

No. 689,782.

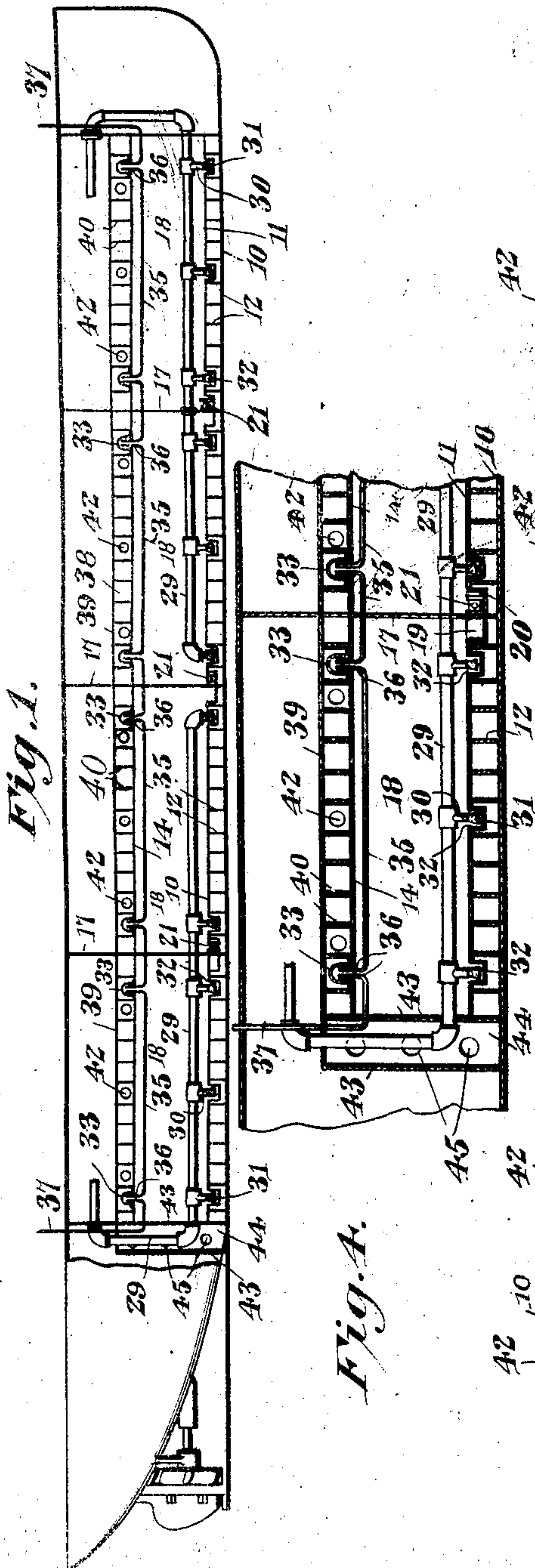
Patented Dec. 24, 1901.

