

J. E. JOHANNESSEN & O. A. WAAGE.
 FORMATION OF A SHIP'S HULL.
 APPLICATION FILED FEB. 23, 1917.

1,263,899.

Patented Apr. 23, 1918.
 2 SHEETS—SHEET 1.

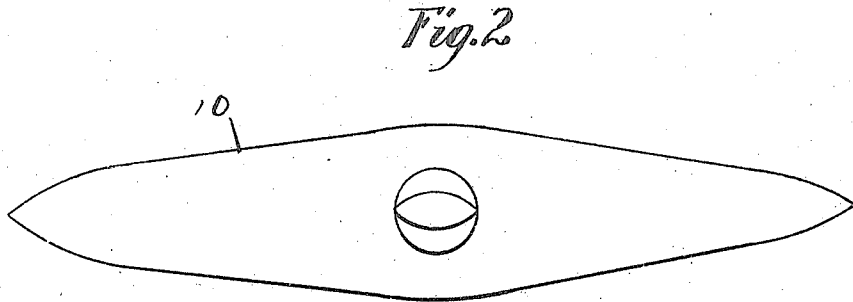
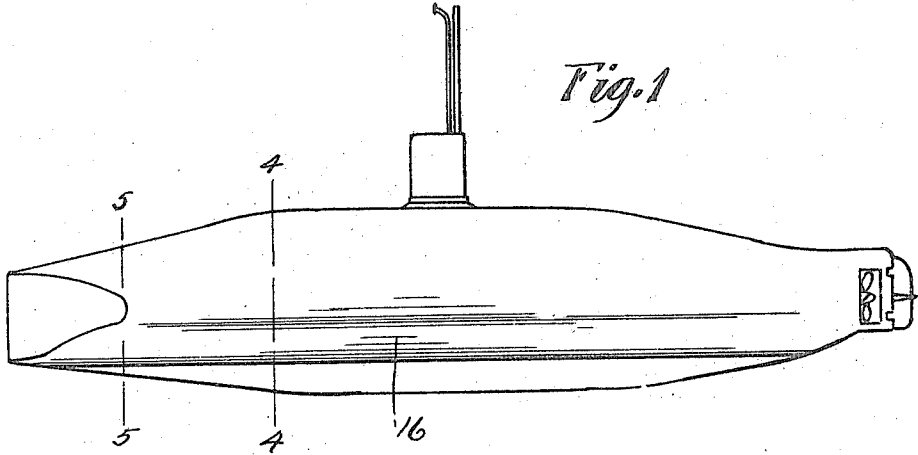
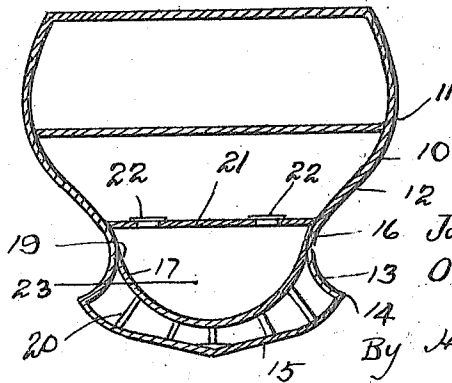


Fig. 3



Witnesses
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Fig. 4

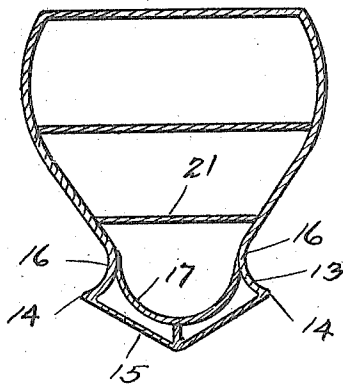
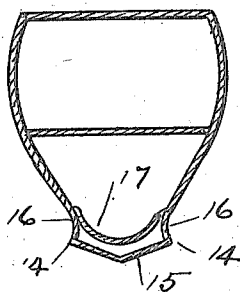


Fig. 5



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UNITED STATES PATENT OFFICE.

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FORMATION OF A SHIP'S HULL.

1,263,899.

Specification of Letters Patent. Patented Apr. 23, 1918.

Application filed February 23, 1917. Serial No. 150,449.

