

J. G. HITCHFIELD.
OIL TANK CONSTRUCTION.
APPLICATION FILED AUG. 4, 1910.

991,507.

Patented May 9, 1911.

2 SHEETS—SHEET 1.

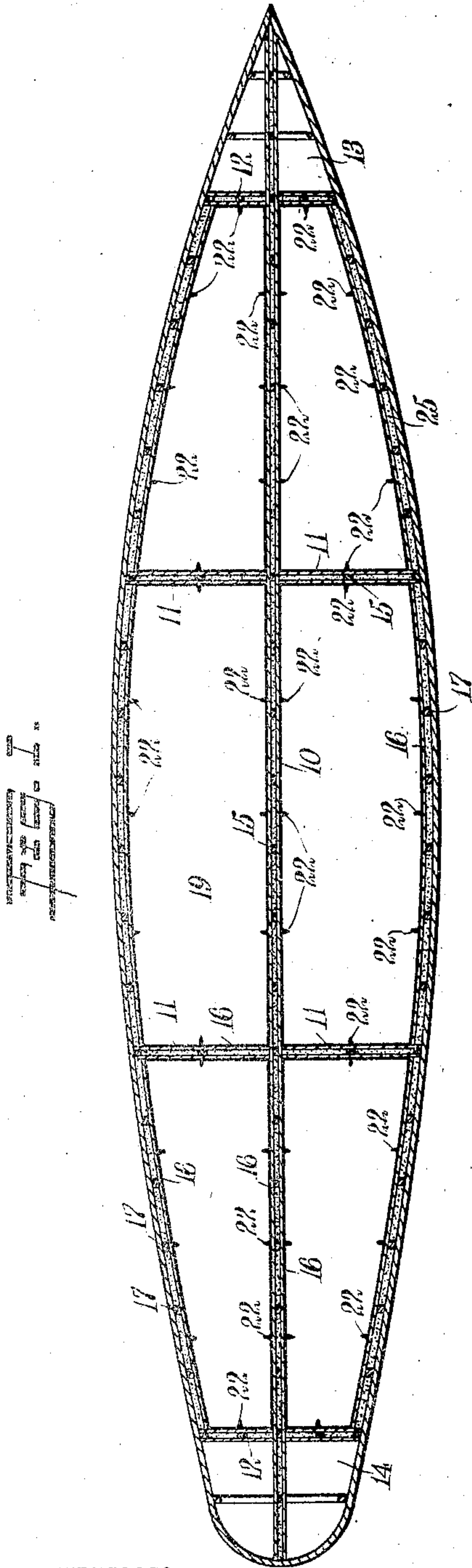


Fig. 1.

