F. CORRELL.

FLOATING DERRICK.

APPLICATION FILED SEPT. 2, 1908.

1,000,152.

Patented Aug. 8, 1911.

4 SHEETS—SHEET 1.

Fig. I.

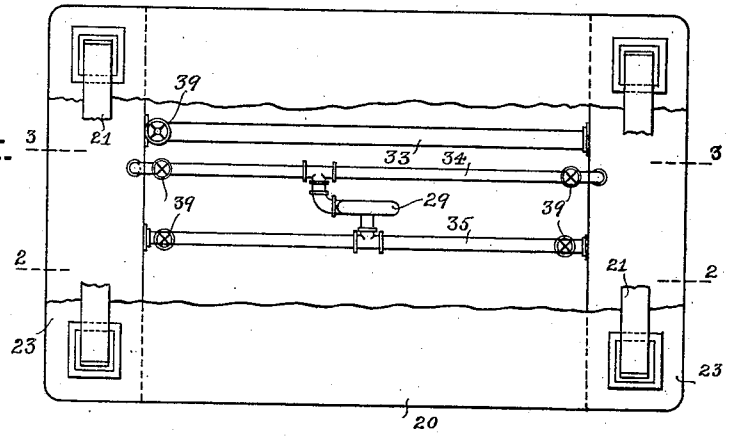


Fig. II.

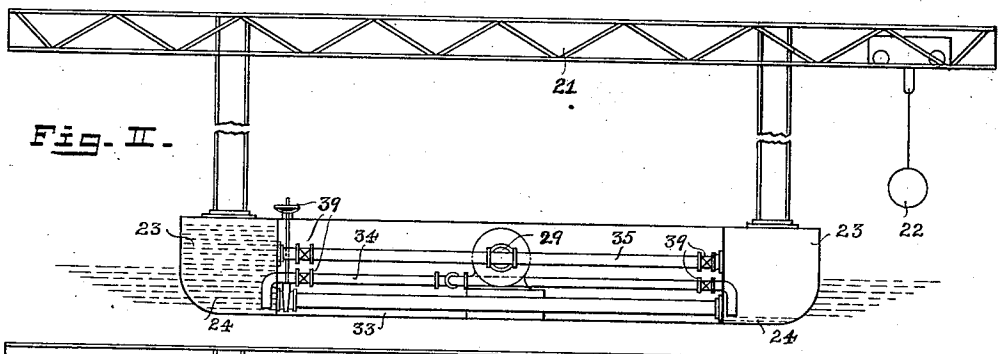


Fig. III.

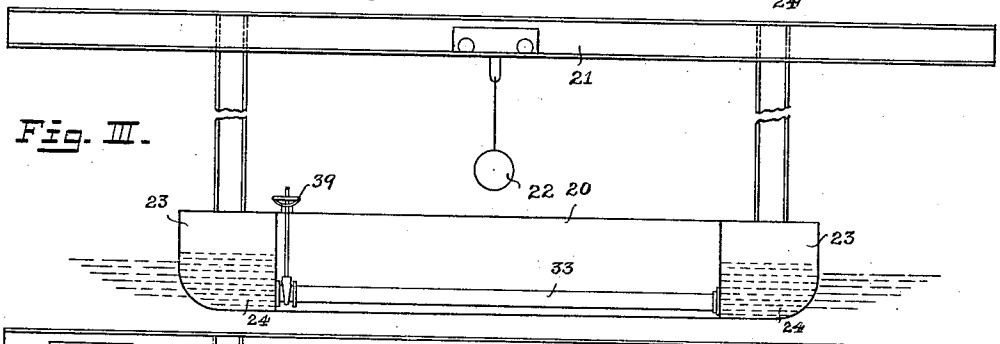
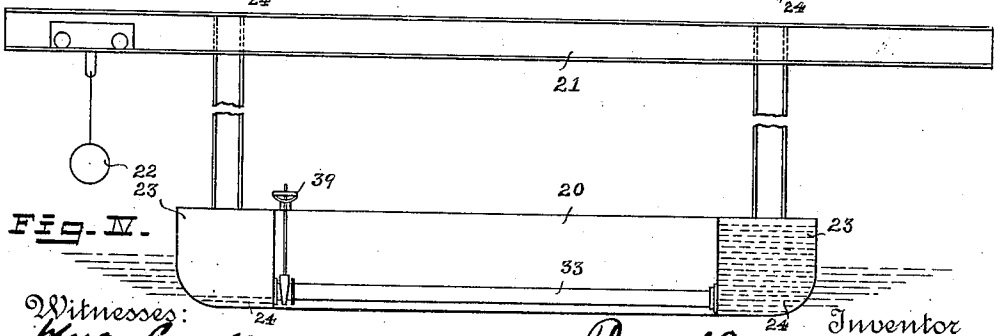


