

(No Model.)

J. BOND.
DEVICE FOR PROPELLING VESSELS.

No. 550,037.

Patented Nov. 19, 1895.

Fig. 1.

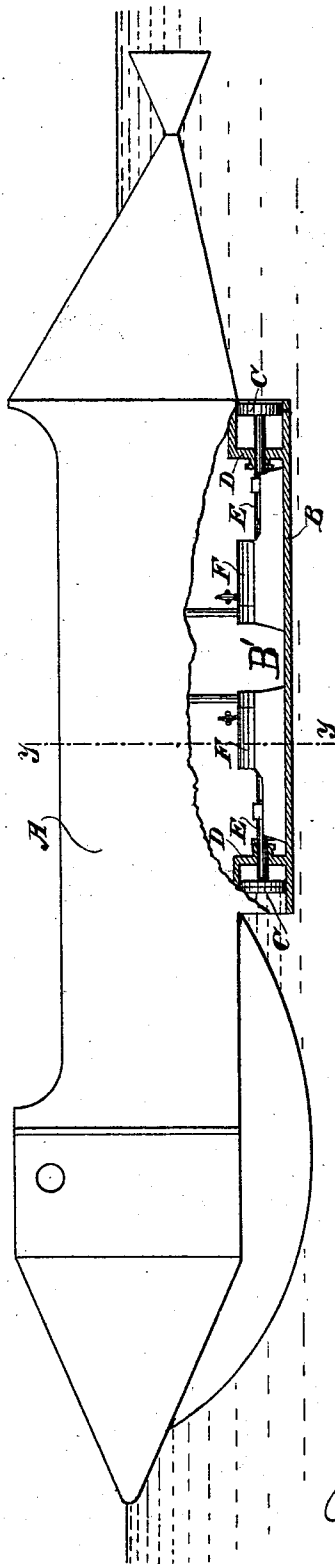
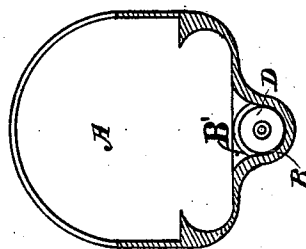


Fig. 2.



Witnesses,

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DEVICE FOR PROPELLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 550,037, dated November 19, 1895.

Application filed June 20, 1895. Serial No. 553,451. (No model.)

To all whom it may concern:

Be it known that I, JOHN BOND, a citizen of the United States, residing at Turlock, county of Stanislaus, State of California, have invented an Improvement in Devices for Propelling Vessels; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in the propulsion of vessels.

It consists essentially of longitudinal tubular chambers arranged beneath the lower part of the vessel with plungers adapted to reciprocate therein and engines by which either one or the other of the plungers may be operated at will to either drive the vessel forward or back.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is an exterior view of a vessel, part of it being broken away to show the propelling mechanism. Fig. 2 is a transverse section on line *y y* of Fig. 1.

The vessel A may be constructed in any suitable or well-known manner. In the present case I have shown it having conical or pointed ends, and the floor may be properly formed to produce the least resistance when moving through the water, this being no special part of my invention. Beneath the floor of the vessel are tubes B, one at each end of a central compartment B', formed by a depression in the floor of the vessel.

C C' are plungers fitting and reciprocating within the tubes near the ends. Between the central compartment and the plunger-chambers are fixed water-tight partitions D, through which the plunger-rods E pass, being provided with suitable stuffing-boxes to prevent water from entering into the central compartment at this point.

F F are engine-cylinders properly fixed in the central compartment B' and essentially in line with the plunger-rods E, with which the engine-pistons are connected in any suitable or desirable manner, as shown. But one of these plungers is operated at one time, the one acting toward the rear of the vessel serving to propel the vessel in a forward direction, and the one acting toward the front of the

vessel serving to reverse its motion when necessary or desirable.

The operation will then be as follows: Water is admitted freely at the end of the horizontal cylindrical chamber B, and when the piston is withdrawn the chamber fills with water. The piston being then rapidly forced outwardly, the impact of the column of water thus forced out by this piston against the exterior water surrounding the vessel serves to force the vessel forward, the other engine and piston being stationary during the operation of the rearmost one.

In carrying out my invention I may use any suitable form of engine.

I have shown here the use of an explosive or gas engine in which the forward motion of the piston and its connected plunger will be effected by the momentum, while the outer motion of the plunger is effected by the direct explosion within the engine-cylinder, thus forcing the piston outwardly with a very powerful movement, and the inelasticity and inertia of the body of water forced out from the cylinder by these means cause it to act powerfully upon the surrounding body of water and react to propel the vessel forward. The filling of the cylinder when the piston moves forward again practically takes place by the flow of water into it from the sides and around the edges of the opening, since the movement of the column just forced out would not have ceased at the time of the return of the piston, and water would not enter in the line of plunger travel.

The stroke of the piston and plunger is exceedingly rapid, thus practically producing a continuous force for the propulsion of vessels by a series of intermittent impacts of columns of water forced from the cylinder against that in which the vessel floats.

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

1. In a vessel, open-ended cylinders located below the bottom of the vessel, and standing in line with each other, having a length less than that of the vessel, pistons fitted to reciprocate in the tubes, near their ends, a chamber intermediate between the cylinders, separated

therefrom by partitions, engines situated within the central compartment, and piston rods leading from the engines, in opposite directions, and connected with the pistons.

- 5 2. The combination, of a vessel having conical or pointed ends, open-ended tubes or cylinders entirely beneath the bottom of the vessel, one at each end of a central compartment
10 formed by a depression of the bottom, said tubes or cylinders having their axes in line with each other and having pistons reciprocating within them, with their rods extending inwardly from opposite directions, and en-

gines in said central compartment in line with the piston rods, adapted to be connected with 15 said rods, one of said pistons with its engine and connections serving to propel the vessel in one direction and the other set serving to propel said vessel in the opposite direction.

In witness whereof I have hereunto set my 20 hand.

JOHN BOND.

Witnesses:

S. H. NOURSE,
H. F. ASCHECK.