

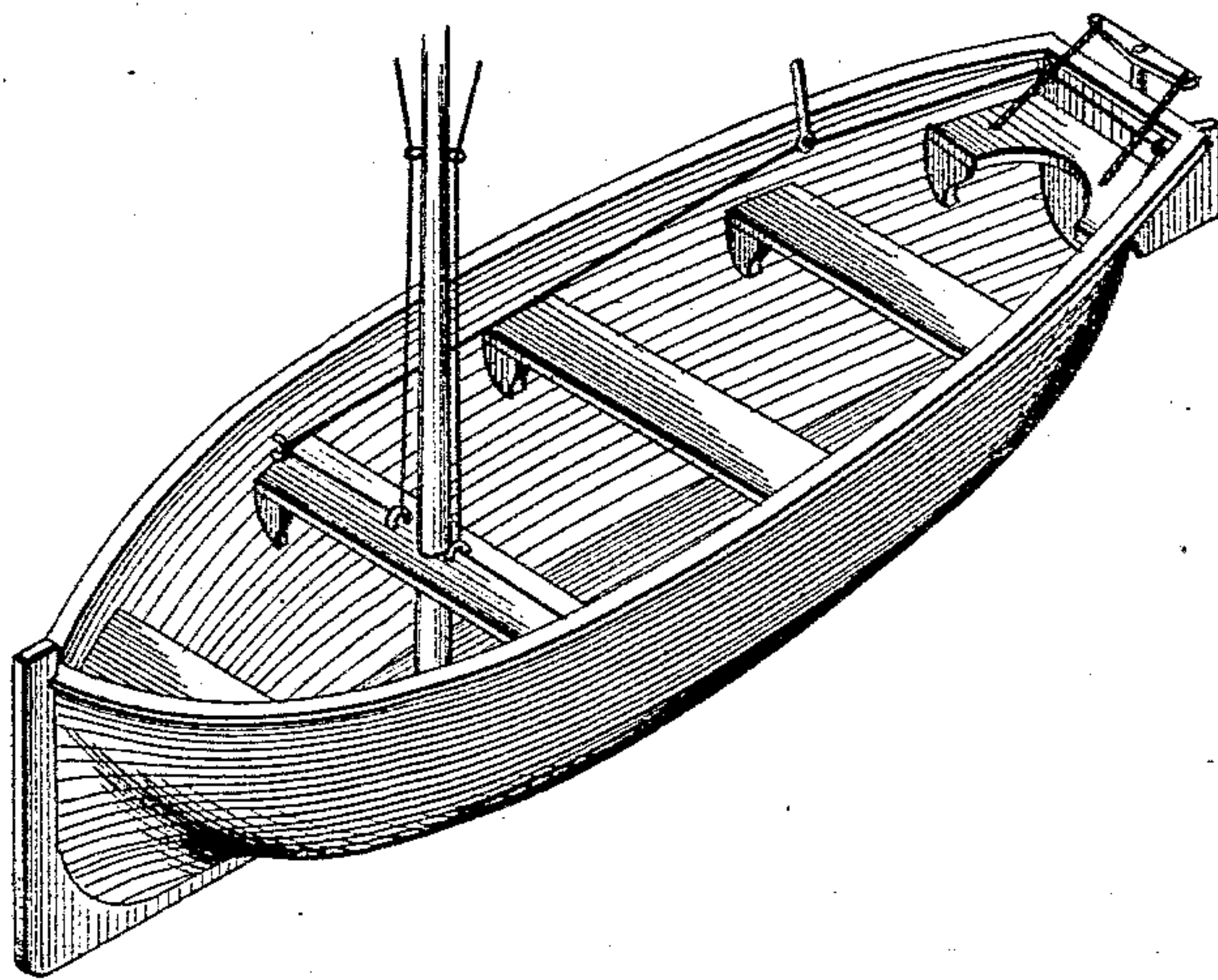
(No Model.)

