

J. W. CAPEN.
Reciprocating-Propeller.

No. 223,882.

Patented Jan. 27, 1880.

Fig. 1.

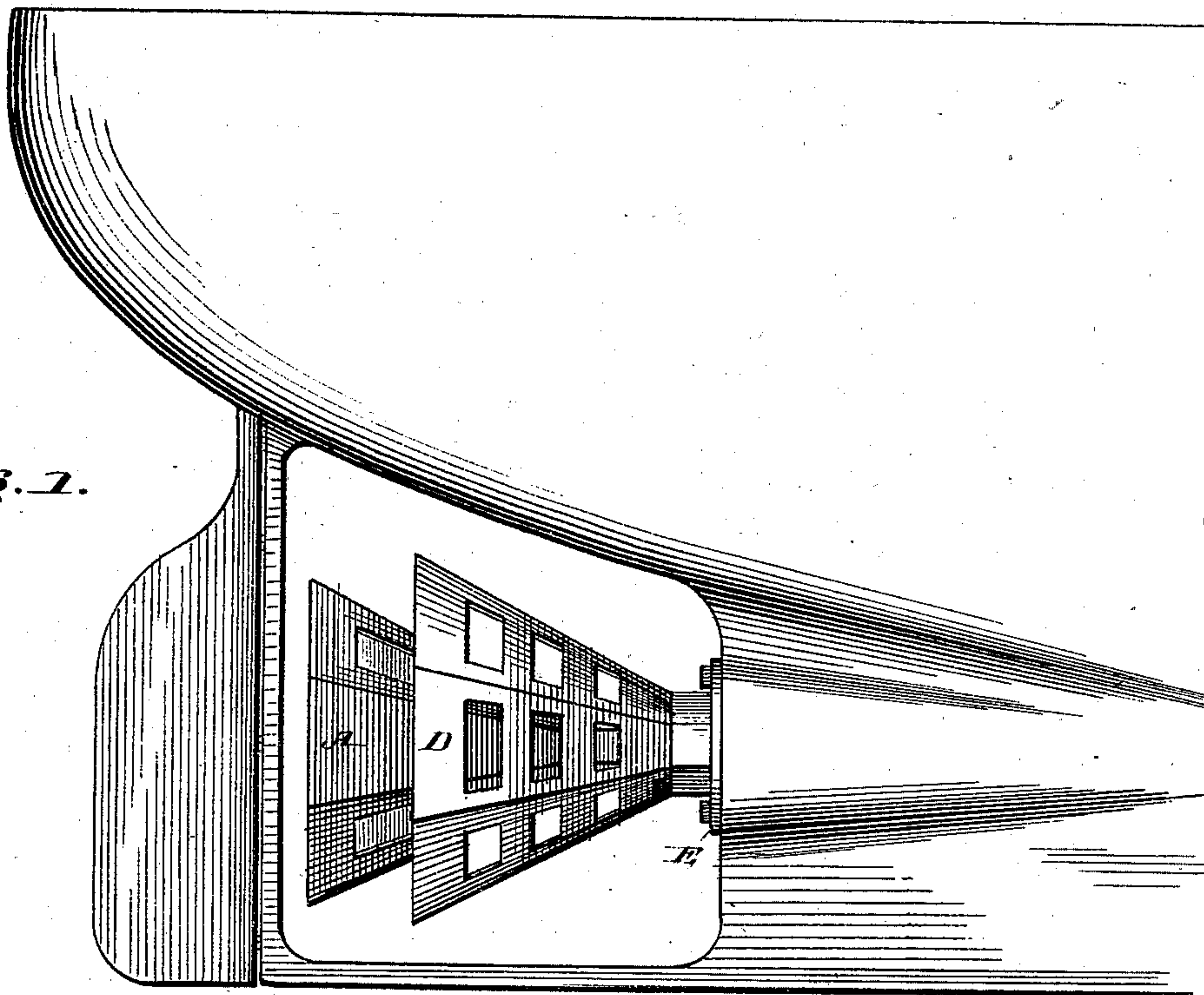


Fig. 2.

