

No. 615,757.

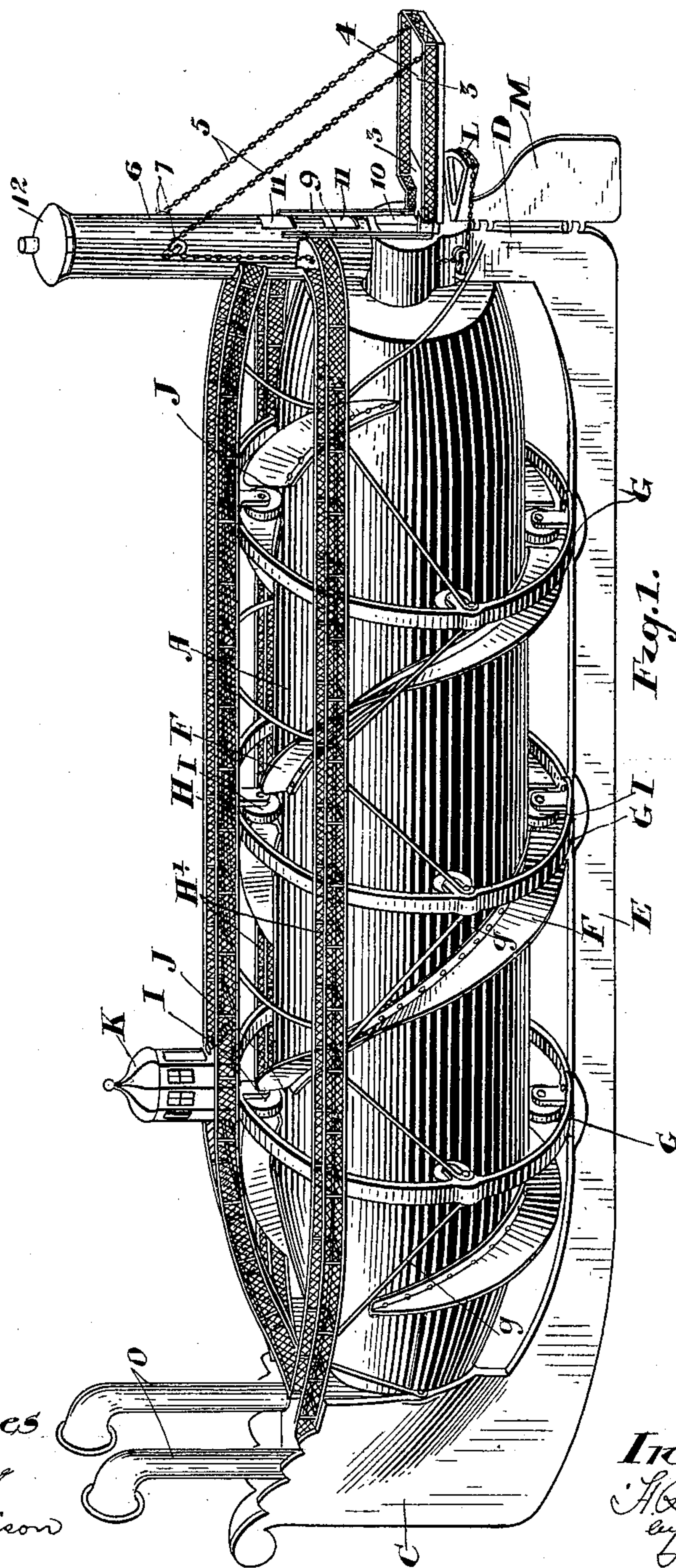
Patented Dec. 13, 1898.

H. R. SHAW.  
CONSTRUCTION AND PROPULSION OF BOATS.

(Application filed Nov. 8, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
H. S. Young  
A. Harrison

Inventor:  
H. R. Shaw  
by  
Belcher & Co.  
attys

No. 615,757.

Patented Dec. 13, 1898.

H. R. SHAW.

CONSTRUCTION AND PROPULSION OF BOATS.

(Application filed Nov. 8, 1897.)

(No Model.)