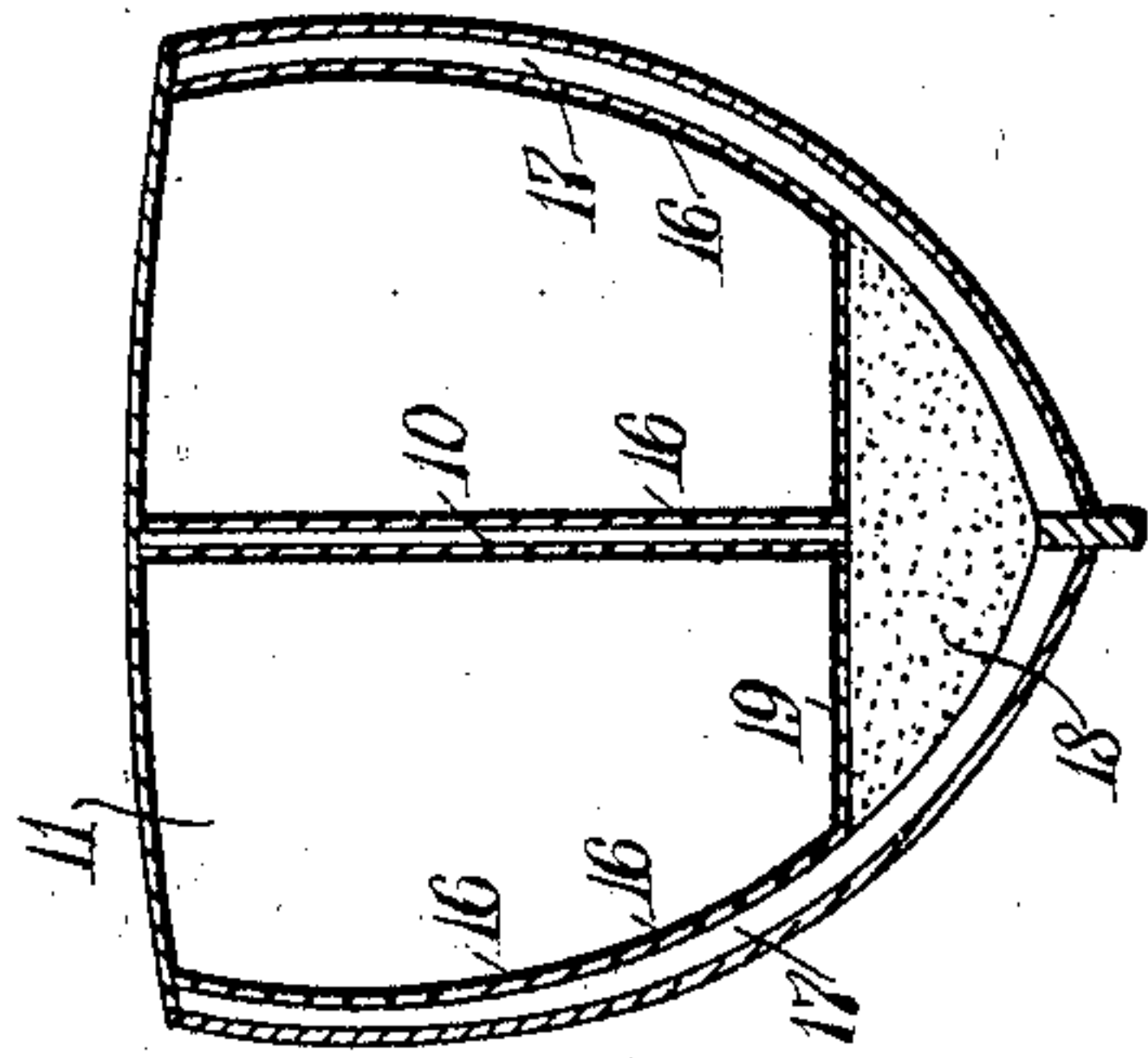
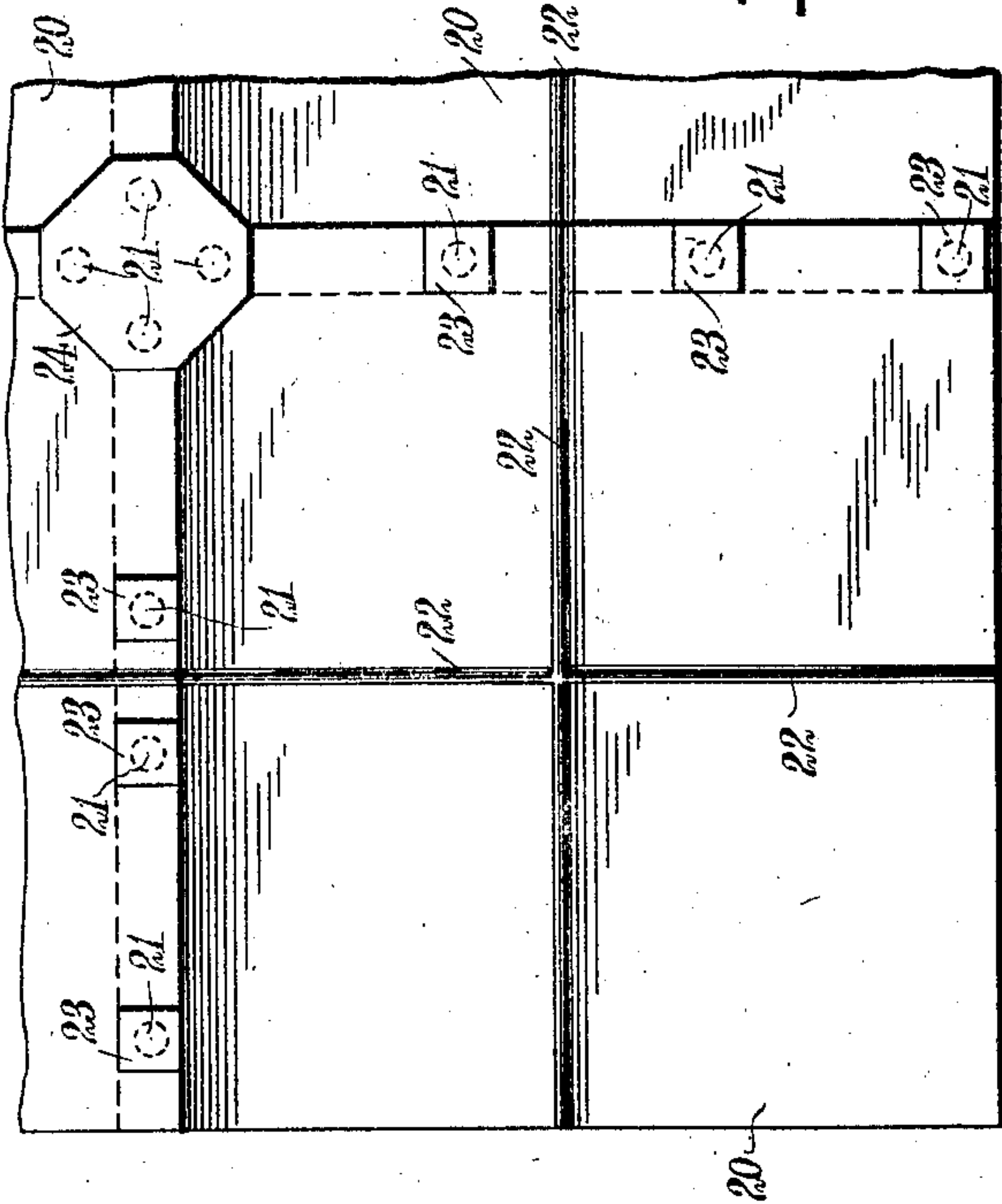


