

(No Model.)

2 Sheets—Sheet 1.

B. A. DAVIS.  
MEANS FOR PROPELLING VESSELS.

No. 543,179.

Patented July 23, 1895.

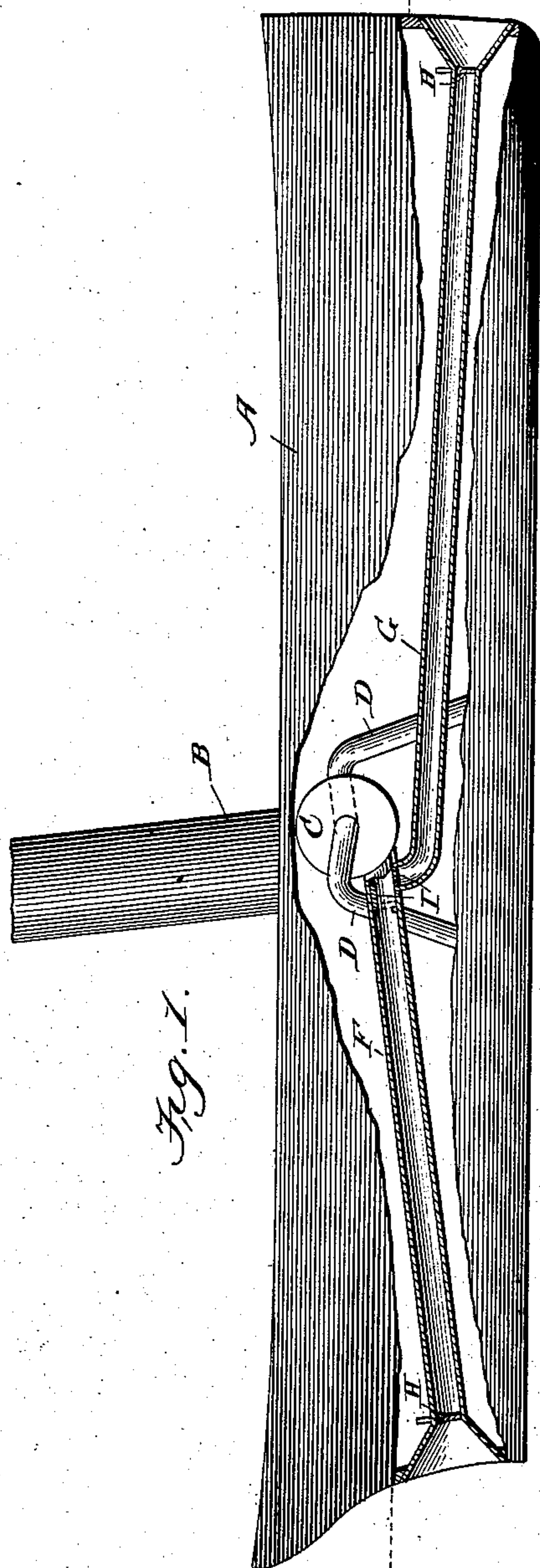


Fig. 1.