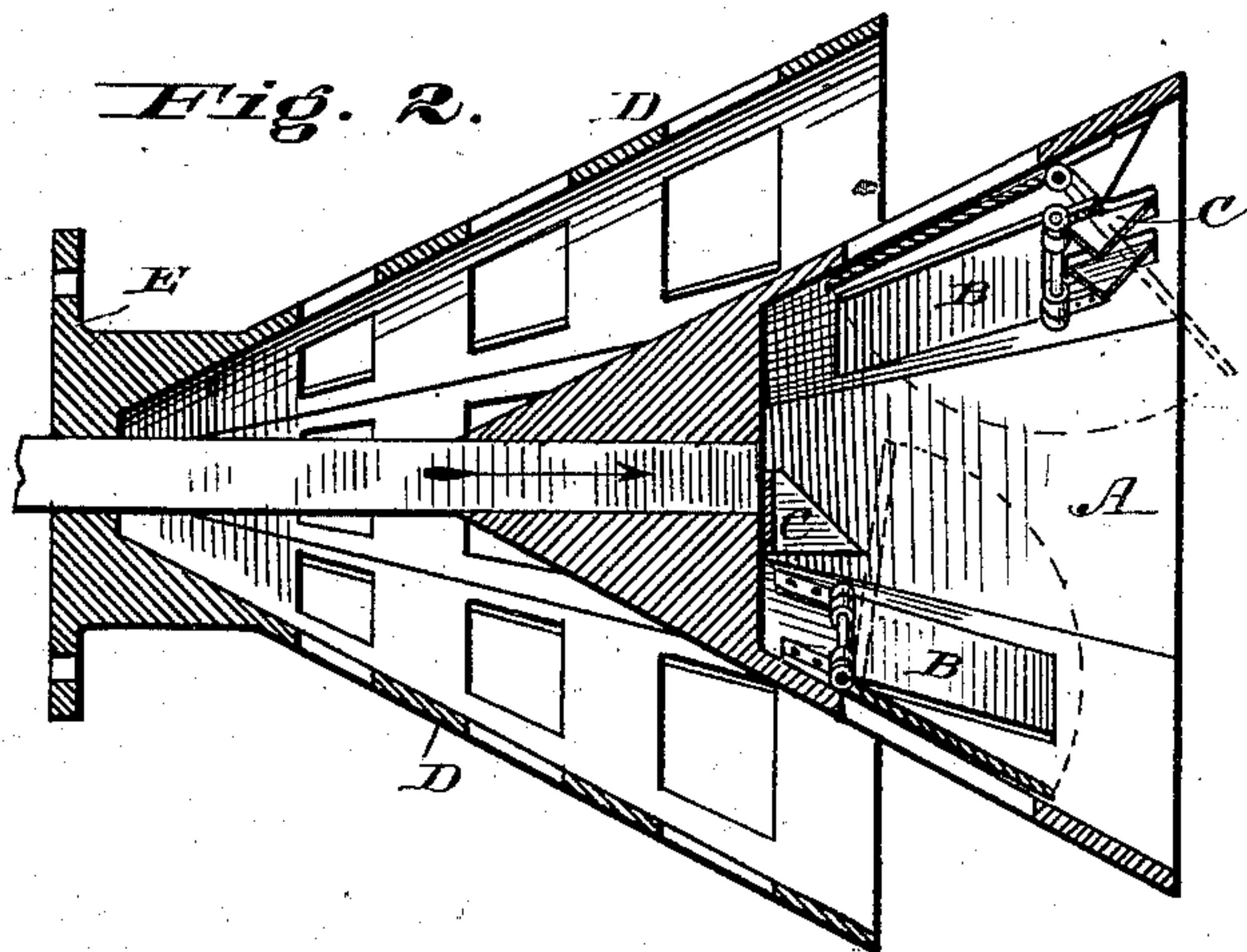