Fig. 2.



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2 SHEETS—SHEET 2.

FIG. 4.

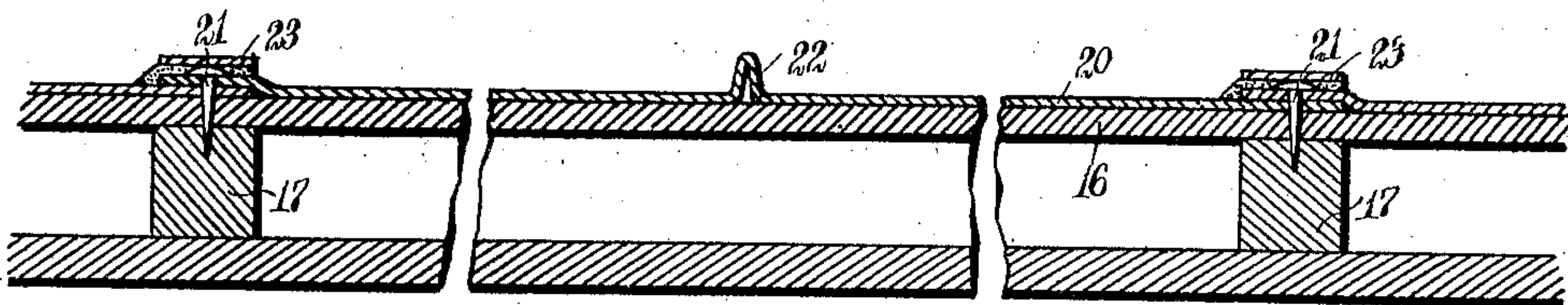
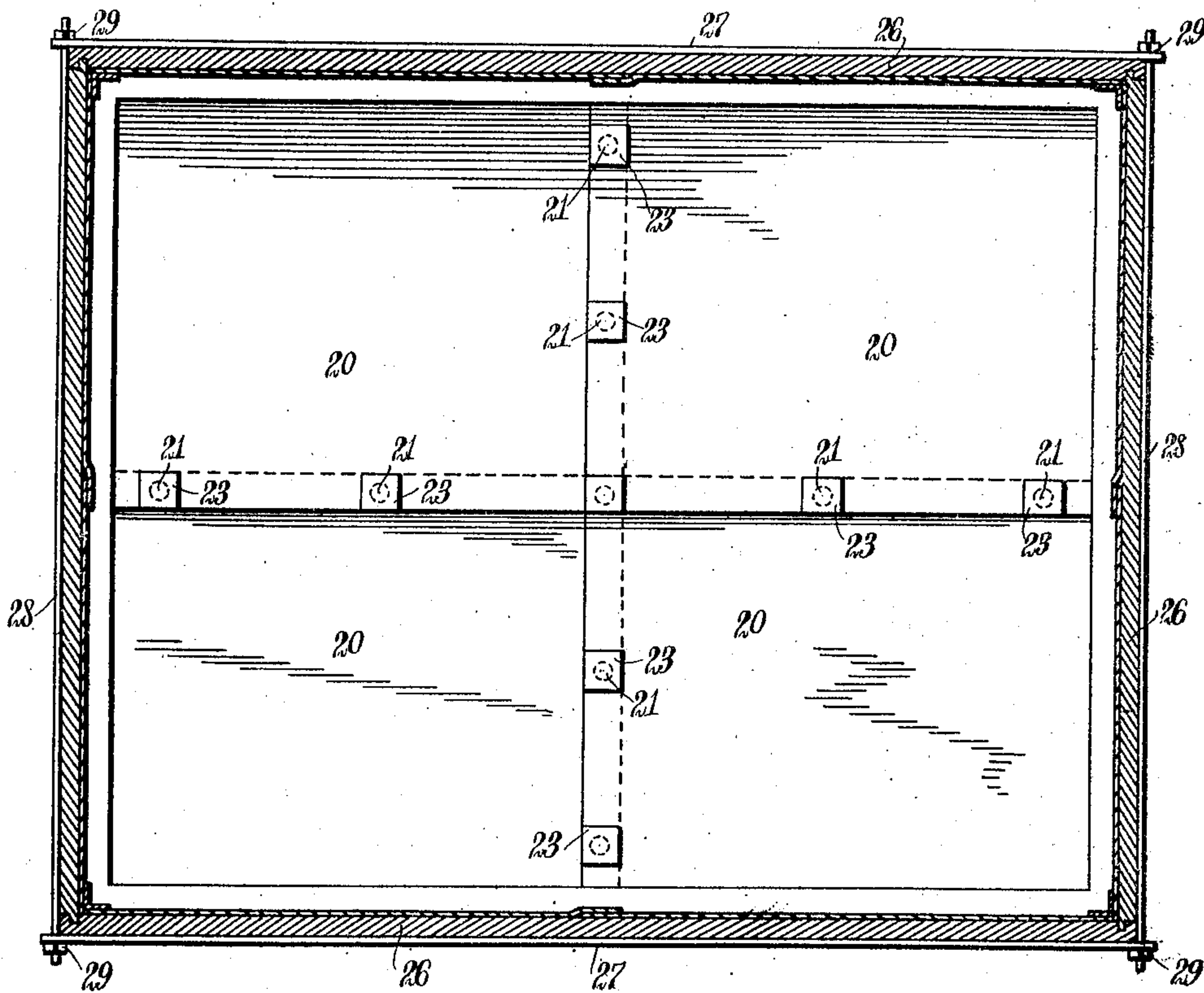