Fig. IV.



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Fredk P. Schuetz

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4 SHEETS—SHEET 2.

Fig. V.

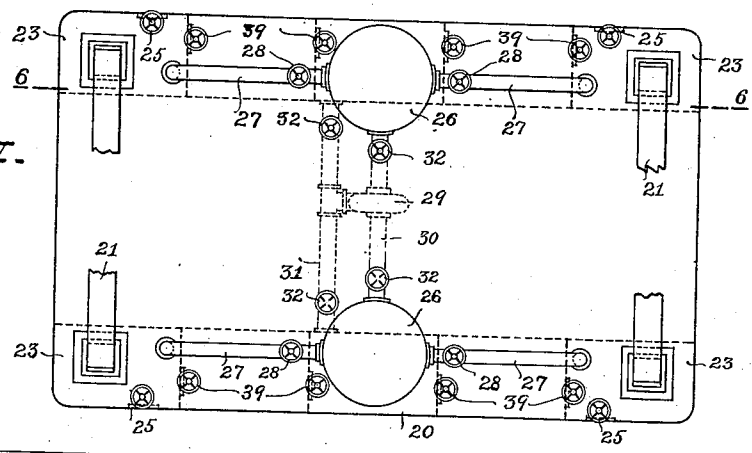


Fig. VI.

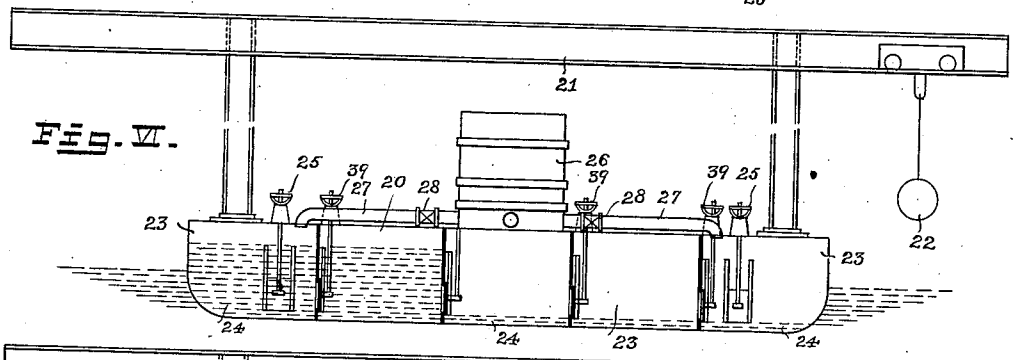


Fig. VII.

