

(No Model.)

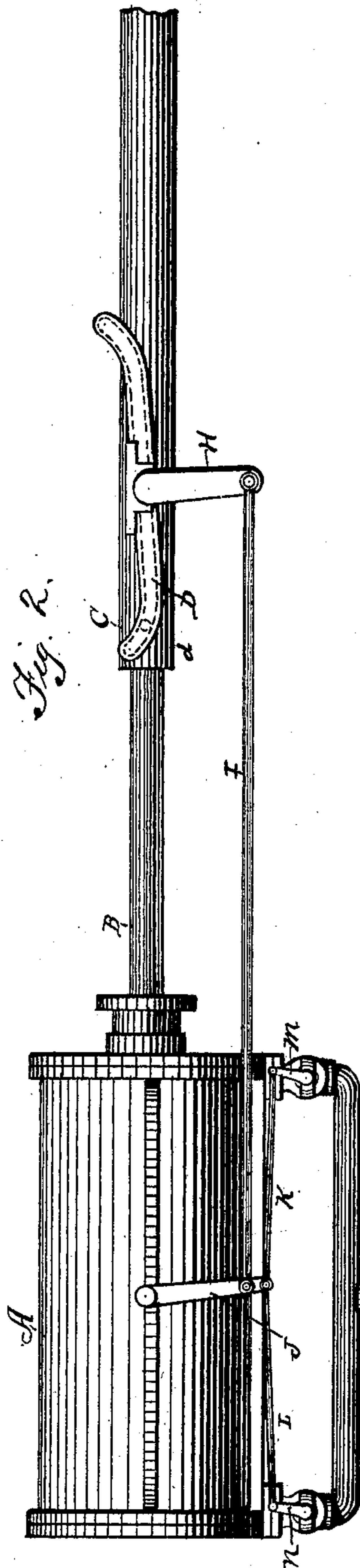
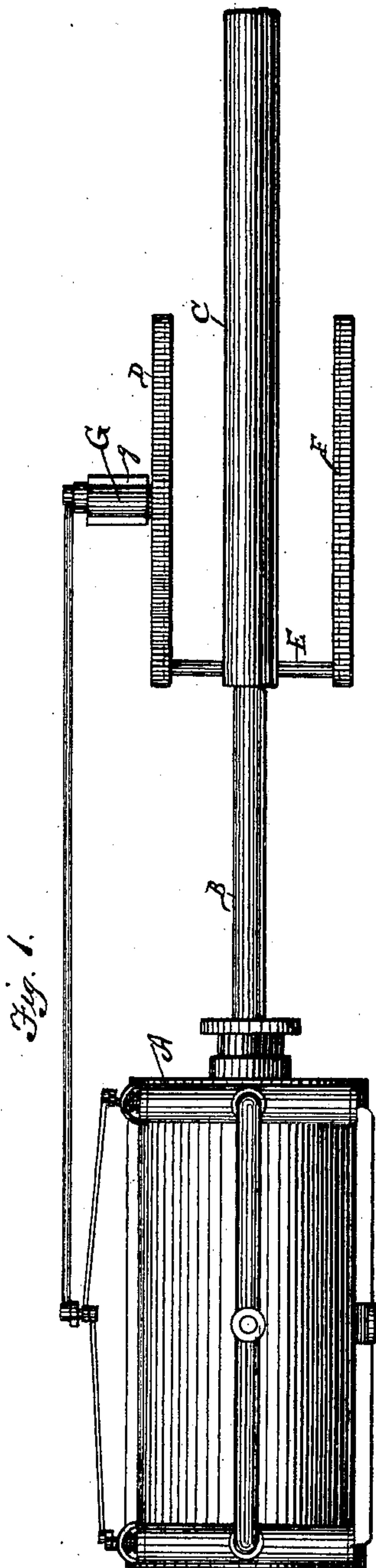
2 Sheets—Sheet 1.

W. K. CAVETT.

SUBMARINE RAM AND TORPEDO EXPLODER.

No. 420,406.

Patented Jan. 28, 1890.



WITNESSES:

R. F. Batheart,
Daniel Agnew,

INVENTOR

William K. Cavett
BY *John H. Roney*
ATTORNEY

(No Model.)