FIG. 5.



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UNITED STATES PATENT OFFICE.

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OIL-TANK CONSTRUCTION.

991,507.

Specification of Letters Patent.

Patented May 9, 1911.

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To all whom it may concern:

Be it known that I, JOHN G. HITCHFIELD, a citizen of the United States, and a resident of Berkeley, in the county of Alameda and State of California, have invented a new and Improved Oil-Tank Construction, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a structure for oil containing tanks of portable and other character adapted to hold oil in such a manner as to prevent leakage; to provide a structure of tank compartments for ships in which it is desired to transport oil; to provide a backing for oil containing compartments when formed in ships to render the structure solid and to prevent puncture of the lining material for the said compartments; and to provide a lining for the said compartments so constructed and arranged as to allow for the vibration and working of the ship, and to reduce to a minimum the danger of fire.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a longitudinal section in plan of a ship having oil carrying tanks constructed and arranged in accordance with the present invention; Fig. 2 is a vertical cross section of the ship shown in Fig. 1; Fig. 3 is a detail view, on an enlarged scale, showing the method of constructing and uniting the sheets of lead lining used by me; Fig. 4 is a detail view, on an enlarged scale and in section, illustrating the method of applying the lead lining to the sides of wooden built ships; and Fig. 5 is a longitudinal section of a stationary or portable oil containing tank constructed and arranged in accordance with the present invention.

When tanks are formed in ships, the ship is preferably divided longitudinally by a partition 10. The partition 10 is extended from stem to stern to divide the ship into equal laterally disposed compartments. The said laterally disposed compartments are divided lengthwise by cross partitions 11, 11 and 12, 12. The partitions 12, 12 are arranged to form at the bow of the ship a compartment 13 and at the stern a compartment 14 which may be built as an air tank, if so

desired, to increase the buoyancy of the ship. The partitions 10, 11 and 12 are formed from upright studding 15, 15 against which are nailed sheathing planks 16, 16. When the sheathing 16 is applied to the framework of the ship at the sides, it is nailed or otherwise secured directly to the ribs 17, 17 of the ship. Before installing the partitions 10, 11 and 12, the lower part of the hull of the ship is filled with a suitable cement, such as Portland or other hydraulic cement, to form a ballast and a hard foundation floor 18. Over the foundation 18 is disposed and firmly secured a flooring 19. The sheathing 16 and the flooring 19 are covered on the inner side of the compartments or tanks thus formed by lead sheets or plates 20. The lead sheets or plates 20 are united by being lapped, the laps being of sufficient size to fold over the flat-headed nails used in securing the lead to the planking, the top of the sheets or plates being nailed by flat-headed nails 21, 21, in a similar manner. The plates are provided with ridges or wrinkles 22, 22. The ridges 22, 22 are provided to permit the sheets 20 to spread or expand without imposing upon the said sheets a tearing strain. By means of this construction the working or vibration of a ship structure is accommodated by the lead lining.

