

O. MEHRTENS.  
TRANSPORT VESSEL.  
APPLICATION FILED JULY 31, 1906.

Fig. 1.

Witnesses  
G. C. Chubb  
Fred Haller

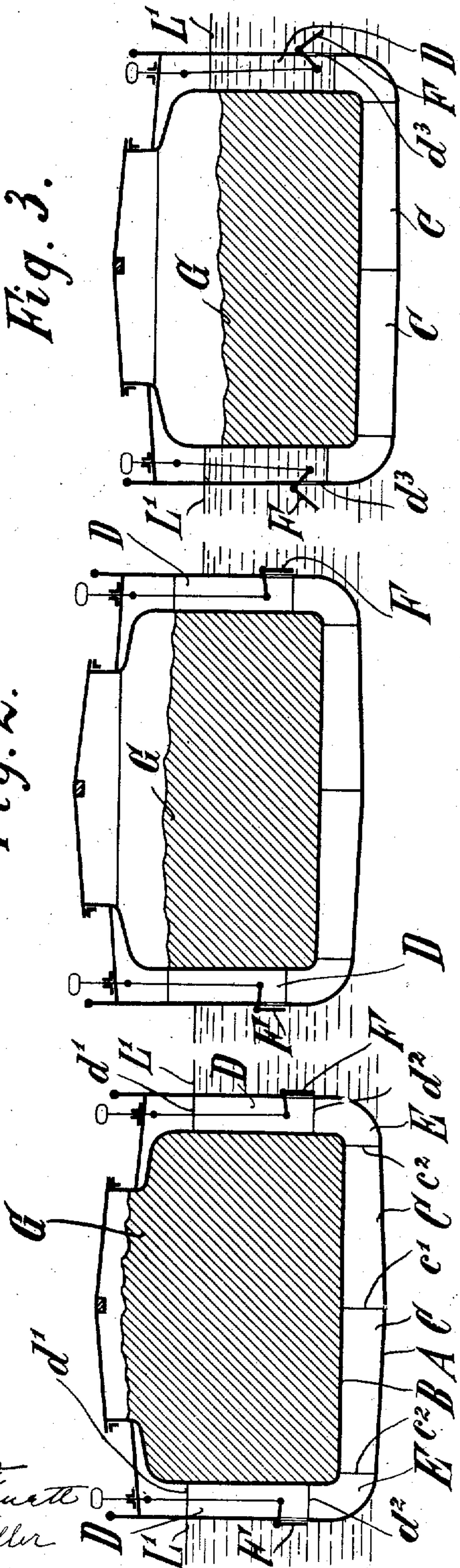


Fig. 2.