W. BLANCHARD.  
VESSEL.

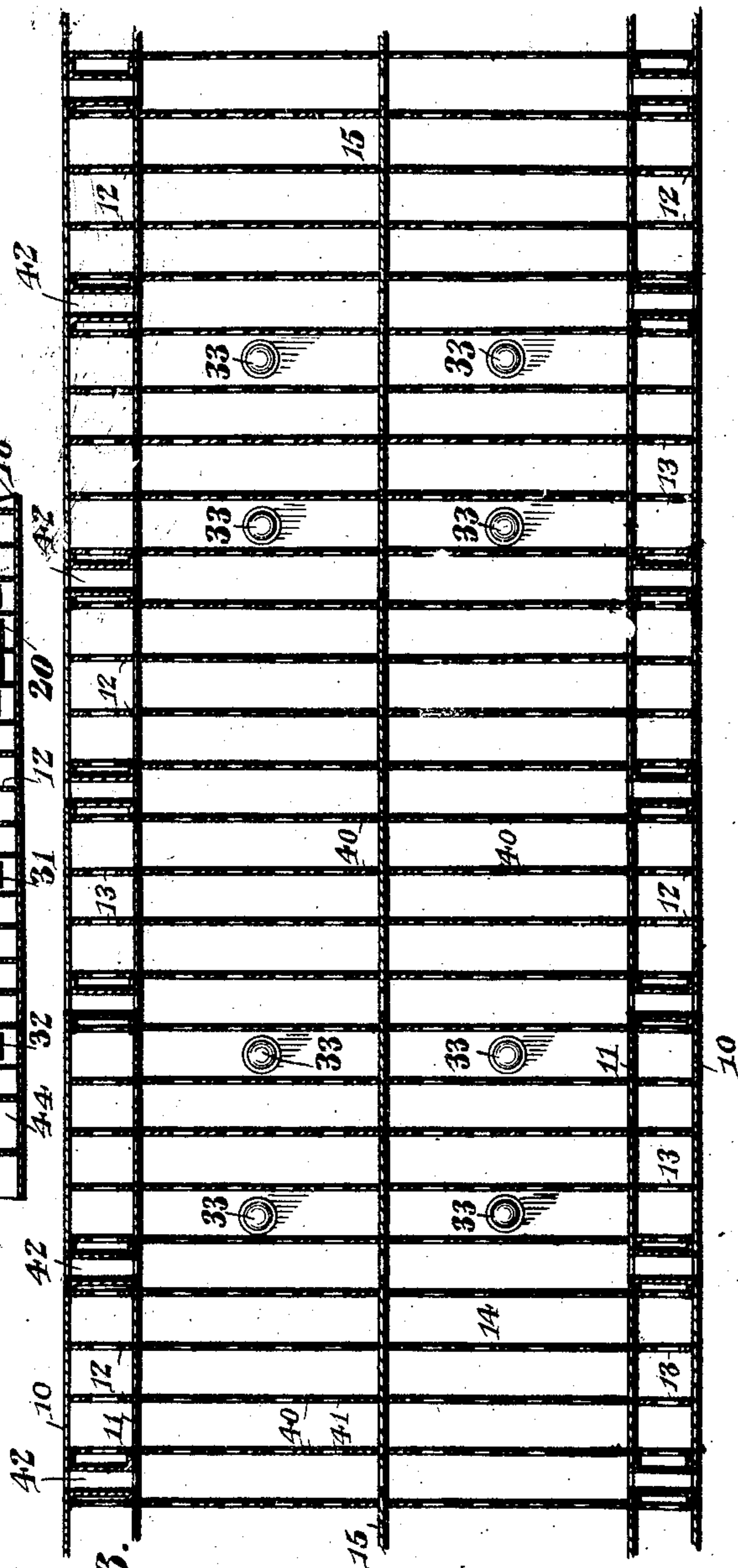
(Application filed July 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.



