H. W. JACOBS.

BOAT.

APPLICATION FILED MAY 19, 1915.

1,173,432.

Patented Feb. 29, 1916.

4 SHEETS—SHEET 1.

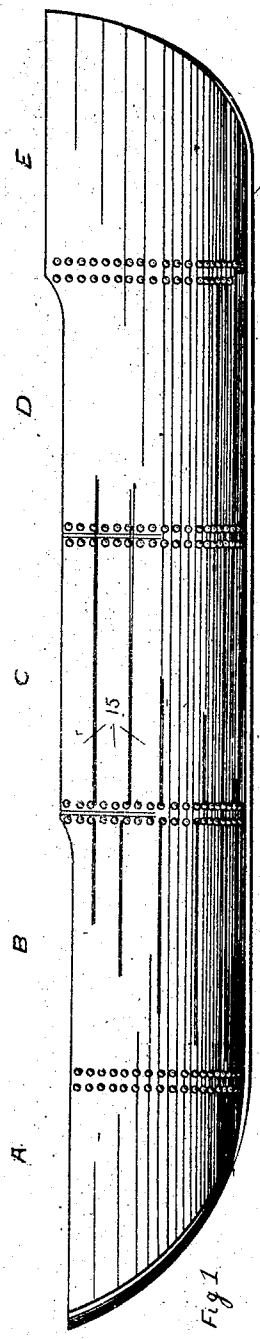


Fig 1

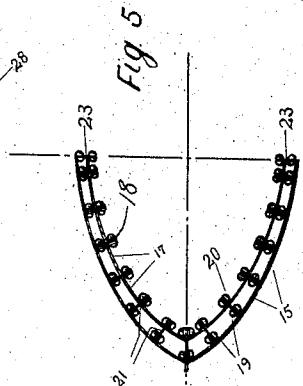


Fig 5

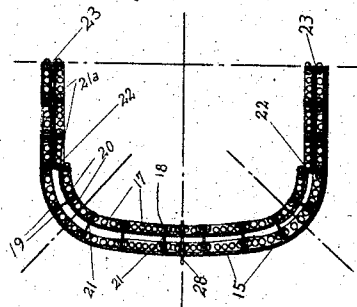


Fig 4

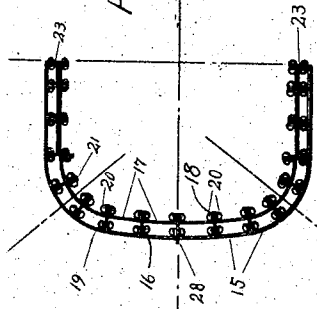


Fig 3

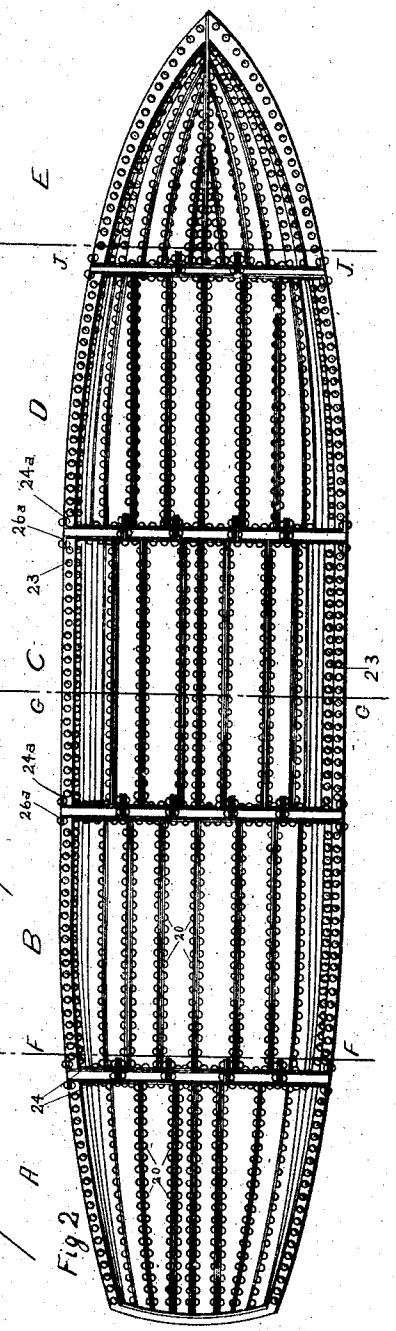


Fig 2

Witnesses.
Robert Hafstetter
William J. Leighty

Inventor.
Henry W. Jacobs,
By Belmont Bissell
Attorneys.