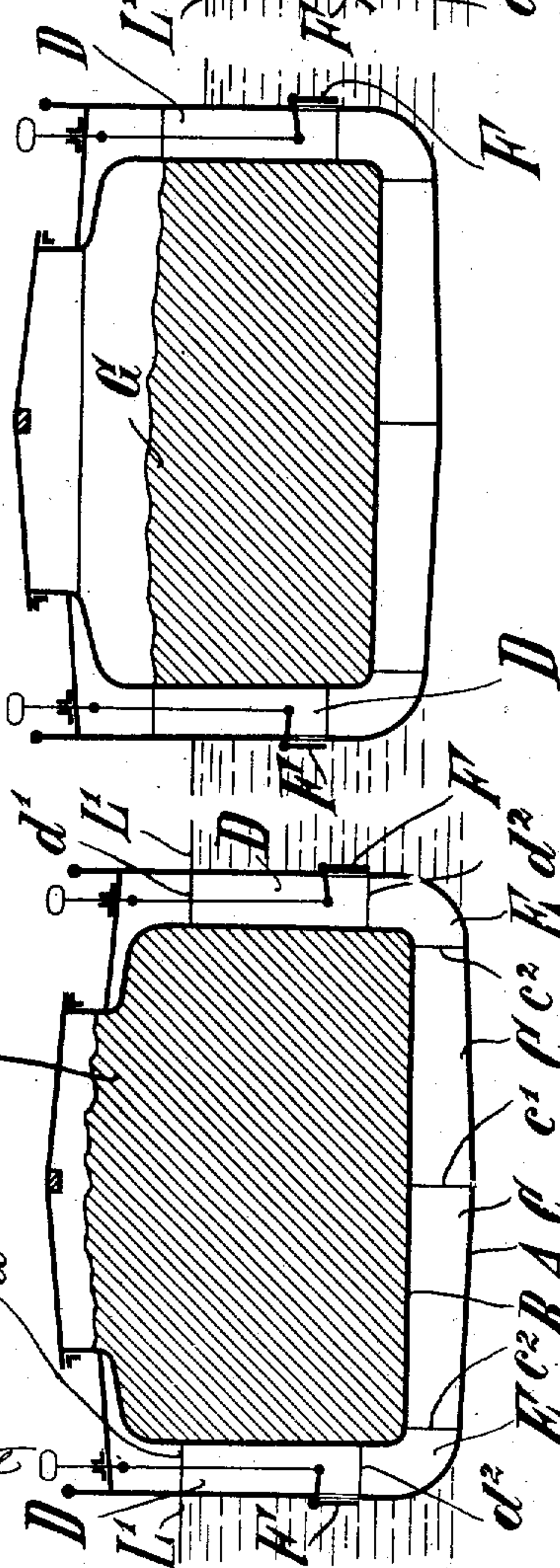


Fig. 3.

