

No. 620,163.

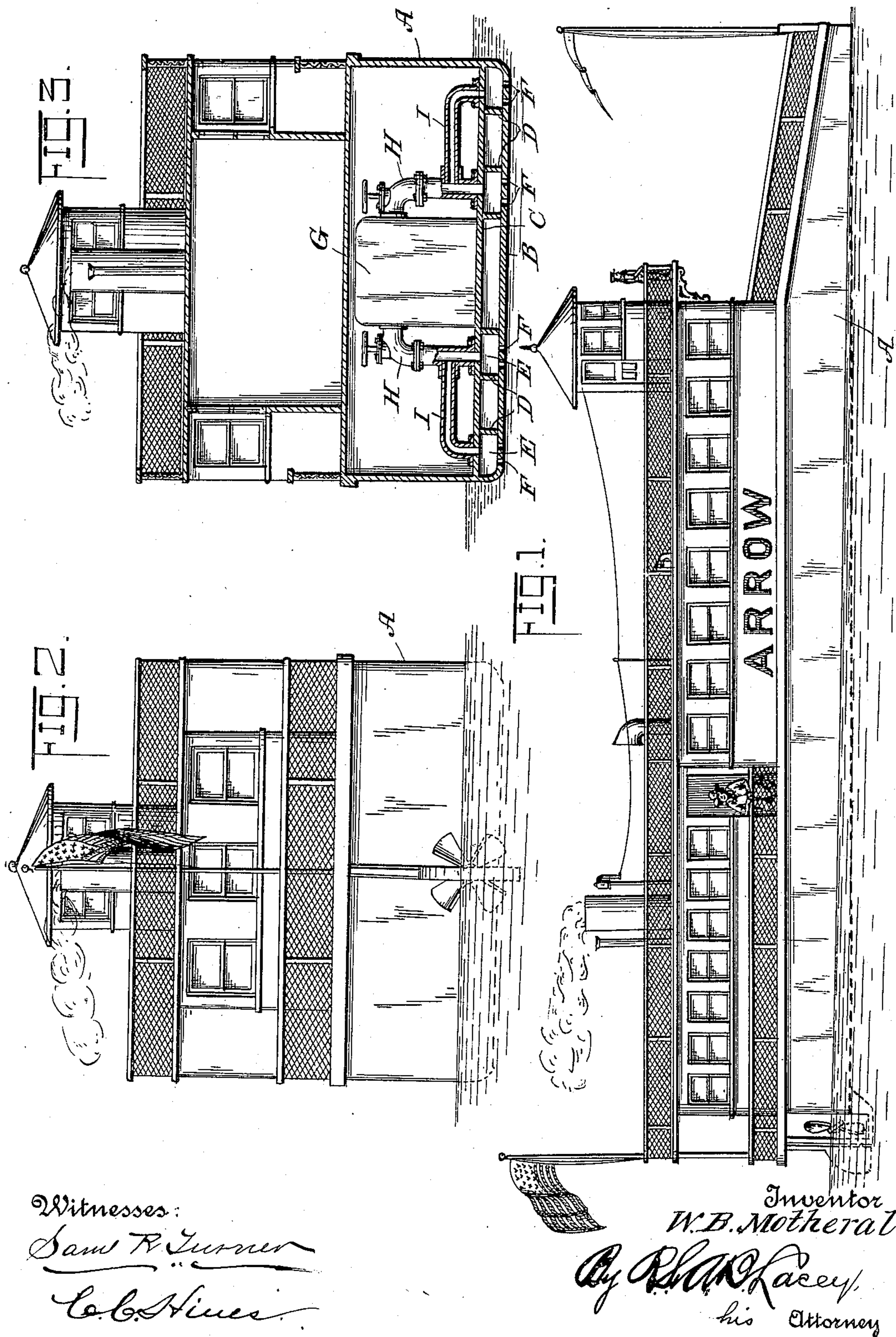
Patented Feb. 28, 1899.

W. B. MOTHERAL.  
VESSEL.

(Application filed Feb. 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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*C. C. Hines*

Inventor  
*W. B. Motheral*

*By R. W. Lacey,*  
his Attorney

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FIG. 4.