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4 SHEETS—SHEET 2.

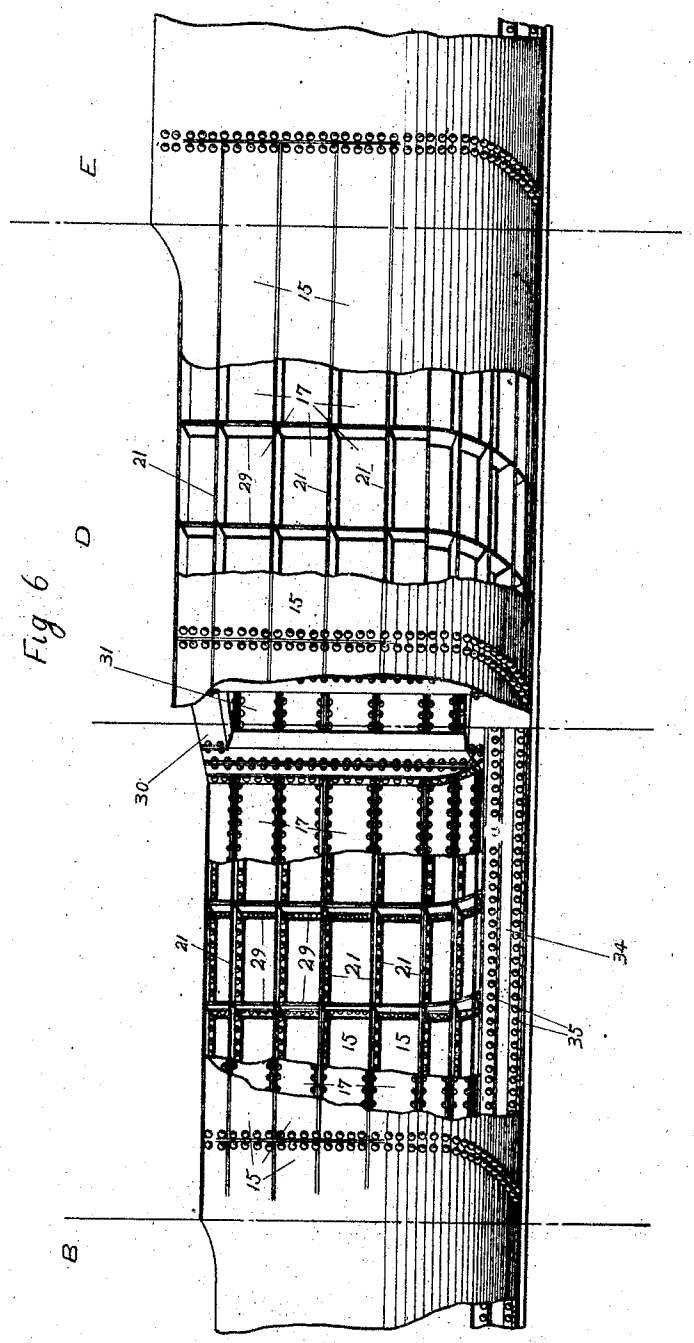


Fig 6

Witnesses.
Robert Hofstetter
William J. Leighty

Inventor
Henry W. Jacobs,
By Siebman Strode
Attorneys

H. W. JACOBS.

BOAT.