*Fig. 4.*



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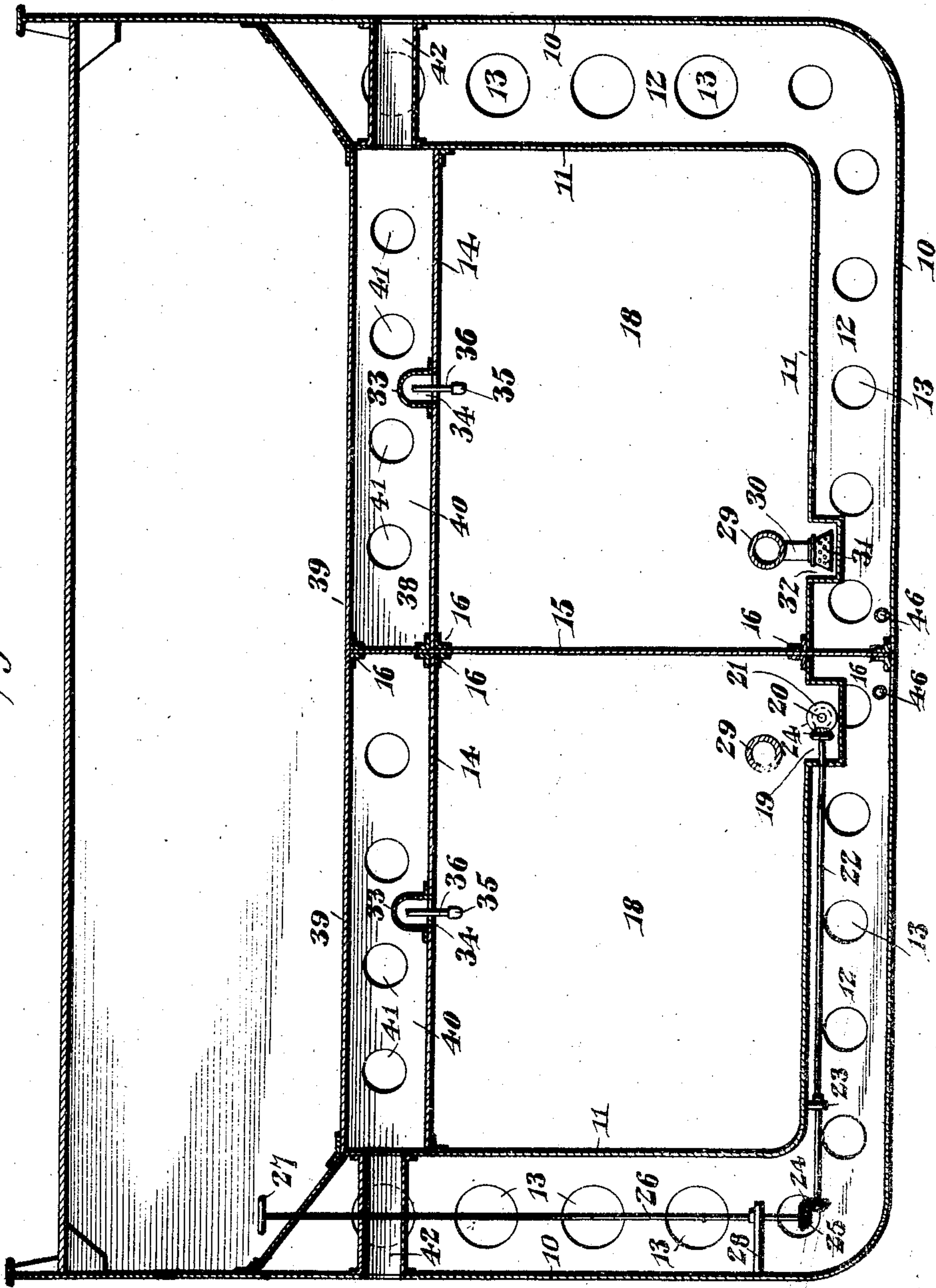
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2 Sheets—Sheet 2.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## VESSEL.

SPECIFICATION forming part of Letters Patent No. 689,782, dated December 24, 1901.

Application filed July 18, 1901. Serial No. 88,766. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BLANCHARD, a citizen of the United States, residing at Scranton, in the county of Jackson and State of Mississippi, have invented a new and useful Vessel, of which the following is a specification.

The present invention relates to vessels, and particularly to that class employed in the transportation of liquid, such as oil.

One of the principal objects of this invention is to provide a practical structure by means of which a large quantity of liquid in bulk may be carried with safety and a minimum amount of waste or leakage, suitable mechanism being employed in loading and unloading the vessel.

A further object is to so construct a vessel that the oil or other inflammable material is completely isolated in one portion of the same, thus being protected from fire or heat and separated from the remainder of the cargo.

Another feature resides in novel means for ventilating the storage-reservoir, so that the gas generated therein may readily escape, thereby relieving the reservoir of any dangerous pressure. This ventilating means furthermore serves as an outlet and inlet for the air during the filling and emptying operation.

While the invention is open to changes and modification, the embodiment which is at present considered preferable is described in the following specification and illustrated in the drawings which accompany and form a part thereof.

In the drawings, Figure 1 is a sectional view of a vessel embodying the present improvements. Fig. 2 is a vertical transverse sectional view through the same on a greatly-enlarged scale. Fig. 3 is a horizontal cross-sectional view taken through the protective intermediate space or chamber. Fig. 4 is a detail vertical sectional view on a somewhat-enlarged scale.

In the drawings similar numerals of reference designate similar parts.

In the present instance the hull of a self-propelling vessel is shown; but as the invention only relates to the storage chambers or reservoirs the driving mechanism and other equipment of the ship have not been shown.