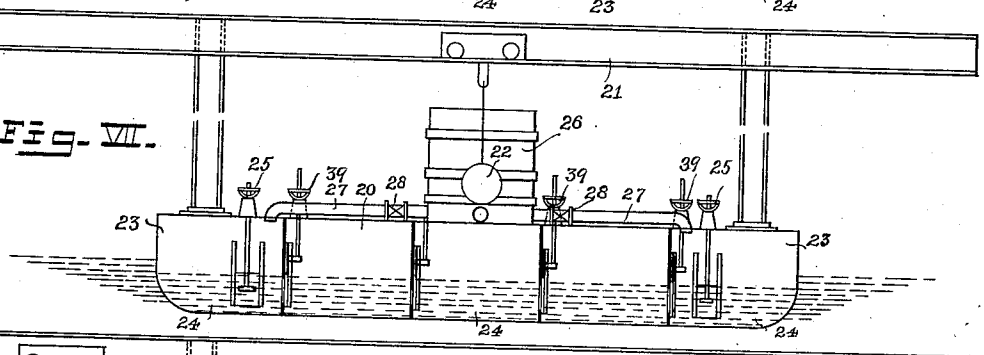
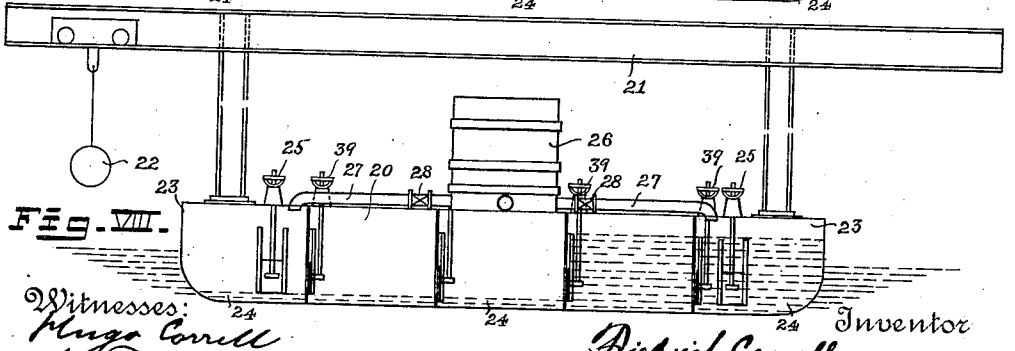


Fig. VIII.



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4 SHEETS—SHEET 3.

Fig. IX.

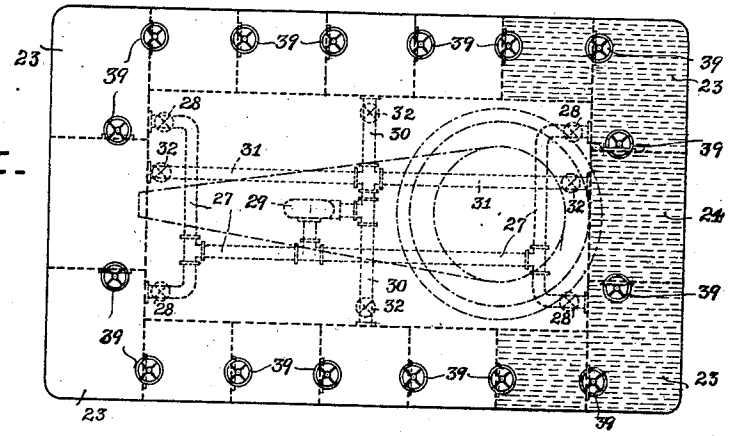


Fig. X.

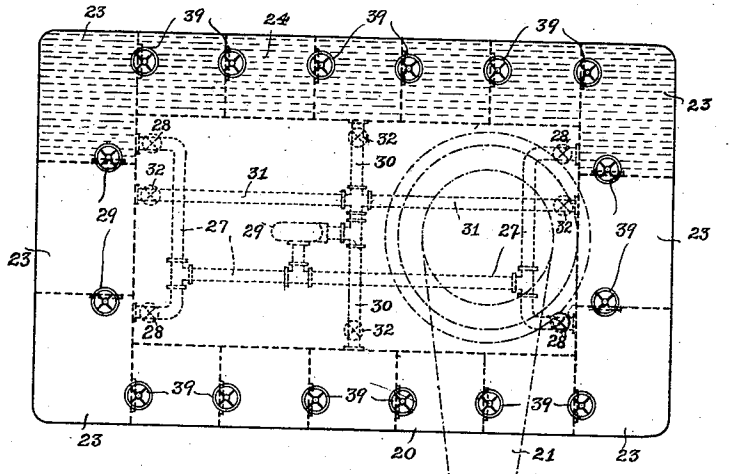
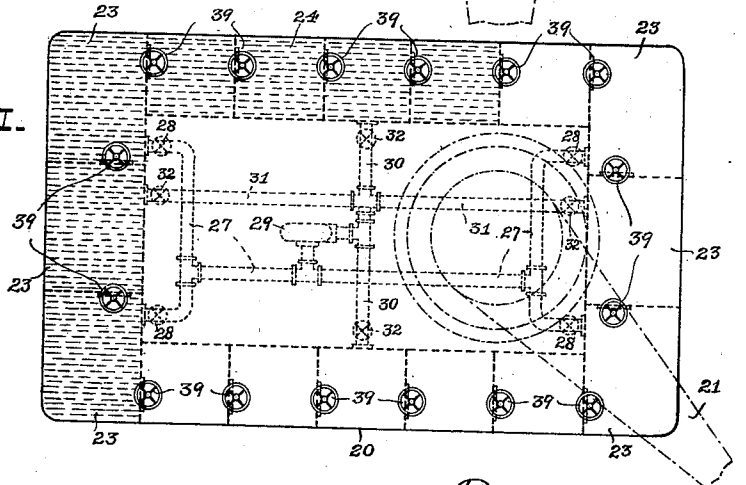