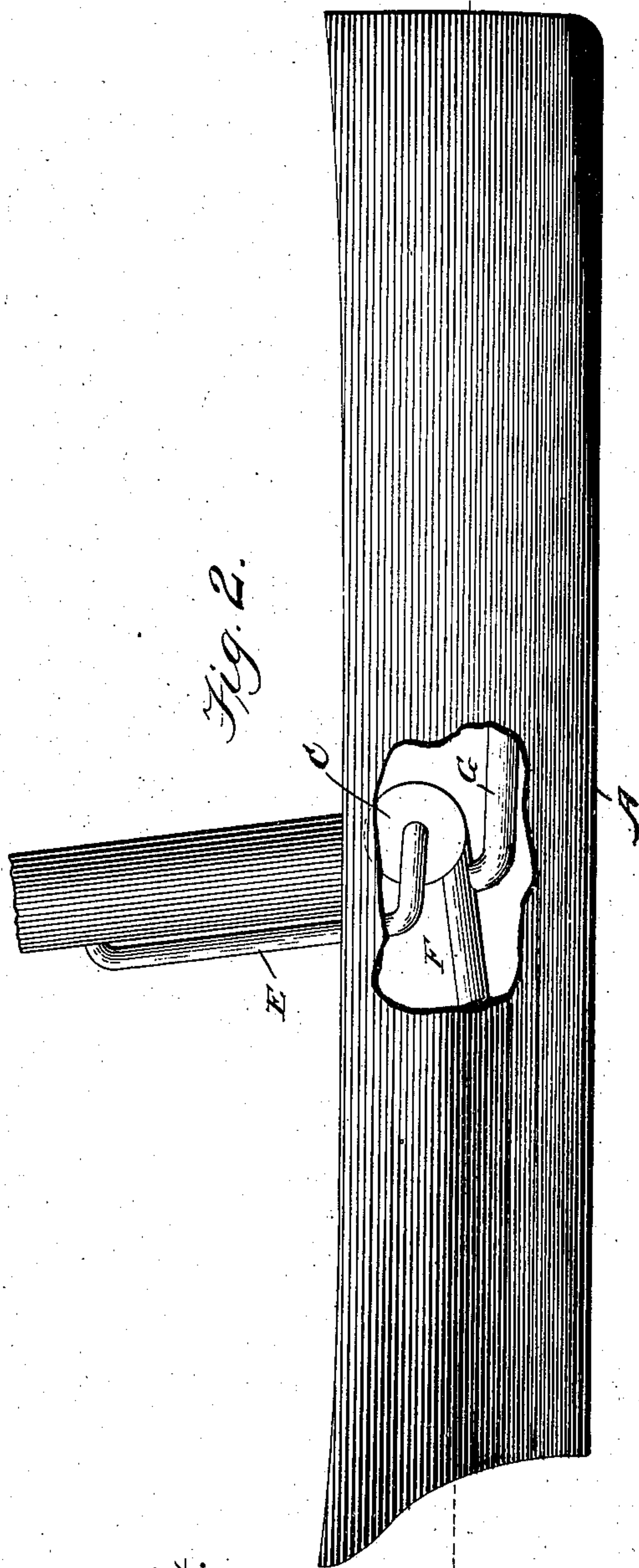


Fig. 2.

Witnesses:

Edwin L. Bradford  
N. Curtis Lammond

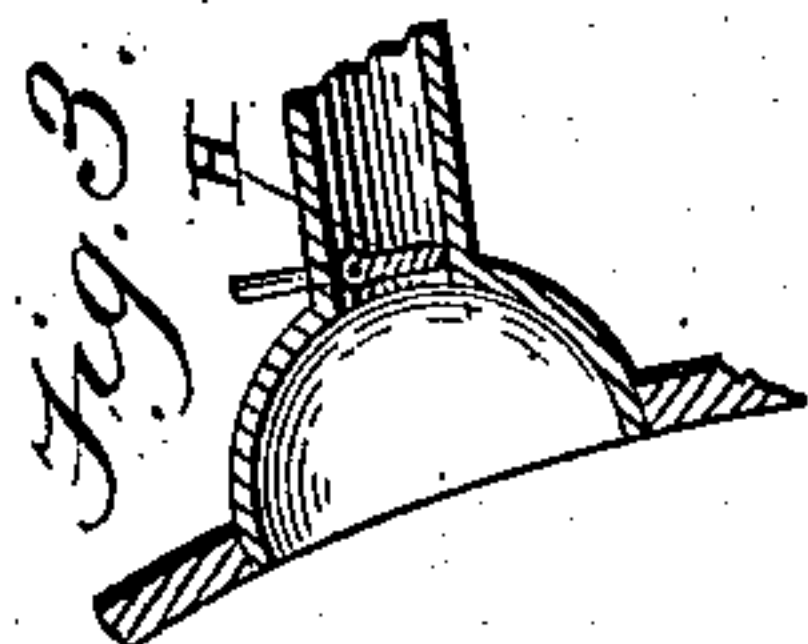


Fig. 3.

