A. VON KEISSLER.

SHIP'S BODY.

APPLICATION FILED SEPT. 4, 1909.

1,010,376.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

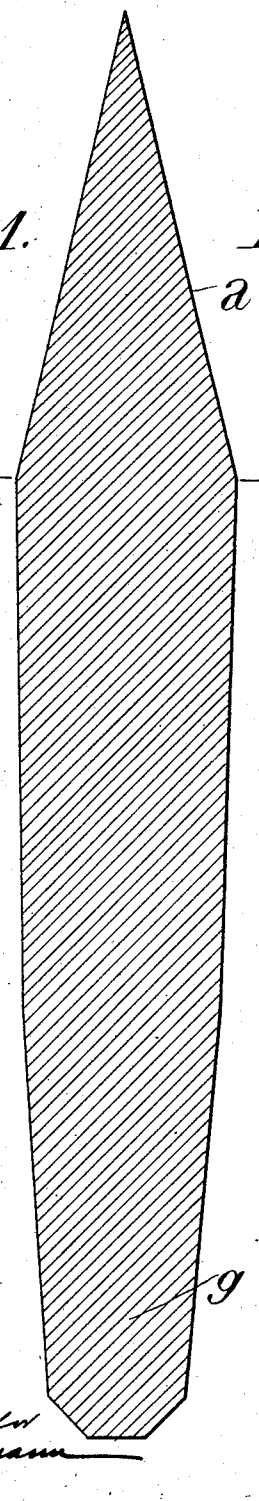
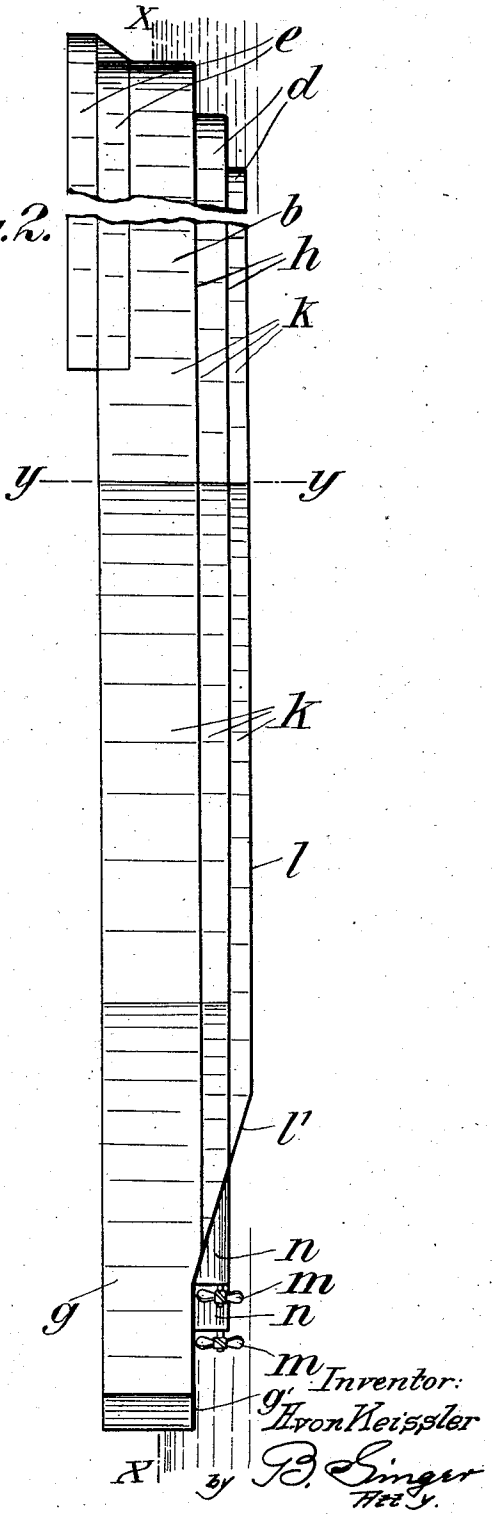


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

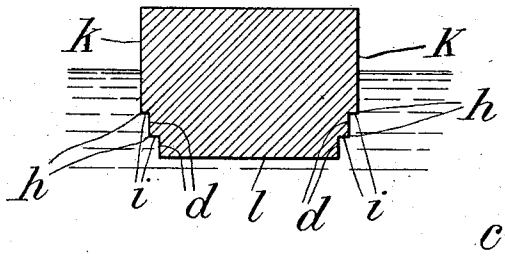


Fig. 4.

