(No Model.)

H. F. HICKS.

SUBMARINE GUN FOR PROJECTING TORPEDOES.

No. 263,408. Patented Aug. 29, 1882.

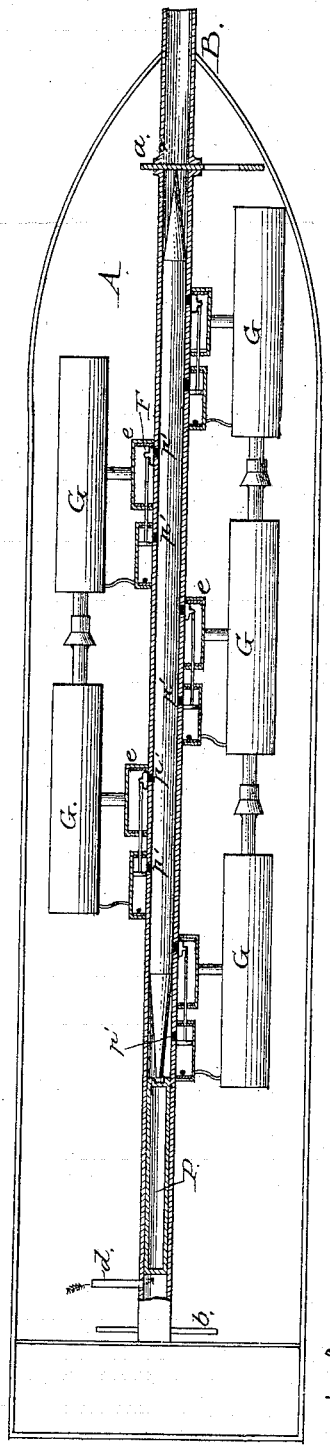

Fig. 1.

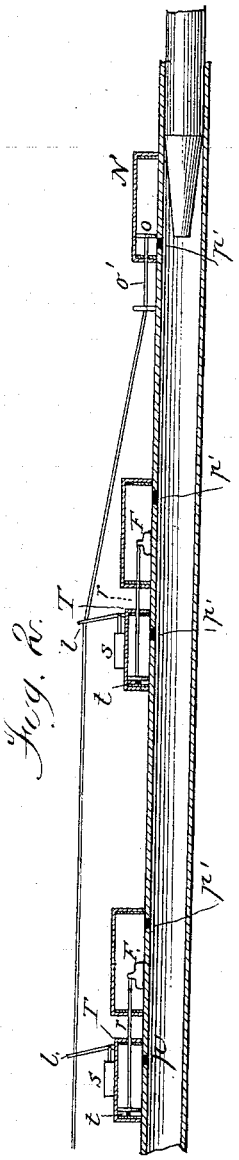

Fig. 2.

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UNITED STATES PATENT OFFICE.

HORATIO F. HICKS, OF MINNEAPOLIS, MINNESOTA.

SUBMARINE GUN FOR PROJECTING TORPEDOES.

SPECIFICATION forming part of Letters Patent No. 263,408, dated August 29, 1882.

Application filed March 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, HORATIO F. HICKS, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain improvements in torpedo-boats for propelling or projecting torpedoes in marine warfare; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a deck of the boat, carrying the tube for directing the torpedo and the apparatus for furnishing the power for propulsion. Fig. 2 is a vertical section through the tube for directing the torpedo and the valve mechanism for introducing and shutting off the propelling force.

My invention relates to that class of torpedoes for marine warfare wherein a torpedo is projected from a tube secured longitudinally in the boat below the water-line, and is an improvement upon the torpedo-boat covered by Letters Patent No. 174,628, issued to me March 14, 1876.

My invention consists in providing the hurl-barrel along its length with a series of steam-boilers or similar pressure-generators, and connected by proper ports and valve-connections, which are progressively opened by the forward movement of the torpedo and progressively add their pressure to the pressure already existing in the hurl-barrel, whereby the torpedo is given a gradually-accelerating speed in its travel through the barrel.

My invention also consists in sundry details of construction and combination of parts, as will hereinafter be fully described and specifically claimed.

In order that those skilled in the art may make and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the deck of the torpedo-boat, carrying a hurl-barrel, B, opened or closed near the bow my means of a sliding gate, *a*, and at its rear end by a sliding breech-block, *b*. Immediately in front of the breech-block a pipe, *d*, from the main pressure-generator enters the hurl-barrel. On each side of the hurl-barrel, alternating from side to side, are a series of supplemental pressure-generators, G G, provided with connecting-pipes to valve-chambers *e e*, secured to the hurl-barrel, and communicating with it through ports *p p*. Slide-valves F F normally rest over ports *p p* and keep them closed, the said valves being connected by rods *r r* to piston-valves *t t*, working in cylinders T T, having steam-chests S S, of ordinary construction, to throw and reverse the valves. Small ports *p′ p′* connect the hurl-barrel with the cylinders T on the side of the piston next to valve-chambers *e e*.

The torpedo being placed in the hurl-barrel, as seen in Fig. 1, and backed by the piston P, the sliding breech-block is closed. The pressure of steam, gas, compressed air, or other desired agent is allowed to enter the tube at pipe *d*. Immediately the inertia of the torpedo is overcome and it moves forward. As it passes through the barrel it reaches and passes the first one of the ports *p′*, leaving it open, whereupon the pressure behind the torpedo enters cylinder T, forces the piston-valve *t* along the cylinder, and, drawing valve F from over port *p* at the instant the base of the piston passes it, allows the whole pressure of the first generator to flow into the hurl-barrel and add its effect in the propulsion of the torpedo. The operation in each generator of the series is the same as the torpedo leaves the barrel.

In order to close ports *p p* as the torpedo leaves the gun, I provide near the end toward the bow a cylinder, N, in which travels a piston, *o*, having a rod, *o′*, connected with a cord, which is attached to all the reversing-levers *l l* on the steam-chests. A port, *i*, allows the pressure behind the torpedo to enter cylinder N as the torpedo leaves the barrel, and by operating all the reversing-levers all the piston-valves *t t* are forced back to their original positions, and with them the slide-valves F F are replaced over ports *p p*.

Any ordinary steam-chest, with the usual valves, ports, and reversing-lever, is utilized in my apparatus.

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

In a torpedo-boat adapted to project a sub-

marine torpedo, the hurl-barrel B, in combination with a series of pressure generators or reservoirs, G G, arranged along said barrel and provided with connecting-ports, and a series of valve mechanisms through the medium of which each generator is opened by the power from each preceding generator, whereby the power stored in each generator is consecutively impinged against the torpedo-piston, for the purpose specified.

HORATIO F. HICKS.

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