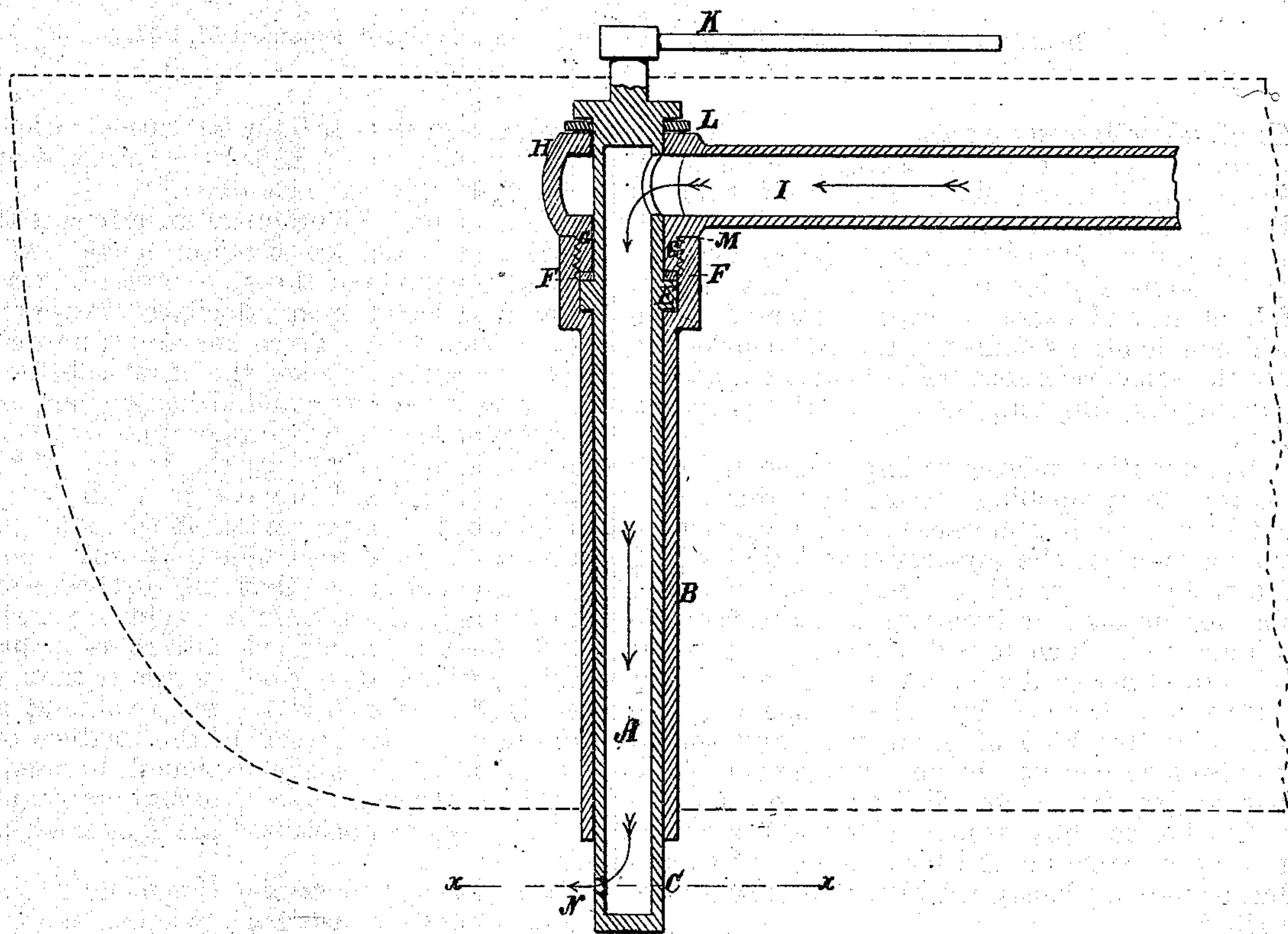
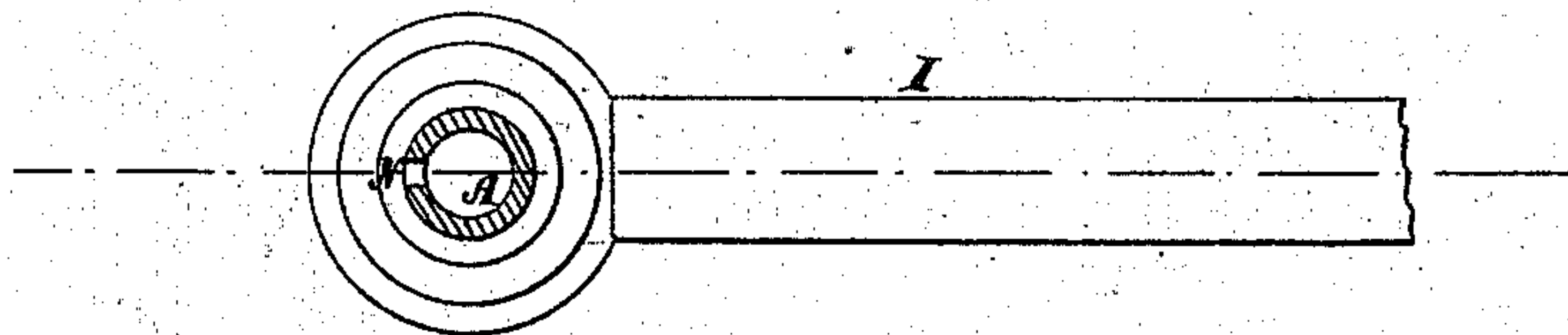