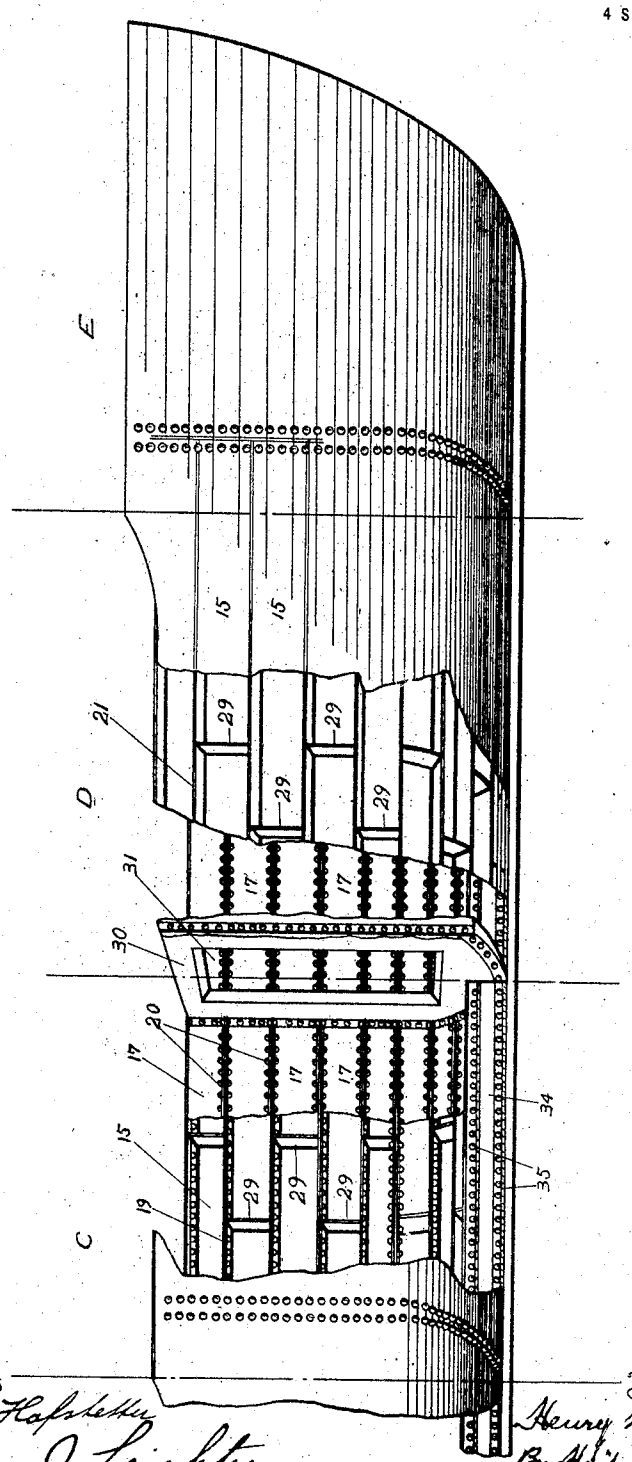
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4 SHEETS—SHEET 3.

Fig 7.