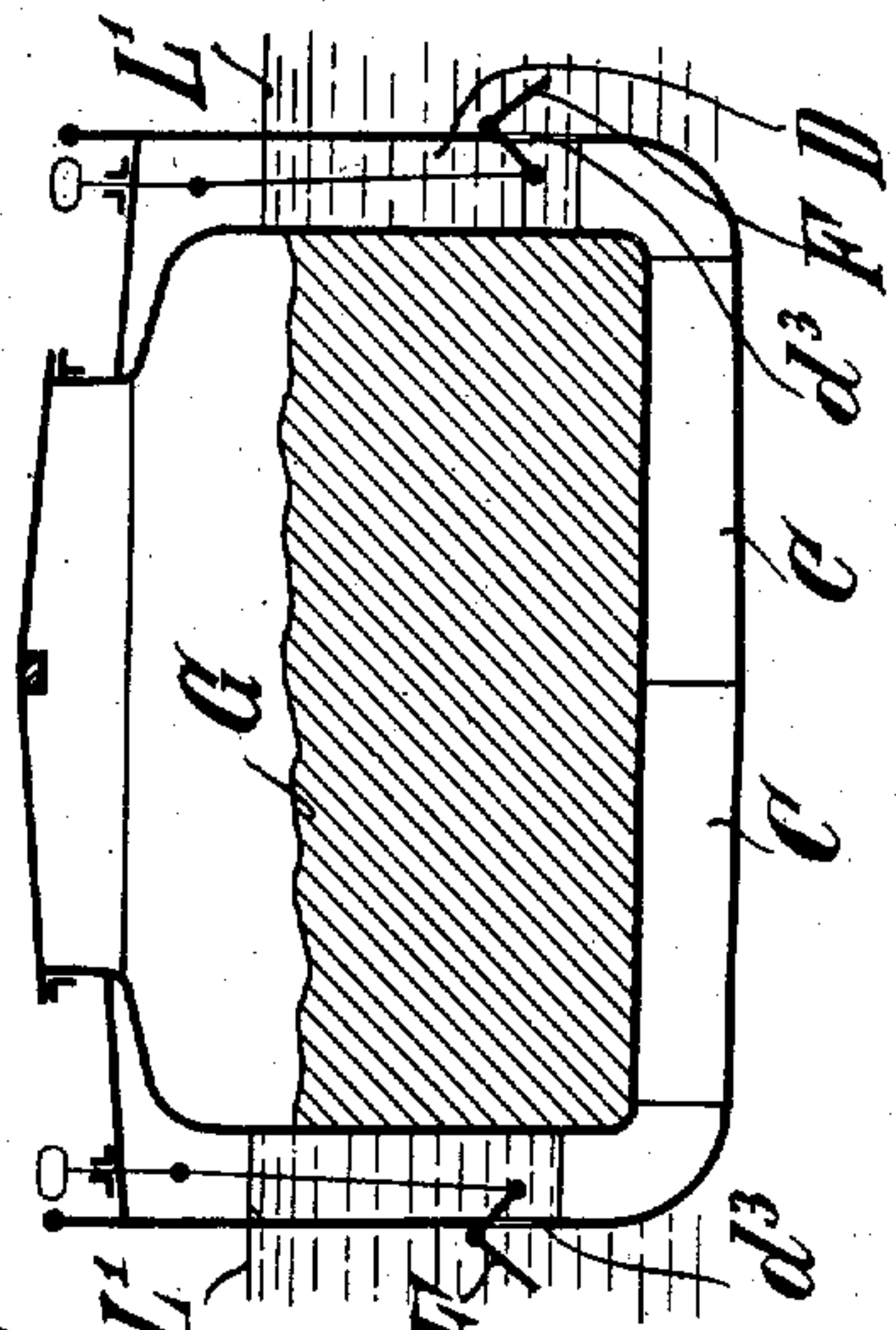
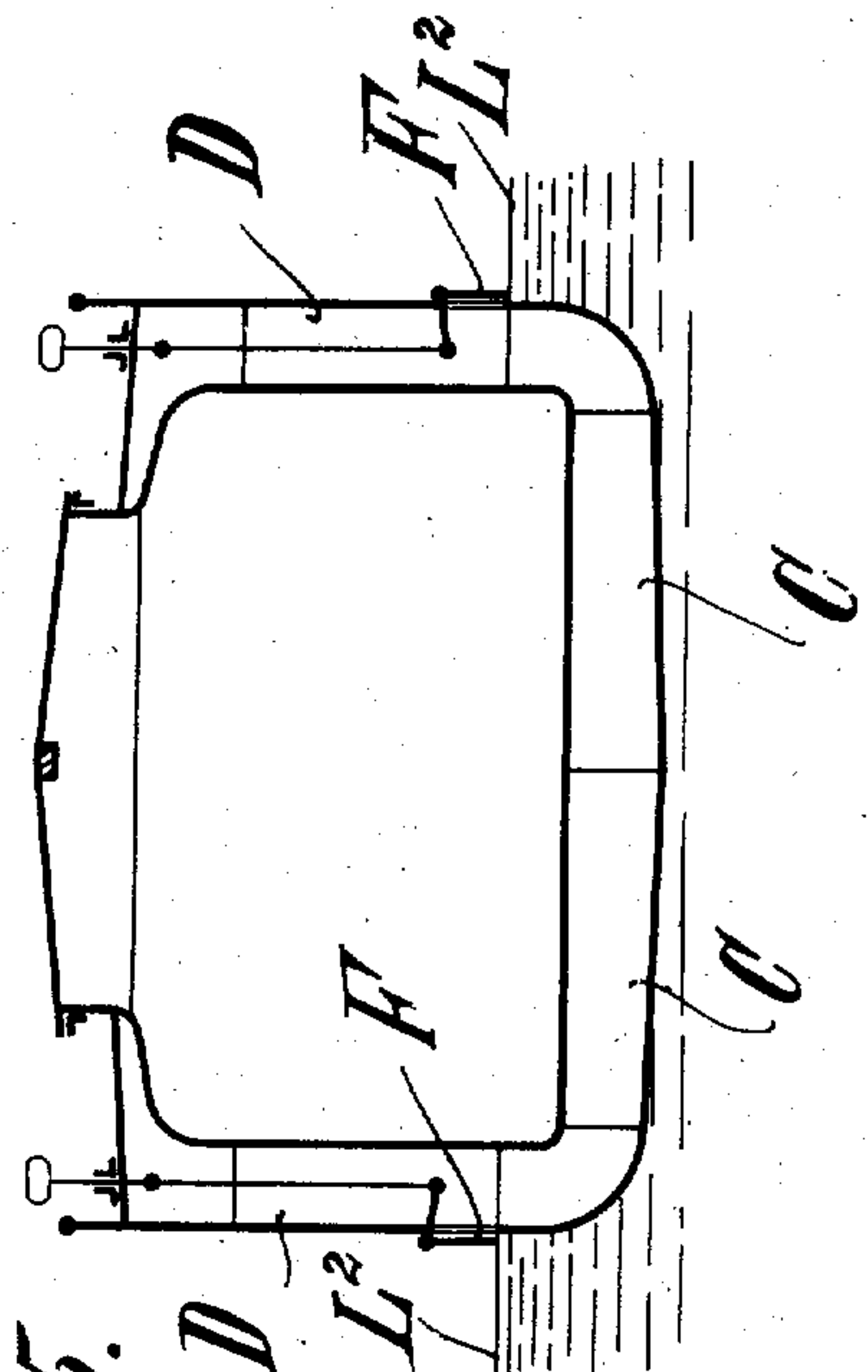
