

March 1, 1927.

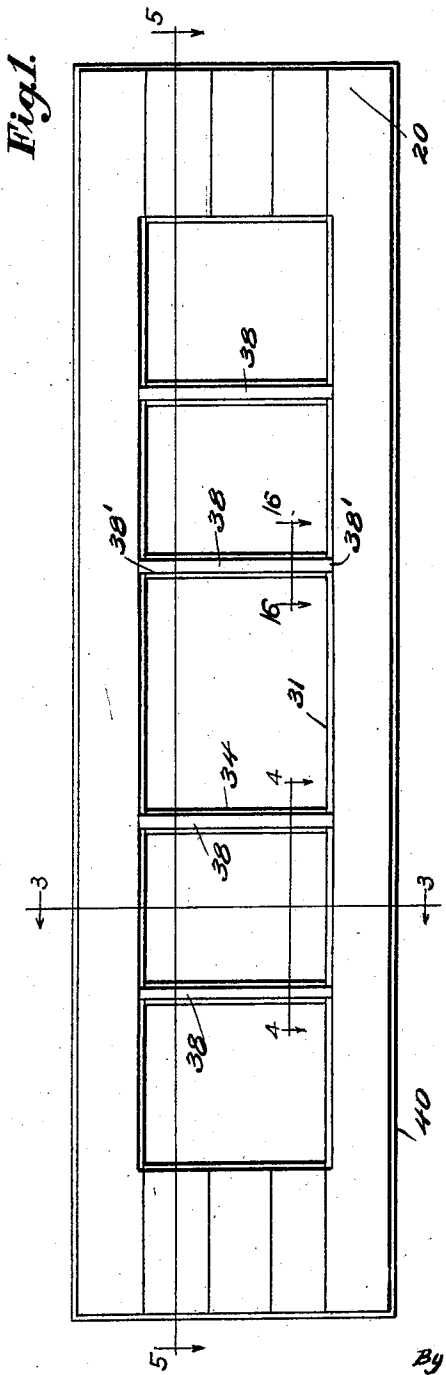
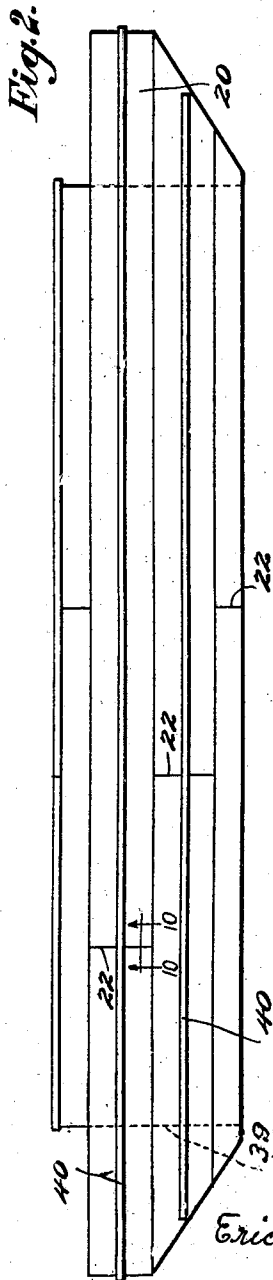
E. H. EWERTZ

1,619,063

VESSEL

Filed Nov. 4, 1921

4 Sheets-Sheet 1



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Filed Nov. 4, 1921

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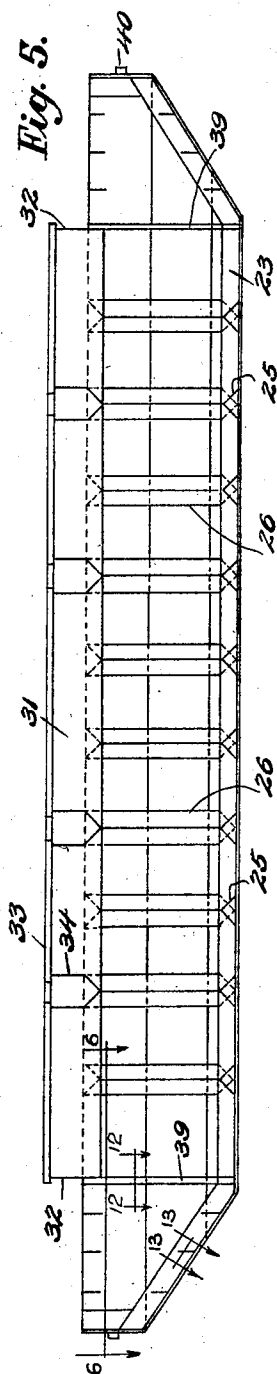


Fig. 6.