Witnesses

Robert Hofstetter

William J. Leighty

Inventor

Henry W. Jacobs,

By Hedman & Street

Attorneys

H. W. JACOBS.

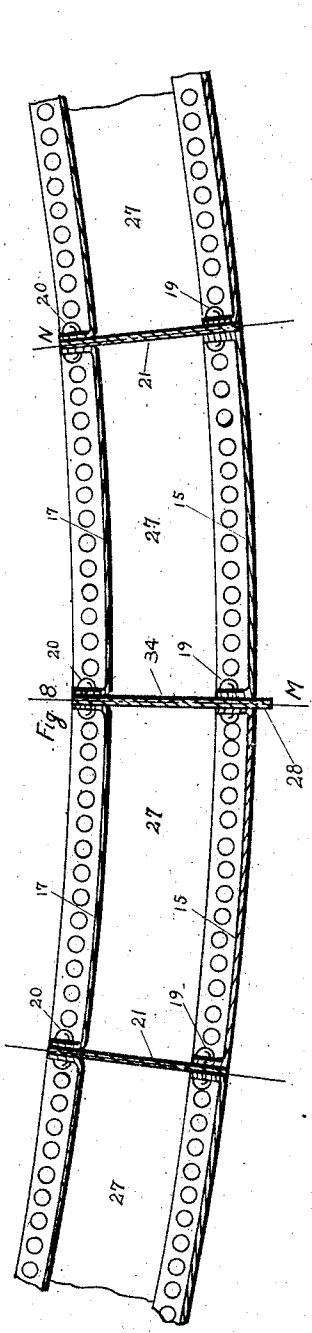
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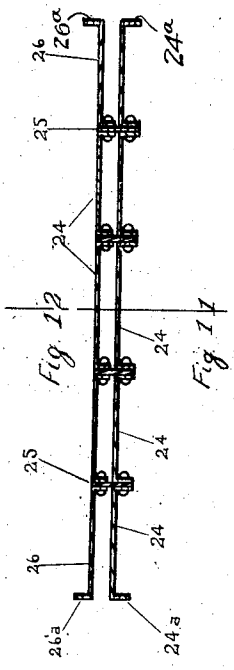
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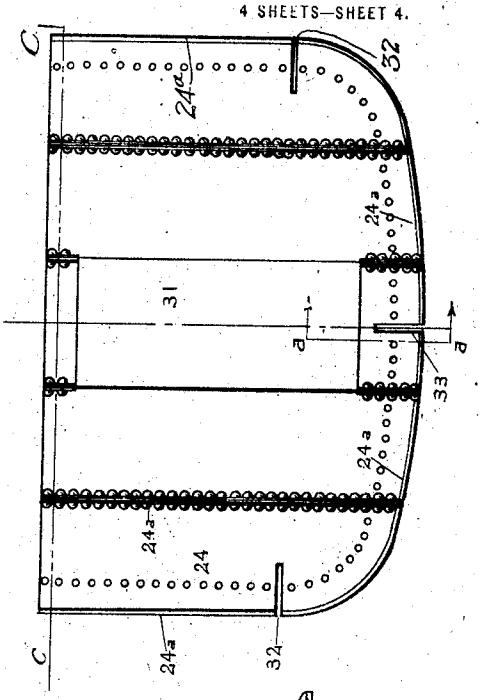
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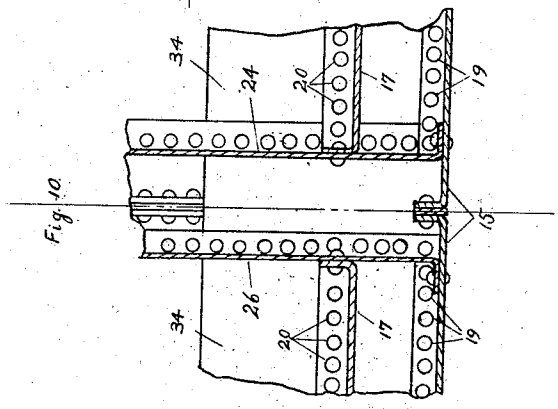
Patented Feb. 29, 1916.

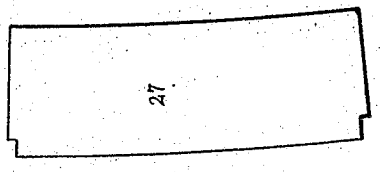
4 SHEETS—SHEET 4.











Witnesses.
Robert Hafkesbrink
William J. Leighty

Inventor
Henry W. Jacobs,
By Reinhardt Strud
Attorneys

UNITED STATES PATENT OFFICE.

HENRY W. JACOBS, OF TOPEKA, KANSAS.

BOAT.

1,173,432. Specification of Letters Patent. Patented Feb. 29, 1916.

Application filed May 19, 1915. Serial No. 29,086.

To all whom it may concern:

Be it known that I, HENRY W. JACOBS, a citizen of the United States, and resident of Topeka, in the county of Shawnee and State of Kansas, have invented a new and useful Improvement in Boats, of which the following is a description, reference being had to the accompanying drawings, which form a part of my specification.