2 Sheets—Sheet 2.

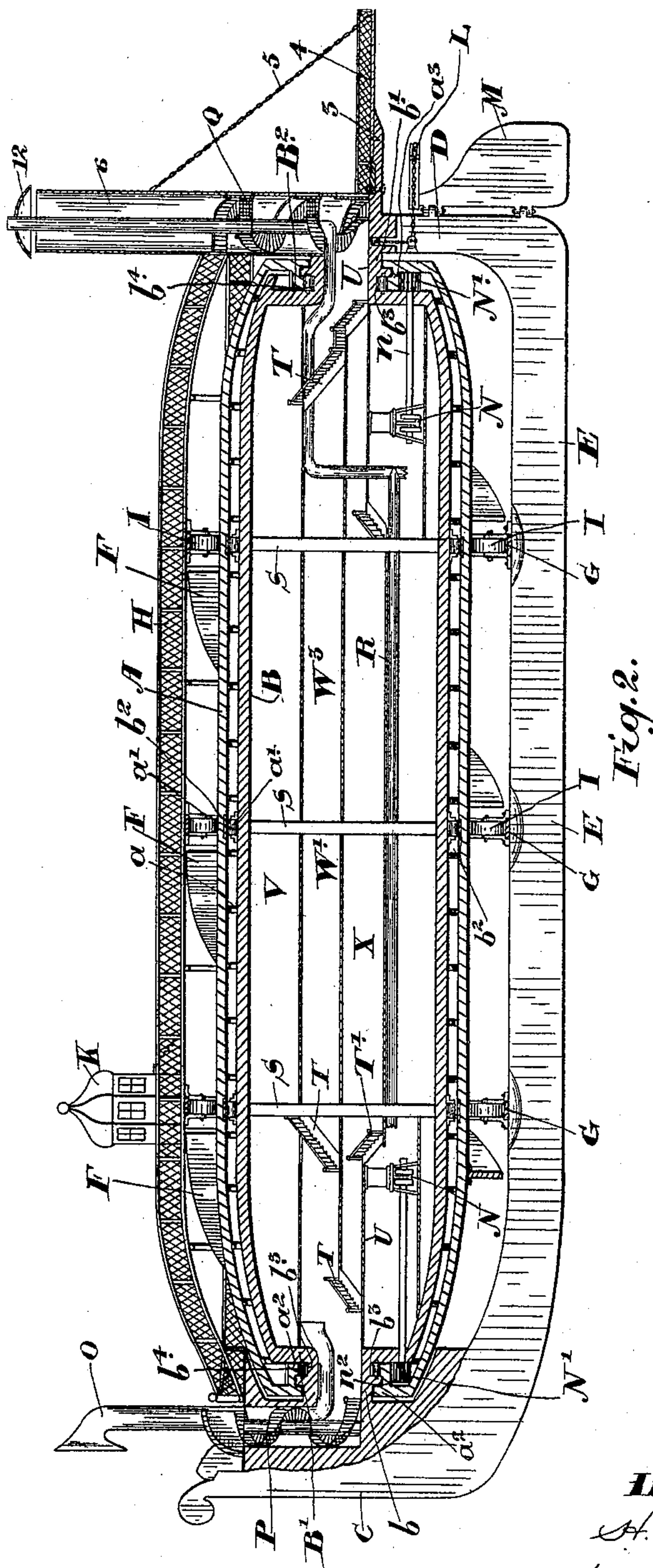


Fig. 2.

Witnesses.

*H. R. Shaw*

*A. W. Morrison.*

Inventor.

*H. R. Shaw*

*by Fletcher & Co  
Atty.*



# UNITED STATES PATENT OFFICE.

HUGH ROBERTSON SHAW, OF ROSSEAU, CANADA.

## CONSTRUCTION AND PROPULSION OF BOATS.

SPECIFICATION forming part of Letters Patent No. 615,757, dated December 13, 1898.

Application filed November 8, 1897. Serial No. 657,866. (No model.)

*To all whom it may concern:*

Be it known that I, HUGH ROBERTSON SHAW, artist, of the village of Rosseau, in the district of Parry Sound, in the Province of Ontario, Canada, have invented certain new and useful Improvements in the Propulsion and Construction of Boats, of which the following is a specification.

