

(No Model.)

2 Sheets—Sheet 1.

P. HIGGINS.  
MEANS FOR PROPELLING BOATS.

No. 527,605.

Patented Oct. 16, 1894.

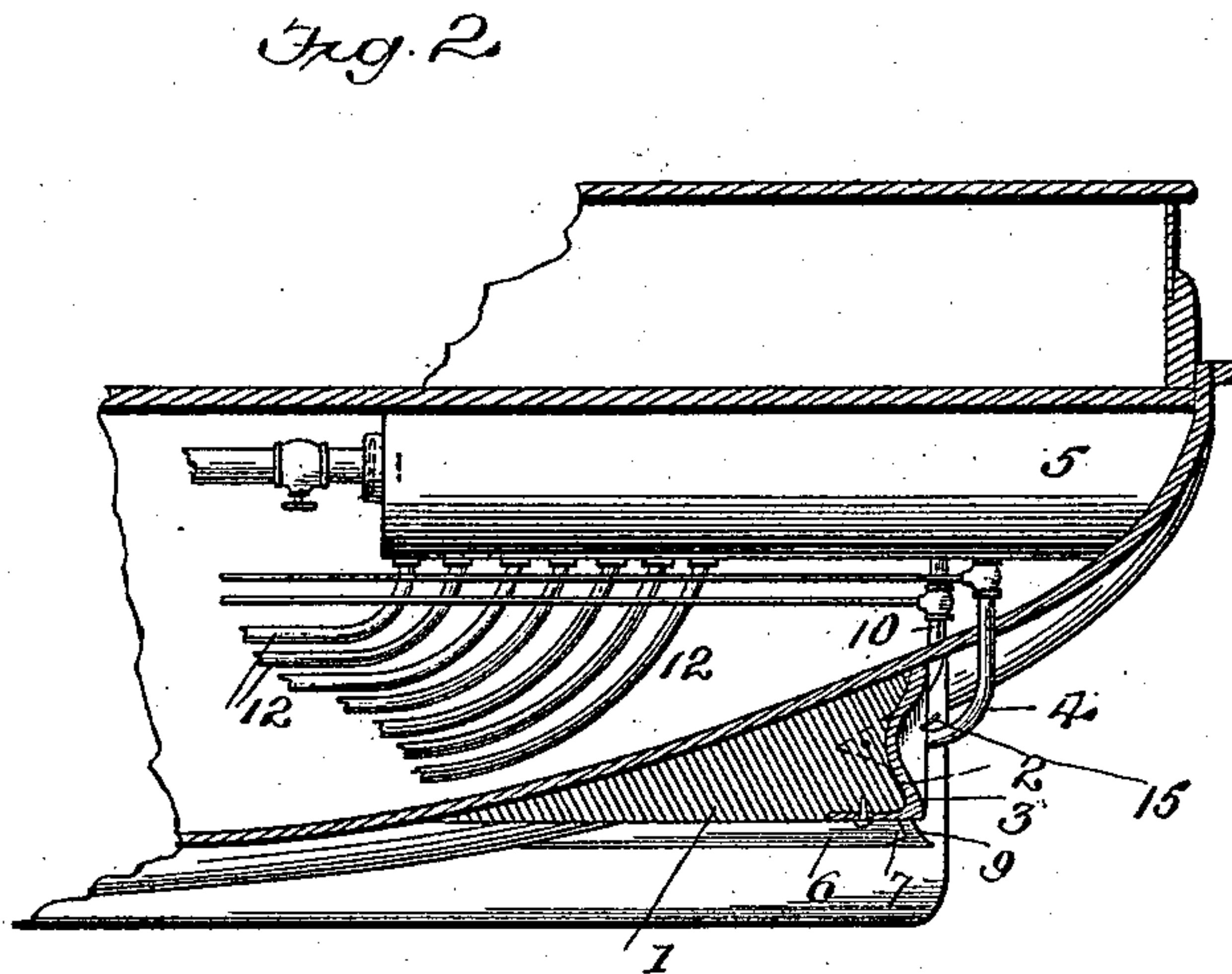