My invention relates more especially to improvements in the hulls of boats; having for its object the provision of sectional steel or metallic walls whereby a hull possessing great strength, and yet comparatively light in weight, is obtained.

Another object of my invention is to provide a construction which will be simple and easy to manufacture, economical in cost and of a non-sinkable and buoyant character.

Another object of my invention is to provide a construction wherein the hull is formed with double walls spaced apart, so that the intervening space can be utilized for the storage of fuel, ballast, and so forth; the intervening space, by reason of the construction employed, being divided into separate non-communicating chambers.

A further object of my invention is to provide a construction wherein the hull is not only provided with a series of longitudinally disposed chambers intermediate of the walls, but also be provided with fluid tight transversely arranged bulkheads, whereby the hull is divided into any desired number of compartments to increase the safety of my improved construction, thus giving greater protection against the possibility of sinking.

The advantages inherent in my improved construction will be readily apparent from the following detailed description.

In the drawings:—Figure 1 is a side elevation of a hull made in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a cross-section taken on the line F—F of Fig. 2. Fig. 4 is a cross-section taken on the line G—G of Fig. 2. Fig. 5 is a cross-section taken on the line J—J of Fig. 2. Fig. 6 illustrates a modified form of my invention; a portion of the wall being shown in side elevation, with a part of the side wall broken away in order to more clearly disclose the construction. Fig. 7 is a view similar to Fig. 6, illustrating another modified form of my invention; only a portion of the hull of the boat being illustrated partially in side elevation and partly in section. Fig. 8 is a detail cross-section through the bottom of the hull, to more clearly illustrate the construction of the outer and inner walls as well as the longitudinal ribs, and the method of securing the parts together. Fig. 9 is a plan view of a vertically arranged or transversely disposed rib employed in my improved construction illustrated in Figs. 6 and 7. Fig. 10 is a detail sectional view on line *a*—*a* of Fig. 11, illustrating a manner of securing the inner wall to the bulkhead or transversely arranged ribs of the boat. Fig. 11 is a side elevation of a bulkhead as employed in my improved constructions shown in Figs. 6 and 7. Fig. 12 is a cross-section through the bulkhead taken on the line C—C of Fig. 11.

My invention relates to the hull of a boat or vessel constructed of sheet metal sections, preferably arranged in the manner hereinafter set forth; the particular exemplification of my invention, as illustrated in the first five figures of the drawings, comprising a series of channel sections spaced apart so as to provide an inner and an outer wall; the outer wall consisting of flanged or channeled sections 15, see Figs. 3, 4 and 5, having their sides or flanged portions 16 preferably presented inwardly, as illustrated. The inner wall is constructed similarly from channel or flanged sections 17, the sides being disposed angularly, as shown at 18, similar to the sides 16 of the channels 15, and are also preferably presented inwardly as illustrated in order to permit the sections to be secured together. The angularly disposed sides or flanges 16 and 18 of adjacent sections 15 and 17 of the two walls, may be secured together in any suitable manner, preferably by riveting, as shown at 19 and 20, respectively.

In order to not only properly space the walls apart, but also to provide reinforcing members, I prefer to employ the stay sheet members or ribs 21 made of proper width and placed between the abutting sides or flanges of adjacent sections so as to be riveted thereto by means of the rivets 19 and 20. In constructing the hull in the manner described, the sections 15, which constitute the outer wall, are first properly associated and riveted to one side of each stay-sheet member or rib 21; the latter being arranged lengthwise of the channel or flange sections 15. The stay-sheet members or reinforcing

ribs 21 are made of a width commensurate with the space it is intended to provide between the inner wall and the outer wall, and also permit the opposite sides of the stay-sheet members or reinforcing ribs 21 to extend intermediate of the angular sides or flanges 18 of the sections 17 which constitute the inner wall.

The stay-sheet members or reinforcing ribs 21 may be of equal width throughout the hull of the boat, or, if desired, the ribs 21 between the respective sections, constituting the bottom portion of the hull, may be of greater width, as clearly illustrated in Fig. 4, than the ribs 21ª arranged intermediate of the sections constituting the sides of the hull. By arranging the sections and reinforcing ribs in the manner just described, and as illustrated in Fig. 4, it is evident that the side of the hull will be provided with a ledge 22 or seat arranged along both sides of the boat.