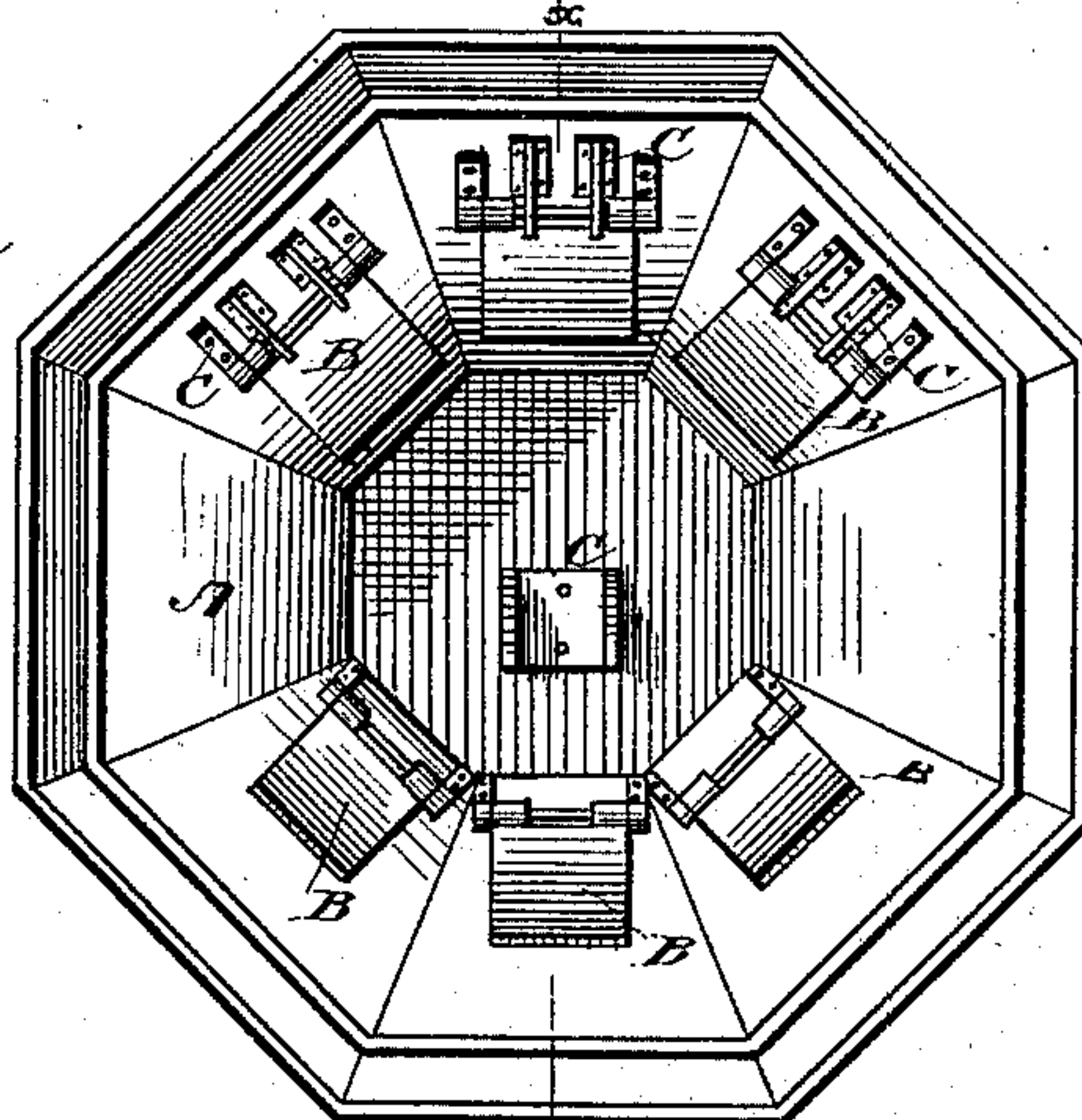