J. FORBES, Jr.  
BOAT.

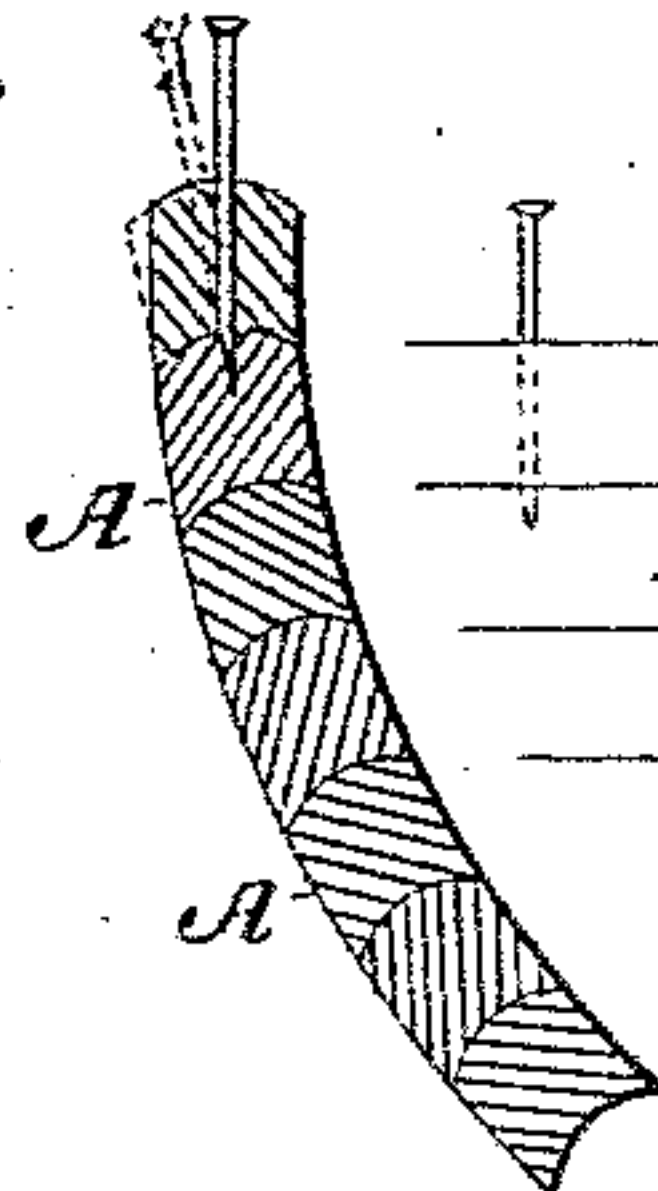