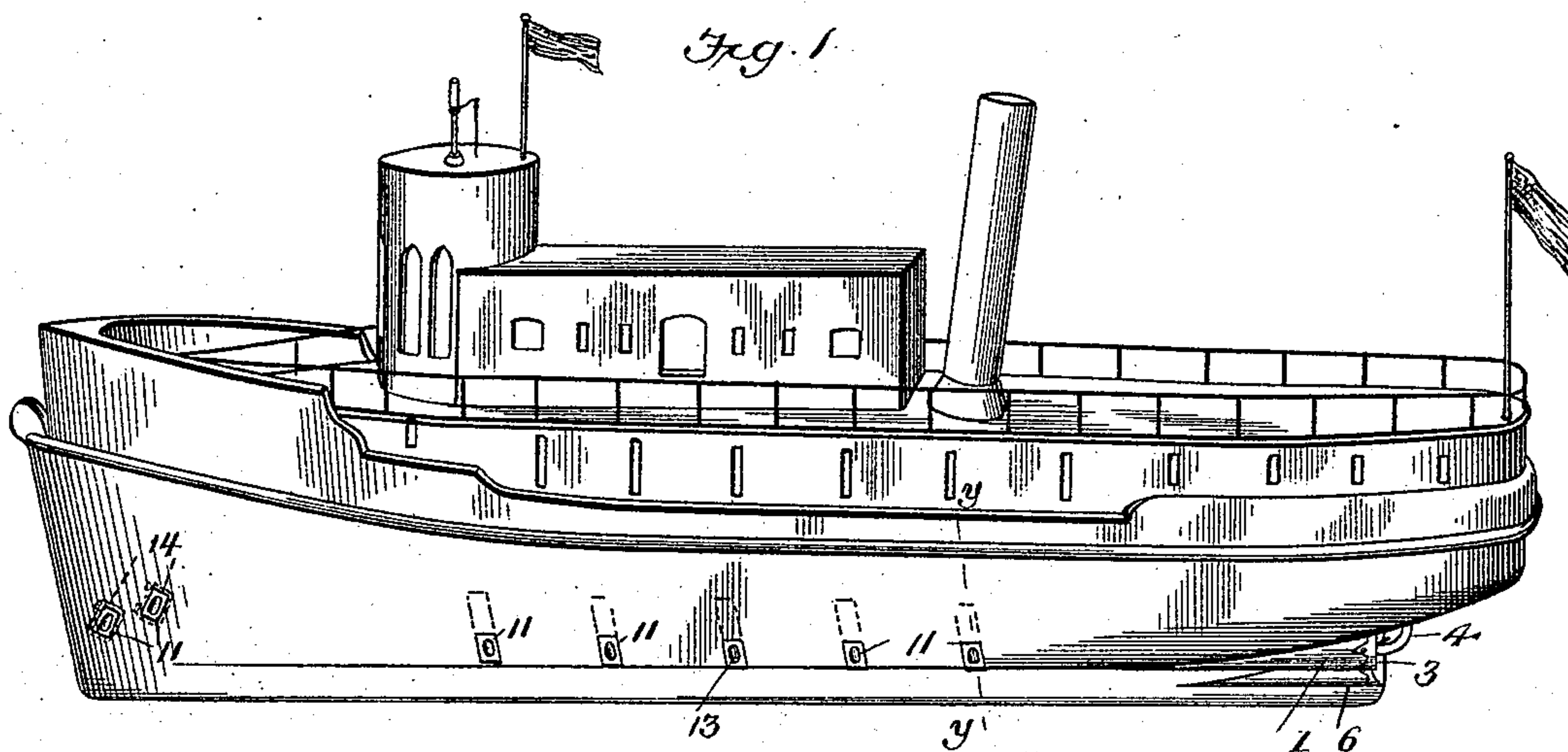
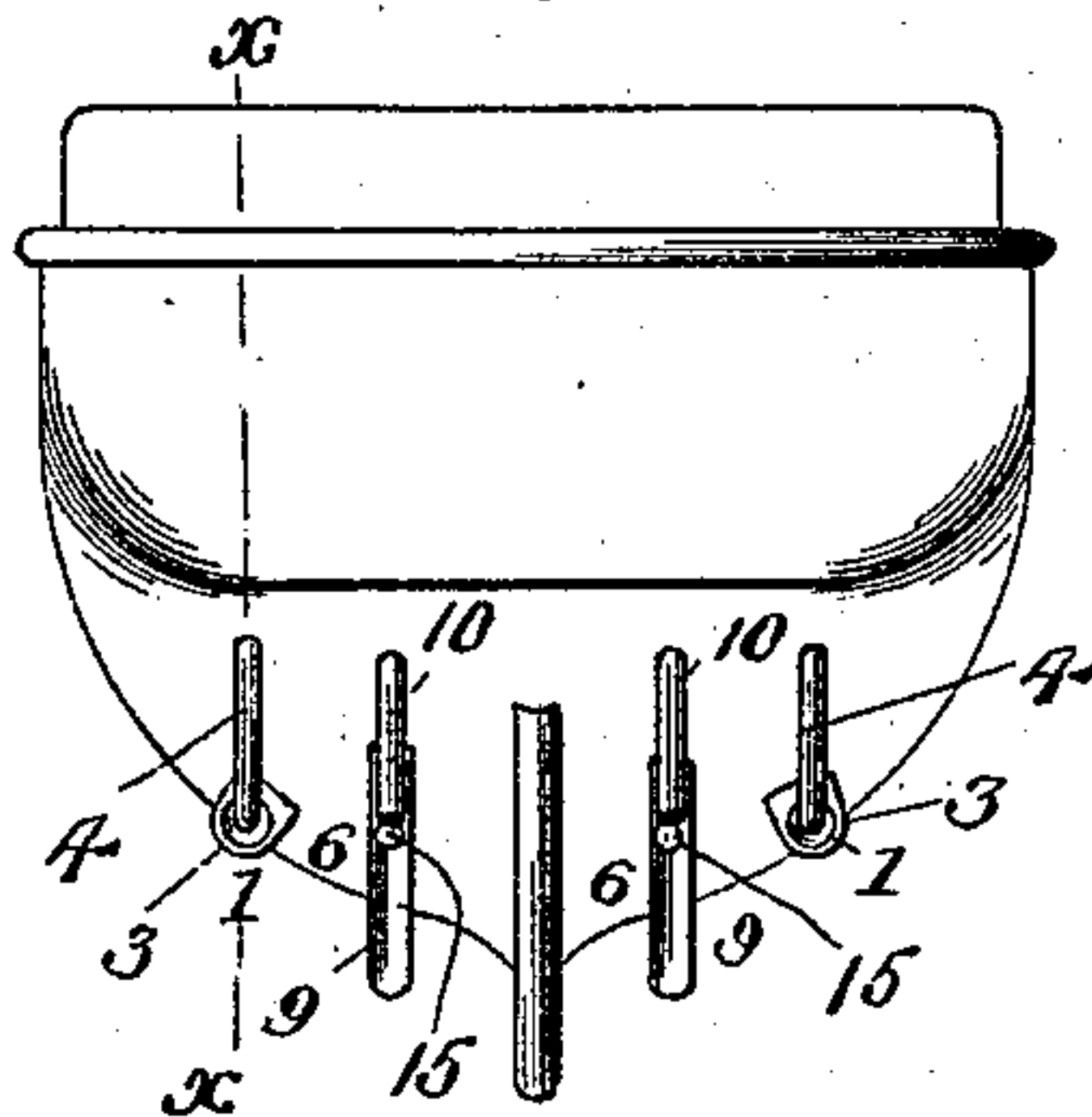