My invention relates to improvements in the propulsion and construction of boats; and the object of the invention is to devise a strong form of boat adaptable for use as a steamship or other vessel in which the power may be applied advantageously to produce a great speed without sacrificing comfort; and it consists, essentially, of a boat made in two shells or casings for the major portion cylindrical in shape and tapered toward the ends, the inner shell being held stationary to the stem and stern, which are attached to or form part of the keel of the boat, and the outer shell being provided with two convolute flanges extending from near the bow or stem to near the stern of the ship, the parts being arranged and constructed in detail as hereinafter more particularly explained.

Figure 1 is a perspective view of a steamship constructed in accordance with my invention. Fig. 2 is a longitudinal section through the ship.

In the drawings like letters and numerals of reference indicate corresponding parts in each figure.

A is the outer cylindrical shell, and B the inner cylindrical shell.

B' and B<sup>2</sup> are the end walls of the inner cylindrical shell, which are connected by the hollow trunnions *b* and *b'* to the stem portion C and stern portion D. The stem portion C is made in any desired form, as also the stern portion, and are connected together by a keel E.

The cylindrical shell A is substantially constructed to resist vibration while revolving around the inner cylindrical shell B, which with the stem portion C and stern portion D and keel E form the stationary portion of the ship.

The cylindrical shell A has secured to its outside preferably two convolute flanges F, running parallel to each other from end to end of the shell. Both shells A and B may

be made of steel, wood, or any other suitable material. The keel E, with the stem and stern portions, serves to preserve the equilibrium of the stationary portion of the ship, and the keel also serves to prevent the drifting of the ship from adverse winds.

*a* are the ribs of the outer shell.

*a'* are rollers secured to the inner shell, or to the outer shell, if preferable, in a circle around the shell and rolling on a plate or other suitable base *b<sup>2</sup>* on the outer shell. These roller-bearings serve to support the outer shell upon the inner shell from end to end and minimize the friction on the outer shell as it turns around the inner shell.

The ends of the outer shell A, which are tapered, as shown, are provided with inwardly-extending trunnions *a<sup>2</sup>* and *a<sup>3</sup>* at each end, between which and the grooves *b<sup>3</sup>* in the trunnions *b'* and *b<sup>2</sup>* rollers *b<sup>4</sup>* are placed, which thus form roller-bearings, so as to support the ends of the cylindrical outer shell and allow of its turning easily.

G are a series of rings which are secured to the keel E and extend around to the outside of the cylindrical shell A, leaving plenty of room for the rotation of the convolute flanges F.

H and H' are the central and side bridges or promenade-decks, which extend from the bow portion to the stern portion of the ship, where they are solidly secured, being also secured to the rings G and braced by the rods *g*. The bridges H and H' serve to brace the upper portion of the ship together and strengthen the whole construction thereof. These bridges H and H' are provided with suitable guard-rails, so as to form a guard for people walking thereon.

I are rollers journaled in bearings to the inside of the rings G and designed to form bearing-supports for the outer side of the cylindrical shell should it vibrate, but not otherwise. Such rollers as the cylindrical shell rotates pass through openings J made in the convolute flanges F, so as to permit of the free rotation of such flanges.

K is the wheel-house, which is connected by suitable chains to the quadrant L at the top of the rudder M, which is suitably held in fastenings on the stern-post.

The rear trunnion *b'* is provided with a



lower extension-platform 3, upon which the gangway or landing platform 4 is pivotally supported at its inner end, so as to swing horizontally. The gangway or landing platform 4 is connected by chains 5 5 to the stair and ventilating-shaft 6, such chains passing over pulley 7 at the outside of the shaft down to suitable windlasses by which the gangway-platform 4 may be raised to a vertical position against the ribs 9 9, Fig. 1.

10 are the rear doors or gangways, which are situated in the center of the hollow trunnions opposite the center of the platform and by which ingress and egress may be made.

11 are upper doors at the back of the shaft.

The platform is of sufficient length so that it may be swung laterally, so that it may extend upon a wharf, the chains in this case being given sufficient slack to allow of this. It may also be raised upon the ribs 9 9 to any height to suit high or low tides. When not in use, it may be raised through the chains 5 and windlass up against the stern-shaft, so as to completely close the rear doors 10 and doors 11.