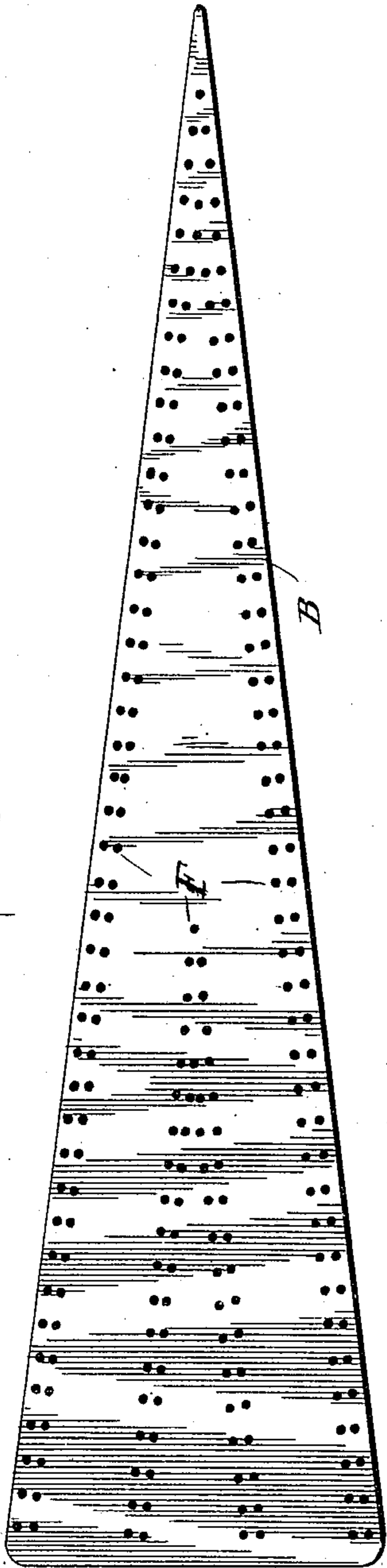
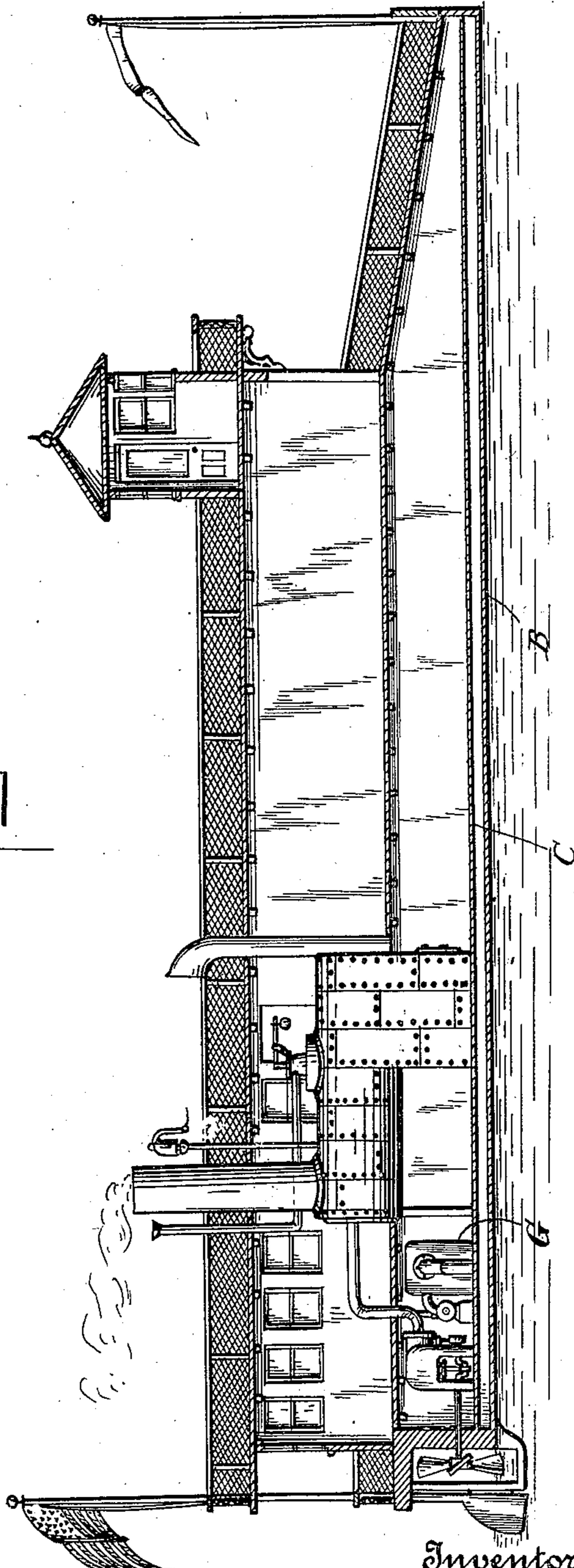


FIG. 5.



