(No Model.)

T. L. STURTEVANT.

HYDRAULIC PROPELLER.

No. 274,839. Patented Mar. 27, 1883.

Fig. 1.

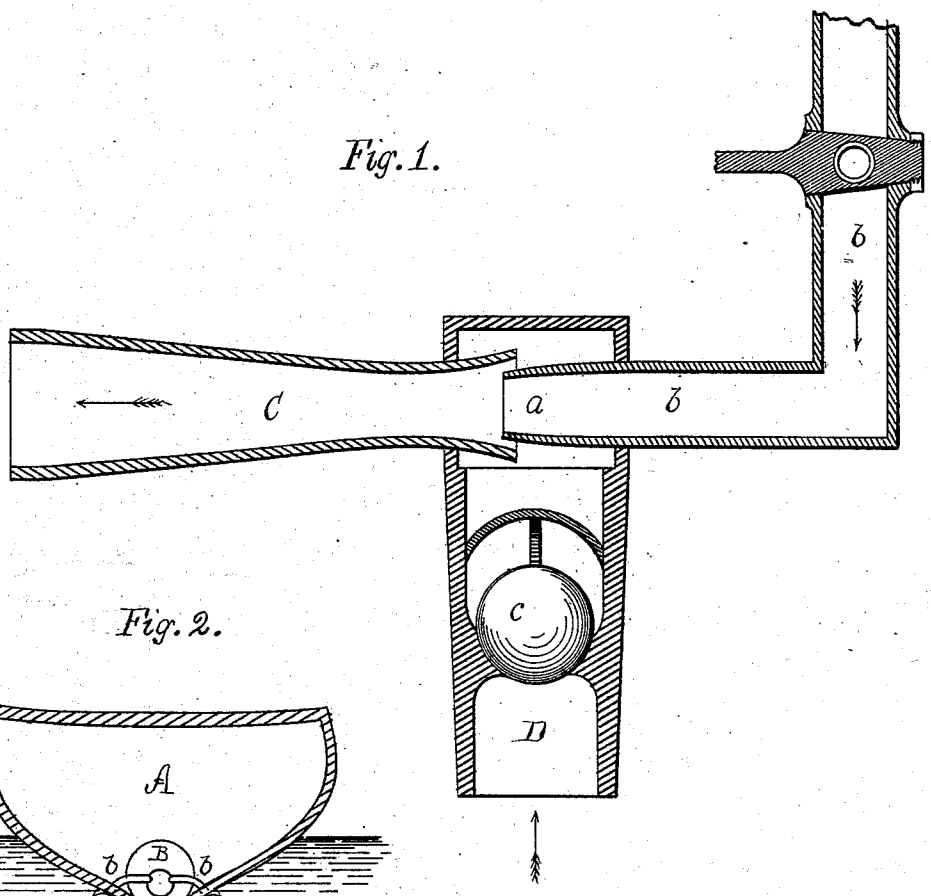


Fig. 2.

Witnesses.
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UNITED STATES PATENT OFFICE.

THOMAS L. STURTEVANT, OF FRAMINGHAM, MASSACHUSETTS.

HYDRAULIC PROPELLER.

SPECIFICATION forming part of Letters Patent No. 274,839, dated March 27, 1883.

Application filed December 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS LEGGETT STURTEVANT, a citizen of the United States, residing at Framingham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Hydraulic 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention consists in a mode of propelling navigable vessels by alternately admitting water to and expelling it from a receiver attached to such vessel, either above or below the water-line, the recoil due to overcoming the inertia of the column of water in such receiver as the steam or other vapor or gas effort imparts its momentum to such water being exerted upon the vessel to propel the latter, the expulsion of the water from said receiver being effected by the pressure of steam, air, or gases admitted to said receiver in the form of intermittent jets or explosions or a continuous flow.

The drawings accompanying this specification represent, in Figure 1, a vertical central section of an injector embodying my invention, while Fig. 2 represents the device as applied to a vessel.

In said drawings, A represents a portion of the hull of a navigable vessel, and B a steam-pipe leading from a boiler contained in such vessel, with branch pipes *b b* extending to the outside of the latter.

C represents a hollow cylinder or conduit, which, as shown in the accompanying drawings, is placed horizontally in the exterior stern run of the vessel, upon one or both sides of the latter, or it may be located upon the keel or other part of said vessel, the front end of said cylinder being closed, while its rear end is open. Said cylinder C is formed with a vertical branch, D, extending downward from it, and open at bottom to permit of entrance of water to supply the cylinder by pressure of fluid in which the vessel floats.

The steam branch supply-pipe *b* (see Fig. 1) enters the front end of the cylinder C, and terminates in a contracted nozzle, *a*, which is located above the opening of the supply-pipe D.

A valve, *c*, may be placed in the supply-pipe D, which shall open to admit water upon condensation of steam within the cylinder C, and close with the admission of live steam to such cylinder; but in practice this valve will undoubtedly be found unnecessary, though useful sometimes where gases or compressed air are used in the place of steam. The water is first sucked up through pipe D and then expelled through pipe C. Each expulsion will be followed by a corresponding rush of water or air, as the case may be, to fill the vacuum thus formed, the result being to drive the vessel along, the operation thus analogous to that of a rapidly-discharged cannon traveling backward by its own recoil.

As before premised, the steam or other gas may be admitted to the cylinder C in an uninterrupted supply; but I prefer that it be introduced at intermediate periods of time in powerful or violent jets or explosions to allow the column of water admitted to the cylinder to come to rest after each expulsion, that its resistance to the thrust of the fluid effort may be greater.

A single device constructed as above described may be placed centrally in the stern dead-wood of the vessel, and a rudder employed for steering such vessel; but in this case the propulsion of the vessel would be unsteady. A better plan would be to employ two or more upon each side the keel of the vessel and operate them alternately in quick repetitions, by which means a steady motion would be imparted to such vessel, and the steering of the latter be effected by them in lieu of a rudder.

I claim—

In an apparatus for propelling a vessel, the steam-supply pipe *b*, terminating in a nozzle, *a*, in combination with cylinder C, into which it discharges, and the water-supply pipe D, provided with valve *c*, the upper end of said pipe D receiving the contiguous ends of the pipes *b c*, and the latter being arranged to receive both the water and the steam and discharge them into the air.

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

THOMAS LEGGETT STURTEVANT.

Witnesses:
H. E. LODGE,
THOS. T. BAILEY.