 4 is then built on the elongate members 3. Drilling or other equipment may be fitted on the platform 4. Part

of some drilling equipment 5 is shown in Figure 2.

The elongate member 3 and the platform 4, which together form a first unit, are slid out of the berths 1 over the blocks 6. The first unit is launched and floated as shown in Figure 2. After launching, the first unit may be moored to a quay for further constructional work.

The construction of parts of a second unit (Figure 3) is then begun in the berths 1 but if other berths are available, the construction of the second unit may be carried out simultaneously with the construction of the first unit. The second unit comprises buoyancy tanks 7, suitable for containing ballast material, and column members 8 one end of each of which is connected to a respective buoyancy tank 7. Each buoyancy tank 7, together with the respective column members 8 connected thereto, is floated after having introduced ballast material into the buoyancy tanks 7. Whilst floating in calm water the column members 8 are interconnected by a connecting member 9.

The second unit is then moved into deep water where further ballast material may be introduced into the buoyancy tanks 7 such that the upper part of each of the column members 8 is disposed above the surface of the water for a height of approximately one metre.

Sufficient anchors (not shown) are then cast in order to prevent the second unit from drifting due to

68

currents and wind etc. and in order to anchor the second unit in the position shown in Figure 3.

The first unit is then floated into a position (Figure 4) over the second unit there being a clearance of approximately one metre between the underside of the platform 4 and the tops of the column member 8.

Finally, the buoyancy tanks 7 are emptied of ballast such that the column members 8 rise upwardly to contact the underside of the platform 4. Whereupon temporary joints between the column members 8 and the platform 4 are provided. The column members 8 are subsequently welded to the underside of the platform 4.

(2)

WHAT WE CLAIM IS:-

1. Components for a floatable assembly, which components comprise a first floatable unit comprising a platform and a second floatable unit, the units being floatable into positions relative to one another, wherein a desired connection between the units can be effected by introducing ballast material into means for containing ballast material of the first unit and/or discharging ballast material from means for containing ballast material of the second unit, the arrangement being such that the platform surface of the first unit is above water level when the desired connection has been made.

2. Components according to Claim 1, wherein the first unit comprises elongate members which extend from the underside of the platform in a direction substantially perpendicular with the platform surface whereby the first unit can float with the underside of the platform above water level.

3. Components according to Claim 2, wherein the first unit comprises two elongate members which are each parallelepipeds.

4. Components according to Claim 1, 2 or 3, wherein the second unit comprises at least two column members which each extend in a substantially vertical direction when the second unit is floating, the column members being interconnected by a connecting member and each column member having a buoyancy tank connected thereto.

(28)

5. Components according to Claim 4, wherein the second unit comprises a plurality of the column members which are arranged in two rows.

6. Components according to Claim 4 or 5, wherein a buoyancy tank is connected to a corresponding end of each column member, the buoyancy tanks being capable of receiving ballast material.

7. Components of a floatable assembly, substantially as hereinbefore described with reference to, and as shown in, Figures 1 to 4 of the accompanying drawings.

8. A method of constructing a floatable assembly which method comprises floating a first unit into a first position relative to a second unit which is floating, and thereafter introducing ballast material into means for containing ballast material of the first unit and/or discharging ballast material from means for containing ballast material of the second unit such that the first unit moves, relative to the second unit, into a second position relative to the second unit, the first unit being connected to the second unit whilst the first unit is in said second position relative to the second unit, the arrangement being such that the platform surface of the first unit is above water level when the desired connection has been made.

9. A method according to Claim 8, wherein the first unit is constructed by building two elongate parallelepipedal members in respective building berths which are separated by a substantially horizontal platform,

(29)

and building a platform which is connected to respective ends of the elongate members, which ends are remote from the floor of the respective berths.

10. A method according to Claim 9, wherein, during the construction of the first unit, the elongate members are each supported on block members over which the elongate members can slide.

11. A method according to Claim 8, 9 or 10, wherein the second unit is constructed by building a buoyancy tank in each of two building berths which are separated by a substantially horizontal platform, and thereafter building column members which are connected to respective buoyancy tanks and which extend in a substantially vertical direction.

12. A method according to Claim 11, wherein the buoyancy tanks and respective column members are floated and then interconnected by a connecting member.

13. A method according to Claim 12, wherein ballast material is introduced into each buoyancy tank prior to the floating thereof.

14. A method according to Claim 11, 12 or 13 when appended to Claim 9 or 10, wherein, in said first position, at least a part of each elongate member is disposed between the column members.

