H. ALFSEN.

METHOD OF BUILDING AND LAUNCHING FLOATING CRAFT.

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1,258,175.

Patented Mar. 5, 1918.

Fig. 1.

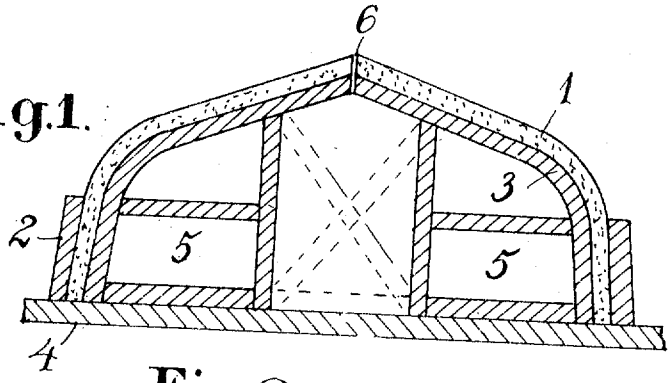


Fig. 2.

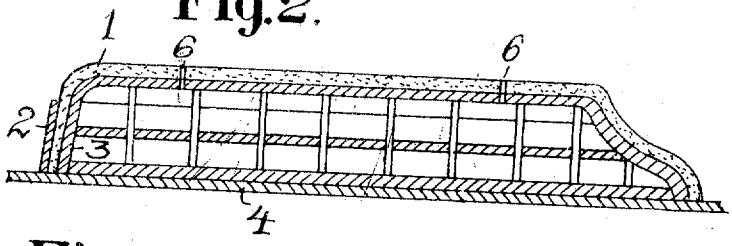


Fig. 3.

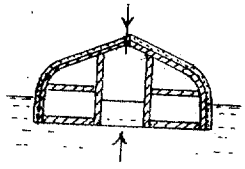


Fig. 4.

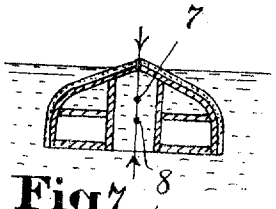


Fig. 5.

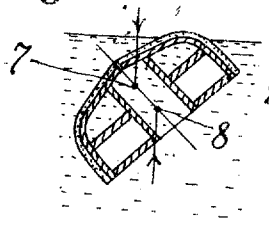


Fig. 6.

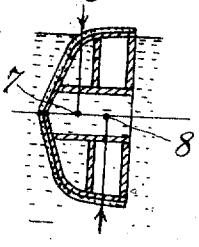
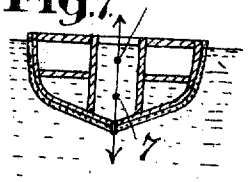


Fig. 7.



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UNITED STATES PATENT OFFICE.

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METHOD OF BUILDING AND LAUNCHING FLOATING CRAFT.

1,258,175. Specification of Letters Patent. Patented Mar. 5, 1918.

Application filed May 10, 1917. Serial No. 167,722.

To all whom it may concern:

Be it known that I, HARALD ALFSEN, a subject of the King of Norway, residing at Porsgrund, Norway, have invented certain new and useful Improvements in Methods of Building and Launching Floating Craft; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to the building and launching of all kinds of floating craft, such as ships, lighters, barges, pontoons and the like and more particularly of such craft manufactured of concrete or reinforced concrete.

In the ordinary way craft of this type are cast in an upright position between suitable lathings or forms, and launched as an ordinary ship. The casting of floating craft in this way is however a costly and difficult process, as it becomes necessary to provide extensive lathing or forms both inside and outside the hull, and this again makes it difficult to place the reinforcement and keep the same in position during the casting operation.

These difficulties are obviated if the craft is cast in an inverted position with the bottom up on an interior lathing or form forming a permanent but easily dismountable structure.

It has previously been proposed to cast smaller craft of concrete in an inverted position in plaster-molds, but the method has been given up as unpracticable owing to the difficulties of turning over the craft after the casting without injuring the same.

According to the present invention all the difficulties of turning over the craft are obviated by launching the same in its inverted position and turning the craft over after launching.

In order to carry out this method in the best possible way, the displacement of the boat when filled with water is so proportioned to the total weight of the same that it will just be awash when the air inside the hull has been displaced by water.

The right conditions may be obtained by regulating the volume of the inside lathing or forms that are launched with the boat so that its buoyancy is just sufficient to carry the concrete hull, or a number of airtight compartments may be conveniently placed in the craft.