Fig. XI.



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FLOATING-DERRICK.

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1,000,152.

Patented Aug. 8, 1911.

4 SHEETS—SHEET 4.

Fig. XII.

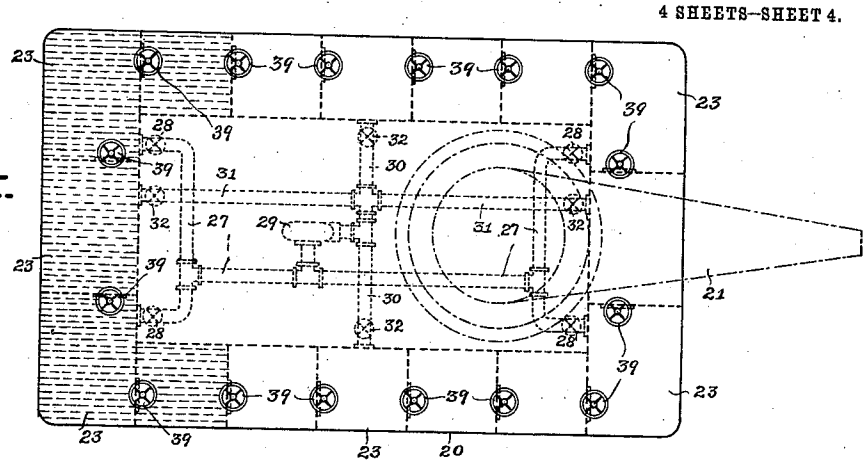


Fig. XIII.

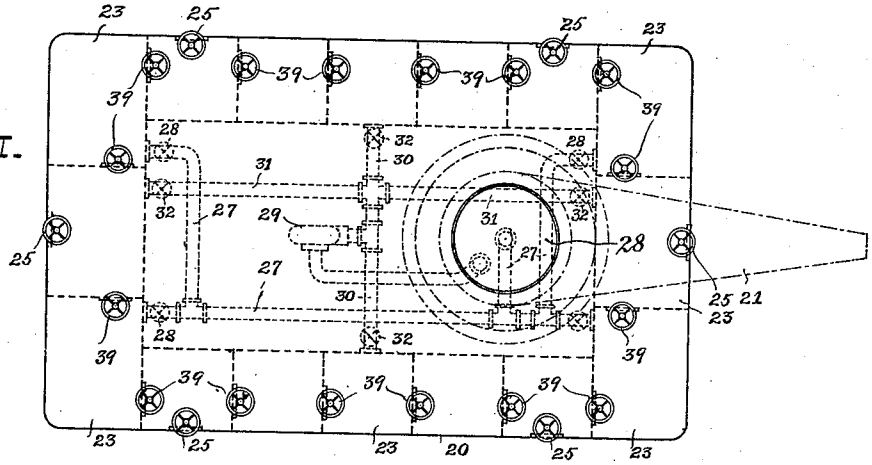
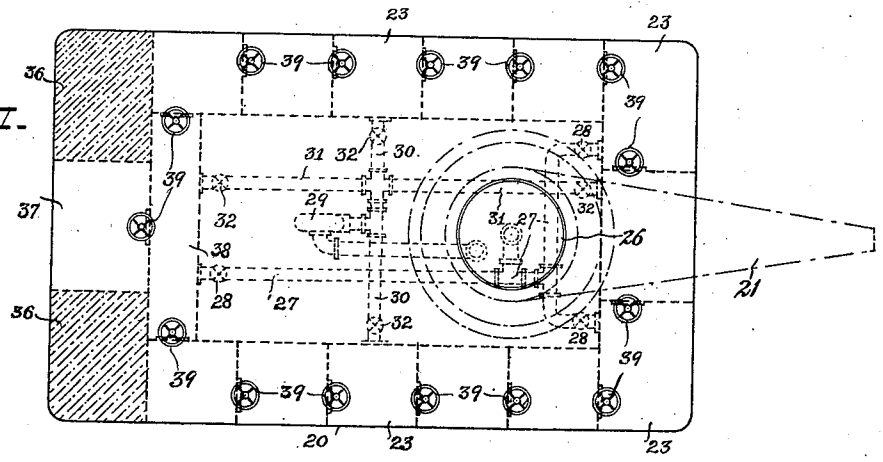