15. A method according to Claim 12, 13 or 14, wherein ballast material is introduced into the buoyancy tanks, after floating thereof, whereby only top portions of the column members are disposed above water level.

16. A method according to any one of Claims 8 to 15, wherein the second unit is anchored to a sea-bed or river bed prior to moving the first unit into said first position.

17. A method of constructing a floatable assembly, substantially as hereinbefore described with reference to Figures 1 to 4 of the accompanying drawings.

18. A floatable assembly whenever constructed by the method of any one of Claims 8 to 17.

Forrester, Ketley & Co

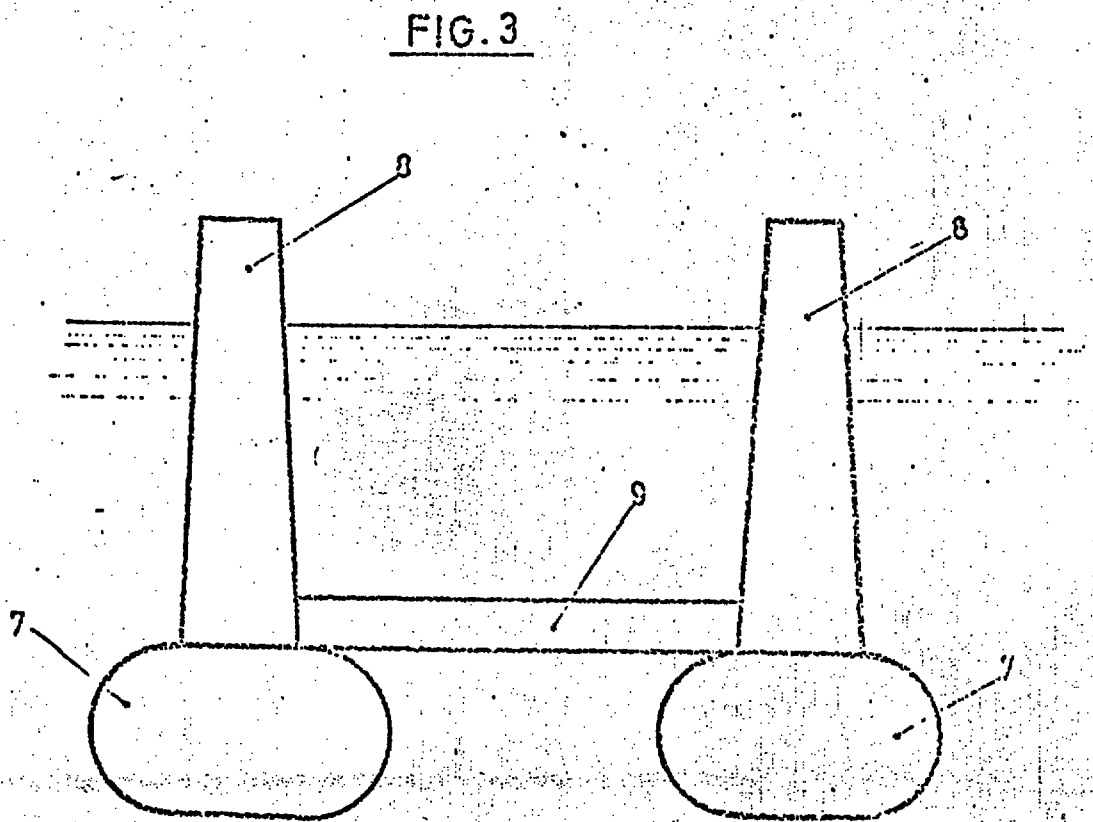
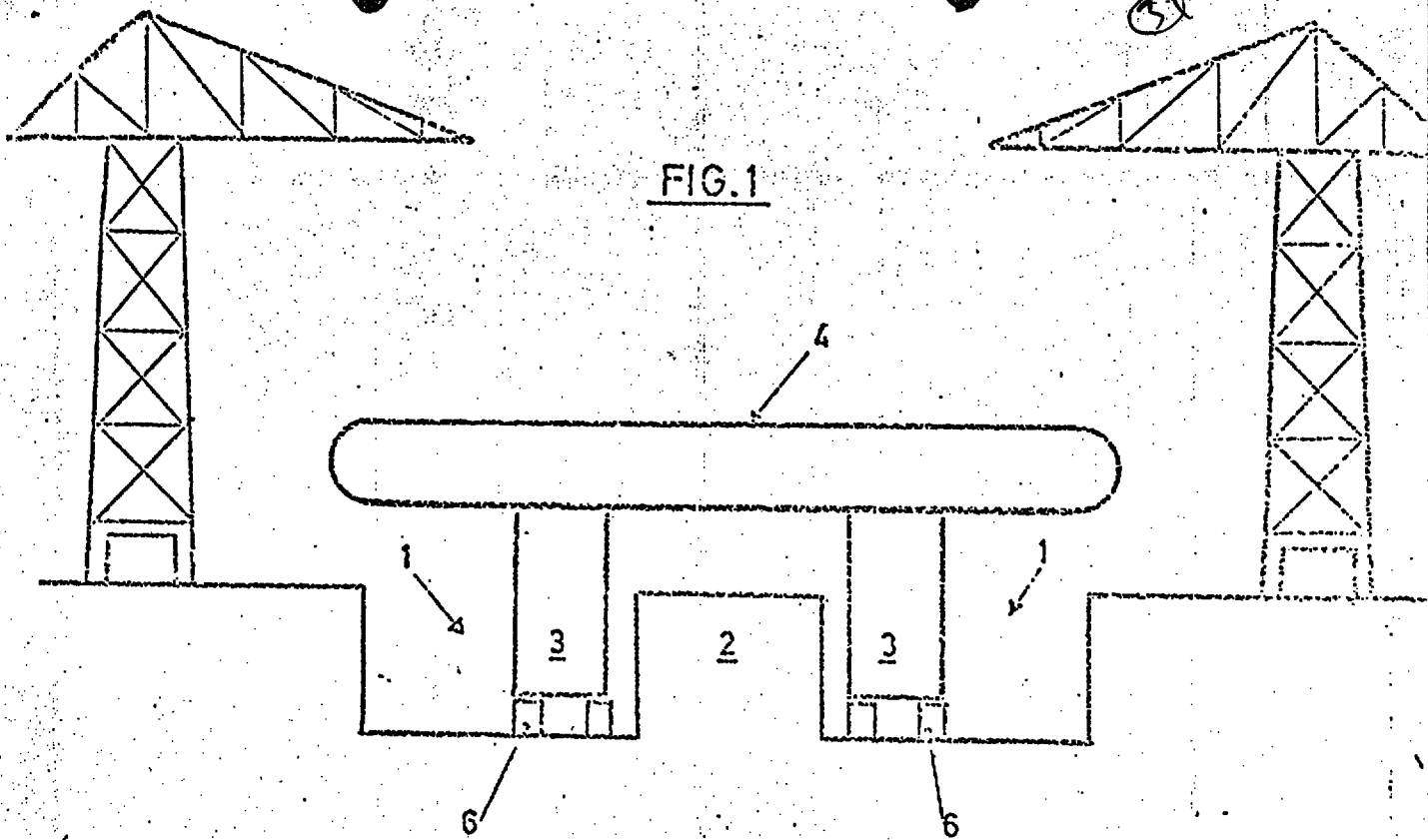
Forrester, Ketley & Co.