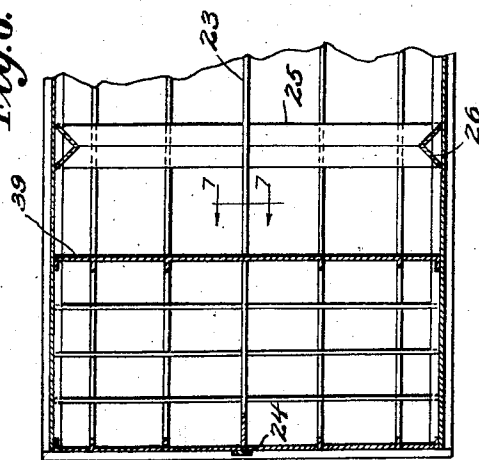


Fig. 7.

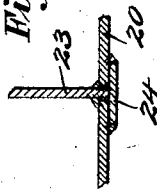


Fig. 8.

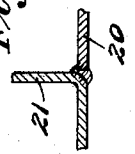


Fig. 9.

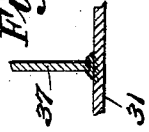


Fig. 10.



Fig. 11.

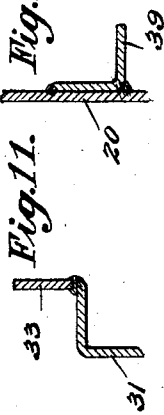


Fig. 12.

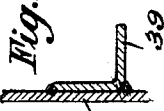
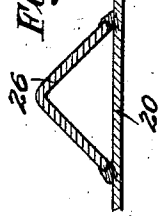


Fig. 13.



Fig. 14.



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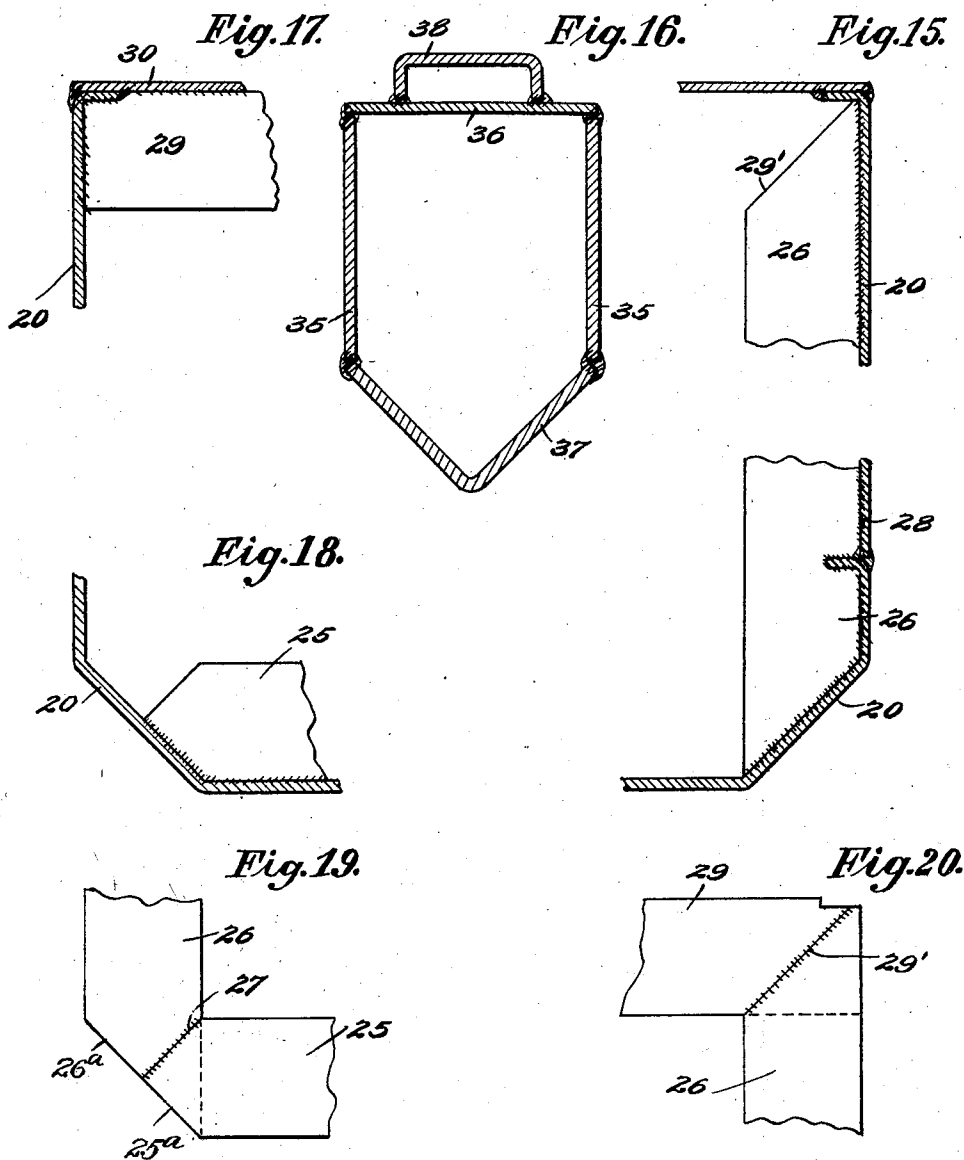
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Filed Nov. 4, 1921

