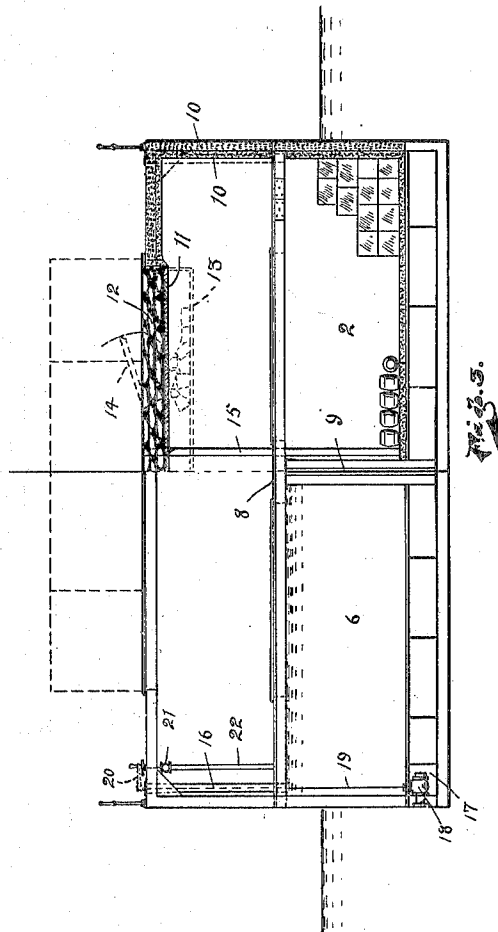
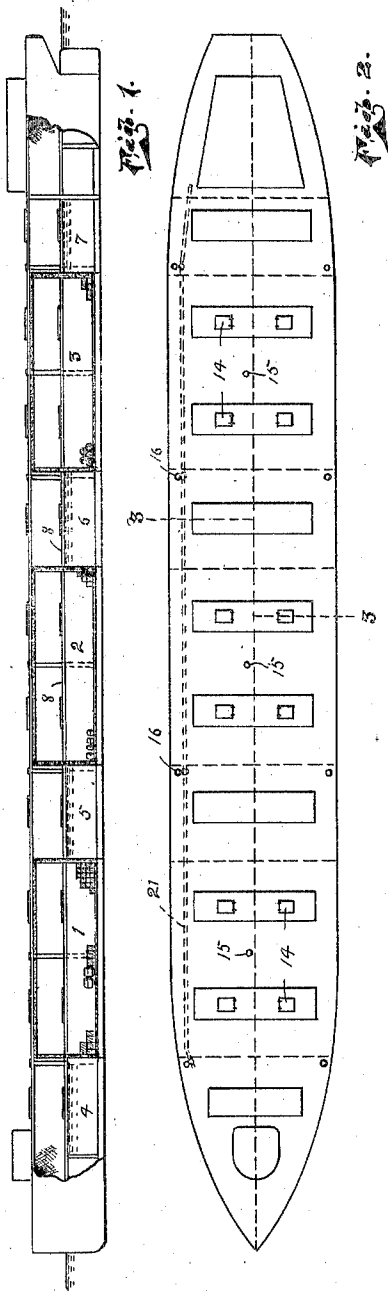


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VESSEL.

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# UNITED STATES PATENT OFFICE.

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VESSEL.

1,345,611.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, ALEXANDER McDOUGALL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Vessels, of which the following is a specification, reference being had therein to the accompanying drawing.

My present invention relates to vessels and has special reference to one particularly designed for storing perishable products or for transporting such products through open waters, such as the Great Lakes or ocean, and at the same time capable of navigating more restricted waters, as rivers and canals, that may have fixed bridges thereacross, thus limiting the height of vessel above water which may pass under the bridges.

The principal object is to produce a vessel of this type having a novel combination of compartments and coöperative elements which result in a practical and serviceable ship especially adapted to the various purposes intended.

Other objects and advantages of the invention will appear in the further description thereof.

In the embodiment of the invention here illustrated, I have shown a barge or vessel to be towed by others, but it is understood that the invention equally applies to a vessel having her own power, though the relative proportion of the compartments may be somewhat different and the construction slightly changed to suit circumstances.

In the accompanying drawings forming part of this application and in which like reference characters indicate like parts;

Figure 1 is a longitudinal central sectional view of a substantially rectangular shaped vessel embodying the invention.

Fig. 2 is a plan view of the upper deck of the vessel, and

Fig. 3 is a cross sectional view on the line 3-3 of Fig. 2, showing a cold storage compartment on one side of the central fore and aft bulk-head and a water ballast compartment upon the other side thereof.

As a preferred arrangement of compartments the vessel is divided fore and aft into alternate water ballast and cold storage sections, the latter being illustrated at 1, 2 and 3, and the former at 4, 5, 6 and 7.

For this class of vessel I also prefer to have the hold divided at least up to the between deck 8, by a fore and aft central bulk-head 9 and which, if desired, may extend the full depth of the hull. This is for longitudinal strength and proper control of water in the ballast compartments, as will be hereinafter described. The vessel here illustrated is of the flush deck type having single plate hatch covers bolted to the deck and made water tight so as to restore strength to the vessel that otherwise would be lost in forming the large hatches therein.

The between deck may also be furnished with water tight hatches to confine the water within the compartments and for access thereto when used for freight. This deck further provides means whereby light packages, such as eggs, apples, or the like, may be stored without being crushed by too great a depth of such packages.