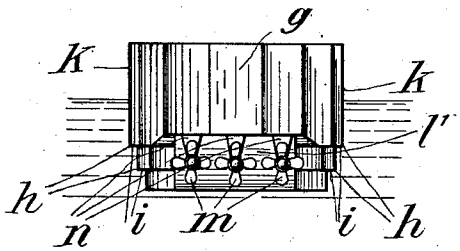
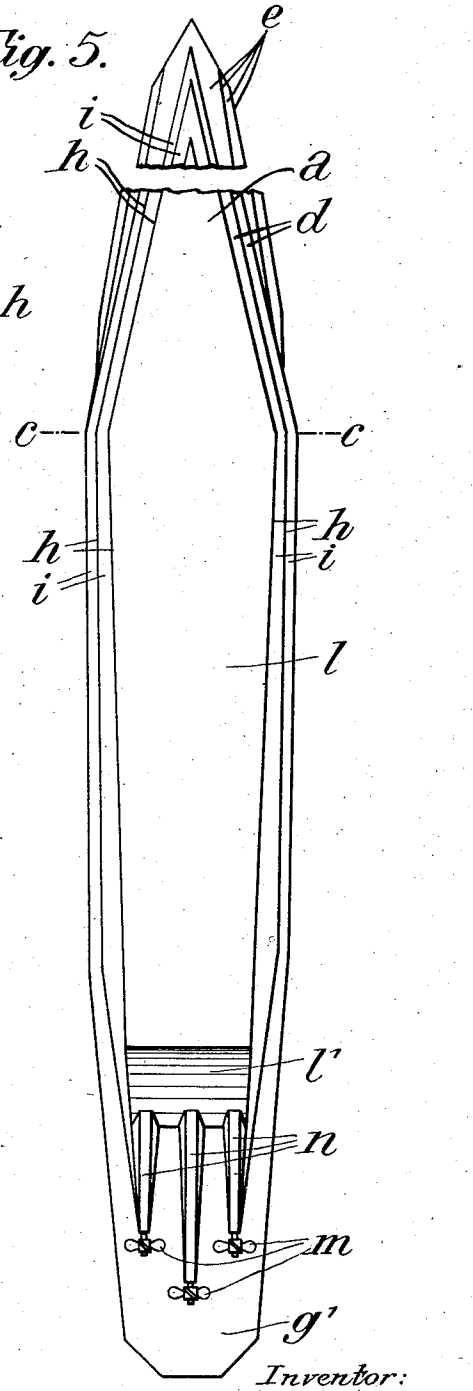


Fig. 5.



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SHIP'S BODY.

1,010,376. Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed September 4, 1909. Serial No. 516,314.

To all whom it may concern:

Be it known that I, ARTHUR VON KEISSLER, landlord, a citizen of the German Empire, and a resident of Gross-Ellguth, near Gnadenfeld, in the Province of Silesia, Germany, have invented certain new and useful Improvements in Ships' Bodies, of which the following is a specification.

My invention relates to improvements in ships' bodies. And the object of the improvements is to provide a ship body of such a construction that the resistance of the water is greatly decreased, so that the speed of the ship can be increased accordingly without increasing the power of its propelling means.

A further object of the improvements is to so construct the hull of the ship, that the part of the cargo laden in the fore and after bodies is directly supported by the pressure of the water exerted on the fore and after bodies, and not by the midship body.

Further objects of the improvements are to increase the stability of the ship, to prevent its bow from excessively pitching in heavy seas, to improve the action of the water on the screw propellers, to dispose each propeller separately within a tunnel which is easily accessible, to enable the ship to land along the pier almost with the whole of its length, and to decrease the cost of construction of the ship.

With these and other objects in view my invention consists in the matters described hereinafter and particularly pointed out in the appended claims.

For the purpose of explaining the invention an example embodying the same has been illustrated in the accompanying drawings in which the same letters of reference have been used in all the views to indicate corresponding parts.

In said drawings:—Figure 1 is a longitudinal horizontal section of the hull of the ship taken on the line *x*—*x* of Fig. 2, Fig. 2, is a side view of the same, Fig. 3, is a vertical cross-section taken on the line *y*—*y* of Fig. 2, Fig. 4, is a rear elevation of the hull, and Fig. 5, is a bottom view of the same.

In ships of the ordinary construction the hull is built up of curved plates. The propeller shafts are disposed within shaft sleeves or extend freely from the body of the ship in which case they are supported in brackets. In twin or multiple screw steamers the propellers are located near the wall of the hull, while they still project sidewise beyond the outer walls

As appears from the example illustrated in the drawings, the wall of the fore body *a* of my improved ship is constructed of a plurality of superposed wedge shaped elements having plane sides. As shown, the basis of a medium wedge shaped element *b* coincides with the line of the greatest width *c*—*c* of the hull, and this line is located nearer the bow than in ships of the ordinary construction. Below the element *b* wedge shaped elements *d* are located the size of which is successively decreased and which have edges *h*. Above the element *b* wedge shaped portions *e* project outward beyond the side walls of the wedge *b*. The portions *e* are obtuse at their forward ends, and they form the bow of the ship. From the bases of the wedges *b* and *d* the horizontal and vertical side walls of the latter extend rearward to form sections *h* in step relation, the width of the hull being gradually decreased toward the stern of the ship. Also in this case the horizontal and vertical faces of the wall of the body form edges.