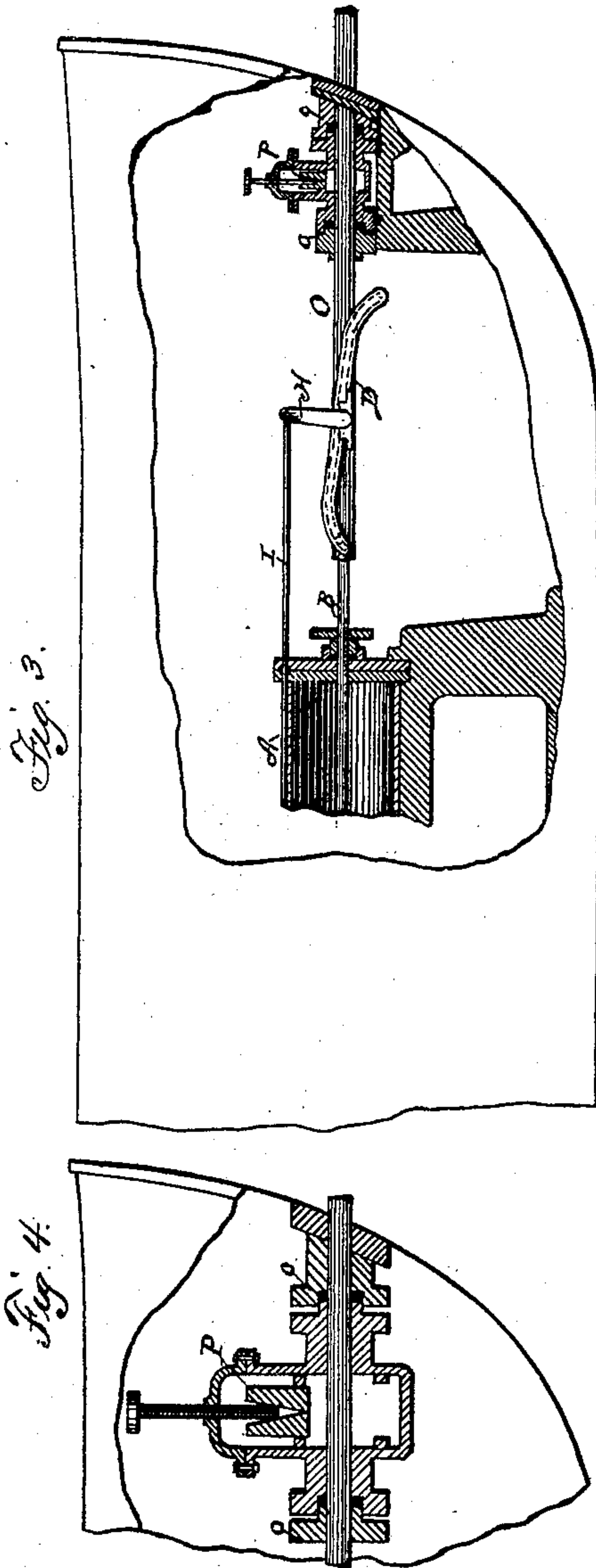
2 Sheets—Sheet 2.

W. K. CAVETT.

SUBMARINE RAM AND TORPEDO EXPLODER.

No. 420,406.

Patented Jan. 28, 1890.



WITNESSES:

R. F. Cathcart.
Daniel Agnew

INVENTOR

William K. Cavett

BY

John A. Roney

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM K. CAVETT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO WILLIAM BUNTON, OF SAME PLACE.

SUBMARINE RAM AND TORPEDO-EXPLODER.

SPECIFICATION forming part of Letters Patent No. 420,406, dated January 28, 1890.

Application filed April 19, 1889. Serial No. 307,859. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. CAVETT, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Submarine Battering-Rams and Torpedo-Exploders; 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a plan of my improved marine ram and torpedo-exploder. Fig. 2 shows a side elevation of the same. Fig. 3 indicates a side elevation of the forward part of a vessel broken away to show the ram. Fig. 4 indicates a view enlarged in section of the gate-valve.

My invention relates to that class of marine rams in which the attacking armament is submerged below the water-line, the object being to produce a ram which is adapted to be impelled rapidly and with great force against the bottom and sides of an opposing vessel below water-line, and to convert the same into a torpedo-exploder by substituting a shaft of greater length but less weight than that required for battering purposes, and may be attached to the same piston and be supported in independent bearings and project through a separate orifice to the side of that in which the ram projects; or it may be suitably secured to the outer end of the ram itself, thus lengthening the same sufficiently to be impelled against a torpedo submerged in the water at a considerable distance from the vessel.