4 Sheets-Sheet 4



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Patented Mar. 1, 1927.

1,619,063

UNITED STATES PATENT OFFICE.

ERIC HAROLD EWERTZ, OF ELIZABETH, NEW JERSEY.

VESSEL.

Application filed November 4, 1921. Serial No. 512,862.

This invention relates to an improved vessel of the "barge" type and is particularly applicable to a vessel constructed as described in Letters Patent No. 1,364,626 issued January 4th, 1921. In said Letters Patent there is described a vessel made of flanged plates extending from bow to stern, the flanges projecting inwardly, said plates being electrically welded together to form a complete water-tight shell.

The object of this invention is to provide improved frame structures for vessels of this character, which structures are arranged in planes substantially perpendicular to the keel, and which are adapted not only to resist stresses in vertical planes, but also stresses oblique to such planes. A further object is to provide frame structures in which the tendency to fail by side flexure under the action of stresses in vertical planes is reduced to a minimum.

To this end each frame structure is composed of a flanged bar or flanged plate welded along at least two edges to the inside of the shell of the vessel. In the particular embodiment of the invention hereinafter described, I have used flanged plates in the form of angle bars having equal legs, the edges of which are welded to the inside of the shell, the knuckle projecting inwardly. Obviously, however, flanged plates or bars having other cross-sectional shape such as the ordinary channel or U-bar may be employed without departing from the spirit of the invention. Throughout this specification the term "flanged plate" or "flanged bar" therefore is to be understood as including any suitable bar having two flanges or legs adapted to be secured to the shell of the vessel.

The angles or flanged plates are run athwart the vessel, across the bottom, up the sides, and preferably across the deck, one or more of said flanged plates being carried across the hatchway as the bottom member of a hatch beam of novel construction. In the complete structure each of the aforesaid angles or flanged plates is a continuous piece, although each may be made from a plurality of sections with their ends abutting and electrically welded together.

In addition to the advantages above noted, this type of construction results in a vessel suitably braced vertically but at the same time having a substantially smooth or only slightly undulated interior, thereby avoiding

sharp projecting edges which interfere with the stowage and hauling of cargo, an advantage which will be apparent to those skilled in the art.

