

I. B. MILLINGTON.  
Hydraulic Ram.

No. 214,682.

Patented April 22, 1879.

Fig. 1.

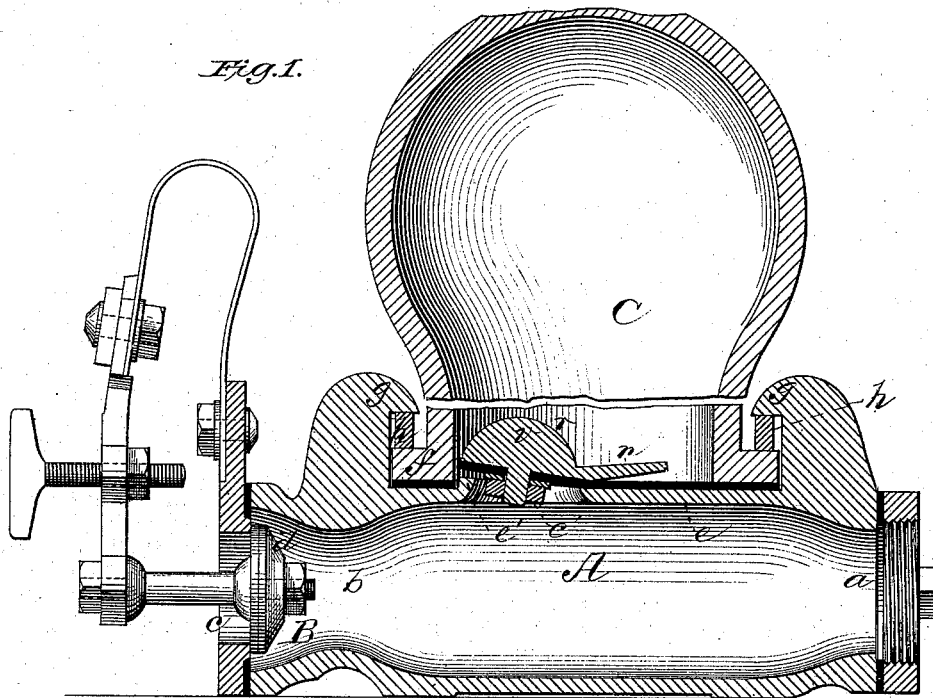


Fig. 2.

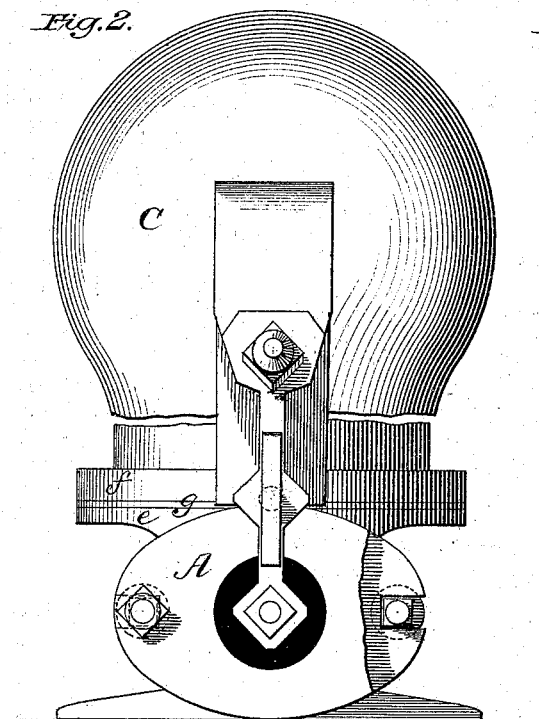
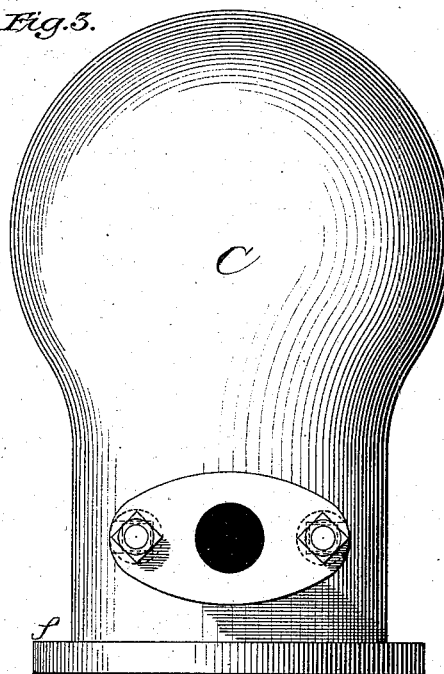