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# UNITED STATES PATENT OFFICE.

WILLIAM B. MOTHERAL, OF NORTH MACGREGOR, IOWA.

## VESSEL.

SPECIFICATION forming part of Letters Patent No. 620,163, dated February 28, 1899.

Application filed February 11, 1898. Serial No. 669,971. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM B. MOTHERAL, a citizen of the United States, residing at North MacGregor, in the county of Clayton and State of Iowa, have invented certain new and useful Improvements in Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in vessels, and has for its object the construction of a vessel having an improved means whereby the friction of the water upon said vessel is reduced, and consequently its passage through the water facilitated and its speed greatly increased.

With the above object in view the invention consists in the novel details of construction hereinafter fully described in the specification, particularly pointed out in the claim, and clearly illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a vessel embodying my invention. Fig. 2 is an end elevation. Fig. 3 is a transverse sectional view. Fig. 4 is a bottom plan view. Fig. 5 is a vertical longitudinal sectional view.

Referring now more particularly to the accompanying drawings, A designates the hull, constructed wedge-shaped, broad at the stern and tapering inwardly therefrom to a comparatively sharp point or apex at the bow, while the bottom B thereof is flat throughout its entire length. The bow end of the hull merely rests upon the surface of the water and does not enter or displace it to any appreciable extent, while the stern is more deeply immersed. Owing to the relative light draft of the vessel at the bow and its slight hold on the water, I reduce the height of the vessel at that point by sloping the deck and sides of the vessel downward at an angle from a point adjacent to the waist to the prow or stern post, so that but slight surface is presented at the bow of the vessel for side winds to act upon, and hence it is enabled to resist said side winds and to be readily steered.

A false bottom C is positioned a short distance above the main bottom and supported upon longitudinally - extending beams D,

which not only serve to support and strengthen the false bottom, but also to divide the space between said bottoms into a plurality of longitudinally-extending air-chambers E, each having two parallel rows of air-outlet passages or ducts F formed in the main bottom and extending longitudinally thereof.

Positioned at any suitable point in the hold or other part of the vessel is an air receiver or reservoir G, into which air is pumped from an ordinary air-pump driven by suitable connections with the propelling mechanism of the vessel or by any other suitable mechanism. Pipes H, leading from opposite sides of the reservoir and controlled by suitable valves, communicate with the inner chambers of the series of longitudinally-extending chambers, while branch pipes I, leading from main pipes H, communicate with the outer chambers of said series. Thus air is supplied to the air-chambers and passes therefrom through the air-ducts, discharging upon the surface of the water, forming an unbroken constantly-renewed sheet or film of air between the water and vessel-bottom upon which the vessel is adapted to ride, the sides of the hull alone being in contact with the water. The friction of the water on the bottom of the vessel is thus obviated and the speed of the vessel greatly increased.

Owing to the wedge-shaped form of the hull of the vessel, with the peculiar features of construction before described, the stern of the vessel rises as the speed of the vessel increases, thereby reducing the area of the sides touched by the water to a minimum, and as a consequence the frictional resistance.

It will be understood that I do not desire to limit my invention to be used as an air-supplying apparatus, as oil or gas may be forced through the air-ducts, the former serving also to calm the waves and the latter preventing barnacles and other animal and vegetable life from adhering to and fouling the ship's bottom as well as reducing friction, as in the case of the air.

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

A vessel having a wedge-shaped hull and flat bottom provided with inner and outer V-shaped series of ducts extending longitudi-

nally thereof, a false bottom, and longitudi-  
nally-extending beams supporting said false  
bottom and forming therewith inner and  
outer chambers or compartments equal in  
5 number to the series of ducts, in combination  
with an air or gas compression pump, a res-  
ervoir in communication therewith, main  
supply-pipes leading from said reservoir to  
the inner compartments and provided with

controlling-cocks, and branch pipes leading to  
from the main pipes to the outer compart-  
ments, substantially as described.

In testimony whereof I affix my signature  
in presence of two witnesses.

WILLIAM B. MOTHERAL.

Witnesses:

GLADYS L. THOMPSON,  
D. C. FINNEY.