The ends of the sections, constituting the inner and outer wall, may be given any desired curvature or shape so as to provide the proper bow and stern formation, as illustrated in Fig. 2.

The stay-sheet member or reinforcing rib, secured to the free or upper sides of the topmost flange-sections, not only provides a suitable closure for the intervening space at the top of the hull, but also provides a suitable finish, as can be seen in Figs. 2, 3 and 4 at 23.

The channel or flange-sections 15 and 17 may be made of any desired length, and the ends secured to the abutting ends of adjacent or alined sections in any suitable manner, as, for example, by having the ends welded or bent at an angle to the main or body-portion, namely by flanging the ends in a manner similar to the sides of the sections. The upturned edges of the alined sections may be riveted to each other directly or with an intermediate stay-sheet member or rib. In Fig. 2, I show the ends of the sections, constituting the inner wall, secured to transversely arranged members which may be constructed like the bulkheads illustrated in Figs. 11 and 12, namely by employing a series of channel sections 24 arranged vertically, with the flanges of the intermediate sections riveted together, preferably with an intermediate stay-sheet or reinforcing member 25, as shown in Fig. 12.

As illustrated in Fig. 12, the bulkheads are preferably constructed with double walls, one wall being composed entirely of channel sections 24, as described, while the other wall is composed of channel sections 24 and side sections 26, in the form of Z-bars in cross-section. The purpose in employing sections 26 is to provide outer or free flanges 26ª disposed in a direction opposite to that of the flanges 24ª on the opposite wall in order to permit the bulkhead to be riveted or otherwise secured into place. The free flanges 24ª and 26ª are adapted to overlap and lie flush against the sections constituting the outer wall of the hull, as more clearly shown in Fig. 2. To permit the flanges 24ª and 26ª, of the transverse beams or bulkheads to be securely riveted to the sections constituting the outer wall, the longitudinally disposed ribs, constituting the top rail or finishing strip 23, are preferably cut away at two of the corners which engage the flanges 24ª and 26ª, in a manner similar to the stay-sheet member or reinforcing rib 27, shown in plan in Fig.

Where the bulkhead construction is employed, it will, of course, be understood that the walls of the bulkheads are secured to the inner surface or side of the sections constituting the outer wall of the hull; or the bulkhead may simply be secured to the sections constituting the inner wall of the hull and not extend through the space between the inner and outer walls of the hull.

As illustrated in Fig. 2, the sections of the two walls are preferably so constructed and arranged as to provide a longitudinal seam at the longitudinal center line of the hull; and the stay-sheet member or reinforcing rib 21 is preferably made wider than the other ribs 21, and so secured between the adjacent sections that it will extend somewhat below the outer bottom wall of the hull and thus provide a keel, as shown at 28 in Figs. 1, 3 and 4.

In the construction illustrated in Fig. 6, the hull is provided with the transversely arranged stay-sheet members or reinforcing ribs 29, which are secured between the inner and outer walls of the hull; a portion of the double side-wall and a portion of the inner wall on the opposite side of the boat being shown broken away to the left of the figure, while a portion of outer wall of the near side of the hull is shown broken away at the right of the figure. These ribs 29 are preferably of the same construction as rib 27, shown in Fig. 9; and are secured to the longitudinally disposed ribs 21, as well as to the flanged sections constituting both walls of the hull, in any suitable manner, but preferably by welding. The ribs 29 may be arranged as shown, thereby providing a series of continuous beams throughout the shell or hull; or, if desired, these ribs 29 may be arranged in the staggered manner illustrated in Fig. 7.

The outer and inner walls of the constructions shown in Figs. 6 and 7, are composed of sections 15 and 17 similar in construction to the sections previously shown and described, and disposed longitudinally of the hull. The constructions shown in Figs. 6 and 7 are also preferably provided with reinforcing ribs 21, secured inter-

mediate of the flanges of adjacent sections of both walls.

