

# J.P. Bruce. Mode of Propelling Marine Vessels.

No. 120,414.

Fig. 1.

Patented Oct. 31, 1871.

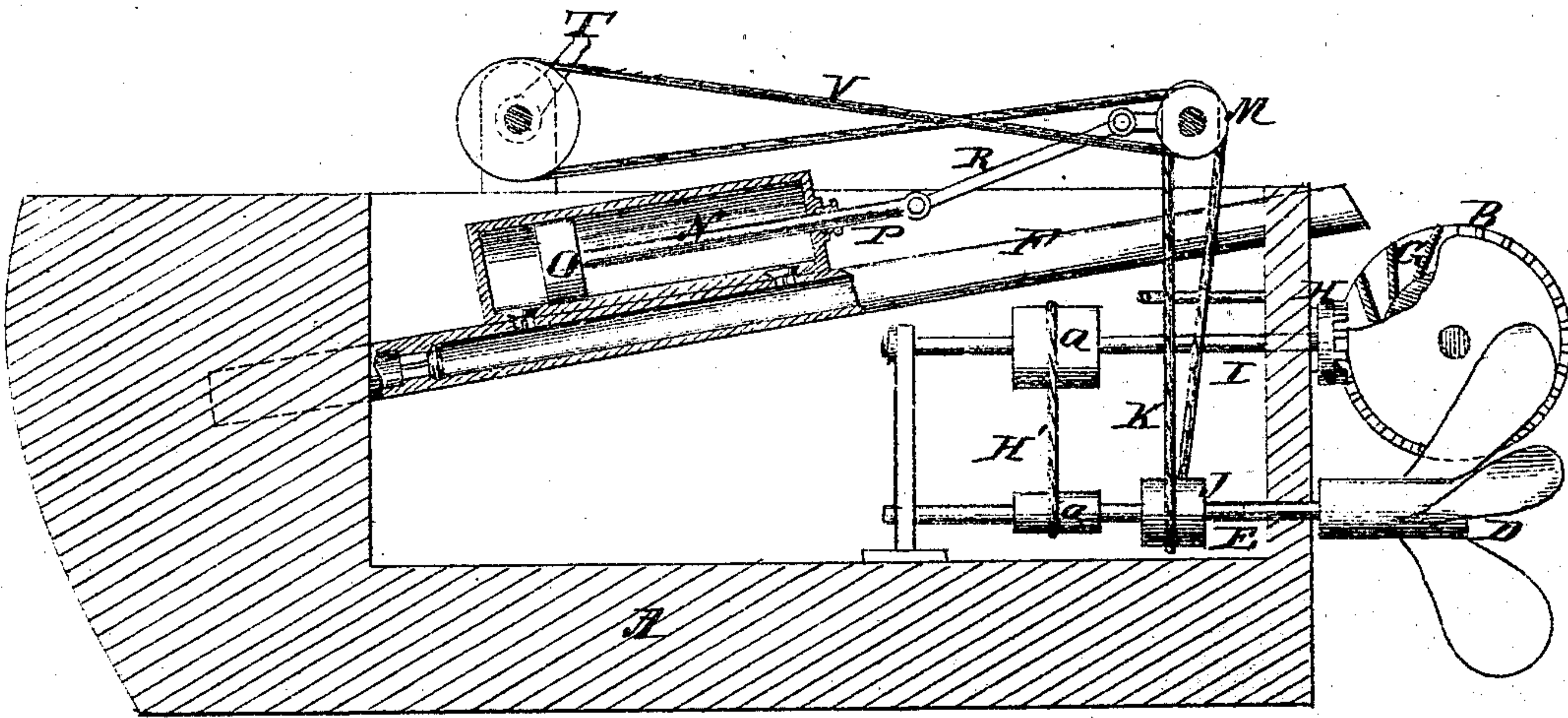
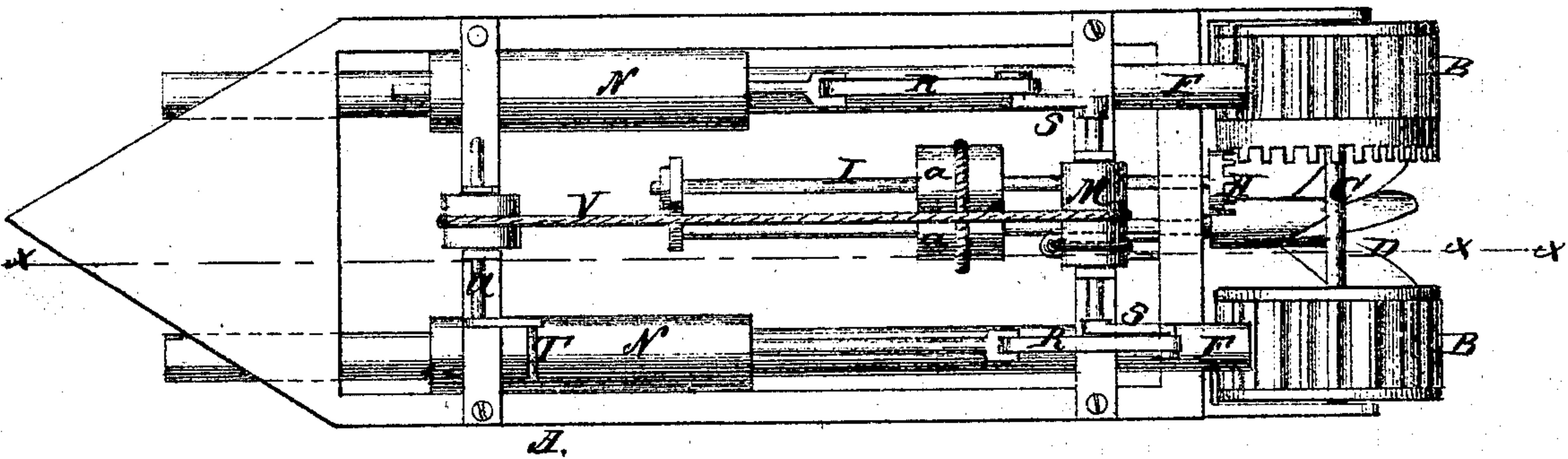