Air outlets are provided in the bottom of the hull. The deck may be cast after the boat has been launched or it may be cast together with the rest of the hull.

On the drawings:

Figure 1 is a cross section through a boat and its lathings or form before the launching.

Fig. 2 is a longitudinal section on a smaller scale.

Figs. 3 to 7 show cross sections of the boat after the launching and on different stages of the turning over process.

1 is the hull, 2 and 3 the outside and inside lathing or forms respectively and 4 is the platform on which the boat is built. Air-tight compartments or cells 5 are provided on each side of the hull and air outlets 6 in the bottom of the same in the open portion of the form to which water is to be admitted.

It will be noted that the outside lathing only extends along the vertical sides of the boat while the hull is cast or plastered on the interior lathing only. The latter may consist of large boards or sections which fit together to form a definite structure and may be easily taken apart for use in casting new ships of the same type.

After the ship has been launched it will first float in the position shown on Fig. 3, but as the air is let out through the holes 6 in the bottom and displaced by water, it will sink till it arrives in the position shown on Fig. 4 in which the ship's weight is equalized by its buoyancy.

As the airtight compartments in this position are in the lowest part of the ship while the heavy bottom is at the top, it is evident that its equilibrium will be instable and it will therefore have a tendency to turn over of its own accord as shown on Figs. 5 and 6, the points 7—8 on Figs. 4 to 7 indicating the center of gravity and the center of buoyancy of the ship, during this movement.

It is preferred to make the buoyancy of the ship sufficient to keep the gunwale well

above the water line so that the water may be pumped out after the launching operation has been performed.

The airholes may if desired be provided with non-return valves.

The method of launching above described may also be applied on floating craft other than of concrete, although it has particular advantages for this kind of craft.

Claims:

1. The method of building and launching floating craft such as ships, lighters, barges, pontoons, and the like, which comprises constructing the hull upside down on suitable forms, launching the structure with its contained forms upside-down as constructed, righting the craft and removing the forms.

2. The method of building and launching floating craft which comprises constructing the hull upside-down upon means capable of floating the hull, launching the structure in its upside-down position, righting the hull and removing the floating means.

3. The method of building and launching floating craft which comprises constructing the hull upside-down upon a suitable form of sufficient buoyancy to cause the center of gravity to lie above the center of buoyancy of the combined hull and form, launching the craft in an upside-down position and righting the hull while afloat and removing the form.

4. The method of building and launching floating craft which comprises constructing the hull upside-down upon suitable forms in which internal air-tight cells and open cells are provided, launching the hull and forms in their upside-down position, venting the air from the open cells, righting the hull, and removing the forms.

5. The method of building and launching concrete vessels which consists in casting the hull upside down, on an interior framework in which air-tight cells and an open cell are provided, the casting being provided with a non-return valve allowing air to escape from the open cell, but preventing water from entering the same and launching said vessel upside down as cast, whereby the same assumes a position of unstable equilibrium, rights itself, and remains afloat.

6. The method of building and launching floating craft which comprises building the hull of reinforced concrete upside down on suitable interior buoyant forms, launching the hull, with the forms therein, upside-down and removing the air from the inverted hull, the buoyancy of said forms being proportioned to keep the hull awash after the removal of the air, righting the hull and removing the forms.

7. The method of building and launching floating craft which comprises constructing a buoyant internal form for the craft proportioned to maintain the combined hull and form in unstable floating equilibrium, constructing the hull upside-down of reinforced concrete on said form, launching the hull upside-down with the form therein, venting air from the hull, righting the hull and removing the form.

8. The method of building and launching floating craft which comprises constructing an interior buoyant form having air-tight compartments and open cells constructing the hull bottom up of reinforced concrete on said form, launching the combined hull and form, venting the air from the open cells, righting the hull, and removing the water and form, said form proportioned to maintain the combined hull and form when launched in indifferent or unstable equilibrium to facilitate righting of the hull.

9. The method of building and launching floating craft which comprises building a form having air-tight cells and open cells, constructing the hull upside-down on such form, launching the combined hull and form, said form constructed to position the center of buoyancy below the center of gravity of the combined hull and form, venting the open cells, righting the hull, and removing the form.

10. The method of building and launching floating craft which comprises building an interior form having air tight cells and open cells, constructing a reinforced hull upside-down on said form, launching the combined hull and form upside-down, venting the air from the open cells, the air-tight cells of said form being proportioned to position the center of buoyancy sufficiently below the center of gravity of the combined hull and form to cause the structure to right itself and remain afloat.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HARALD ALFSEN.

Witnesses:

C. VORMAN,

KARL L. LEE.