H. W. JACOBS.

BOAT.

APPLICATION FILED APR. 14, 1915.

1,173,431.

Patented Feb. 29, 1916.

2 SHEETS—SHEET 1.

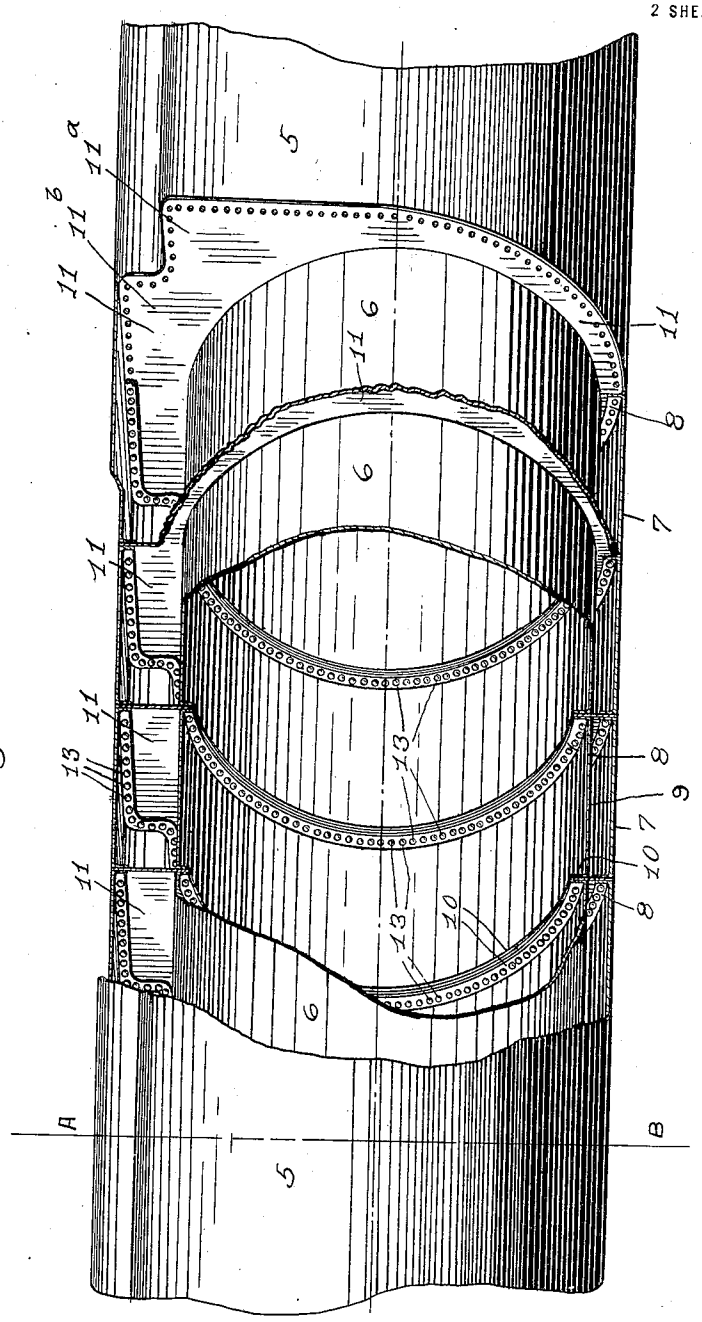


Fig. 1

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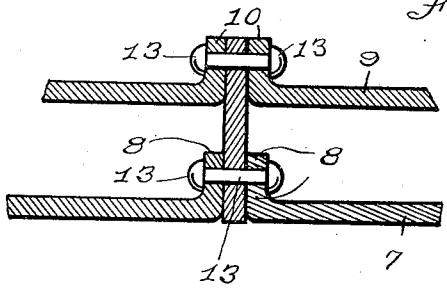
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2 SHEETS—SHEET 2.

