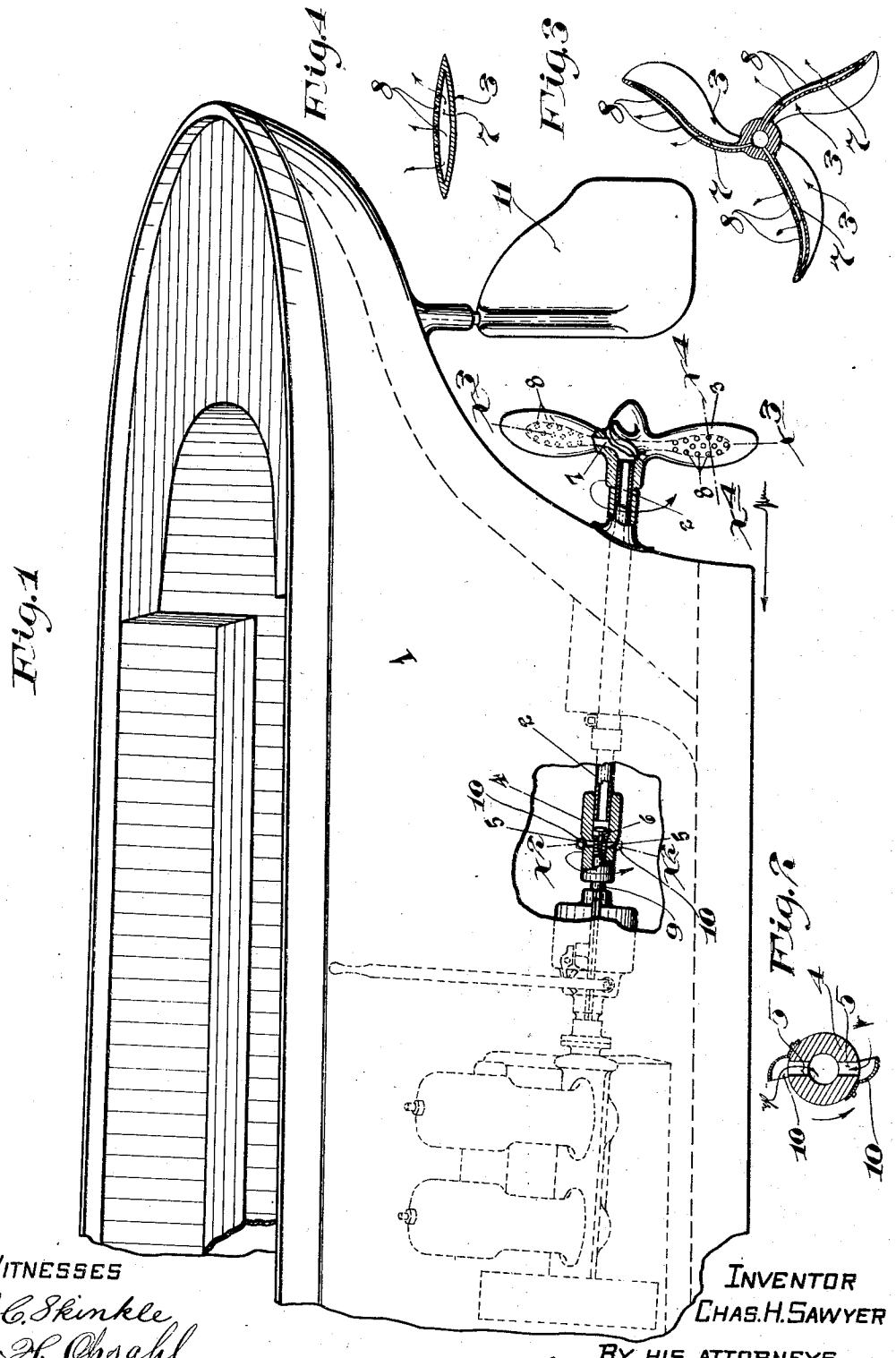
C. H. SAWYER.