Other novel features will be apparent from the following description taken in connection with the drawings, in which:

Figure 1 is a plan view of the vessel;

Figure 2 is a side elevation of the same;

Figure 3 is a section taken on line 3—3 of Figure 1;

Figure 4 is a sectional elevation taken on line 4—4, Figure 1;

Figure 5 is a longitudinal section, shown rather diagrammatically, taken on line 5—5, Figure 1;

Figure 6 is a section taken on line 6—6, Figure 5;

Figure 7 is a detailed section taken on line 7—7, Figure 6, and illustrates the construction for a joint between the shell, vertical keel and keel bar;

Figure 8 is a detailed section taken on line 8—8, Figure 4, and illustrates the construction for a joint between the flanged shell plates;

Figure 9 is a detailed section taken on line 9—9, Figure 4, and illustrates the construction for a joint with an end abutting the plane surface such as between the deck beam and the hatch girder;

Figure 10 is a detailed section taken on line 10—10, Figure 2, and illustrates the construction of a joint between the adjacent ends of two shell plates;

Figure 11 is a detailed section taken on line 11—11, Figure 4, and illustrates the construction of a joint between the hatch girder and plate to form a recess for the hatch covering;

Figure 12 is a detailed section taken on line 12—12, Figure 5, and illustrates a construction of a joint between the bulkhead and the shell, and also the shell plates with the deck;

Figure 13 is a detailed section taken on line 13—13, Figure 5, and illustrates the construction of a joint between the intersection of the vertical keel with the floor plate and also the hatch girder with the deck beam;

Figure 14 is a detailed section taken on line 14—14, Figure 4, and illustrates the junction of the flanged plates or bars with the shell;

Figure 15 is an enlarged detail showing the construction of the flanged plates em-

ployed to form the side units of the supporting structure;

Figure 16 is an enlarged detailed section taken on line 16—16, Figure 1, showing the construction of the hatch beam;

Figure 17 is a detailed view showing one of the flanged plates forming a deck beam unit and illustrating the junction with the shell and deck;

Figure 18 is a detailed view showing one of the flanged plates forming a floor beam unit and illustrating its junction with the shell;

Figure 19 illustrates the junction between the side beams and the floor beams formed by the flanged plates; and

Figure 20 illustrates the junction between the side beams and the deck beams.

On the drawings electric welding is indicated by fine hatching. The shell of the vessel consists of a plurality of plates (20) having a flange (21) at one edge extending inwardly. The side of the flange abuts the flangeless edge of the adjacent plate and the two are fastened together to make a watertight joint by electric welding. Each of these plates is a continuous piece, although each may be made from a plurality of sections with their ends abutted and electrically welded together, as illustrated in Figure 10, and the word "continuous" throughout the specification is used in this sense. The abutted ends of said sections in one of the continuous plates extending from the bow to the stern of the vessel are out of alignment with the similar abutted ends of adjacent plates as indicated by lines 22, Figure 2. A continuous vertical keel 23 extends from the bow to the stern of the vessel and projects between flangeless edges of two adjacent plates (20) to which it is electrically welded and reinforced by a continuous keel bar (24) electrically welded to the shell, centrally, beneath said vertical keel, as indicated in Figure 7. At intervals along the floor of the shell and extending transversely of the vertical keel are flanged bars or floor beams (25) preferably made, as heretofore stated, from plate in the form of an angle, having equal legs which are cut at intervals to clear the projecting flanges 21 of the plates (20). The edges of the beams are electrically welded to the bottom of the shell and the abutting ends are electrically welded to the vertical keel. Side or frame members 26 of similar shape to the aforesaid floor beams extend vertically up the sides of the shell at the ends of said floor beams to which they are scarfed and electrically welded, as shown at 27, Figure 19. The adjacent or meeting ends of the beams 25 and 26 are also bevelled or cut away as shown at 25^a, 26^a in Figure 19 so as to give the bottom of the vessel a bevelled or slanting contour on each side. The side