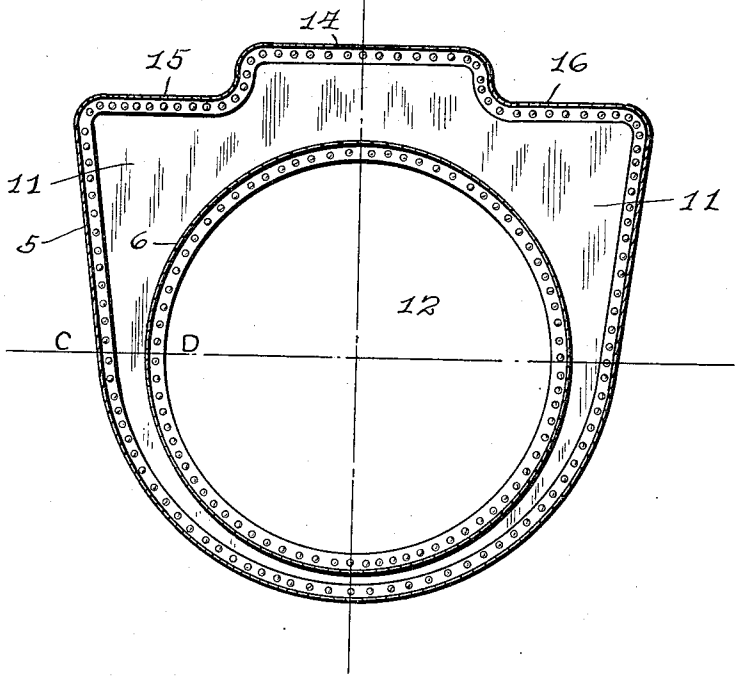
Section C-D

Fig. 3



Section A-B

Fig. 2



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BOAT.

1,173,431. Specification of Letters Patent. Patented Feb. 29, 1916.

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To all whom it may concern:

Be it known that I, HENRY W. JACOBS, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements 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 particularly to the hulls or shells of submarine boats constructed of metal; having for its object the provision of a double walled construction possessing increased strength without, however, increasing the weight. By reason of the construction, comprising inner and outer walls, reinforced or stayed by suitable members or portions, chambers or cells are provided, which may be utilized for the storage of air and fuel; suitable mechanism being employed for properly controlling and directing such supplies.

A further object of the invention is to provide a construction whereby the possibility of leakage will be practically eliminated owing to the method of construction whereby greatly improved joints are provided, and the safety of the construction materially increased.

Another object of the invention is to provide a construction which not only possesses greater strength without increased weight, but which may be produced at less cost, comparatively, per unit weight.

The invention possesses other advantages inherent in the construction, which will be apparent from the following detailed description.

In the drawings: Figure 1 is a partial side view, in perspective with portions of the walls broken away and the reinforcing members shown in section, in order to more clearly disclose the general construction. Fig. 2 is a cross-sectional view taken on the line A—B of Fig. 1. Fig. 3 is a cross-sectional view taken on the line C—D of Fig. 2.

In the particular exemplification of my invention, as illustrated in the drawings, wherein the invention relates more especially to the shell or hull of a submarine boat, the boat is provided with outer and inner walls, as indicated at 5 and 6, respectively, which are composed of flanged sections extending circumferentially; the sections being of any suitable cross sectional contour, with the sides or flange-portions of the sections preferably disposed inwardly. In the construction, as illustrated, the outer wall 5 consists of a series of sections 7, see Figs. 1 and 3, illustrated in the nature of channels; the sections being placed adjacent one another so that the sides or flange-portions 8, 8 of the various sections will be arranged parallel with each other and extend circumferentially about the boat, as shown in Fig. 1; the flanges or sides 8 being preferably presented inwardly as shown. The inner wall 6 is also preferably constructed of channels 9, of smaller circumference, having the sides or flange-portions 10, 10 also preferably presented inwardly, where they may be accessible for the purpose of securing them together, and arranged to extend circumferentially, as shown in Fig. 1.

In order to not only maintain the relative position or spaced relation of the outer and inner walls, but also to properly reinforce the walls, I provide reinforcing members or stay-sheets 11 having the cut-out circular portion or central opening, as shown at 12 in Fig. 2, in order that a continuous chamber or passage may be provided within the inner wall. The reinforcing members or stay-sheets 11 are adapted to be inserted between the adjacent sections of the construction, namely between the sides or flanges 8, 8 of the sections constituting the outer wall 5 and the flanges 10, 10 of the sections constituting the inner wall 6; the stay-sheets or reinforcing members 11 and the abutting flanges 8, 8 and 10, 10 being secured together as, for example, by a suitable number of rivets, as indicated at 13, which are intended to extend entirely through the adjacent flanges and the stay-sheet, as more clearly shown in Fig. 3.

In Fig. 1, portions of the outer wall 5 and of inner wall 6 are broken away in order to more clearly illustrate the method of arranging the respective sections constituting the two walls, as well as the method of placing the intervening members or stay-sheets 11.