The compartments are so arranged as to result in the least strain possible upon the vessel when certain ones are used for water ballast and others being empty, and it is to be understood that all of the compartments may be used for common cargo when desired, so long as no damage results to the insulation within the cold storage spaces.

I have shown insulating material, as at 10, about the entire interior of the cold storage compartments and which may be of any desired thickness or material suitable for the purpose, and in the hatchways is installed a removable depressed deck 11, preferably of wood, and upon which may be placed loosely filled sacks of insulating material, indicated at 12, to insure a completely insulated compartment.

The form of refrigerator contemplated for such a vessel is that common in the art and in which the generating plant may be located in any compartment of the ship desired, as for example, in the engine room, and from whence the brine or other cooling medium is conducted by pipes to the cold storage compartments, as is commonly practised, the same not being shown in the drawings as it does not constitute part of my present invention.

However, in some instances it may be desirable to maintain low temperature in the cold storage sections of the vessel by the use of ice, in which case a suspended pan or tank, shown in dotted lines at 13, may be

constructed beneath the sack-carrying platform 11 and access gained thereto through small hatchways 14 formed in the hatch proper and through which ice may be supplied to the pan or tank, and from where drainage pipes may lead to the sides of the ship or into its bilges.

I have shown at 15 vertically disposed tubes or pipes, one in each cold storage compartment, and accessible from the upper deck of the hull for testing the condition of each compartment from on deck by lowering a thermometer, or other testing device, into the pipe. In this manner actual conditions in each compartment may be determined at any time and careful watch of the temperature and humidity in the compartments maintained.

Leading upwardly from the between deck 8 from each water ballast compartment and through the upper deck, is a stand pipe or tube 16 through which the depth of water in the tank may be determined by sounding or which will overflow when the tank is full.

Directly beneath the stand pipe 16 in each water compartment and below the tank top, is formed a small chamber or well 17 in which is installed a suitable sea valve 18, the upper wall of the well being covered with a suitable grating and communicating with the water ballast compartment. A controlling stem 19 extends from each valve upwardly through its respective stand pipe 16, at the upper end of which it may be operative by a portable wrench or crank 20. When the valve is not being opened or closed by the wrench 20 the end of the stand pipe will be covered with a common screw cap. This also being essential when water is being discharged from the compartments.

By opening the valve 18 water will enter the well 17 and from there flow into the respective compartment, and for discharging the water from the compartments I have provided an air supply pipe 21 extending longitudinally the vessel and communicating with each of the water ballast compartments by a pipe 22, the supply to which is controlled from the deck of the vessel.

When it is desired to discharge the water from a certain compartment the sea valve 18 of such compartment is opened, the upper end of the standpipe 16 closed by means of its cap and the air under pressure admitted to the compartment through the pipe 22 from the supply pipe 21. In this manner all of the water in the compartment may be quickly forced therefrom and much more conveniently than by pumping, although if preferred the common method of pumping water to and from the compartments may be resorted to and whereby water may be raised to a greater depth than the draft of the vessel, as is obvious.

The object of forming a small well for the

sea valve within the double bottom of the vessel is to occupy as little space as possible therein, for in many vessels such double bottom will be utilized for carrying fuel oil.

It is apparent that when navigating restricted water such as canals or the like, and when necessary to pass under fixed bridges, certain fixed height of vessel above water becomes necessary and the amount of ballast employed in the water compartments will vary according to the weight of carbon carried at the time by the vessel and by having a number of comparatively small water ballast compartments spaced at intervals throughout the entire length of the vessel it becomes quite practical to lower same on an even keel irrespective of the location of the cargo therein, the same advantages being essential when it becomes necessary to use water ballast while at sea, and the desirability of the between deck in the water compartments is very apparent in that it will effectually confine the water thus carried.

In the event of a self propelled vessel being equipped in accordance with this invention, the water ballast tanks in the forward end may be utilized to counterbalance the weight of machinery and coal at the after end and being able to fill or empty the intermediate tanks or compartments, as desired, the weight may be so proportioned as to bring the least adverse strain or stress possible on the hull of the ship. It is understood that the compartments referred to for water ballast may at any time desired be used for cargo purposes and the preferred size of such compartments is about one-half that of the cold storage spaces as shown.

A vessel of this character may be used for storage purposes in port, as for example, in the lake country during the winter months, which in many instances amounts to one hundred and ten days or more, or she may remain during the soliciting of trade and store any kind of freight until full loaded, then go on to her destination where it may be extremely desirable to hold part, if not all of her load, for some considerable time in storage.

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

1. The combination with a vessel of the character described having a double bottom or tank in the hold thereof and compartments above the tank suitable for the reception of water for ballast, of a well in each of the compartments, below the tank top and communicating with the former, a sea valve within the well, opening thereinto and communicating with the water outside of the vessel, and means for opening and closing the valve from the deck of the vessel.

2. In combination, a water compartment  
in a vessel having means to eject water there-  
from by admitting air under compression  
into said compartment, a sea valve beneath  
5 the bottom of the compartment communi-  
cating with the water outside of the vessel  
and the interior of the compartment, and  
means for controlling the valve from the  
deck of the vessel, whereby all of the water

in the compartment may be ejected there- 10  
from by the air pressure.

In testimony whereof I have hereunto af-  
fixed my signature in the presence of two  
witnesses.

ALEXANDER McDOUGALL.

Witnesses:

H. S. MACGREGOR,  
S. GEO. STEVENS.