Fig. XIV.



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UNITED STATES PATENT OFFICE.

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FLOATING DERRICK.

1,000,152. Specification of Letters Patent. Patented Aug. 8, 1911.

Application filed September 2, 1908. Serial No. 451,311.

To all whom it may concern:

Be it known that I, FRIEDRICH CORRELL, a subject of the Emperor of Germany, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Floating Derricks, of which the following is a specification.

My invention relates to pontoons for floating derricks and the like; and particularly to derricks employing a liquid ballast.

It has for its object to so arrange and control said ballast that the same may be quickly and readily varied to correspond to the position and condition of the load carried by the said derrick, whereby the barge or pontoon may be maintained substantially level under the various positions and conditions of the said load.

For this purpose my invention consists of certain novel features of construction as set forth in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a plan view of the pontoon with a portion of the deck removed and shows ballast compartments at both ends of pontoon. Figs. 2 and 3 are sectional views taken respectively on the lines 2—2 and 3—3, Fig. 1, and show also a side elevation of a derrick of the bridge type with the load and ballast in various positions. Fig. 4 is a section on the line 3—3, Fig. 1, and shows also a side elevation of a derrick of the bridge type with load at one extreme position. Fig. 5 is a plan view of the pontoon and ballast storage tanks, and shows ballast compartments at both sides of pontoon. Figs. 6 to 8 are sectional views on the line 6—6, Fig. 5, showing also, in side elevation, a derrick of the bridge type with load and ballast in various positions. Figs. 9 to 12 are plan views of the pontoon with ballast compartments about the entire portion and carrying a revolving derrick, the liquid ballast and derrick being shown in various positions. Fig. 13 is a similar view, and shows the pontoon provided with sea-valves. Fig. 14 is a similar view, and shows the pontoon provided with both independent and with movable liquid ballast.

Similar characters of reference designate corresponding parts throughout the several views.