Chartered Patent Agents.

Jessel Chambers, 88/90, Chancery Lane, London, W.C.2.

and Rutland House, Edmund Street, Birmingham, 3.

Agents for the Applicants.



ESCALA VARIABLE.

FIG. 2

378304

32

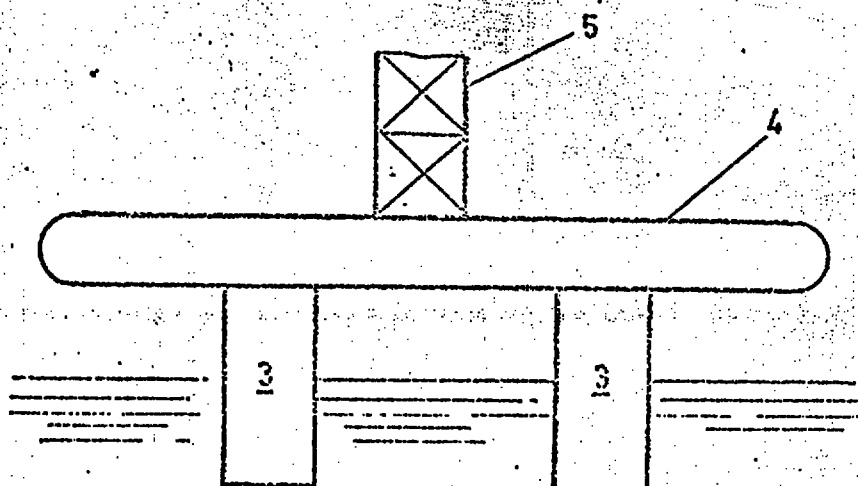


FIG. 4