In order to provide a suitable deck-portion for the outer wall 5, the upper parts of the intervening members or stay-sheets 11 are somewhat flared or extended, as shown at 11^a, see Fig. 1, while the intermediate upper portion of each reinforcing member or stay-sheet 11 is preferably extended upwardly, as shown at 11^b, and the upper parts

of sections 7, constituting the outer wall 5, are likewise made to conform to the formations of the reinforcing members 11 at their tops, in order to provide the flat horizontally disposed deck-portions, as shown at 14, 15 and 16, see Fig. 2.

In practice, it may be found desirable to construct the sections or channel members, constituting the inner wall, in separate portions or sections, semi-circular in cross-section, and uniting the two halves or semi-circular portions together in any suitable manner, as, for example, by welding, either by means of the autogenous or electric methods. The sections, which constitute the outer wall, may also be made from separate portions, firmly united together by welding; for example, the portions of the sections, which constitute the lower or rounded part of the hull, may be made of one piece, while the part of each section, which forms the top, as indicated at 14, 15 and 16, may be of a single piece, with the abutting ends of the lower and upper portions of each section properly welded together, thus practically providing an integral wall.

In assembling the various parts, the reinforcing members or stay-sheets 11 are first securely riveted or otherwise properly secured between the flanges 8, 8 of adjacent sections 7, constituting the outer wall 5, after which the sections 9, constituting the inner wall 6, are riveted or otherwise secured to the intervening stay-sheets.

It is evident that the employment of a series of sections, circumferentially arranged, with the intervening stay-sheets extending from the outer to the inner wall, results in a number of bulk-heads or separate chambers being formed extending circumferentially and arranged throughout the entire length of the boat, as can clearly be seen in Figs. 1 and 2. As these chambers extend entirely about the inner wall 6, injury to the outer wall 5 would not necessarily result in injury to the inner wall.

The construction of a series of circumferentially extending chambers arranged side by side throughout the length of the boat, made fluid tight, provides space for the separate storage of air and oil; proper connections from the interior of the boat with the various chambers being, of course, provided to enable the utilization of said supplies, as well as the displacement of the air in certain chambers by water or other suitable ballast employed for the submersion of the boat. As the various mechanisms necessary for manipulating the matter within the chambers may be similar to those at present in use, which mechanisms form no part of my present invention, a detailed description of the same and the connections necessary need not be entered into.

The boat may be given any suitable contour and tapered toward the ends as is usual, if preferred; while the deck-portion would, of course, be provided with a conning tower and other parts usual on submarines or submersible boats.

The employment of a series of channel sections, having their flanges or angular sides arranged parallel, provides a series of circumferential ribs which are reinforced by the stay-sheets between each set of flanges, with the result that a construction capable of withstanding great water-pressure is provided, which, therefore, is capable of submersion to a considerable depth.

A proper riveting of the flanges and intervening stay-sheets or reinforcing members will obviate any possiblity for leakage, so that my improved construction possesses greater safety than is true with constructions heretofore employed. It is also evident from the construction that if one or more of the sections become injured in any manner, such section, or sections, may be readily replaced by simply removing the rivets, whereby the respective flanges of adjacent sections and the intervening stay-sheets are held together and replacing the injured section, or sections, by riveting said section, or sections, in the manner herein shown and described.

I have shown and described what I believe to be the simplest and best form of my invention, but the same may be altered in certain respects without, however, departing from the spirit of my invention, and I do not wish to be understood, therefore, as limiting myself to the exact construction shown and described.

What I claim is:—

1. A boat provided with an inner and an outer wall composed of series of sheet metal channel sections disposed circumferentially, the flanges of the channel sections being disposed inwardly so as to provide inwardly presented ribs, and a single piece stay-sheet having the portion within in the inner wall cut out and arranged between and secured to the flanges of adjacent sections so as to extend transversely of the boat intermediate of the walls and thereby maintain a spaced relation between the walls and provide a series of circumferentially disposed chambers.

2. A submarine including a series of outer channel sections and series of inner channel sections inclosed thereby, both the outer and the inner channel sections being disposed circumferentially about the boat, a stay-sheet between the adjacent sections of both series, and means to fasten the stay-sheet to the adjacent flanges of the channel sections.

3. A boat provided with an inner and an outer wall composed of sheet metal sec-

tions arranged transversely and continuously about the boat, the sides of the sections being disposed inwardly so as to provide circumferential ribs, stay-sheets arranged between and secured to the inwardly disposed sides of adjacent sections of both walls so as to maintain the walls in spaced relation, and means whereby the sides of adjacent sections and the intermediate stay-sheets are secured together.

HENRY W. JACOBS.

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