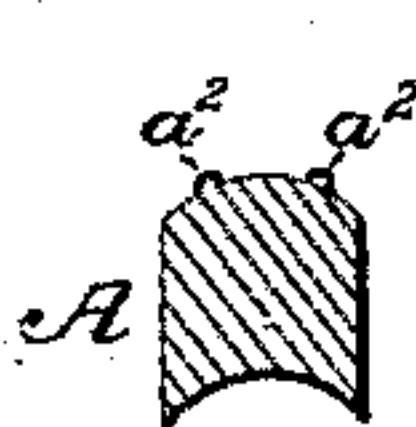
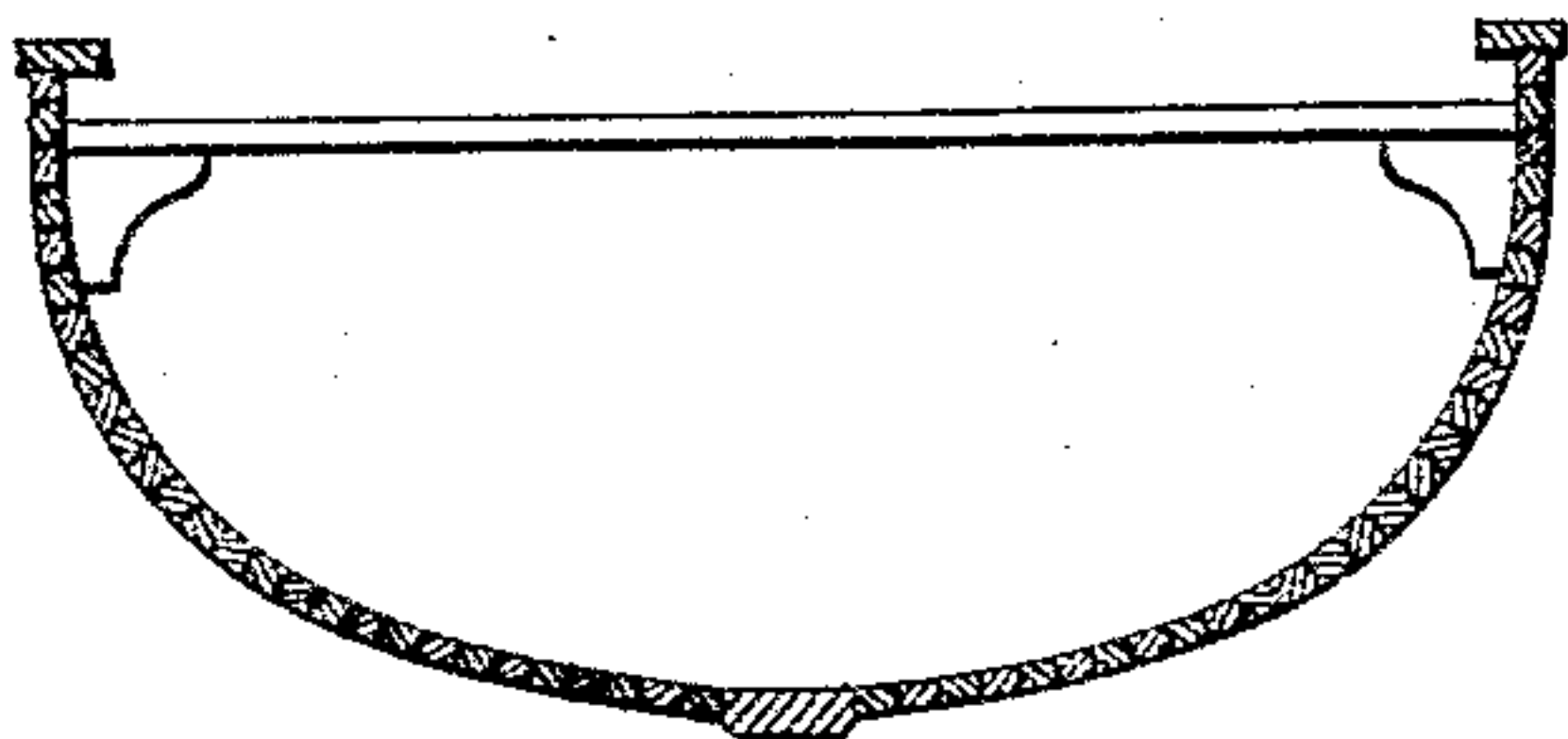
No. 315,758.