The hull comprises an outer and an inner

sheathing, (designated, respectively, 10 and 11,) said sheathings being separated and held in spaced relation by means of ribs 12, having transverse openings 13, which greatly lighten the structure without unnecessarily sacrificing the strength. In practice these several elements are preferably constructed of metal, though they may be wood. The upper edge of the inner sheathing terminates some distance from the upper edge of the outer sheathing, constituting a liquid-tight reservoir, which is covered by a roofing 14. This reservoir is divided longitudinally by a vertical partition 15, that extends to the inner face of the outer sheathing and is suitably braced by angle-plates 16. Transversely-arranged vertical partitions or bulkheads 17 divide the reservoir into a plurality of compartments 18, which under normal conditions are entirely separate and independent of each other. The bottoms of the compartments are provided with depressions 19, located adjacent to the partitions or bulkheads, and said partitions are provided in these depressed portions with passage-ways 20, controlled by suitable valves 21, which may be of any desired or well-known construction. These valves are operated through the medium of horizontal rotary shafts 22, that pass through the walls of the depressed portions and are supported in the space between the outer and inner sheathings by means of brackets 23. They are provided on their opposite ends with beveled gear-wheels 24, the inner of which mesh with similar wheels upon the valve-stems, while the outer engage with wheels 25, secured to the lower ends of upright operating-shafts 26, having exposed hand-wheels 27 on their lower ends, said shafts being journaled in brackets 28. By this means it will be seen that communication may be established through the entire set of compartments upon each side of the longitudinal partition or said communication may be entirely cut off.

In order to fill and empty the several compartments, conveyer-pipes 29 are located along the bottoms of the same and are provided with depending necks 30, having terminal strainers 31, that are located in wells 32, arranged in the bottoms of the compartments, said wells depending in the space between the inner and outer sheathings. Sev-



eral of these wells are preferably arranged in each compartment, three being shown, though more or less may be employed, if desired. The conveyer-pipes extend from the reservoir 5 to any desirable or convenient point where pumps may be attached.

For the purpose of venting the several compartments the roof is provided with a plurality of domes 33, having communication, as 10 at 34, with the interiors of the several compartments, two or more of said domes being preferably employed in connection with each. Vent-pipes 35, suitably secured to the roofs, have upturned ends 36, that are located in 15 the domes, said pipes extending from one dome to the next. From the outermost domes exhaust-pipes 37 lead to the open air, and thus afford free communication with the interiors of the several compartments.

20 The compartments are completely isolated from the remainder of the vessel by means of an intermediate protective chamber 38, formed by a lower deck 39, supported by metallic girders 40 a suitable distance above the 25 roofing 14 of the reservoir, these girders being preferably provided with openings 41. The chamber 38 is in open communication with the exterior of the vessel through horizontal tubes 42, that extend across the space 30 between the inner and outer sheathings, said sheathings being provided with openings at the ends of the tubes. In like manner the rear end of the reservoir is spaced from the rear portion of the vessel through the medium 35 of spaced vertical sheathings 43, which form an intermediate chamber 44, that communicates with the exterior of the vessel below the water-line through passage-ways 45. (Shown in Fig. 4.) A series of pipes 46 are run along 40 the bottom of the ship between the inner and outer sheathings and extend upwardly at their ends, where they may be connected to pumps in any desired manner. Thus any leakage that may take place will be over- 45 come.

The remaining portions of the vessel form no special part of the present invention. The upper decks illustrated may, if desired, be employed for carrying a general cargo and the 50 necessary equipment of the vessel. The space shown at the rear in Fig. 1 is reserved for the driving mechanism; but in case the invention is applied to barges or vessels to be towed it will be readily understood that this 55 space may be filled with compartments similar to those above described.