BOAT PROPELLER.

APPLICATION FILED MAR. 15, 1913.

1,097,991.

Patented May 26, 1914.



WITNESSES

E. C. Skinkle

A. H. Opsahl

INVENTOR

CHAS. H. SAWYER

BY HIS ATTORNEYS

Williamson & Merchant

UNITED STATES PATENT OFFICE.

CHARLES H. SAWYER, OF MINNEAPOLIS, MINNESOTA.

BOAT-PROPELLER.

1,097,991. Specification of Letters Patent. Patented May 26, 1914.

Application filed March 15, 1913. Serial No. 754,625.

To all whom it may concern:

Be it known that I, CHARLES H. SAWYER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Boat-Propellers; 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.

My invention has for its object to improve the construction of boat propellers of the well known screw or spiral blade type, with a view of obtaining greater propelling efficiency from the propeller.

It is a well known fact that when a screw propeller is rotated at high speed, a partial vacuum is produced just in front of the propeller and just immediately at the rear of the stern of the boat. This partial vacuum produces a back suction on the boat and decreases the efficiency of the propeller. By my invention, I provide means for supplying air at the point where there is a tendency to produce the vacuum, and thereby relieve the boat from back pressure or suction and increase the efficiency of the propeller. In fact, by thus supplying air and destroying the partial vacuum which would otherwise be produced, I am able to run the propeller wheel efficiently at a much higher speed than would otherwise be possible.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a perspective view with some parts broken away, showing a boat with my improved propeller applied thereto; Fig. 2 is a detail in section on the line x^2 x^2 on Fig. 1; Fig. 3 is a section taken on the line x^3 x^3 on Fig. 1; and Fig. 4 is a section taken on the line x^4 x^4 on Fig. 1.

The boat hull is indicated by the numeral 1, the numeral 2 indicates a tubular propeller shaft, and the numeral 3 indicates the screw propeller which is secured to the rear end of the said shaft. This propeller has substantially standard general outlines, but in accordance with my invention, its hub and blades are formed hollow, as indicated at 7, and the blades of the propeller on their front sides are formed with a multiplicity of air discharge passages 8.

The front end of the propeller shaft 2 is connected by a hollow sleeve 4, to the engine driven shaft 9. The said sleeve 4 is formed with a plurality of air intake ports 5 that communicate with the interior chamber of the sleeve 4, and hence, with the interior of the tubular shaft 2. Within the sleeve 4 is a check valve 6 which freely opens to permit air to move from the ports 5 through the shaft 2 to the chamber 7 of the propeller. This valve 6, however, will close and prevent water from flowing through the propeller shaft and into the boat. The numeral 10 indicates a scoop-like cup secured to the sleeve 4 adjacent to the air ports 5 and serves, when the propeller shaft is rotated in the direction of the arrows on Figs. 1 and 2, to assist in forcing air through the said ports. The rudder, which is of the usual or any suitable construction, is indicated by the numeral 11. When the propeller is rotated in the direction just stated, and there is a tendency to produce a vacuum in front of the propeller and just at the rear of the stern of the boat, air will be sucked through the shaft 2 and into the chamber 7 of the propeller and partially by centrifugal force and partly from the suction produced by the rearward thrust of the water under the action of the propeller blades, air will be discharged through the air ports 8 in the front faces of the said propeller blades. In this way, the partial vacuum will be either prevented or reduced to a minimum. It must, therefore be admitted that by thus destroying the vacuum in the backward suction at the rear of the boat, the operative efficiency of the propeller is increased and it is made possible to efficiently run the propeller at a much higher speed than is possible with a propeller constructed in the usual way.

What I claim is:

A propeller having a hollow shaft, hollow blades and air discharge ports in the front faces of said blades, said propeller shaft having an air intake port and a check valve for preventing the flow of water from said propeller to said air intake port.

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

CHARLES H. SAWYER.

Witnesses:

HARRY D. KILGORE,

F. D. MERCHANT.