

G. W. CUMMINGS.
Rotary Engines.

No. 141,261.

Patented July 29, 1873.

Fig: 1.

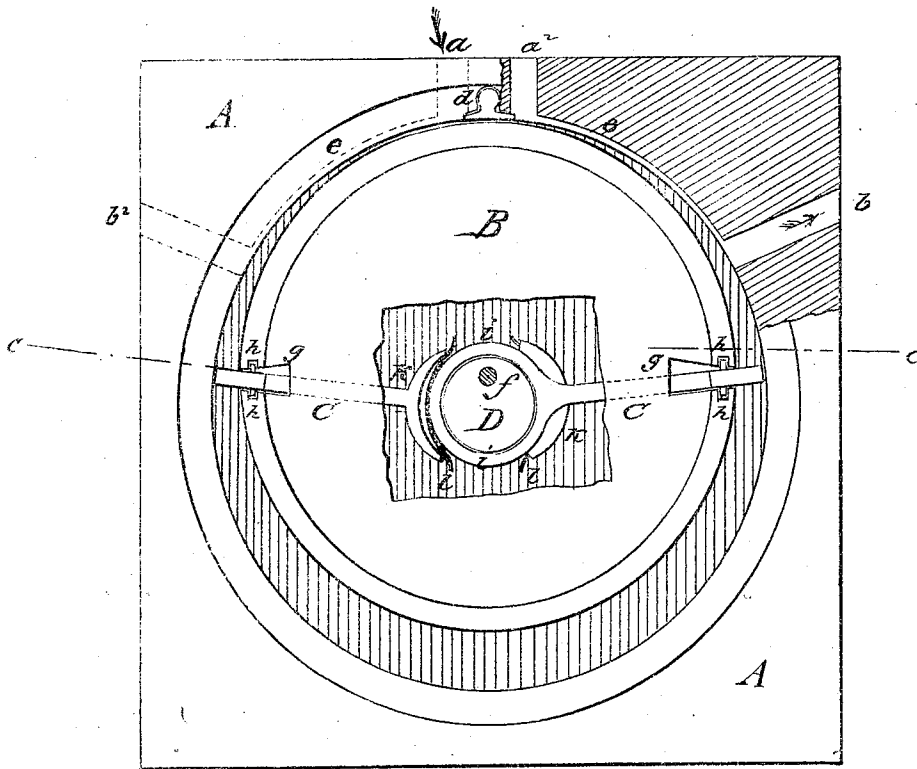
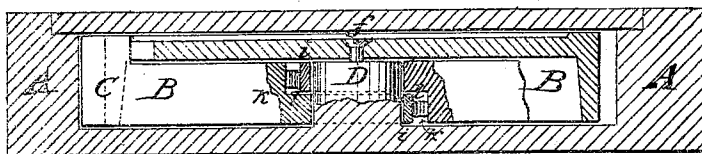


Fig: 2.



Witnesses:

Chas. Nida
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Inventor:

G. W. Cummings

PER

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UNITED STATES PATENT OFFICE.

GEORGE W. CUMMINGS, OF CONNEAUT, OHIO, ASSIGNOR OF ONE-HALF
HIS RIGHT TO DANIEL W. HAZELTINE, OF SAME PLACE.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **141,261**, dated July 29, 1873; application filed
February 8, 1873.

To all whom it may concern:

Be it known that I, GEORGE W. CUMMINGS, of Conneaut, in the county of Ashtabula and State of Ohio, have invented a new and Improved Rotary Steam-Engine, of which the following is a specification:

Figure 1 is a plan view of my invention with parts open to show interior connection, and Fig. 2 is a vertical section of the same on the line *c c*, Fig. 1, also partly opened.

Similar letters of reference indicate corresponding parts.

The object of my invention is improvement in the class of rotary engines and pumps having a piston-box placed eccentrically within the steam cylinder and controlling the piston-arms. In my invention the piston-arms are arranged concentrically with the steam-cylinder and tightly fitted to it by means of springs and packing.

In the drawing, A represents the outer steam-cylinder with steam-ports *a* and *a*² and exhausts *b* and *b*². The ports *a* *a*² are close to each other, a pivoted packing, *d*, between them establishing the contact with the piston-box B. The exhaust-ports *b* *b*² lead out through the sides of the cylinder A, and will be, in practice, provided with valves, so arranged that when steam is admitted through port *a* the exhaust *b*² will be closed and *b* opened, and vice versa. When steam enters at *a*² the exhaust *b* will be closed and *b*² opened. Thus the pistons may be caused to move in either direction around their axis. A grooved recess, *e*, of cylinder A, connects the ports and exhausts, and is gradually diminishing from the former to the latter. A suitable lever and valve arrangement opens and closes the corresponding ports and exhausts. The piston-box B is placed at *f*, eccentrically to the inclosing steam-cylinder, and of somewhat smaller diameter. It is of drum-like shape, and fits to the bottom and top of the steam-cylinder A. Dovetail-shaped apertures *g*, of the top of the piston-box, connect with vertical extensions at the side thereof to allow the

free play of the projecting piston-arms C. These are closely fitted to the piston-box B by packings *h*. The piston-arms C are secured diametrically to the cylindrical center-piece D of the steam-cylinder by ring-shaped bands *i*, fitting one above the other, and furthermore supplied with segmental supports K, into which are let by proper means strong springs *l*, which serve to press the piston-arms C closely to the periphery of the steam-cylinder A. The upper segmental support *k*, and spring *l* of one arm, press toward the upper ring *i* of the other arm, and similarly the lower supports and ways. The ends of the piston-arms extend vertically into the apertures *g*, and are projecting more or less outside of the eccentric piston-box B, the nearer or further they are from the steam-ports *a* and *a*².

As soon as the steam enters for forward motion through steam-port *a*, it moves both pistons—one directly, the other by means of the recess *e*—till the piston-arm C has passed the closed exhaust *b*², when the full power of the steam acts on the same, the exhaust steam on the other arm escaping at the exhaust *b*. One arm, C, being at full stroke, the other passes port *a*, and is acted upon by the steam, recess *e* admitting sufficient steam to the forward arm to finish its stroke by expansion, till exhaust *b*² is passed and a full head of steam carries the former forward, the exhaust steam escaping at *b* again, and so on. To reverse the engine, steam is allowed to enter at port *a*² and to escape at *b*² with precisely the same effect on the piston-arms.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent—

The piston-arms C, with rings *i*, segmental supports *k*, and springs *l*, in connection with the ports *a* *a*², exhausts *b* *b*², and grooved recesses E of cylinder A, as set forth.

GEORGE W. CUMMINGS.

Witnesses:

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