Fig. 3.



Witnesses

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Inventor

*Patillo Higgins*

By *John Wedderburn*  
his Attorney

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Fig. 4.

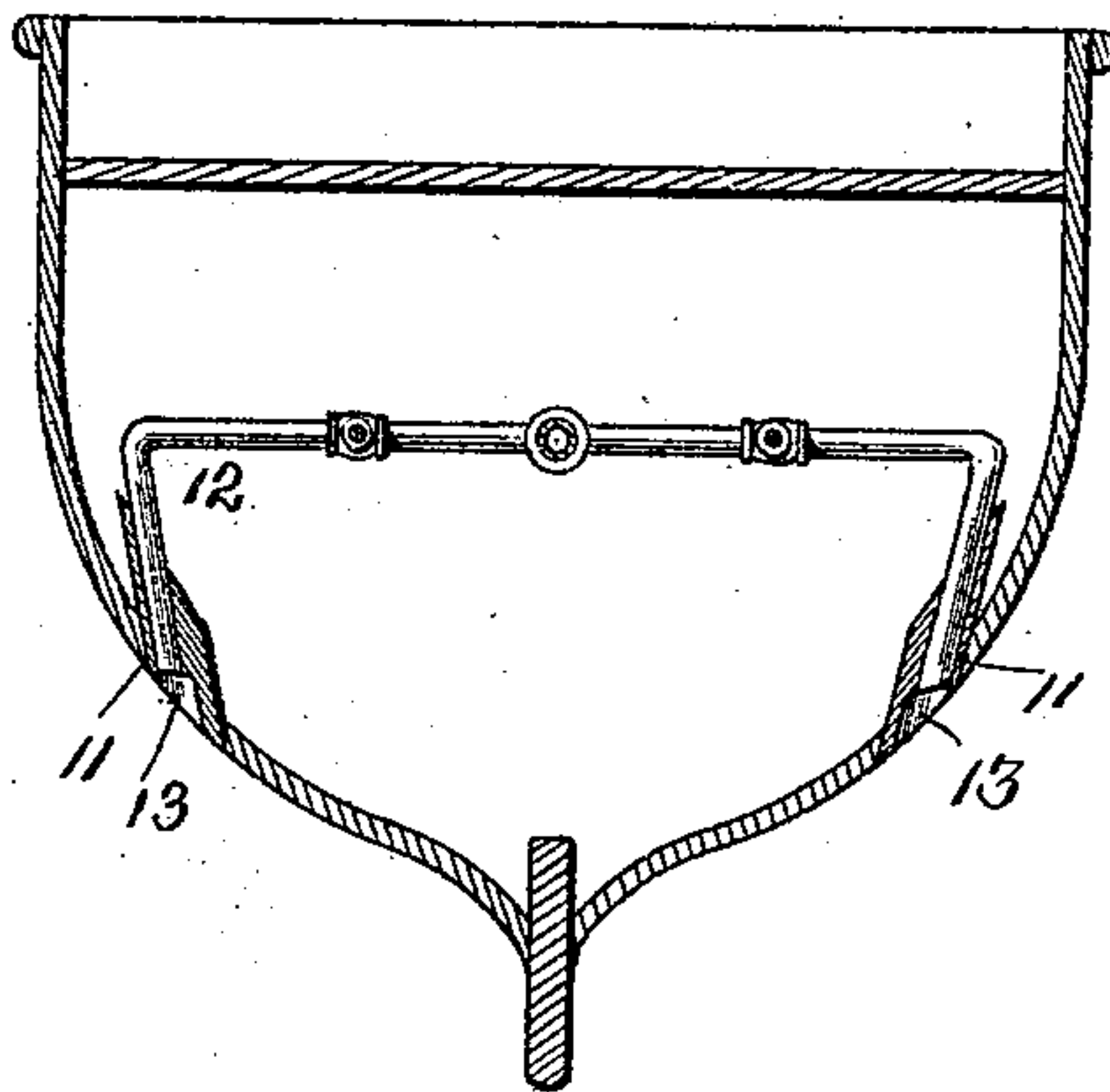


Fig. 5.