N are the engines, which are preferably located one at each end of the shaft within the inner shell, being suitably supported. There need only be one engine if desired; but I preferably have two, so that if one gets out of order the other may be used. The engine-shaft  $n$  extends out through the end walls  $B'$  and  $B^2$ , being provided at its ends, outside the walls, with pinions  $N'$ , which mesh with gear-rings  $n^2$  formed on the inwardly-extending trunnions  $a^2$  and  $a^3$ . It will now be seen that the manner of driving the outer cylindrical shell is extremely simple and positive.

O are the air-funnels, situated in the stationary bow portion of the ship, through which the fresh air and ventilation is carried to the interior shell or living portion of the ship, the shaft 6, with its cowl 12, serving to carry away all foul air.

P is a spiral staircase at the bow of the ship, leading from the hollow trunnions  $b$  to the deck on the bow.

Q is a staircase leading up the shaft 6 to the upper or hurricane decks.

R is the smoke-pipe, leading from the furnace under the boilers, (not shown,) through the center shell in the lower portion thereof, out through the stair-shaft 6.

S are stanchions, which are placed at any desired distance apart in the shell and form the bars for the bulkhead to make the compartments of the inner shell air-tight, if desired. The inner shell may be otherwise braced, if desired.

T are the stairs leading from the main entrance-decks U into the upper sleeping-berth sections V and into the saloon and smoking-room W' and the dining-saloon and kitchen W<sup>2</sup>, which are preferably on the same floor. The steerage would be on the floor below, from which communication is made from the main

entrance-decks U by the stairs T'. The bottom portion of the ship may be used for storage, freight, &c., and the interior may be otherwise subdivided, as may be thought preferable.

One of the engines hereinbefore described, if not utilized for the running of the ship, may be used for the purpose of running a dynamo and also to work the fans in the cold-storage portion of the ship.

There are various ways of subdividing the ship and for arranging for the convenience therein; but I do not think it necessary in this specification to go into details thereof, as anybody skilled in such matters would readily comprehend the requirements.

Any suitable means for the propulsion of the ship may be utilized and lookouts may be arranged in the bow.

It will be readily seen from this description that the ship is propelled by the rapid rotation of the outer shell, the convolute flanges acting on the water as a screw-propeller and carrying the ship forward with velocity.

As the ship will be made in cylindrical form it will be understood that the main portion of the ship will take but little draft, while the keel will serve to steady it on its onward course.

Among the advantages which naturally accrue from the ship constructed and propelled in the manner hereinbefore described are great speed, positive drive through the convolute screw-flanges, and less liability to seasickness. It is also admirably adapted for the transportation of meats, fruit, and other perishable commodities between distant countries. It can be utilized for any size craft from an ocean-going ship down to the smallest-sized hand-power pleasure-boat to run on small lakes and rivers. In life-saving-station work there could be nothing more safe and comfortable, as the surf which proves so disastrous in the case of present appliances would have no effect on a boat of cylindrical form completely closed in.

What I claim as my invention is—

1. A boat comprising stem and stern portions and keel connecting the same at the bottom thereof, an inner cylindrical shell rigidly connected to the stem and stern portions of the boat above the keel and forming a living-compartment and an outer cylindrical shell having bearings on the inner cylindrical shell and provided with convolute flanges, means for driving the same and hurricane-deck bridge or bridges connecting the bow or stern portion to the stern portion above the shells as and for the purpose specified.

2. A boat comprising stem and stern portions and keel connecting the same at the bottom thereof, an inner cylindrical shell rigidly connected to the stem and stern portions of the boat above the keel and forming a living-compartment and an outer cylindrical shell having bearings on the inner cylindrical shell and provided with convolute



flanges, means for driving the same, hurricane-deck bridge or bridges connecting the bow or stem portion to the stern portion above the shells, and rings surrounding the shells and secured to the keel and hurricane-deck bridges as and for the purpose specified.

3. A boat comprising stem and stern portions and keel connecting the same at the bottom thereof, an inner cylindrical shell rigidly connected to the stem and stern portions of the boat above the keel and forming a living-compartment, and an outer cylindrical shell having bearings on the inner cylindrical shell and provided with convolute flanges, means for driving the shell, hurricane-deck bridge or bridges connecting the bow or stem portion to the stern portion above the shells, rings surrounding the shells and secured to the keel and hurricane-deck bridges, rollers supported in suitable bearings within the said rings and designed to lie adjacent to the cylindrical shell, and openings in the convolute flanges to permit the rollers passing through the convolute flanges as the shell rotates as and for the purpose specified.