Fig. 3.



WITNESSES

*John A. Green.*  
*A. J. Masi.*

INVENTOR

*Isaac B. Millington,*  
*by E. W. Anderson.*

ATTORNEY

# UNITED STATES PATENT OFFICE

ISAAC B. MILLINGTON, OF COLUMBIA, PENNSYLVANIA.

## IMPROVEMENT IN HYDRAULIC RAMS.

Specification forming part of Letters Patent No. **214,682**, dated April 22, 1879; application filed February 10, 1879.

### *To all whom it may concern:*

Be it known that I, ISAAC B. MILLINGTON, of Columbia, in the county of Lancaster and State of Pennsylvania, have invented a new and valuable Improvement in Hydraulic Rams; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of my improved ram. Fig. 2 is an end view of the same, and Fig. 3 is a detached view of the air-chamber.

The nature of the invention consists in the construction and novel arrangement of a straight ram-cylinder having a reduced inlet at one end, a valved box at the other end, and a reduced neck in the line of the cylinder connecting the said box and body of the cylinder.

In the annexed drawings, the letter A designates a strong metallic cylinder, constituting the body of the ram. This cylinder has at one end a reduced neck, *a*, to which the feed-pipe is secured, and at the other end a water-box, B, connected with the enlarged part of the body by means of a reduced neck, *b*. At the end of the water-box B is an opening, *c*, in which is a horizontally-acting valve, *d*, of the same general construction as that shown in my Letters Patent No. 177,144, dated May 9, 1876, being so arranged as to receive the direct impact of the water-head, and being normally open.

On top of the cylinder, near the reduced neck *b*, is a seat, *e*, of circular form, having formed therein an oval opening, having an inclined circumferential flange, *e'*, that is the valve-seat. C indicates the air-chamber, having a base-flange, *f*, conforming to the seat *e*, and resting snugly thereon.

A leather washer, *g*, having an oval opening in it to receive the valve-seat *e'* and a flap covering the opening *e'*, is interposed between the base-flange and air-chamber seat, as shown in Fig. 1. The base-flange is caught under the projections *g* on the ram-tube, and the chamber is secured to the seat by means of wedges *h*, forced in between the said flange and projections and clamping the leather washer forcibly between them. A valve, *v*, is bolted to the flap aforesaid, and accurately closes the opening in the seat. This valve is provided with a projection, *n*, arranged at an angle of forty-five degrees, or thereabouts, to the body of the valve, and of about two-thirds of its superficial area, the effect of which is to render the valve very sensitive both in opening and closing, because of the counterbalancing and reacting effect of the said projection. The valve is of angular form in cross-section, terminating above in a sharp ridge, *r*, and acting after the manner of a cut-water.

The principle on which a ram operates is so well known that no explanation is necessary.

What I claim as new, and desire to secure by Letters Patent, is—

A straight ram-cylinder having a reduced inlet, *a*, at one end, a valved box, B, at the other, and a reduced neck, *b*, in the line of the cylinder, connecting the said box and body of the cylinder, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ISAAC B. MILLINGTON.

### Witnesses:

J. W. YOCUM,  
GEORGE YOUNG, Jr.,  
C. B. MILLINGTON.