Patented Apr. 14, 1885.

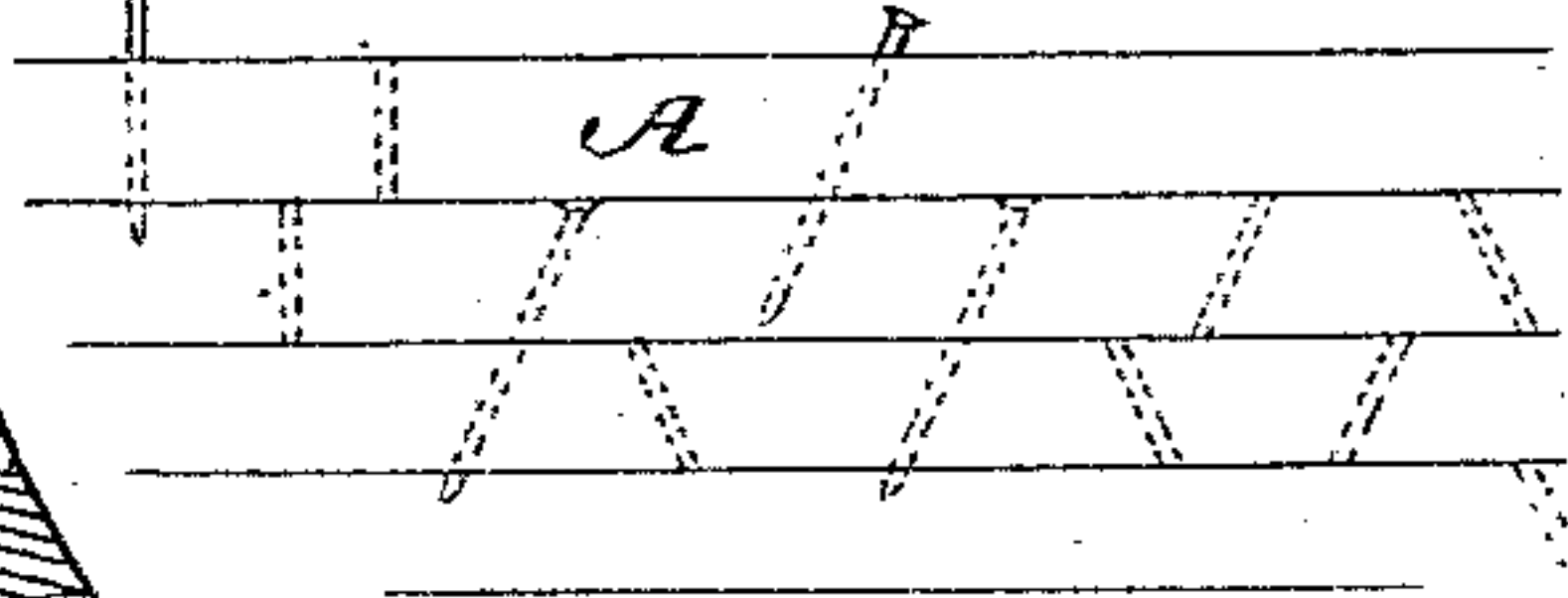
*Fig 1.*



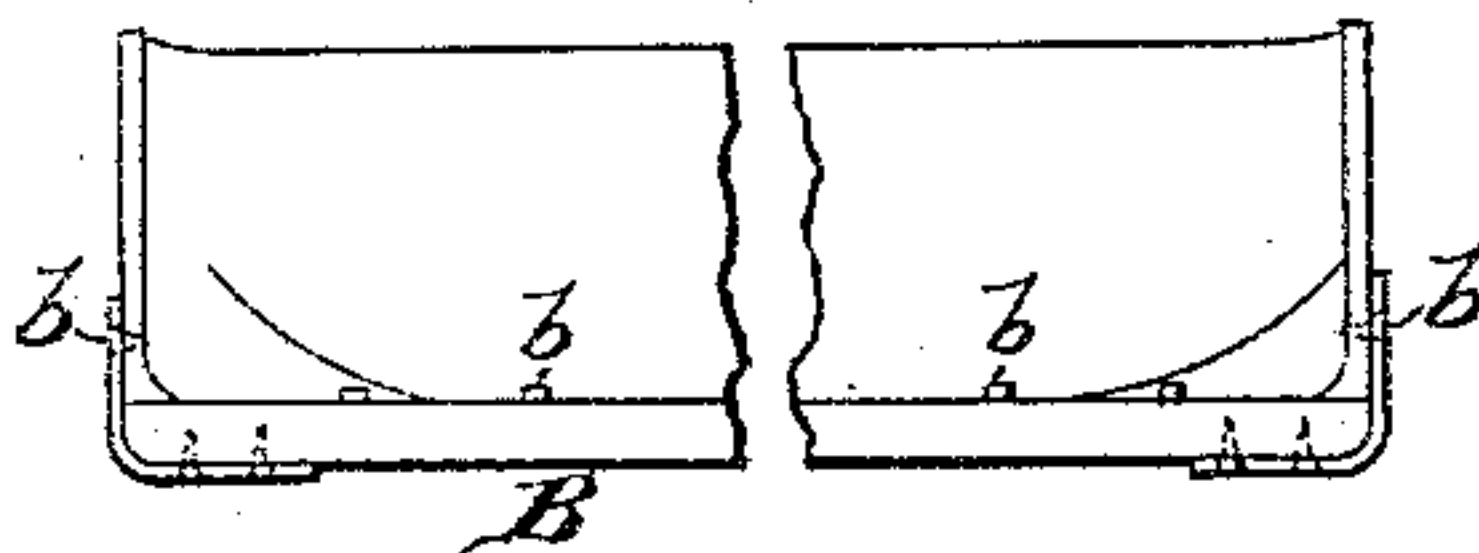
*Fig 2.*



*Fig 3.*



*Fig 4.*



Witnesses,  
*Robert Everett,*  
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Inventor,  
*John Forbes Jr.*  
By *W W Feggs,*  
Atty.



# UNITED STATES PATENT OFFICE.

JOHN FORBES, JR., OF PLAINWELL, ASSIGNOR OF ONE-HALF TO ISAAC L. LYON, OF DETROIT, MICHIGAN.

## BOAT.

SPECIFICATION forming part of Letters Patent No. 315,758, dated April 14, 1885.

Application filed May 29, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN FORBES, JR., of Plainwell, county of Allegan, State of Michigan, have invented a new and useful Improvement in Boats; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a boat embodying my invention. Fig. 2 is a cross-section of the same. Fig. 3 is a separate enlarged view illustrating how the strakes or planks are formed and united one to the other. Fig. 4 represents an adjustable keel-board.

My invention has for its object, first, the peculiar construction of the planks or strakes, the same being made convex on one edge and concave on the other, so as to match together, whereby the structure is materially strengthened and the joints made smooth and tight, regardless of the particular configuration of the outer surface of the boat; second, in planks of this character united edgewise by nails; third, in constructing one of the edges of the plank or strake with one or more slight ridges which serve as calking.

A represents the planks of my boat, B the keel. The planks A are made narrow, long, and straight, and are tapered, preferably, toward the ends, so as to compensate for the difference in length of the section-lines at the bow, the stern, and the middle of the boat. Thus in a pleasure-boat of, say, fifteen to eighteen feet in length, I would generally make the plank of material, say, seven-eighths thick to about one inch in average breadth. These dimensions may, of course, be considerably varied to suit the requirements of any particular case. One edge, *a*, is made convex in form, while the other is concave in form, so that when the planks are brought together edge to edge in the construction of a boat the convex edge of one plank matches into the concave