In order to prevent the leakage of the oil within the wood structure around the nails 21, 21 and between the lapped joints of the plates 20, 20, I secure the said lapped joints by means of magnesite cement and solder, using an electric soldering iron, blow pipe or other convenient tool for that purpose. Over the heads of the nails 21, 21, I likewise place a flat section or cap 23 of lead, the edges whereof I solder to the sheets or plates 20 about the said nails 21; thereby preventing the contact of the oil with the said nails. At the junction of four plates 20, 20 I provide an enlarged lead cap 24 adapted to extend over the four nails adjacent to the corner of the said four plates.

In the drawings I have accentuated the extension of the ridges 22, 22 to call particular attention thereto. It will be understood that in practice the projection of the said ridges will be small.

When the oil carrying compartments are provided in metal ships, I prefer to back the sheathing 16 with any form of cement, such

as magnesite or other suitable cement, which is filled in between the ribs 17, 17, as shown at 25 in Fig. 1 of the drawings.

When the present construction is adapted for use in the forming of stationary or portable tanks, the same method is followed, except that the sheets or plates 20, 20 are secured directly to the wood sides 26, 26 and bottom of the said tank. The tank thus constructed is reinforced by side bars 27, 27, the ends whereof are extended slightly beyond the limits of the tank, and are connected by means of tie rods 28, 28, the ends whereof are threaded to receive tightening nuts 29, 29, the whole outside being coated with magnesite cement to protect the wood from the weather and to reduce to a minimum the danger of fire.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An oil tank construction, comprising a wooden tank-shaped structure, a lining therefor embodying a plurality of metal sheets or plates, said sheets or plates having ridges formed therein to provide an excess of material to permit extension of the said plates, and a covering for said sheets or plates formed of magnesite cement.

2. An oil tank construction, comprising a wooden tank-shaped structure, a lining therefor embodying a plurality of metal sheets or plates, said sheets or plates having ridges formed therein to provide an excess of material to permit extension of said sheets or plates, and said sheets or plates being provided with a lapping extension, fastening devices driven through the said lapped extensions into said wooden structure, means for preventing the access of oil to the said fastening devices, and a covering for said sheets or plates formed of magnesite cement.

3. An oil tank construction, comprising a wooden tank-shaped structure, a lining therefor embodying a plurality of metal sheets or plates, said sheets or plates having ridges formed therein to provide an excess of material to permit extension of said sheets or plates, and said sheets or plates being pro-

vided with a lapping extension, a plurality of flat headed nails driven through said lapped extensions, and a plurality of small metal covering caps superposed above said nails and soldered to the metal tank lining surrounding said nails, and a covering for said sheets or plates formed of magnesite cement.

4. An oil tank construction, comprising a ballast floor for ships, embodying a hydraulic concrete filling disposed adjacent to the keel of the ship, a plurality of vertical partitions extended from said floor within the hull of said ship to form tank-like compartments, a lining for said compartments embodying a plurality of metal sheets or plates, said sheets or plates being united by lapped soldered extensions, suitable fastening devices for securing said plates to said partitions, and suitable caps superposed over said fastening devices and soldered to the lining sheets or plates adjacent thereto, and a covering for said sheets or plates composed of magnesite cement.

5. An oil tank construction, comprising a ballast floor for ships, embodying a hydraulic concrete filling disposed adjacent to the keel of the ship, a plurality of vertical partitions extended from said floor within the hull of said ship to form tank-like compartments, a cement-like filling for said partitions, a lining for said compartments embodying a plurality of metal sheets or plates, said sheets or plates being united by lapped soldered extensions, suitable fastening devices for securing said plates to said partitions, suitable caps superposed over said fastening devices and soldered to the lining plates adjacent thereto, and a covering for said sheets or plates composed of magnesite cement.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN GORDON HITCHFIELD.

Witnesses:

FRANK S. MOORE,
C. C. CUNHA.