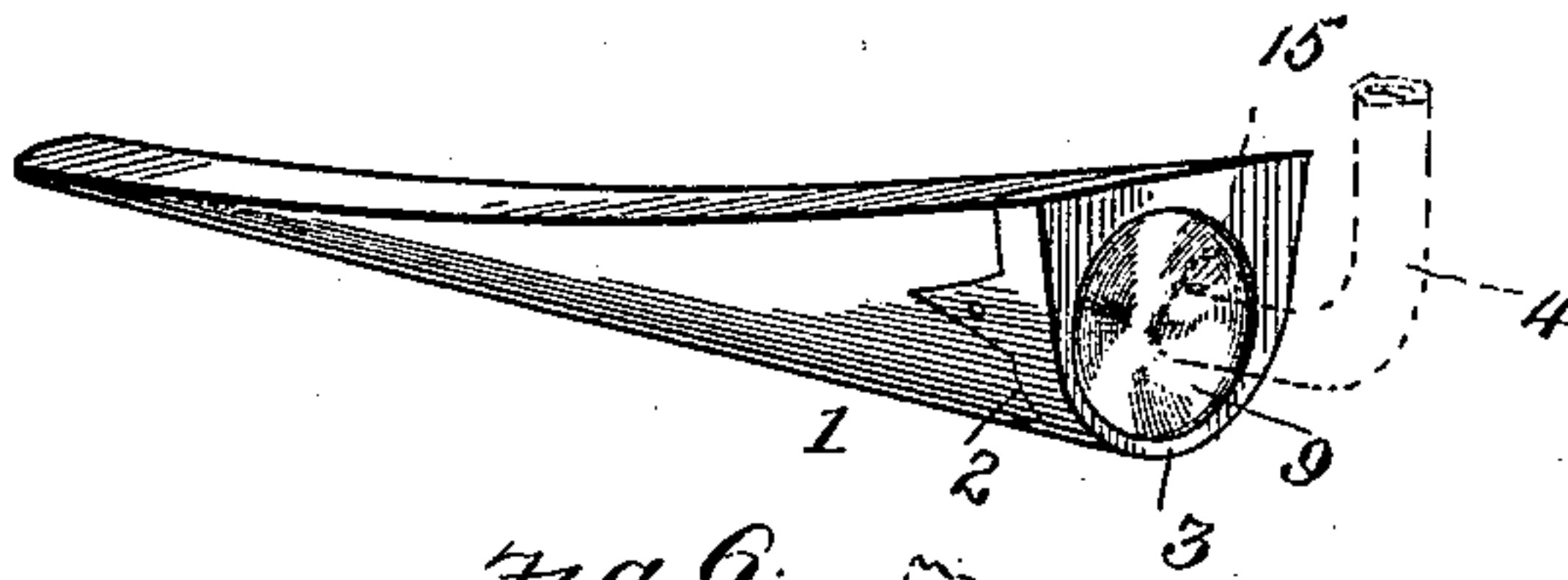


Fig. 6.