edge of the adjacent plank. It is thus seen that when fastened together edge to edge a very firm union is established between the planks to resist any strain from the inside or the outside of the boat. Moreover, this concavity and convexity of the adjacent edges enables me to conform to any desired section in making a boat without the necessity of beveling the edges of the planks, for no matter how they are turned with respect to each other they can rest in contact throughout, and their exterior surfaces will be tangent to each other, and not present an open seam, as shown in Fig. 3.

In order to fasten the adjacent planks together, I pass nails down edgewise, as shown in Fig. 3, driving them preferably through the adjacent plank and partially through the next plank below. These nails may be driven their whole length, if desired, but I prefer generally to puncture or bore through the first plank, so that the nail may enter and be pressed through this first plank by hand. This gives to it the proper direction and holds it steadily while it is being driven through the second and into the third plank. The nails may be driven straight, as shown in Fig. 3, although I prefer to drive them slanting, as also shown in Fig. 3, in order that they may act something as a dovetail in holding the parts together. Moreover, if desired, some of the nails may be driven with a slant in one direction and the others with a slant in the opposite direction. Again, where the planks are being brought around a rather abrupt curve a nail may be passed through a hole in the first plank and the plank be held off by the hand so that it is substantially parallel or in the same plane with the plank below it until the nail has been started. This gives direction to the point of the nail. The plank may now be forced into its proper position and the nail be driven on the curve, on the same principle precisely as a blacksmith bends the point of a horseshoe-nail to cause it to drive out through the side of the hoof, the object in my case, however, being to prevent the nail from driving out through the side of the plank. Ordinarily, the simple binding of the planks together with the nails is sufficient to make