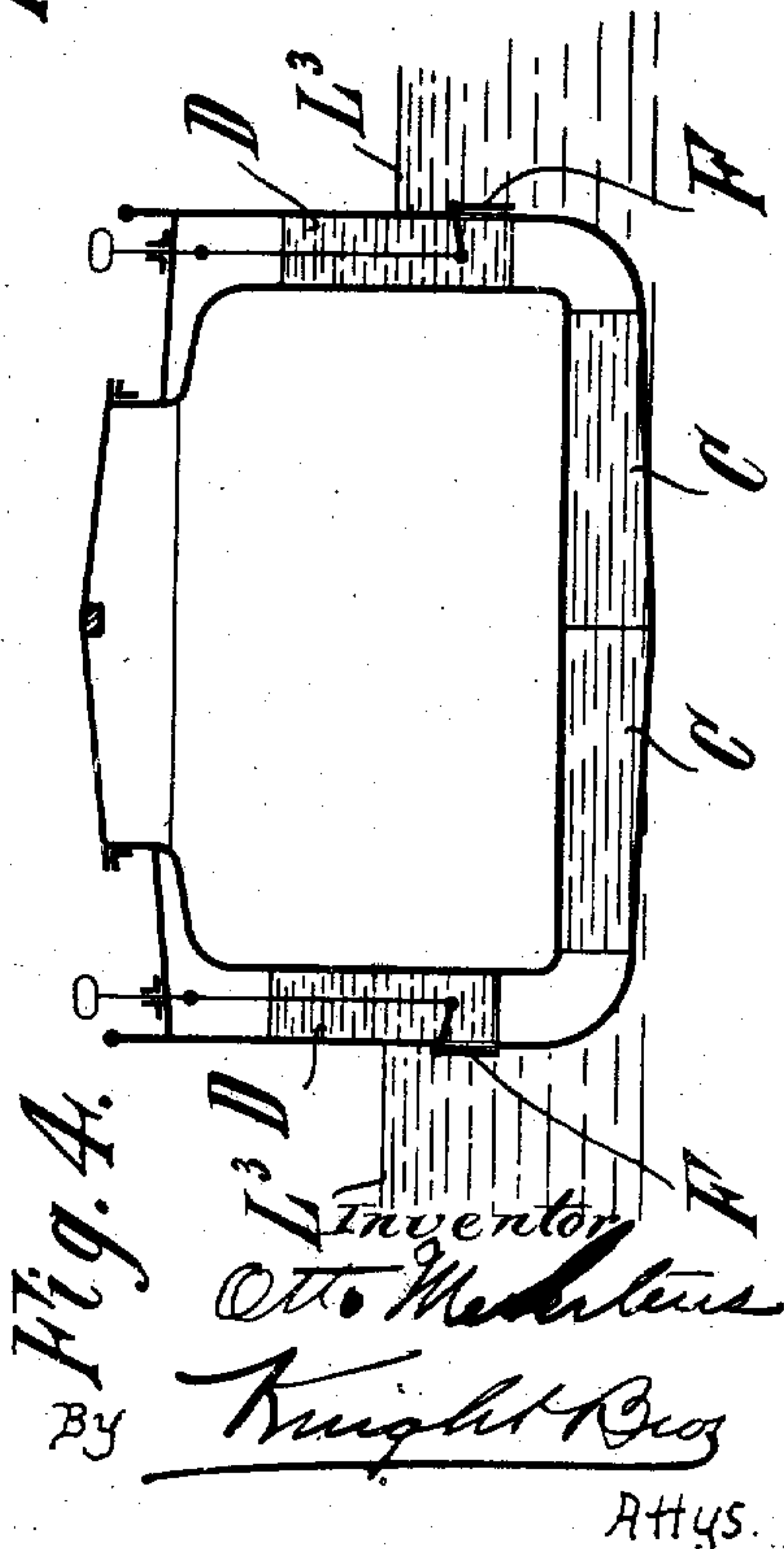