In the drawings, A is a cylinder, and B is the piston thereof, to the outer end of which is suitably secured a shaft or ram C of any desirable length and weight, supported and adapted to operate in suitable bearings.

D is a link or eccentric provided with a groove or channel upon its inner side and extending the length thereof, in which a friction-roller *d* upon the end of the shaft E is adapted to operate said shaft, project through an orifice in the ram and piston, and is suit-

ably secured therein, the other end of said shaft being also provided with a friction-roller which operates in a groove or channel on the inner side of the long bearing F, similar to that in the eccentric-link.

G is a shaft suitably journaled in the bearing *g*, one end of which is connected to the link or eccentric midway the length thereof and the outer end to the crank H, to the lower end of which is connected the long rod or arm I, the other end of said arm being connected to a similar crank J a short distance from the lower end of the same, said crank J being connected at its lower end to the inner ends of the rods or levers K and L, respectively, the outer ends of said levers being connected, respectively, to the cranks M and N, which control for the admission of steam, air, or gas to the forward and reverse heads, respectively, of the cylinder A.

O O is a stuffing-box in which said ram is adapted to operate, and P is a safety-gate valve for the purpose of excluding the water from the vessel at any time it may be necessary to withdraw the ram from the orifice in the bow or sides of the vessel in which said ram projects.

The operation of my device is as follows: Steam, air, or gas being admitted to the forward end of the cylinder, the piston and the ram secured to the outer end thereof is driven forward with great force until the friction-rollers traveling in the channels in the inner sides of the eccentric-link and long bearing, respectively, reaches the outer end thereof, when the same is deflected slightly, throwing the crank secured to the center of said eccentric and the long rod secured to the lower end of the same inwardly, thereby closing the valve which admits steam, &c., to the forward end of the cylinder and opening the valve which admits steam, &c., to the reverse head of said cylinder, causing the piston to reciprocate the ram backward and forward as long as may be required.

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

1. In a submarine ram and torpedo-exploder, substantially as described, the combination of a reciprocating shaft arranged

and adapted to play in an orifice in the side of a vessel, a stuffing-box for excluding water from entering the vessel through said orifice and receiving the reciprocating shaft, a fluid-cylinder, and valve mechanism controlled by the reciprocating shaft to alternately supply and cut off the motive fluid at opposite ends of said cylinder, as set forth.

2. In a submarine ram and torpedo-exploder, substantially as described, the combination of a reciprocating shaft, a fluid-cylinder to the piston of which the reciprocating shaft is connected, valves for alternately admitting motive fluid at opposite ends of said cylinder, and an oscillating device connected to the regulating-valves supported on a horizontal pivot and having a connection with the reciprocating shaft to cause it to tilt or oscillate on its pivot by the longitudinal movement of said shaft, for the purpose set forth.

3. In a submarine ram and torpedo-exploder, substantially as described, the combination of a cylinder, a reciprocating shaft connected to the piston thereof, valves for controlling the supply of motive fluid to the cylinder, an oscillating eccentric-bar having a cam groove or way, connections intermediate of said bar and the valves, and a device carried by the reciprocating shaft and fitted in said cam groove or way, substantially as and for the purpose described.

4. In a submarine ram and torpedo-exploder, the combination of a cylinder, a re-

ciprocating shaft, an eccentric-bar having a cam groove or way and located on one side of said shaft, a long bearing located on the opposite side of the shaft and having a similar cam-groove in its face that opposes the eccentric-bar, a transverse shaft or pin carried by the reciprocating shaft and working in the cam grooves or ways of said bar and bearing, and valve mechanism actuated by the eccentric-bar, substantially as and for the purpose described.

5. In a submarine ram and torpedo-exploder, the combination of a cylinder, a reciprocating shaft connected to the piston thereof, valves communicating with opposite ends of the cylinder and each having an arm, a single crank-arm connected by links with the arms of the two valves, and an oscillating bar actuated by said reciprocating shaft and connected by a rod to said single crank-arm, substantially as described.

6. In a submarine ram and torpedo-exploder having a reciprocating shaft, substantially as described, a stuffing-box consisting of the two sections in which said shaft operates, and a chamber intermediate of said stuffing-boxes and having a valve, as and for the purpose described.

In testimony that I claim the foregoing I hereunto affix my signature.

WILLIAM K. CAVETT. [L. S.]

In presence of—

REED B. COYLE,
J. E. GLASS.