The manner of filling and emptying the compartments will be readily apparent. The conveyer-pipes 29 are employed both in load- 60 ing and unloading, and for the former purpose pumps are attached to the free ends of said pipes, so that the oil or other liquid will be forced therethrough and discharged into the compartments, the confined air readily 65 escaping through the vent-tubes. Should it be desired from any cause to fill or empty all the compartments on one side of the central

partition from one pipe, it is only necessary to open the valves 21, thus throwing the several compartments into communication with each 70 other. When the vessel is loaded, the intermediate chamber 38 will be below the water-line, so that said chamber will be filled with water, and as the water has a free circulation the reservoir is kept in a cooled condition and 75 all danger of heating the oil is obviated. On the other hand, when the vessel is light the passage-ways 42 will be above the water-line, so that the water contained in the chamber will gravitate out through said openings and 80 the vessel will be relieved of the same. In case it is desired to carry a general cargo—as, for instance, upon a return trip—the compartments may be employed for carrying water ballast. 85

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood 90 that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention. 95

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

1. In a vessel, a hull having an outer and an inner sheathing spaced from each other, 100 said inner sheathing forming a storage-reservoir, a cover for the reservoir, a deck located above the reservoir and spaced therefrom, forming an intermediate chamber, and open-ended tubes extending across the space be- 105 tween the inner and outer sheathings and communicating with the intermediate chamber and the exterior of the vessel.

2. In a vessel, a hull comprising an inner and an outer sheathing, the inner sheathing 110 constituting a reservoir, a top closing the reservoir, a deck located above and spaced from the top leaving an intermediate water-chamber the side walls of which are formed by the inner sheathing, the inner and outer sheath- 115 ings having openings, those of the inner sheathing being located above the top of the reservoir, and open-ended tubes extending from the openings of the outer sheathings to the openings of the inner sheathings and 120 bridging the space between the two.

3. In a vessel, a hull comprising an inner and an outer sheathing, the inner sheathing constituting a reservoir, a top closing the reservoir and located below the upper edge of 125 the inner sheathing, a deck located above and spaced from the cover leaving an intermediate water-chamber, the side walls of which are formed by the inner sheathing, transverse girders extending across the chamber and 130 having a plurality of openings therethrough, the inner and outer sheathings also having openings, those of the inner sheathing being located above the top of the reservoir, and



open-ended tubes extending from the openings of the outer sheathings to the openings of the inner sheathings and bridging the space between the two.

4. In a vessel, a hull comprising an outer and an inner sheathing spaced from each other, the inner sheathing constituting a storage-reservoir and being provided in its bottom with a well depending below the plane of said bottom and into the space between the two sheathings, and a conveyer-pipe leading from the well.

5. In a vessel, a hull comprising an outer and an inner sheathing spaced from each other, the inner sheathing constituting a storage-reservoir, partitions dividing said reservoir into a plurality of compartments each being provided in its bottom with a well depending in the space between the inner and outer sheathings, and a conveyer-pipe having offset necks located in the wells.

6. In a vessel, a hull comprising an inner and an outer sheathing spaced from each other, the inner sheathing constituting a storage-reservoir, partitions dividing said reservoir into a plurality of compartments, each compartment being provided in its bottom with a plurality of wells that depend in the space between the inner and outer sheathings, and conveyer-pipes extending along the bottoms of the compartments and provided with depending necks having terminal strainers located in the wells.

7. In a vessel, a hull having an inner and an outer sheathing, said inner sheathing constituting a storage-reservoir, partitions dividing the reservoir into separate compartments, the bottoms of said compartments having depressed portions and valved passage-ways forming means of communication there-

between, and valve-operating mechanism passing through the walls of one of said depressed portions and located in the space between the inner and outer sheathings.

8. In a vessel, a hull having an inner and an outer sheathing, said inner sheathing constituting a storage-reservoir, partitions dividing the reservoir into separate compartments, the bottoms of said compartments having corresponding depressed portions located adjacent to the partitions, said partitions being provided with passage-ways located in the depressed portions, valves controlling the passage-ways, and operating mechanism for the valves located in the space between the inner and outer sheathings, and extending into the depressed portions.

9. In a vessel, a hull having a storage-reservoir, a top closing the reservoir, a plurality of domes located upon the top and communicating with the reservoir, a vent-pipe arranged within the reservoir and having its opposite ends disposed within the domes, and another vent-pipe having one end extending into the dome, and the other end communicating with the open air.

10. In a vessel, a hull having a plurality of storage-chambers, a dome located on each storage-chamber and communicating therewith, a vent-pipe extending from one dome to the other, and another vent-pipe extending from one of the domes to the exterior of the storage-chamber.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM BLANCHARD.

Witnesses:

DUDLEY R. WALKER,  
JAS. A. KATHMAN.