Referring now to the drawings, 20 indicates a pontoon or barge, carrying a derrick, which may be of the bridge type, as illustrated in Figs. 1 to 8; or of the revolving type, as illustrated in Figs. 9 to 14, said derrick being adapted to handle a load 22 in the usual manner. It is well known, however, in connection with floating derricks, that the supporting pontoon is unstable and must be provided with suitable counter-ballast to compensate for the varying position and condition of the load carried by the said derrick. It has been the usual practice, therefore, to provide the pontoon at certain parts with suitable stationary liquid or solid counter-ballast; or with movable counter-ballast. Such movable counter-ballasts are difficult to manipulate, require considerable time to reach the desired positions and consume a relatively large amount of power. Furthermore, it is not practicable to place such counter-ballast in all of the positions required, and should the load be suddenly released, as for example by being supported, the said counter-ballast is in a most unfavorable position. To overcome these serious objections, I have devised an improved pontoon, employing a liquid ballast and arranged so that the same may be quickly and inexpensively moved to any desired part of the pontoon, and the latter may be maintained in a substantially level position under various positions and conditions of the load. I accomplish this by providing the pontoon 20 with a number of communicating compartments 23 adapted to retain a liquid ballast 24, which may be obtained directly from the sea, in case water be employed as ballast, through suitable sea-valves 25, Figs. 5 to 8 and 13. A storage tank or tanks 26, Figs. 5 to 8, 13 and 14, may be provided on the pontoon to hold reserve ballast, and to enable the same to be quickly distributed as hereinafter set forth, the tanks being connected to a number or all of said compartments through suitable pipes 27, and valves 28 controlling the flow. A pump 29, delivers the ballast from the compartments through pipes 30 and 31, and suitable controlling valves 32, to the said tank or tanks; and is arranged also to control the flow between a number or all of said compartments. Of course, a separate pump might be employed for this purpose. The said compartments 23 are arranged at suitable parts of the pontoon, preferably at the ends or at the sides, in connection with the bridge type of derrick (see Figs. 1 to 8); and at the

sides and one or both ends, in connection with the revolving type of derricks (see Figs. 9 to 14).

The compartments at the ends, or those at the sides, are arranged to communicate with each other through pipes 33, 34 and 35, Figs. 1 to 4 or the pipe 31 Figs. 5 to 8 of suitable dimensions; or in the pontoon shown in Figs. 9 to 14, through other sets of communicating compartments, either at both ends, Figs. 9 to 13, or only at one end, Fig. 14. In the pontoon shown in Fig. 14, independent counter-ballast 36, either solid or liquid and fixed or movable, is provided at the end opposite to the derrick 21, which is located eccentrically with respect to the said pontoon as set forth in U. S. Letters Patent #840,684. A compartment 37, intermediate of the counter-ballast 36, is arranged to receive liquid ballast from the compartments 23, through a single compartment or tube 38, adapted also to establish communication between the compartments of both sides. The various compartments 23, communicate with each other through suitable controlling valves 39, which are shown hand-controlled; but which, of course, may be operated by steam, water, compressed air or electricity, permitting automatic control.

The operation of my improved pontoon is as follows, reference being had to Figs. 1 to 8, illustrating the form employed in connection with the bridge type of derricks. Liquid ballast 24 such as water, is supplied to the compartments 23 at the sides or ends of the pontoon in any suitable manner; and, in case the same are provided with sea-valves 25, as illustrated in Figs. 5 to 8, the water may be directly and quickly run in from the sea. When the load 22 is at one extreme end, as shown in Fig. 2, the ballast 24 is pumped from the forward compartment by means of the pump 29 either overboard, to the storage tanks 26 or to the rear compartment in order to compensate for the forward dip of the pontoon due to the position of the load 22, the valve 39 of said compartment of course having been previously closed. When the load is in its central position, Fig. 3, the ballast 24 from the rear compartment is allowed to partly return to the forward compartment through the communication 33 by opening its valve 39, until the ballast in both is at the same level as shown. Should the load continue traveling in the same direction, the valve 39 of pipe 33 is closed and the liquid ballast is pumped from the rear compartment overboard, to the tanks 26 or to the forward compartment to overcome the backward dip of the pontoon, the condition with the load at the extreme position being then as shown in Fig. 4. In case sea valves 25 are provided, as illustrated in Figs. 5 to 8, the desired compartments may be quickly filled to the waterline by opening same; and if further ballast be required, water is supplied to same by means of the pump 29, or from tanks 26. As soon as the load is removed and the counter-ballast is no longer required, the valves connecting the various water ballast compartments are opened and the water finds its own level, and is then pumped overboard or to the tank or tanks 26.

In the form of pontoon illustrated in Figs. 9 to 14, the ballast 24 is arranged to move entirely around the said pontoon, following the derrick 21 with load as indicated. Because the water ballast will not flow entirely out of the compartments to be emptied when the load is shifted, the pump 29 is employed to pump same overboard, into other compartments, or into the tank 26 from which it can be distributed to any desired compartment.