or frame members are electrically welded to the shell as shown at 28 in Figure 15, and at their upper end are scarfed and electrically welded to the deck beams 29, as shown at 29' in Figure 3, 15 and 20. These deck beams are shaped similarly to the floor beams and run transversely of the vessel under the deck to which they are electrically welded, as at 30, Figure 17. These deck beams abut against and are electrically welded to the longitudinal vertical hatch girders (31) which together with two transverse vertical hatch girders (32) form a hatchway in the deck which is formed by a plurality of continuous plates electrically welded together along their edges similar to the shell. The deck along its edges is electrically welded to the shell and the hatchway girders. The latter is preferably of form similar to the shell plates 20, the flanged edge being uppermost and directed outwardly. The flat vertical plate 33 is disposed at the end of the flange and electrically welded thereto, as shown in Figure 11, so as to form a recess to receive the hatch cover (not shown). Spanning the hatchway and continuous with several of the deck beams are transverse hatch beams 34 formed of two vertical plates 35 disposed parallel to each other and electrically welded at their upper edges to a flat horizontal plate 36 and at their lower edges to the edges of the legs of the flanged plate or bar 37. An inverted channel beam 38 of narrower width than the plate 36 is centrally disposed on the latter and electrically welded at its edges thereto. The channel beam 38 is of greater length than the hatch beam and extends at each end into the aforementioned recess formed at the top of the hatch girder 31, and together with the plate 33 continues said recess around each opening in the hatchway. The ends 38' of the channel beam 38 are electrically welded to the plates 33. The ends of the hatch beams are electrically welded to the hatch girder, so it will be clearly seen that the inside of the vessel at several points is completely encircled by a continuous band of flanged bar or angle-shaped stiffener material welded to the shell, deck and hatch beams along two edges. At each end of the vessel (or at desired intervals) watertight compartments are formed by the transverse bulkhead 39, which are formed by electrically welding together plates similar to those forming the shell of the vessel. These bulkheads are electrically welded at their edges to the shell and deck to completely seal said compartment. Fenders 40 are provided by electrically welding a continuous channel bar to the shell, the flanges of said channel bar projecting outwardly to receive wooden blocks between their flanges. A floor 41 may be laid along the hold of the vessel supported

by the floor beams or plates, as shown in Figure 3.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. In a vessel, the combination of a keel member extending longitudinally thereof, bottom plates having edges welded to the keel member, and a keel bar covering the bottom of the keel member and the plate edges and having its sides welded to the plates.

2. In a vessel, the combination of a keel member, pairs of aligned bottom frame members having adjacent ends welded to the keel member, said frame members being spaced upwardly from the bottom edge of the keel member a distance substantially equal to the thickness of the bottom plates, bottom plates welded to the frame members and having edges thereof welded to the keel member, and a keel bar covering the bottom of the keel member and the welded edges of the bottom plates and having its sides welded to the bottom plates.

3. In a vessel, the combination of a keel member; a plurality of transverse frames each of which consists of a pair of aligned bottom angle members having their adjacent ends welded to the keel member, the leg portions of the angle members extending downwardly and the outer ends of the angle members being scarfed, vertical angle members having lower scarfed ends which fit the scarfed ends of the first angle members and are welded thereto, the upper ends of the vertical angle members being scarfed and the leg portions of said vertical members extending outwardly, transverse top or deck angle members having scarfed ends which fit the upper scarfed ends of the vertical angle members and are welded thereto, the leg portions of the last-named angle members extending upwardly; and plates welded to the leg portions of the bottom, the vertical, and the top or deck angle members of the frames; and to one another and consti-

tuting, with the keel member, the sole connecting means between frames, said plates being provided with inwardly-projecting flanges which extend longitudinally of the vessel, which fit in recesses provided therefor in the leg portions of the angle members and which constitute longitudinal stringers for the vessel, the edges of the plates adjoining the keel member being secured to the latter.

4. In a vessel having a deck formed of metallic plates, a hatch in said deck, vertically arranged plates forming the sides and ends of said hatch, a supporting member extending transversely of the hatch, said member comprising a flanged plate or bar having the ends thereof welded to the said vertically arranged plates on the sides of the hatch and having the legs thereof extending upwardly, a pair of vertically arranged plates extending transversely of said hatch, the lower longitudinal edges thereof being welded to the legs of said flanged plate, and a horizontally arranged plate extending transversely of the hatch and having its edges welded to the upper longitudinal edges of said vertically arranged plates.

5. In a vessel having a metallic shell, a deck having a hatch, vertically arranged plates forming the sides and ends of said hatch, said plates being welded to the deck plates of the vessel, a flanged bar extending transversely of said hatch and welded at its ends to said vertically arranged side plates of the hatch, the legs of said bar extending upwardly, a pair of vertically arranged plates extending transversely of said hatch and welded at their lower edges to the legs of said bar, a horizontally arranged plate welded to the upper edges of said last named vertically arranged plates, and a channel bar having its legs welded to said last named plate.

In testimony whereof I hereunto affix my signature.

ERIC HAROLD EWERTZ.