The stern *g* of the body is formed below the water line by cutting the dead wood upward and rearward in an oblique direction, and building the same with a flat and broad lower face g^1. With a stern of this construction the tunnels for the propeller shafts can be so constructed as to extend from the inner part of the hull outward to the stern bearings, and the shafts can be suitably supported within the said tunnels.

In the drawings *k* indicates the side walls of the hull, l^1 the oblique portion of the bottom extending to the lower face of the stern, g^1 the lower face of the stern *n* the tunnels disposed outside the hull, and *m* the propeller shafts.

A hull of the construction described is advantageous in the following respects: As is well known, the best means to cut through a medium of any kind is a wedge having plane faces. Therefore, when constructing the fore body of a ship in the form of wedges, the ship will more readily overcome the re-

sistance of the water, than a ship in which the fore body is constructed, above and below the water line, with curved walls which must push the water sidewise rather than cut through the same. Therefore a fore body of the character described is particularly advantageous in ships designed to run at high speeds, and the speeds now attainable in ships of any construction can be greatly increased when building the same with my improved fore body. In other ships which are not designed to run at high speed the improved construction of the hull is advantageous also for other reasons. In a hull of the construction described, in which the wall of the fore body consists of wedge shaped elements, in which the greatest width is located nearer the bow, and in which the width of the hull gradually decreases toward the stern, only the vertical side faces of the wedge shaped section *b* and the vertical side faces of the wedge shaped portion *d* must overcome the resistance of the water, and this is done rather in a cutting than in a pushing way. The other faces of the wall of the hull are exposed merely to the frictional resistance of the water. Furthermore, in a hull of the character described also the fore body and the stern support with their horizontal faces *i*, i^1, and g^1 their portion of the cargo, so that the midship body is discharged from the weight of the fore and after bodies and their load. The longitudinal and lateral stability of the ship is increased because the edges *h* and the horizontal faces *i* located below the water line and extending to the stern of the hull act as a rolling keel to ease the rolling of the ship. The lower faces *i* and *e* prevent the fore body from excessively pitching in heavy seas. The water flows to the propellers in a straight direction. The propeller blades extend to the lower horizontal face of the stern only with their upper ends, while they are otherwise entirely unobstructed, particularly at their lower ends, where they have the greatest effect. The propellers are prevented from producing foam by being protected by the flat, broad and deep stern. They do not project beyond the side walls of the stern, even if their diameter is comparatively large, and they are protected against injury by waves or from projectiles.

A particular advantage of my improved construction of the hull resides in the fact, that, also outside the hull, the propeller shafts are disposed within tunnels extending to the stern bearings, within which tunnels they are easily accessible. Therefore, the shafts can be constructed of short sections, which can be renewed while the ship is in use. The bearings can be cooled and oiled.

The ship can land along the piers almost with the whole of its length. Thereby the loading and unloading of the same is greatly facilitated. Furthermore the propellers are protected from injury by striking against the walls of the piers, and on the other hand they can not injure the tug boats used for warping the ship.

A hull of my improved construction can be built more easily and at a lower cost and more rapidly, because only plane plates and straight building material are required.

On the wharves, mold lofts are dispensed with, because no patterns for bending the materials are used. Also heating furnaces and bending machines are dispensed with.

The material can be manufactured and made ready for use in any factory, while on the wharf they are merely put together. A large proportion of the riveting can be effected by means of machines.

The new construction of the hull is suitable for ships of any design, and it is particularly advantageous in men of war, because the artillery and the launching tubes can be disposed in a suitable way.

I claim.

1. A ship's hull provided with a converging vertical water-cutting prow composed of a plurality of vertical and horizontally disposed portions arranged to form a series of angular steps, the vertical portions of the steps being parallel with respect to each other and gradually receding from the forward extremity of the prow toward the stern, the highest vertical portion of the prow extremity being foremost and the lower vertical portion rearmost, the angular stepped portions of said prow extremity extending rearwardly along the side of the hull and forming a series of steps on each side of the hull, horizontal throughout their length and extending substantially to the stern.

2. A ship's hull provided with a relatively wide flat bottom but narrower than the sides of the hull, a series of angular and relatively small stepped sections on each side of the hull and below the water-line and comprising continuously straight horizontal and vertical portions, each series extending to and terminating at the prow, the prow terminals of said stepped portions comprising vertical and horizontal portions receding from the foremost extremity of the prow rearwardly.

3. A ship's hull provided with a vertical converging water-cutting prow and a flat bottom, a series of superposed stepped sections below the water-line and connecting each side of the hull with the bottom thereof, said sections having straight and continuous flat horizontal bottom faces extending from the prow rearwardly, said prow having stepped sections at its extremity coinciding with each series of stepped sections on the sides of the hull.

4. A ship's hull having a series of relatively small stepped sections on each side thereof, horizontal and straight throughout their length, said hull having a vertical prow composed of stepped sections and each series of stepped sections on the sides converging to and terminating into the stepped sections of the prow.

In testimony whereof I hereunto affix my signature in the presence of two witnesess.

ARTHUR VON KEISSLER.

Witnesses:
ERNST KATZ,
CLARA BENDIG.