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## TRANSPORT VESSEL.

No. 860,492.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed July 31, 1906. Serial No. 328,574.

To all whom it may concern:

Be it known that I, OTTO MEHRTENS, a subject of the Emperor of Germany, and a resident of Kiel, Schwanenweg 29, Germany, have invented certain new and useful Improvements in Transport Vessels, of which the following is a specification.

The present invention relates to transport vessels.

It more particularly relates to those transport vessels, which, in addition to the usual bottom reservoirs for water ballast, are provided with special water ballast reservoirs located at a higher elevation. In the transport vessel according to the present invention, both the filling and the emptying of the upper reservoirs can be effected without special consumption of labor, that is to say, without the use of pumps or the like.

The accompanying drawing shows, by way of example, a transport vessel having the water ballast reservoirs arranged within a double bottom which extends up to the deck.

Figures 1 to 5, are diagrammatic views showing the same cross-section through one of the holds of the vessel but with different filling relations of the hold and of the water-ballast reservoirs.

The double bottom of the vessel is formed by the walls A and B, and longitudinal walls  $c'$   $c^2$  and  $d'$   $d^2$  divide the space between the walls A and B into compartments C and D which are adapted to receive water ballast. The water ballast reservoirs C can be filled in the usual manner by opening a valve (not shown) in the bottom and they can be emptied by means of pumps (not shown). In the outer walls of the lateral reservoirs D and near the bottom walls  $d^2$  openings  $d^3$  are provided (Fig. 3), which can be tightly closed from the deck by means of flaps F or the like to prevent water from passing through the openings. The top walls  $d'$  of the lateral compartments D are located in line with the loaded draft-line  $L'$  of the vessel, that is to say, they are located at the place to which the vessel is immersed when loaded (see Fig. 1). The bottom walls  $d^2$  are located in line with the light draft-line  $L^2$  of the vessel, that is to say, they are located at the place to which the vessel is immersed (Fig. 5) when it is without cargo and without water ballast. The ship floats on the water line  $L^3$  (Fig. 4) when it is in ballast. G indicates the cargo of the vessel.

The filling of the lateral reservoirs D is effected in connection with the unloading of the cargo G. In the description of the proceeding, which takes place, it is assumed that the vessel is completely loaded, that is to say, it floats on the loaded draft-line  $L'$  (Fig. 1). The ballast spaces C and D are empty and closed to-

wards the exterior water. Now in order to provide for an automatic filling of the lateral reservoirs D and at the same time avoid the danger of the vessel becoming immersed below the loaded draft-line, one first unloads as much of the cargo as corresponds to the weight of the water ballast that the lateral reservoirs are capable of holding. During this proceeding, the vessel rises and finally assumes about the position shown in Fig. 2. If the closures or flaps F are now opened, the lateral reservoirs D become completely filled and the vessel floats once more on the loaded draft-line  $L'$  (Fig. 3), whereupon the flaps F are closed. The filling of the bottom reservoir C can be effected by opening the bottom valve after further unloading of at least as much of the remaining cargo G as corresponds to the weight of the water ballast to be placed in the bottom reservoirs C. After the bottom reservoirs have been filled and the unloading of the cargo has been completed, the vessel floats on the water line  $L^3$  (Fig. 4).

When it is desired to empty the water ballast reservoirs C and D prior to the renewed loading of the vessel, the flaps F of the lateral reservoirs D are opened and the water is pumped out of the bottom reservoir C, and the lateral reservoirs D will then automatically run empty. The vessel now floats on the light draft-line  $L^2$  (Fig. 5) and can be loaded afresh.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a transport vessel, a ballast reservoir of a height approximately equal to the distance between the load and the light draft line, and having an opening at its bottom to permit the natural flow to and from the reservoir, and means for closing the opening.

2. In a transport vessel, a ballast reservoir, the upper wall of which is approximately in alinement with the load draft line, and the lower wall of which is approximately in alinement with the light draft line, said reservoir being provided with an opening at its lower end and a closure for said opening.

3. In a transport vessel, lateral ballast reservoirs for the vessel, the upper walls of which are approximately in alinement with the load draft line and the bottom walls of which are in alinement with the light draft line, said reservoirs being provided with openings at their lower ends, and closures for said openings.

4. In a transport vessel, lateral ballast reservoirs for the vessel, the upper walls of which are approximately in alinement with the load draft line and the bottom walls of which are in alinement with the light draft line, said reservoirs being provided with openings at their lower ends, closures for said openings, and bottom ballast chambers.

The foregoing specification signed at Kiel, Germany, this 20th day of June, 1906.

OTTO MEHRTENS.

In presence of—  
HUGO LIEBELT,  
OTTO LAU.