the boat water-tight, although I purpose, if found desirable, to leave slight ridges  $a^2$  upon one edge of the plank. This ridge as the planks are joined will mash down and will serve to effectually calk the joint. A boat constructed on this principle possesses many advantages. In the first place, it is devoid of ribs, and is therefore perfectly smooth upon the inside, and can be readily dressed, painted, and cleaned. Its planks, moreover, being fastened to each other and not to a rib, expand and contract together without the usual tendency of opening the seams—a difficulty always met with by reason of unequal expansion and contraction of the ribs and the planks, where the planks are fastened directly to the ribs; and, finally, the boat is perfectly smooth upon the outside, and its joints, by their convex and concave matching, are for all practical purposes as strong and unyielding as the solid portion of the planks. The planks being narrow are readily warped or twisted to conform to any desired section or peculiarity of contour, and the resulting boat is exceeding strong and light, and it is especially well adapted for all purposes of an ordinary pleasure or working boat. In ordinary row-boats I generally prefer to make the boat with a flat bottom—that is to say, without a vertical keel-board. If, however, a keel is desired—as, for instance, for a sail-boat—the same can be provided. I purpose, also, where desirable, to make a removable keel-board, B, in which case I would provide the keel-board with dowels  $b$ , adapted to enter corresponding holes in the flat board forming the middle of the bottom of the boat. I would also provide clips  $b'$ , adapted to project up in front of the stem and up in rear of the stern-post, to which the same may be fastened by screws or any other suitable manner. This keel-board may be made straight from end to end, or may be made deeper along the middle than at the ends, to serve at once the purpose of a keel and center board. These boats may of course be provided with any of the usual oarlock mechanism.

I am aware that it is old to form a boat of tongue-and-grooved planks, and also to provide a removable keel; and I therefore lay no claim to such matter, broadly; but

What I claim is—

1. A boat made of narrow planks fastened together edgewise, said planks being convex on one edge and concave upon the other edge

in cross-section, substantially as and for the purpose described.

2. A boat made of thin narrow strips concave at one edge and convex at the other in cross-section, said strips fastened together by nails passed through them edgewise, substantially as described.

3. A boat made of narrow strips concaved upon one edge and convexed upon the other, fastened together by nails passing through them edgewise, and in connection therewith a small ridge or ridges,  $a^2$ , formed upon one edge of each plank, substantially as described.

4. A boat made of narrow strips convexed on one edge and concaved on the other in cross-section, said strips being punctured or bored at intervals for the passage of nails, and fastened together edgewise by nails passed through said holes and then driven through one or more adjacent planks, whereby said holes are made to serve as a guide for the nails, substantially as described.

5. A boat made of narrow strips concaved on one edge and convexed on the other in cross-section, and fastened together edgewise by nails passed through two or more adjacent planks in an angular direction, substantially as described.

6. A boat plank or strake consisting of a long narrow strip tapered somewhat at its extremities, made concaved on one edge and convexed on the other in cross-section, substantially as described.

7. A boat plank or strake consisting of a long narrow strip convexed upon one edge and concaved upon the other in cross-section, and slightly tapering toward its extremities, said strake or plank being perforated or bored at intervals for the passage of nails, substantially as described.

8. The combination, with a boat, of the removable keel B, provided with dowels  $b$ , engaging with corresponding holes or recesses in the bottom of the boat, and clip  $b'$ , connected to the keel, and bent up and secured, respectively, to the stem and stern posts, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN FORBES, JR.

Witnesses:

N. S. WRIGHT,  
M. B. O'DOHERTY.