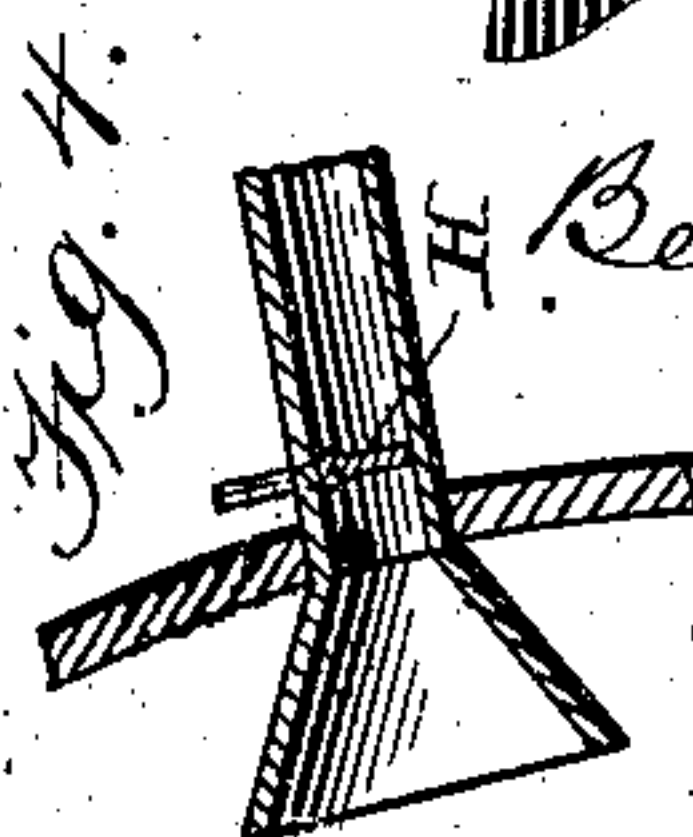


Fig. 4.

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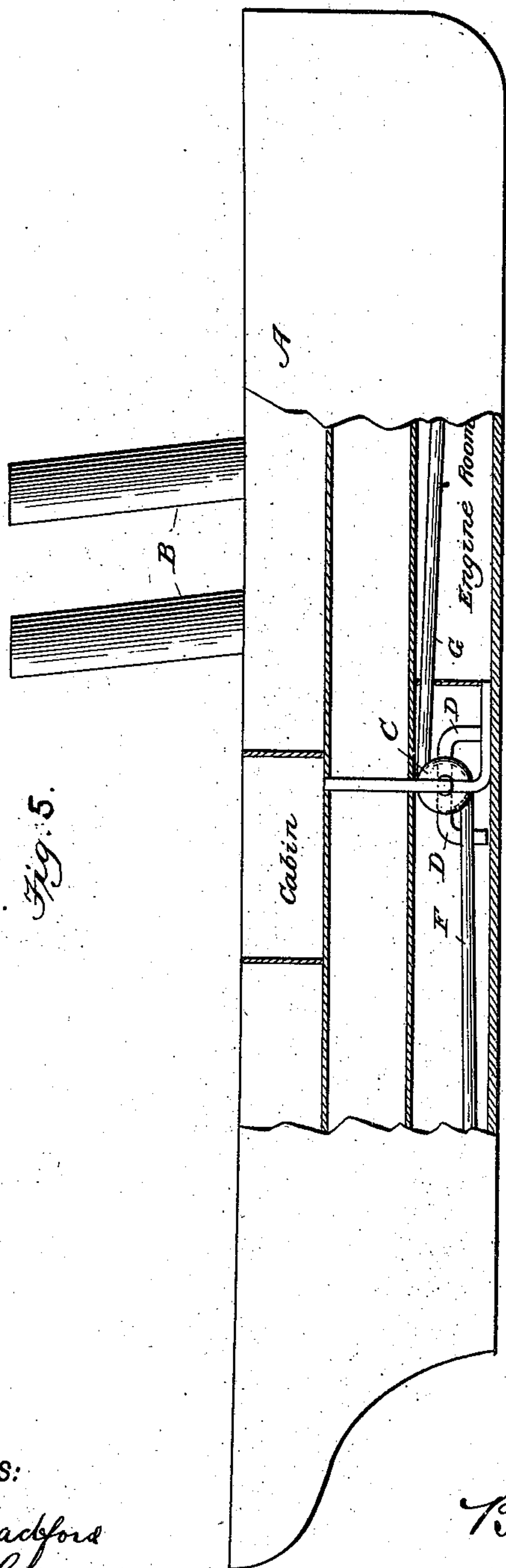
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WITNESSES:

*E. Latimer Bradford*  
*N. Curtis Lammond*

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*B. A. Davis*

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ATTORNEY.



# UNITED STATES PATENT OFFICE.

BENJAMIN A. DAVIS, OF NEW YORK, N. Y.

## MEANS FOR PROPELLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 543,179, dated July 23, 1895.

Application filed July 13, 1894. Serial No. 517,424. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN A. DAVIS, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Means for Propelling Vessels; 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 relates to certain new and useful improvements in means for propelling vessels.

It has for its object the utilization of air under pressure in such manner as to obtain direct reactionary effects, and also to secure the fullest results by delivering the air against an enlarged area of water.

With these objects in view my invention consists in the peculiar construction and arrangement hereinafter fully described and specifically claimed.

While my improvements are designed to be used as an auxiliary to any other well-known means of propulsion, they may be successfully employed without the aid thereof.