To all whom it may concern:

Be it known that we, JOHAN E. JOHANNESSEN, a citizen of the United States, and OSBORNE A. WAAGE, a subject of the King of Norway, and residents of Brooklyn, county of Kings, State of New York, and New York city, in the county of Kings and State of New York, respectively, have invented certain new and useful Improvements in Formation of Ships' Hulls, of which the following is a specification.

This invention relates to the construction of ships, and has for its object to provide an improved form of hull for a ship whose sides below the water-line and adjacent the bottom of the vessel are turned sharply outward forming a longitudinally disposed groove in either side of the hull, each groove having a laterally extending lower lip which serves to catch and lift the water as the vessel rolls from side to side, thereby minimizing this rolling action in a sea way.

A further object of the invention is to provide a false bottom portion adapted to engage the sides of the vessel adjacent the bottom of the grooves, to support the sides at this point.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings,

Figure 1— is a side elevation showing a submarine type of ship which is provided with a bottom portion of our improved construction.

Fig. 2— is a plan view of the deck of the ship.

Fig. 3— is a transverse mid-ship section.

Fig. 4— is a cross section on line 4—4 of Fig. 1.

Fig. 5— is a cross section on line 5—5 of Fig. 1 illustrating the diminishing depth of the groove as it approaches the bow of the ship, this diminishing effect being the same in approaching the stern.

In order to obtain great speed in a ship it must of necessity be relatively narrow, and as is well known, narrow vessels roll more easily than the wider type, which rolling action is very objectionable particularly in passenger-carrying ships. To obviate this very serious difficulty and minimize the rolling action of such a vessel, we have

formed the hull 10, below the water line 11, with its side walls rounding slightly inward as at 12 and have then turned these walls sharply outward as at 13 forming a deep groove at the mid-ship section with a prominent laterally extending lower lip 14, the groove being somewhat of a hook-shape, the point or lower lip 14 of the hook forming the side edge of the bottom portion of the ship 15. By this construction we provide a longitudinally disposed groove which runs substantially the length of the vessel, the greatest depth of the groove being through the mid-ship section which is illustrated in Fig. 3.

We have herein shown the width of the groove as being about one-third that of the greatest width of the vessel, and the depth of the groove as being about one-tenth that of the greatest width of the vessel, but the width and depth of this groove may vary according to the various requirements in the construction of the hull.

As illustrated in Figs. 4 and 5, the depth of the groove diminishes in approaching the ends of the vessel.

Another feature of our improved construction of hull is the reinforcing false bottom 17 which is spaced apart from the lower or outer bottom 15 and is formed in a bow-shape as illustrated in Fig. 3, its ends 19 embracing and supporting the hull at the bottom of the groove. These inner and outer bottoms are connected together by suitable trusses 20 or other means to prevent a swashing of water in the space between them.

A third bottom or lower deck 21 is also provided adjacent the groove portion of this hull for the purpose of supporting the vessel at this point and also to provide a water-tight deck which will prevent the vessel from sinking even though the outer bottom 15 and the false bottom 17 were punctured. This lower deck 21 is provided with water-tight hatches 22 through which a portion of the cargo may be passed and stored in the space 23.

Having thus described one illustrative embodiment of our invention we desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense and not for the purpose of limitation. We therefore reserve the privilege of resorting to all me-

chanical changes to which the construction is susceptible, the invention being defined by the appended claims.

We claim.

5 1. A ship comprising a hull having a bottom and side walls, each side wall adjacent the bottom portion being turned sharply outward forming a deep hook-shaped longitudinally disposed groove therein with a
10 laterally extending lower lip, said groove having its maximum depth substantially at the mid-ship section and gradually diminishing in both width and depth to conform
15 to the general convex surface of the hull at either end of the vessel.

2. A ship comprising a hull having a bottom and side walls, each side wall adjacent the bottom being turned sharply out-

ward forming a longitudinally disposed
20 groove therein with a laterally extending lower lip, said groove having its maximum depth at the mid-ship section and gradually diminishing in depth to conform to the
25 general convex surface of the hull at either end of the vessel, and a water-tight inner bottom wall spaced from the outer bottom wall and set to support the bottom wall of
30 said grooved portion and reinforcing supports between said inner and outer bottom walls.

In testimony whereof we affix our signatures in presence of a witness.

JOHAN E. JOHANNESSEN.
OSBORNE A. WAAGE.

Witness:

HOWARD E. BARLOW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."