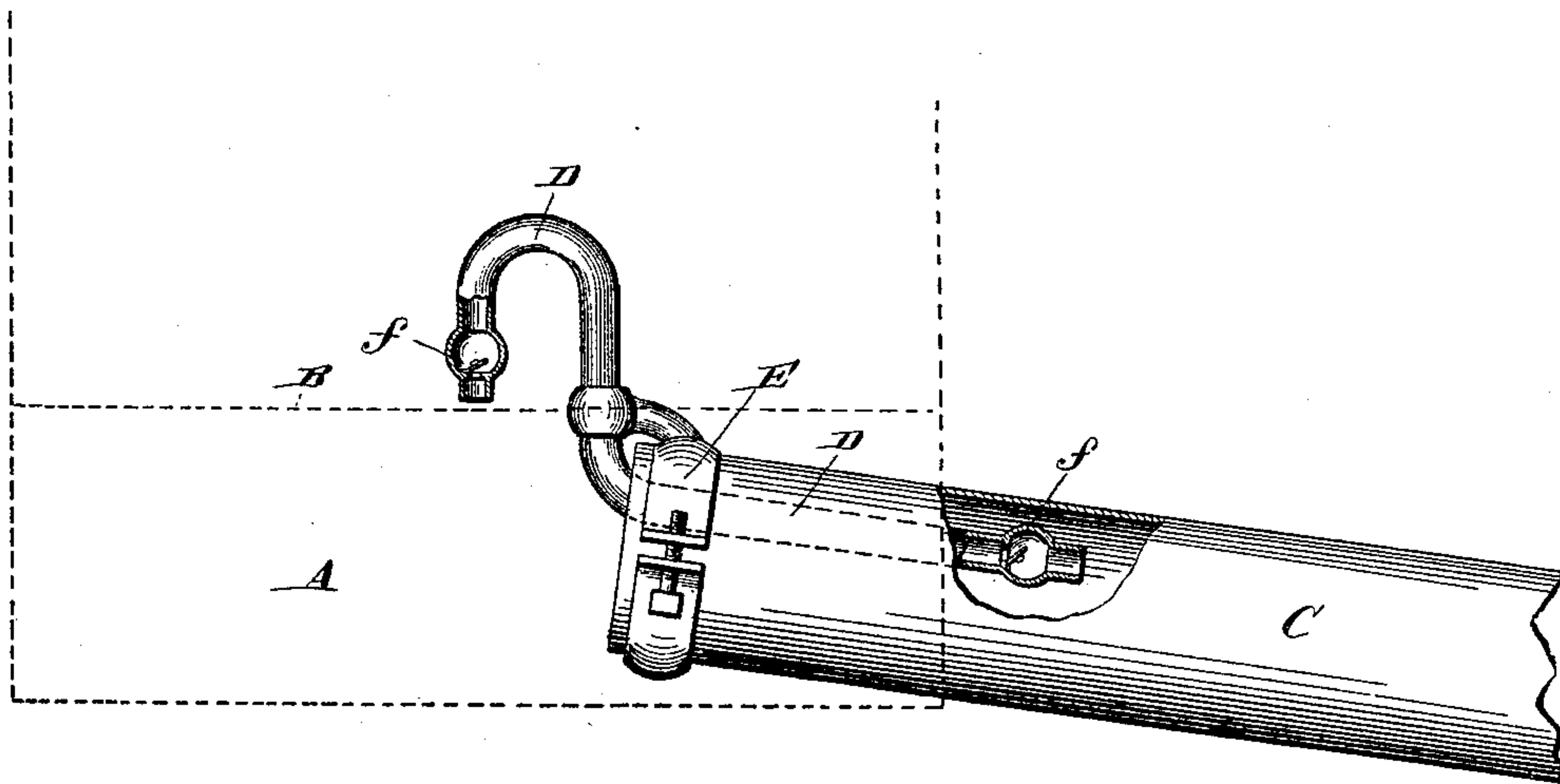


(No Model.)

H. INGHAM.
MACHINE FOR MAINTAINING AIR PRESSURE IN CHAMBERS OF
HYDRAULIC RAMS.

No. 521,167.

Patented June 12, 1894.



Witnesses:
Edna J. Ingham
George H. Bundy

Inventor:
Henry Ingham

UNITED STATES PATENT OFFICE.

HENRY INGHAM, OF BELLOWS FALLS, VERMONT.

MACHINE FOR MAINTAINING AIR-PRESSURE IN CHAMBERS OF HYDRAULIC RAMS.

SPECIFICATION forming part of Letters Patent No. 521,167, dated June 12, 1894.

Application filed December 8, 1891. Serial No. 414,441. (No model.)

To all whom it may concern:

Be it known that I, HENRY INGHAM, a citizen of the United States, residing at Bellows Falls, in the county of Windham and State of Vermont, have invented a new and useful Air-Pressure-Maintaining Tube for the Drive-Pipe of Hydraulic Rams, of which the following is a specification.

My invention relates to improvements in machines for maintaining the air pressure in the chamber of hydraulic rams; and the objects of my improvements are, first, to provide for the admission of air into the drive pipe of a ram in small quantities so that it may be carried to the ram along with the water in the drive pipe. Second, to prevent the discharge of water from the drive pipe through the same opening by which the air is admitted. Third, to admit the air to the drive pipe at a distance below the opening where the drive pipe takes its water so great that the weight of water from above will prevent the air from rising in bubbles in the water supply box and will assist in forcing the air along toward the ram, it will be seen by this that the longer that portion of the air maintaining tube which runs inside and parallel to the drive pipe is made the better the machine will work. Fourth, to assist the ram to raise its water easier by maintaining an elasticity in the air chamber by the air supplied. Fifth, to supply air to the chamber of a hydraulic ram without adding the resistance to the movements of the plunger which is made necessary by running an air pump attached thereto. I attain these objects by the mechanism illustrated in the accompanying drawing, in which—

A, is the box containing the water for supplying the ram.

B, shows the water line in box A.

C, is a drive pipe connecting the water box with the ram.

D, is the air pressure tube having the lower end bent parallel with and placed inside of the drive pipe and the upper end curved so that the valve will drop to place by its weight.

E, is a bracket attached to the air pressure tube D, and having an annular clasp and tightening screw or other suitable means for attaching it to the drive pipe C.

ff, are valves placed at each end of the air pressure tube D, in such a manner as to allow the air to pass through the tube D, from the upper curved end into the drive pipe C, where it passes into the air chamber of the ram with the water; when the water is driven back in the drive pipe by the plunger of the ram the valves close thus preventing the water entering the tube D, it will be seen that the valve at the upper curved end of the air tube D, will close first by its own weight, while the valve at the lower end of the tube D, is closed by the water in the drive pipe C, in this manner a pressure is maintained in the air pressure maintaining tube D, between the valves *ff*.

I am aware that prior to my invention air has been admitted to the drive pipe of hydraulic rams in various ways; I do not therefore claim this invention broadly, but

What I do claim as my invention, and desire to secure by Letters Patent of the United States, is—

In a hydraulic ram, the combination with the water supply pipe, of an air tube having its discharge end entering said supply pipe and extended in a direction parallel thereto and having its inlet end in communication with the atmosphere only and extended in a substantially vertical direction, an outwardly opening check valve at the discharge end of the air tube and an inwardly opening check valve adapted to close by gravity at the inlet end of the air tube, whereby air is drawn into the ram by the intermittent flow of water through the supply pipe, substantially as described.

HENRY INGHAM.

Witnesses:

EDNA J. INGHAM,
GEORGE H. BUNDY.