In Figs. 6 and 7, I show the hulls provided with bulkheads at 30, which are preferably constructed as previously described and more clearly illustrated in Figs. 11 and 12, where the bulkheads are shown composed of sections 24 arranged to provide a double wall, spaced apart and reinforced by stay-sheet members or ribs 25; portions of the intermediate sections being omitted, or shorter sections being employed, so as to provide an opening or doorway 31. These openings or doorways 31 may be provided with suitable air-tight doors, so that any one of the compartments in the hull, resulting from the use of bulkheads, may become filled with water, without causing the vessel to sink, as the water, by closing the doors of the bulkheads, can be kept in the compartment which may have become damaged; and the cellular construction of the hull will maintain the boat afloat and permit a safe landing.

The bulkheads constructed as shown and described provide a very rigid construction adapted to resist great fluid pressure. The bulkheads may either be secured to the inner wall in a manner as hereinbefore described, namely by riveting or otherwise securing the flanges 24^a and 26^a of the bulkhead to the sections 17 constituting the inner wall, or the bulkheads may extend through the inner wall and be secured to the outer wall, as previously stated, in which construction the abutting sections of the inner wall, like those of the outer wall, are also riveted to the bulkhead.

When the vessel is to be of some size, it may be desirable to provide the hull with additional stiffening members extending longitudinally of the hull below the normal water-line where injury to the hull is most likely to occur. I, therefore, illustrate the bulkhead shown in Fig. 11, provided with slots 32, 32 arranged at the sides above the bottom and with a central slot 33. These slots permit the use of inwardly extending longitudinal ribs, as shown at 34 in Figs. 6 and 7, whereby the hull will not only be greatly stiffened, but also protected against any external obstructions encountered by the vessel; and these stiffening ribs may be secured in place by riveting to the sectional walls, as shown, for example, at 35 in Figs. 6 and 7, or otherwise secured in place.

By constructing the hull as herein described, a very strong and yet at the same time light construction is obtained, wherein the vessel is provided with a cellular fluid-tight wall, the cells or chambers being adapted for the storage of liquid fuel, lubricating oil, fresh water, etc., while some of the cells may act as air-chambers to prevent sinking of the vessel.

The comparatively small cells or chambers will prevent the extensive rolling and splashing of the stored liquids; and by careful manipulation, or rather by emptying the cells on opposite sides of the longitudinal center line of the vessel to an equal extent, the balance or equilibrium of the boat may be maintained.

I have shown and described what I believe to be the best and simplest forms of my invention, but the same may be varied without, however, departing from the spirit of my invention, and I do not wish to be understood as limiting myself to the precise constructions shown and described.

What I claim is:—

1. A boat provided with an inner and an outer wall composed of sheet metal flanged sections, the flanges of adjacent sections being secured together with intervening stay-sheet members whereby longitudinally disposed ribs are provided and the walls maintained in proper spaced relation to each other, some of the intervening stay-sheet members along the bottom of the boat being of greater width so as to extend to the outside of the outer wall, and flanged sections secured together and extending transversely of the boat so as to provide bulkheads.

2. A boat provided with an inner and an outer wall composed of metal flanged sections, the flanges of adjacent sections being secured together with intervening stay-sheet members whereby longitudinally disposed reinforcing ribs are provided and the walls maintained in proper spaced relation, and means secured intermediate of the walls and arranged transversely of the boat whereby the hull is divided into a series of fluid-tight cells or chambers.

3. A boat provided with an inner and an outer wall composed of series of sheet metal flanged sections whose flanges are presented inwardly, stay-sheets arranged lengthwise of the boat intermediate of the flanged sides of the sections of both walls and secured thereto so as to provide longitudinally disposed ribs whereby the walls are maintained in proper spaced relation, and a bulkhead composed of a double wall, each formed of series of transversely disposed flanged sections, the sections of the two bulkhead-walls being maintained in spaced relation by stay-sheets whereby a cellular bulkhead is produced.

HENRY W. JACOBS.

Witnesses:
GEORGE HEIDMAN,
R. EMERSON.