4. In a boat the stem and stern portions, and keel connecting the same at the bottom thereof, an inner cylindrical shell provided with suitable end walls, the hollow trunnions leading outwardly from such walls and rigidly connected to the stem and stern portions, the outer cylindrical shell having central bearings on the inner cylindrical shell and having suitable end walls, the trunnions extending inwardly from the end walls over the hollow trunnions of the inner shell, the bearings between the stationary trunnions and the trunnions of the outer shell, and means for driving the outer shell as and for the purpose specified.

5. In a boat the stem and stern portions, and keel connecting the same at the bottom thereof, an inner cylindrical shell provided with suitable end walls, the hollow trunnions leading outwardly from such walls and rigidly connected to the stem and stern portions, the outer cylindrical shell having central bearings on the inner cylindrical shell and having suitable end walls, the trunnions extending inwardly from the end walls over the hollow trunnions of the inner shell, the bearings between the stationary trunnions and the trunnions of the outer shell, the gear-rings formed on the trunnions of the outer shell, a suitably-driven engine and shaft extending through the ends of the inner shell, and pinions on the outer end of the shaft meshing with the gear-rings on the trunnions, as and for the purpose specified.

6. In a boat, the stem and stern portions, and keel connecting the same at the bottom thereof, the inner cylindrical shell provided with suitable end walls, the hollow trunnions leading outwardly from such walls and rigidly connected to the stem and stern portions,

the outer cylindrical shell having bearings on the inner cylindrical shell, and convolute flanges extending throughout its length, the forward air-funnels extending down through the bow portion and through the trunnions into the interior shell, and the stern air-shaft extending from the stern-trunnions upwardly and provided with a suitable cowl as and for the purpose specified.

7. In a boat, the stem and stern portions, and keel connecting the same at the bottom thereof, the inner cylindrical shell provided with suitable end walls, the hollow trunnions leading outwardly from such walls and rigidly connected to the stem and stern portions, the outer cylindrical shell having bearings on the inner cylindrical shell, and convolute flanges extending throughout its length, the forward air-funnels extending down through the bow portion and through the trunnions into the interior shell, the stern air-shaft extending from the stern-trunnions upwardly and provided with a suitable cowl, and the smoke-pipe leading from the engine-room to and through the stern-shaft, as and for the purpose specified.

8. In a boat, the stem and stern portions, and keel connecting the same at the bottom thereof, the inner cylindrical shell provided with suitable end walls, the hollow trunnions leading outwardly from such walls and rigidly connected to the stem and stern portions, the outer cylindrical shell having bearings on the inner cylindrical shell, and convolute flanges extending throughout its length, the front and rear ventilating-shafts communicating with the hollow trunnions and extending up to the upper decks, and the spiral stairs located therein as and for the purpose specified.

9. In a boat, the stem and stern portions, and keel connecting the same at the bottom thereof, the inner cylindrical shell provided with suitable end walls, the hollow trunnions leading outwardly from such walls and rigidly connected to the stem and stern portions, the outer cylindrical shell having bearings on the inner cylindrical shell, and convolute flanges extending throughout its length, and the rudder fastened to the stern-post and manipulated as shown and as specified.

10. In combination the outer and inner shells constructed as specified, and the inner shell connected to the stem and stern portions, the keel connecting the stem and stern portions, the hollow trunnions at the front and rear, the platform extending out from the hollow rear trunnion, the landing-platform swiveled thereon and the supporting and raising chains for the landing-platform suitably operated and the entrance-doors in the end of the hollow trunnions as and for the purpose specified.

11. In combination the outer and inner shells constructed as specified, with the inner shell connected to the stem and stern portions, the keel connecting the stem and stern portions,

the hollow trunnions, the platform extending  
out from the rear hollow trunnion, the land-  
ing-platform swiveled on such latter platform,  
the supporting and raising chains for the  
5 landing-platform suitably operated, the en-  
trance-doors in the end of the hollow trun-  
nions, the air-shaft, doors in the same and the

guiding-ribs all arranged as and for the pur-  
pose specified.

HUGH ROBERTSON SHAW.

Witnesses:

B. BOYD,

H. DENNISON.