A. D. COBURN.

Hydraulic-Engine.

No. 217,991. Patented July 29, 1879.

Fig. 1.

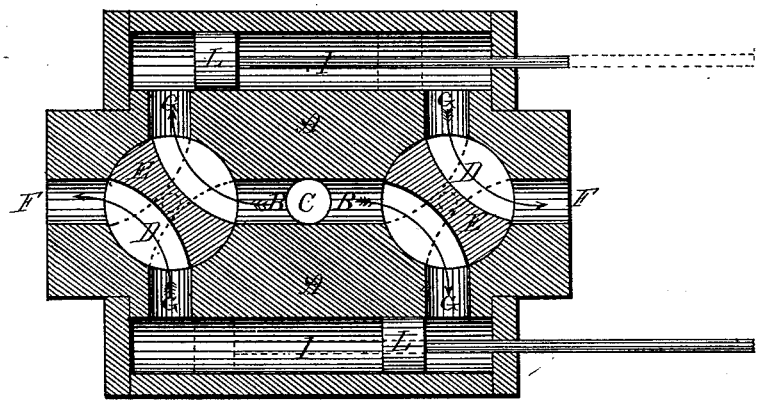


Fig. 2.

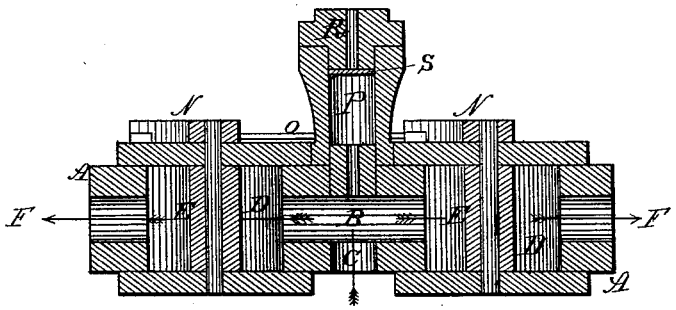
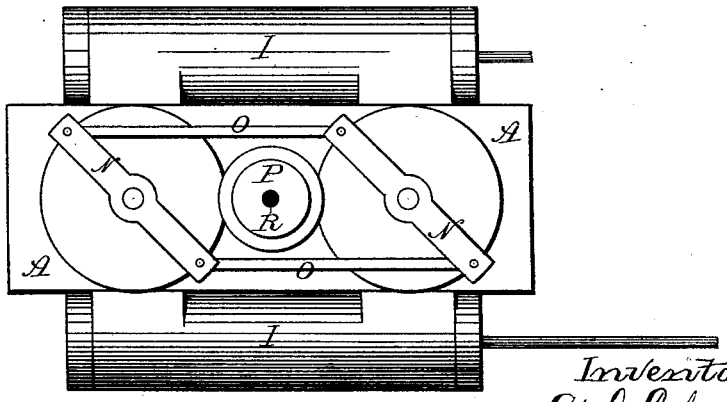


Fig. 3.



Witnesses:

J. W. Garner.

W. S. D. Baines.

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per

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atty.

UNITED STATES PATENT OFFICE.

ARTHUR D. COBURN, OF GREENE, MAINE.

IMPROVEMENT IN HYDRAULIC ENGINES.

Specification forming part of Letters Patent No. **217,991**, dated July 29, 1879; application filed May 8, 1879.

To all whom it may concern:

Be it known that I, ARTHUR D. COBURN, of Greene, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Hydraulic Engines; 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 it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in hydraulic engines; and it consists in a suitable case having a water-way through its center and a chamber at each end, in which chambers are placed rotary valves that are connected together by parallel rods, so as to move at the same instant, and alternately exhaust and fill the cylinders with water, so as to drive the pistons back and forth in the cylinders, as will be more fully described hereinafter.

Figure 1 is a horizontal longitudinal section of my invention. Fig. 2 is a vertical longitudinal section, and Fig. 3 is a plan view, of the engine.

A represents the frame of the engine, which has the water-way B extending through its center, and into which water-way the water passes through the supply-pipe C. At each end of this case there is made a circular chamber, D, and in each of these chambers there is placed a rotary valve, E, which is cut away on opposite sides, as shown. Leading from each of these chambers at their outer sides are the exhaust-ports F and inlet-passages G, through which the water is alternately admitted into and discharged from the cylinders I, secured to the sides of the frame A. In these cylinders move the pistons L, which are alternately driven back and forth in the cylinders, moving in opposite directions, and which transmit the power of the water to any suitable mechanism.

To the upper end of each of the valve-stems is secured a cross-bar, N, and the ends of these two cross-bars are connected together by the parallel rods O, so as to cause the valves to always move together.

Upon the center of the top of the frame is placed the air-chamber P, which has an opening, R, through its top, and is provided with the valve S.

As the water rushes into the frame the air in the chamber is compressed, so as to close the valve upward against the top of the chamber; but when the engine is at rest and this valve is forced downward so as to allow air to enter the top of the chamber, the water in the frame will at once be made to run freely out.

The operation of my engine is as follows: The water, entering by the pipe C, passes down toward both ends of the water-way B, where it comes in contact with the two valves inclined in the same direction, which turn it aside, through the openings G, into the two cylinders on the side of the frame. The water here acts against the outer end of one piston and the inner end of the other, thus driving them in opposite directions, and when these pistons have made their full stroke the two valves are instantly reversed, so as to empty the two cylinders through the ends at which they had just been filled at the same moment that they are being filled from the opposite end.

In this manner the two cylinders are alternately filled and discharged at opposite ends, so as to keep the two pistons constantly moving in opposite directions.

By packing the valves so as to move steam and air tight, this engine may be driven by either steam or compressed air, as well as by water.

This engine can be made to work in any place where there is a head of water, and can be made to take the place of water-wheels in nearly every place where they are used.

I am aware that hydraulic engines having valves at each end which are turned partially around, so as to turn the water into the cylinders alternately, and pistons which are forced back and forth in the cylinders by the pressure of the water, are not new, and these I disclaim.

Having thus described my invention, I claim—

1. The combination of the body A, having a water-way through its center, with the two rotary valves connected together by parallel

rods, so as to always operate at the same time, substantially as shown.

2. In a hydraulic engine, the air-chamber P, having the opening R through its top, and valve S, whereby the water may be discharged from the frame, substantially as described.

3. The combination of the frame A, having the two cylinders provided with pistons secured to opposite sides, with the two rotary valves connected together by parallel rods, so as to alternately fill and empty the cylinders at opposite ends, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 2d day of May, 1879.

ARTHUR D. COBURN. [L. S.]

Witnesses:
E. L. MOWER,
R. S. ELLMES.