I claim:—

1. In combination: a pontoon or barge; a derrick carried thereby, and adapted to control a load; a number of communicating compartments adapted to retain a liquid ballast; and means to control the flow of same in such a manner that the pontoon is maintained in a substantially level position under various positions and conditions of the load.

2. In combination: a pontoon or barge; a revolving derrick eccentrically mounted thereon, and adapted to carry a load; a number of communicating compartments adapted to retain a liquid ballast; and means to control the flow of same in such a manner that the pontoon is maintained in a substantially level position under various positions and conditions of the load.

3. In combination: a pontoon or barge; a revolving derrick eccentrically mounted thereon, and adapted to carry a load; a number of communicating compartments adapted to retain water; suitable sea-valves to admit water to said compartments; a pump and suitable valves to control the flow of the water in such a manner that the pontoon is maintained in a substantially level position under various positions and conditions of the load.

4. In a pontoon for floating derricks: communicating compartments at each of the two sides of said pontoon, adapted to retain a liquid ballast; means to control the flow of ballast through same; means to establish communication between the compartments of one side and those of the other side; and means to control the flow of ballast through said communication.

5. In a pontoon for floating derricks: communicating compartments at each of the two sides of said pontoon, adapted to retain a liquid ballast; means to control the flow of ballast through same; a number of communicating ballast compartments at one end,

said compartments communicating also with said compartments at the two sides of said pontoon; and means to control the flow of ballast through said end compartments.

6. In a pontoon for floating derricks: a number of communicating compartments, adapted to retain a liquid ballast; a storage tank or tanks for said ballast, communicating with said compartments; and means to control the flow of said liquid ballast.

7. In a pontoon for floating derricks: a number of communicating compartments, adapted to retain a liquid ballast; a storage tank or tanks for said ballast communicating with said compartments; suitable valves to control the flow of ballast to and from said compartments, from and to said storage tank or tanks; suitable valves between said compartments to control the flow of fluid through same; and a pump to transfer the ballast from said compartments to said tank or tanks.

8. In a pontoon for floating derricks: a number of communicating compartments adapted to retain water; suitable sea-valves for said compartments to admit water to same; a storage tank or tanks for said water, communicating with said compartments; suitable valves to control the flow of water to and from said compartments, from and to said storage tank or tanks; suitable valves between said compartments to control the flow through same; and a pump to transfer the water from said compartments to said tank or tanks.

9. In a pontoon for floating derricks: communicating compartments about the four sides of said pontoon, adapted to retain a liquid ballast; a storage tank or tanks for same; and means to control the flow of ballast through said compartments.

10. In a pontoon for floating derricks: communicating compartments about the four sides of said pontoon, adapted to retain water; suitable sea-valves adapted to admit water to said compartments; a storage tank or tanks for said water; and means to control the flow of water through said compartments and to and from said tank or tanks.

11. In combination: a pontoon or barge; a revolving derrick eccentrically mounted thereon, and adapted to carry a load; a number of communicating compartments adapted to retain water; suitable sea-valves to admit water to said compartments; a storage tank or tanks; a pump to transfer the water from said compartments to said tank or tanks, and suitable valves to control the flow of water from said compartments to said tank or tanks or from said tank or tanks to said compartments; and suitable valves between said compartments to control the flow through same.

12. In a pontoon for floating derricks: a number of communicating compartments adapted to retain a liquid ballast; means to control the flow of same through the various compartments; and independent ballast.

13. In combination: a pontoon or barge; a revolving derrick eccentrically mounted thereon, and adapted to carry a load; a number of communicating compartments adapted to retain a liquid ballast; means to control the flow of same in such a manner that the pontoon is maintained in a substantially level position under various positions and conditions of the load; and independent ballast.

Signed at New York in the county of New York and State of New York this 1st day of September A. D. 1908.

FRIEDRICH CORRELL.

Witnesses:
FREDK. F. SCHUETZ,
SALLY O. YUDIZKY.