Fig. 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PROPULSION OF VESSELS.

Specification forming part of Letters Patent No. 120,414, dated October 31, 1871; antedated October 17, 1871.

*To all whom it may concern:*

Be it known that I, JOHN P. BRUCE, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Mode of Propelling Marine 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.

This invention relates to a new mode of propelling marine vessels; and consists in driving the screw or propelling-wheel by means of water-wheels revolved or driven by water elevated by pumps, the latter being driven by a steam-engine, the whole arranged as hereinafter described.

In the accompanying drawing, Figure 1 represents a vertical longitudinal section taken on the line *x x* of Fig. 2. Fig. 2 is a top or plan view.

Similar letters of reference indicate corresponding parts.

A represents the hull of a vessel. B B are water-wheels, supported by brackets or in any substantial manner on a single shaft at the stern of the vessel. C is the water-wheel shaft, to which the water-wheels are rigidly attached. D is the propeller or screw on the horizontal shaft E. F F represent two water-tubes, placed inside of the vessel, as seen in the drawing. The forward or bow ends of these tubes dip into the water in which the vessel floats. The rear ends are elevated so as to discharge water onto the water-wheels. The buckets G of the latter, being tight, are filled, and revolve the wheels by the gravity of the water. Motion is conveyed from the water-wheels to the propeller or screw by means of the pinion-wheel H on the shaft I, and the belt H' on the pulley *a a*. The rim of one of the water-wheels is provided with cogs, with

which the pinion H engages, the motion being increased threefold, (more or less.) Motion is conveyed to the screw-shaft E in any suitable manner, preferably by spur-gear wheels; but a belt may be employed, as seen in the drawing, if that mode be preferred. J is a pulley on the screw-shaft; and K is a belt from the pulley L on the crank-shaft M. This belt, it will be observed, is crossed, so as to reverse the motion of the screw when the engine which drives the crank-shaft M is reversed. When this is done the water-wheels cease to act upon the screw, the gearing or pulleys being provided with a clutch-coupling sliding on a feather, so that one of the shafts (either E or I) will revolve without affecting the screw. The water for driving the water-wheels is raised partly by the forward motion of the vessel and partly by pumps N N operating in connection with the tubes F F. In Fig. 1 one of the pumps is shown in section. O is the piston. P is the piston-rod. R is the pitman, which connects with the crank S on the shaft M, the arrangement being plainly seen in Fig. 2. The valves of the pump and the induction and eduction-ports are also plainly seen in the drawing, Fig. 1. The steam-engine by which the pumps are driven is connected with the crank T on the shaft U. The pumps are driven, as seen in the drawing, by means of the belt V, but gear-wheels may be employed, if desired.

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

The combination and arrangement of the screw D, water-wheels B B, water-tubes F F, and pumps N N on a marine vessel, substantially as and for the purposes described.

JOHN P. BRUCE.

Witnesses:

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