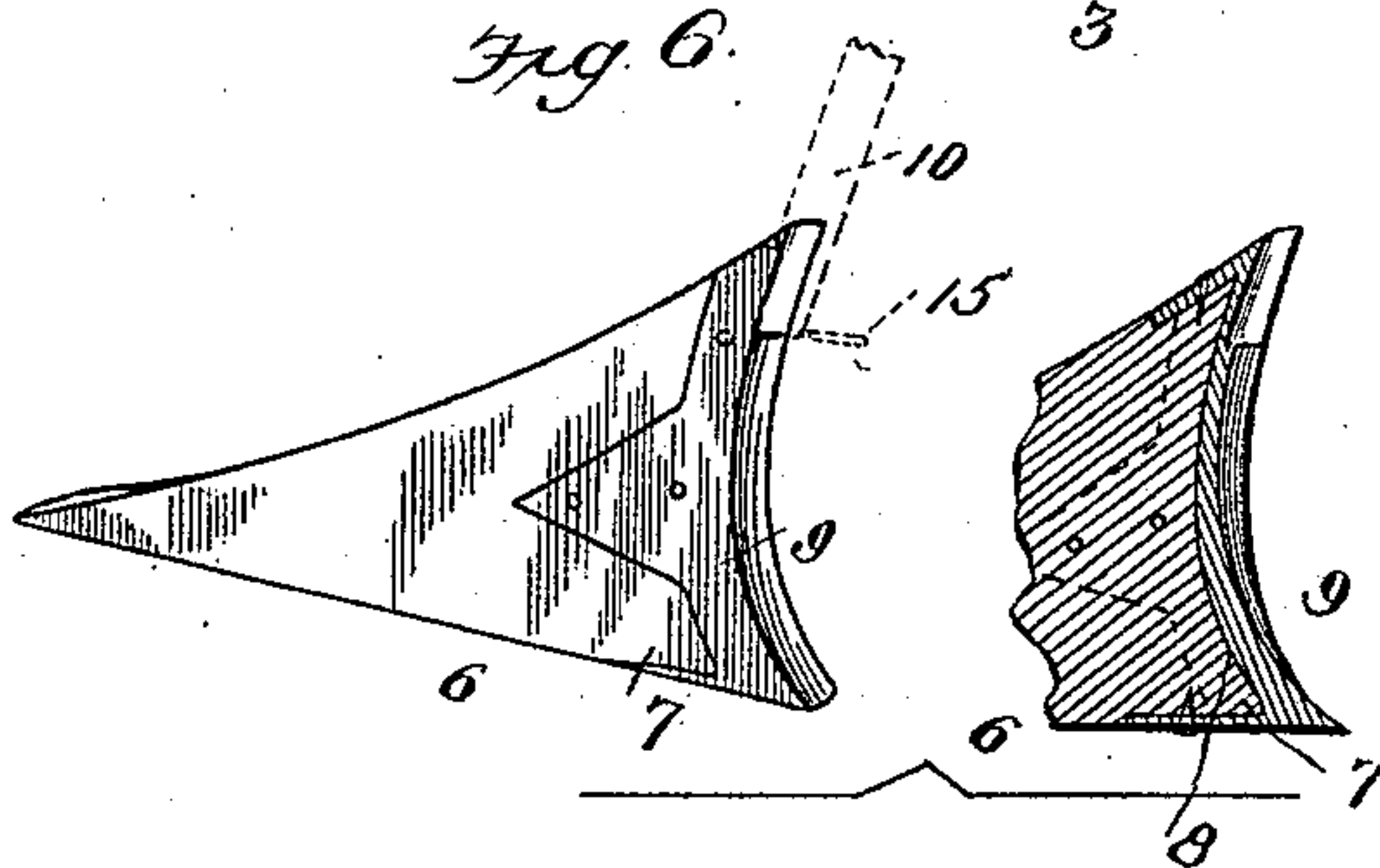


Fig. 7.



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# UNITED STATES PATENT OFFICE.

PATTILLO HIGGINS, OF BEAUMONT, TEXAS.

## MEANS FOR PROPELLING BOATS.

SPECIFICATION forming part of Letters Patent No. 527,605, dated October 16, 1894.

Application filed October 5, 1893. Serial No. 487,221. (No model.)

*To all whom it may concern:*

Be it known that I, PATTILLO HIGGINS, a citizen of the United States, residing at Beaumont, in the county of Jefferson and State of Texas, have invented certain new and useful Improvements in Means for Propelling Boats; 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 means for propelling and steering boats or marine vessels by pneumatic pressure, and has for its object to dispense with the use of propellers and screws as generally employed and at the same time materially increase the propulsive power and speed.

With these and other objects in view the invention consists of the construction and arrangement of the several parts together with equivalent structures, which will be more fully hereinafter described and claimed.

In the drawings: Figure 1 is a perspective view of a boat embodying the invention. Fig. 2 is a section on the line  $x-x$  Fig. 3. Fig. 3 is a rear end elevation. Fig. 4 is a transverse vertical section on the line  $y-y$  Fig. 1. Figs. 5, 6 and 7 are detail perspective views of the side and end mechanisms for delivering the air and inducing propulsion.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

Referring to the drawings, the numeral 1 designates the rear projecting head, which is formed of timber and fastened on the counter of the boat. One end of the head tapers forward and the other end widens aft to make it about level with the bottom of the boat, and the said raised end is concaved or dished as at 2, and supplied with an iron cap 3, which partakes of the concave construction and closely fits the same. An air pipe 4, extends through the boat, and has a curved end projecting into the concave cap to deliver the air thereinto, it being understood that the impact of the air against the said cap will produce such a pressure on the water which surrounds the same as to form a propelling medium of great intensity of action. The pipe 4, extends from a receiver 5, which is located

on the interior of the vessel, and the heads 1 are located on opposite sides of the bottom of the vessel as fully shown in the drawings. The pipe 4, may extend any distance either from one receiver as shown or other suitable air supplying chambers, and preferably extends down through the overhang of the stern of the boat, and bends over until its end projects on a level with and into the center of the concave of the head 1, which is covered by the cap aforesaid but does not touch the same, the said concave acting to spread the volume of air so that the latter may act on a greater surface of water.