H. JACKSON.

## Improvement in Propulsion of Vessels.

No. 119,363

Patented Sep. 26, 1871.

*Fig. 1.**Fig. 2.*

Witnesses:

A Bennekenndorf.  
Francis McArdle

Inventor:

H. Jackson.

PER

Wm. L.  
Attorneys.



# UNITED STATES PATENT OFFICE.

HENRY JACKSON, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN PROPULSION OF VESSELS.

Specification forming part of Letters Patent No. 119,363, dated September 26, 1871.

*To all whom it may concern:*

Be it known that I, HENRY JACKSON, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Apparatus for Propelling and Steering Vessels; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to improvements in apparatus for propelling vessels by water forced out of a tube in the vessel; and it consists in arrangement of the apparatus for discharging the water in a small jet with great velocity; also, for discharging it perpendicular to the main column from which it is discharged, whereby it is believed material advantages are gained over the results obtained by the common arrangements for this kind of propulsion; and the invention also consists in an arrangement of the discharging device for shifting or rotating the orifice horizontally around a vertical axis for guiding or steering the boat in lieu of a rudder, or moving backward, all as hereinafter described.

Figure 1 represents a sectional elevation of the apparatus I propose to employ for carrying out my invention, and indicates part of a vessel in dotted lines, showing the application of the apparatus. Fig. 2 is a section on the line *xx* of Fig. 1.

A is a large vertical tube, arranged in the vessel, near the stern, within another one, B, and projecting through the bottom a short distance, as shown at C, being fitted to turn freely in said tube B, and confined in it against moving endwise by a collar, E, in an enlarged socket, F, in the top of said tube B, and the end G of an elbow, H, of a water-supply pipe, I, screwing into said socket. The said tube A rises up through the top of elbow H, and is provided with a lever, K; or it may be any other equivalent device for turning it. A water-tight joint is provided at L by any suitable means for packing, and another at M to permit the escape of water. A small hole, N, is made through the part C of the tube A, projecting through the bottom of the boat, for the issue of the water for propulsion, which is to be forced in through tube I by a pump of any kind. The said hole, being in the rearmost side of the tube A, discharges the water, so as to drive the boat

forward and steer it by being turned either way by the revolution of the tube A; and it is turned toward the bow for backing.

I have found by practical experiments that a small contracted jet of water much less than the main volume of the tube projected through a small orifice of great velocity gives very much better results for a given amount of power than a jet nearly the size of the main tube moving at a slower velocity; and although I am unable to account for the advantage gained, yet being convinced of the fact by the results of extensive experiments, I propose to avail myself of this feature of improvement in this kind of propulsion. I have also found by varied and extensive experiments that the discharge of the propelling-jet from the main volume perpendicularly to it is highly advantageous in propelling the vessel, giving better results than when delivered in line with the main volume; and I propose to avail myself of this feature of improvement in propulsion, although I am equally unable to account for the advantage gained by it, but have demonstrated the fact experimentally.

It is intended to employ this mode of propulsion mainly as an auxiliary to sails, for working vessels into and out of harbors, and the like, in which cases sufficient headway can be made by the applications of small engines, donkey-pumps, and the like. It is considered particularly desirable for auxiliary use, as the projection C of the pipe A will not materially obstruct the speed of the vessel when the jet is not used; and, besides, the tube A may be readily taken out altogether, if preferred, and no water can enter the ship, being excluded by the tube B.

I do not propose to limit myself to the arrangement of apparatus for supporting and confining tube A, or admitting the water to it, for any equivalent arrangement that will accomplish the desired objects will answer as well.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The rotary tube A having collar E and aperture N at the lower end, the surrounding tube B having socket F, the elbow H, and the water-pipe I, all constructed, arranged, and applied to discharge water, as and for the purpose specified.

Witnesses:

HENRY JACKSON.

T. B. MOSHER,

GEO. W. MABEE.

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