

H. H. HEISE.
Hydraulic Ram.

No. 218,964.

Patented Aug. 26, 1879.

Fig. 1.

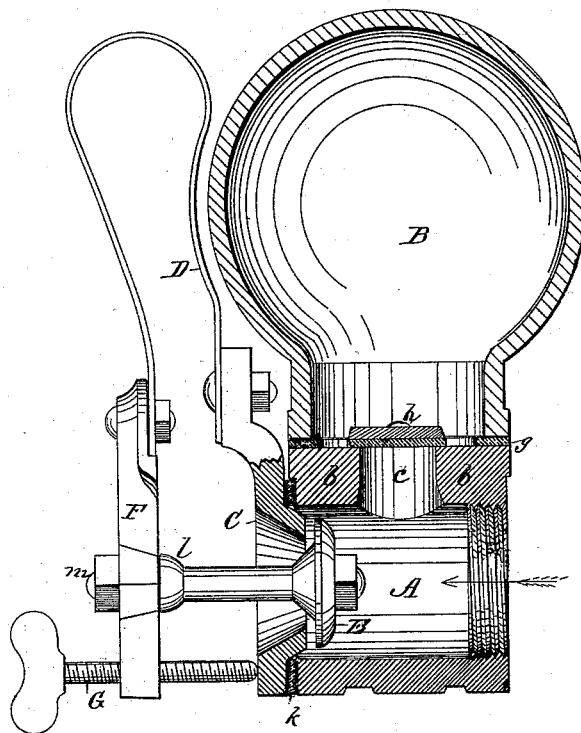


Fig. 2.

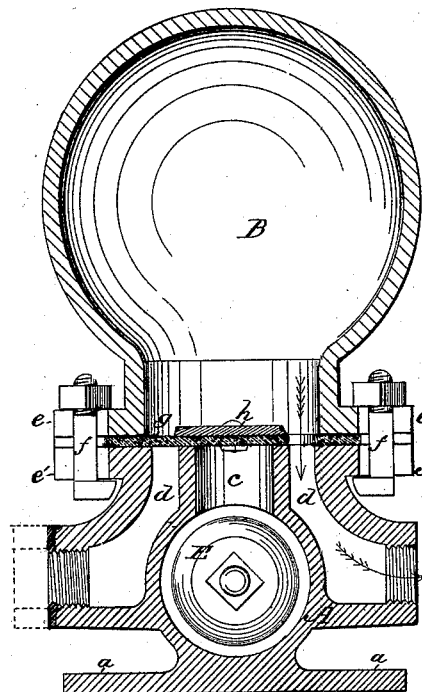
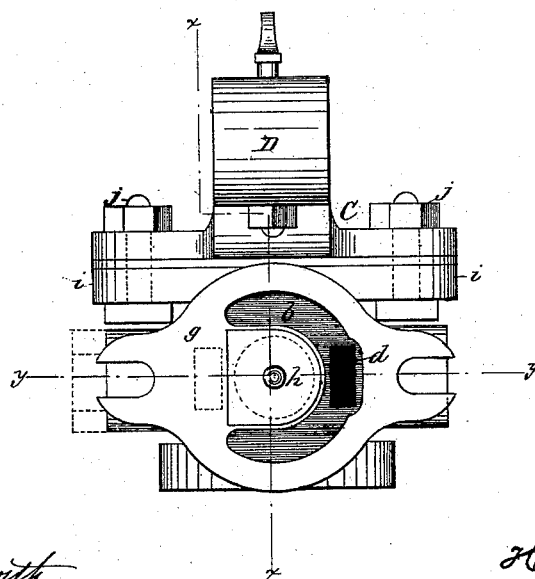


Fig. 3.



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IMPROVEMENT IN HYDRAULIC RAMS.

Specification forming part of Letters Patent No. **218,964**, dated August 26, 1879; application filed June 19, 1879.