The head 1, can be made in any shape to fit the form of the boat, and can be fastened on the hull of the latter as shown, or slipped through the end thereof which will be an analogous arrangement. This form of construction can be used alone in propelling a boat if desired, but it is also found in some instances a material assistance in the propulsion of a boat by having the inner heads 6, which are fastened on the counter of the boat inside of the previously described heads, the forward ends of the inner heads being tapered and the aft ends widened to make the same about level with the bottom of the boat. The aft ends of the inner heads start down in a straight line under the overhang of the boat, and are curved outwardly behind at the bottom as shown at 7, and are also concaved as at 8, and supplied with an iron cap 9. A pipe extends through the hull of the vessel or boat and runs from the air chamber or receiver 5, and fits closely down into the concave portion of the inner head. The air comes through the pipe 10, and runs down the concave part of the inner head and a similar operation ensues as that heretofore described in connection with the first named construction. In this instance as in the previously described form, the heads can be applied on the outsides of the boat on opposite sides of the counter or they can be put through from the inside of the hull. At proper intervals along the front and sides of the boat are arranged heads 11, which are let through from the inside of said boat for propelling the same, it being understood that the heads 11, are located immediately on opposite sides. In rear of the bow, heads 14 are ranged toward



the stern for driving the boat ahead by producing a raising and pushing action.

The heads 11, on the opposite sides of the boat are connected by pipes 12, with a receiver or air chamber, the same as that heretofore designated by the numeral 5, each of the said heads 11, having outer concaves 13 on a level with which the outer ends of said pipes terminate. The air goes through the pipes 12, and the concaves in the heads and ranges aft and a little down and out as previously stated. This form of the device can also be used at the stern in place of the other form if so desired, and be employed to push the boat ahead from this point. The heads 11, are also employed at the bow end of the boat, and adapted for backing, the concave portions of the same being arranged in front and supplied with doors 14, which will be closed by the pneumatic action or suction and are adapted to open outwardly to thereby prevent clogging of the concave with material which might collect therein owing to the forward movement of the boat through the water. When the air goes forward for backing the boat, the doors in the heads at the front of the latter are forced open, and as soon as the air is cut off, the doors will be shut up or closed.

These several forms described are fully shown in Figs. 5, 6 and 7 in detail, and it will be understood that they can be substituted for others in different parts of the boat for the several purposes described either together or individually, the main object of the invention being to propel a boat by the use of air and materially increase its speed. In filling the air receivers or chambers a practicable operation will ensue by the employment of a one hundred and twenty horse power engine

which has been calculated to drive any size or shape of boat now in use.

All the parts of the mechanism including such pumps as are necessary, are driven by direct engagement without the use of gearing. The pipes through which the air passes are all supplied with backing valves similar to those described at the front heads, and each is provided with two cut off valves 15, one being used by hand and the other may be operated by the air. By this means a similar number or all of the air pipes might be brought into play. It is intended that all of the parts are to register in the pilot house so that the pilot may control the air to drive ahead or to back up.

The entire construction and arrangement of the several parts is exceptionally simple and will be readily understood by those skilled in the art, and the advantages are manifold, and the use of the device materially lessens the cost of marine propulsion.

Having thus described the invention, what is claimed as new is—

The combination with a boat, of a head fastened to the counter thereof, and tapering from front and rear to bring it about on a level with the bottom of the boat, the rear end of the head being concaved and provided with a cap, a pipe connected with an air reservoir and terminating opposite the said concaved end of the head, substantially as described for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PATTILLO HIGGINS.

Witnesses:

JAMES INGALLS,  
H. S. BLANCHETTE.