Fig. 3.



Attest:
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UNITED STATES PATENT OFFICE.

JAMES W. CAPEN, OF BINGHAMTON, NEW YORK.

RECIPROCATING PROPELLER.

SPECIFICATION forming part of Letters Patent No. 223,882, dated January 27, 1880.

Application filed November 7, 1879.

To all whom it may concern:

Be it known that I, JAMES W. CAPEN, of Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Reciprocating 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 of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a side view of the propeller as applied to the stern of a vessel; Fig. 2, a vertical section thereof through *x x* of Fig. 3, and Fig. 3 a rear view.

My invention relates to propellers for vessels, and may be correctly designated as a "stern-thrust propeller;" and it consists in the construction hereinafter described.

In the accompanying drawings, the letter A refers to the propeller, which, in this instance, is represented as made octagonal, in form of a truncated cone, and is provided with a series of wings or valves, B, hinged or hung, as shown, so as to be closed on the outward thrust of the propeller, in order to offer the most resistance to the body of water, and to be opened on the inward thrust, so as to offer the least resistance.

In order to prevent the wings or valves from swinging so far back when thrown open as to prevent the possibility of the water getting under the same so as to force them closed, one or more checks or stops, C, are formed on the inside of the propeller just back of the valves, preferably a short distance back of their hinges.

While the form of propeller shown is considered the best, yet I do not intend to limit myself thereto, for the form of it may be hexagonal, four-sided, circular, or other form, or be a flat plate with hinged valves, or a disk more or less concave or tubular; and the valves in number may be more or less than shown, the number of six being used in the drawings only to illustrate their application and operation.

The propeller is closed at the forward end, and has a shaft projecting therefrom through the stern of the vessel into the interior of the latter, where it is connected to a piston-shaft op-

erated by suitable mechanism connected to the steam-engine. It is made large or small, according as a large or small vessel is to be propelled by it; and when large is made of boiler-iron, each side being a separate piece and provided with flanges, so that the several pieces can be riveted one to the other, and the number and size of the valves depend on the size of the propeller. Generally the valves need not exceed one foot in length. A small propeller can be made of galvanized iron bent by suitable machinery or tools into the shape desired.

In order to protect the propeller from violence by heavy waves, a shield is provided therefor, which shield generally conforms to the configuration of the propeller, and is provided with a number of openings, as shown in the drawings, so that water may pass there-through, and is bolted to the stern of the vessel, it being provided with flanges E for that purpose. This shield fits around the propeller, and the shaft of the latter passes through the head thereof, to which head the sides of the shield are secured.

The vessel to which this propeller is applied works more satisfactorily when provided with two sterns, the same being far enough apart to allow the propellers to work with ease; and when such is the case two rudders are used. Screw-propellers may also be used in both of these sterns, or only one can be used, in which event it may be placed beneath the propeller; and when the screw-propeller is used in connection with the thrust-propeller more speed in the forward movement of the vessel is obtained, and the vessel can be moved backward as well as forward.

By the construction described it is claimed that greater speed is obtained and that the rolling of the vessel is greatly reduced.

In operation, on the backward thrust of the propeller the valves are closed and the resistance of the water to the thrust of the propeller moves the vessel forward, while on the forward thrust or drawing of the propeller the valves are opened and the water passes there-through, meeting with but little resistance, and allowing the propeller to be drawn backward with comparative ease.

Having described my invention, what I claim is—

1. A conical thrust-propeller provided with openings and hinged valves therefor, and operated within a conical shield provided with openings, all substantially as set forth.

2. The conical thrust-propeller A, provided with hinged valves B and stops C, located back thereof, the several parts being adapted to operate as described, for the purpose set forth.

3. The conical thrust-propeller A, provided

with valves B and stops C, adapted to operate as described, and combined with a conical shield, D, provided with openings, the propeller operating within the shield, as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 4th day of November, 1879.

JAMES W. CAPEN. [L. S.]

Witnesses:

JOSHUA WHITNEY,
O. BRONSON.