To all whom it may concern:

Be it known that I, HARRY H. HEISE, of Columbia, in the county of Lancaster and State of Pennsylvania, have invented a new and Improved Hydraulic Ram; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section through line *x x* of Fig. 3. Fig. 2 is a vertical section through line *y y* of Fig. 3. Fig. 3 is a plan view with the air-chamber removed.

My invention relates to certain improvements in hydraulic rams, designed to render the same more simple, compact, and efficient.

The invention consists in casting the cylindrical base of the ram with a face-plate for receiving the air-chamber, a central opening leading from the cylinder into the air-chamber, and with one or two independent discharge-conduits extending laterally across the cylinder, and formed of the same metal with the same, and in combining the cylinder thus cast with an air-chamber having an open bottom, and with suitable valves, as hereinafter fully described.

In the drawings, A represents the cylinder, which is cast with a basic support, *a*, a face-plate, *b*, a central hole, *c*, through the face-plate, and two discharge-conduits, *d d*, opening upon each side of the central orifice through the face-plate, and extending at right angles to the axis of the cylinder and across the periphery of the same. Only one of these discharge-conduits is necessary; but to permit the ram to be used in the various relations which may require the water to be elevated from either one side of the ram or the other I have formed the same with two opposite conduits, it being understood, however, that when any one of these discharge-conduits is being used the other is to be stopped up with a screw-plug, as shown in dotted lines.

B is the air-chamber, which is constructed with a plain surface and without any discharge pipe or conduit leading directly from said chamber. It has, however, an open bottom, whose edges are faced to fit upon the face-plate of the subjacent cylinder, and are provided with lugs *e e*, which are clamped by

bolts *f f* to lugs *e' e'*, formed upon the edges of the face-plate, so as to hold the air-chamber securely to the subjacent cylinder.

Between the air-chamber and face-plate is clamped a leather gasket, *g*, to which is hinged, upon one side, a flap-valve, *h*, covering the central hole leading from the cylinder into the air-chamber.

In constructing the valve *h* and gasket *g*, the leather of the gasket is cut in one and the same piece with the leather facing of said flap-valve. This causes the gasket to tightly close one of the conduit-openings when the air-chamber is clamped down, and may be used independently of, or in connection with, a screw-plug for stopping up one of said conduits.

Upon the end of the cylinder is formed a facing with lugs *i i* corresponding to the upper face-plate, and to which facing is clamped the cylinder-head C by means of bolts *j*, a leather gasket, *k*, being interposed to make a tight joint. This cylinder-head C also forms a point of attachment for the bent spring D, which, at its lower end carries the waste-valve E, and at the same time forms a seat upon which said waste-valve plays and a waste-discharge through which the waste-water flows.

In connecting the waste-valve to the bent spring a bar or casting, F, is bolted or riveted to the lower end of said spring, and is formed with a perforation through which a screw-threaded end of the valve E is extended, the stem of the valve being securely clamped at right angles to said bar by a shoulder, *l*, on said valve-stem and a nut, *m*. To regulate the extent of the play of the waste-valve an adjusting-screw, G, extends through a screw-threaded perforation on the end of bar F, and when the valve is opened bears against the head of the cylinder.

In the operation of the ram, as thus described, the water enters through the inlet-pipe communicating with the open end of the cylinder, and the waste-valve is held open by the tension of the carrying-spring. Now, as soon as the escape of water around the valve and through the valve-seat acquires a certain momentum it closes the waste-valve, and with the acquired movement it then forces its way

up into the air-chamber through the central valve and compresses the cushion of air. When the momentum has thus been partially checked the tension of the spring opens the waste-valve for a repetition of the operation, and the pressure in the air-chamber at the same time closing the central valve, the air-cushion forces the body of water down through one of the discharge-conduits to the point of utilization.

Having thus described my invention, what
what I claim as new is—

The cylinder A, cast in one piece, with a face-plate, *b*, central hole *c*, and one or more transversely-extending discharge-conduits, *d*, in combination with an air-chamber having an open bottom and valves, substantially as described.

HARRY H. HEISE.

Witnesses:

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