In order that those skilled in the art to which my invention appertains may fully understand the same, I will proceed to describe the construction and arrangement and the principle involved, referring by letters of reference to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a vessel embodying my improvements. Fig. 2 is a side elevation with a portion of the hull broken away, exposing the relation between the blower and the air-conduits, and also showing a pipe communication with the blower and the smoke-stack. Fig. 3 is a detail section illustrating a modification of end of the air-conduit, and Fig. 4 is a detail sectional view illustrating the bell-mouth or end of the air-conduit extending beyond the hull of the vessel. Fig. 5 is a side elevation, partly in section, of a vessel, this view being designed more particularly to show the exhaust-pipes communicating with the engine-room and cabin, and also connected with the eye of the blower.

Similar letters indicate like parts in the several figures of the drawings.

A represents the hull of a vessel, and B is a smoke-stack. A suitable blower C is arranged at any convenient or desirable locality in the vessel and adapted by suitable connections with the engine to be driven at any required rate of speed. This blower may be connected by suitable pipes D D with that portion of the vessel wherein the cargo is located and adapted to draw air from and through the cargo to suitably ventilate the same and to supply the blower with air. Suitable pipe connections may also be made with the state-rooms, furnace-room, or other portions of the vessel which it may be desirable to ventilate. Other connections, such as one or more pipes E, may connect the blower with the smoke-stack B to utilize the exhaust and heated air and to assist in regulating combustion.

F is an air-conduit connected with the blower C and extending toward the stern of the vessel and terminating at a line coincident with the stern, as shown clearly at Fig. 1. The terminal end of the air-conduit F is made of cone or bell shape, as seen at Figs. 1, 3, or 4, in order that an increased area of water surface may be presented for the action of the air forced through the conduit F by the blower C. Another air-conduit G extends from the blower to the bow of the vessel and is similarly enlarged at its extreme or delivery end.

While I have shown the air-conduits as extending to and being coincident with the lines of the stern and bow of the vessel, it will be understood that the straight air-conduits may connect with cone-shaped or bell-mouthed recesses formed in the hull—that is to say, the hull of the vessel may be so constructed as to provide a flaring or bell-mouthed terminal for the air-conduits.

I have shown at Fig. 4 the air-conduit extending beyond the plane of the hull of the vessel; but I prefer the construction shown in the other figures of the drawings, although I do not wish to be limited in this respect; nor do I wish to be limited to the geometrical form of the flaring mouth or exit of the air-conduits, so long as the generic idea is in-



volved of providing an increased area of water against which the air is forced to produce the direct reactionary effect.

The pipes or air-conduits are provided with suitable gates H, by means of which said conduits may be closed when not in use and to prevent ingress of water. For instance, when the vessel is being propelled forward the gate H in the air-conduit G is closed, and if the air-conduit G is being used to back the vessel then the gate H in the conduit F is closed, and each air-conduit is provided with a gate or valve I near the blower, so that the current of air under pressure generated by the blower may be controlled in an obvious way and delivered to either one of the conduits. The conduits F G terminate below the waterline of the vessel and preferably incline downwardly, as shown.

A great variety of changes may be made in the details of construction and arrangement of parts without departing from the gist or principle involved in my invention, which consists in so forming the delivery end of the air-conduit as to present a broad area of water, against which the air forced by the blower will come into contact, thus largely increasing the reactionary power of the air.

It is desirable that the air-conduits should be throughout their length as unobstructed as possible by bends or curves in order to lessen the friction of the air, and it will be understood that I do not wish to limit myself to any exact location or number of the air-

conduits or to the point at which they shall terminate with reference to the lines of the hull—that is to say, they may terminate coincident with the lines of the hull, as shown in Fig. 1, or outside or beyond it, as illustrated at Fig. 4.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the blower C and air conduits F, G, pipes D, connecting with the cargo space, and the eye of the blower, to ventilate the cargo and supply air for compression, substantially as and for the purpose set forth.

2. In combination with the blower C and air conduits F, G, the pipe E connected at one end with the smoke stack B, and at the other end with the blower C, substantially as and for the purpose set forth.

3. A vessel having one or more air conduits F G extending from a blower C, said air conduits being continuous and uniform in diameter, and terminating in enlarged or bell shaped mouths, in combination with exhaust pipes communicating with the cabins, engine room or smoke stack, substantially as and for the purposes set forth.

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

BENJAMIN A. DAVIS.

Witnesses:

SAML. I. WRIGHT,  
GEO. W. POTTER.