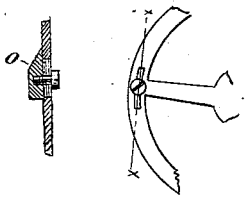
G. LILLY.

ROTARY-ENGINE.

No. 193,338. Patented July 24, 1877.

Fig. 4.



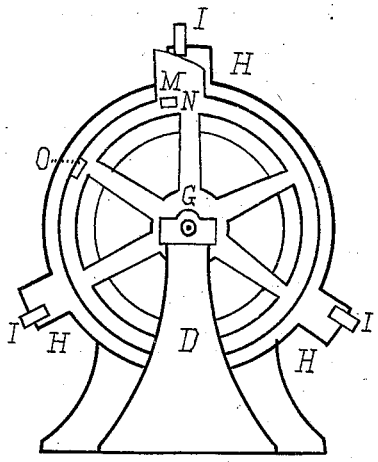


Fig. 1.

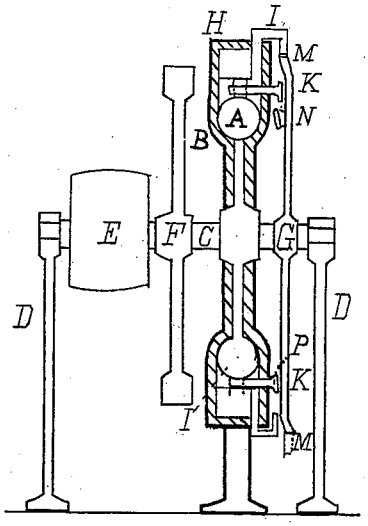


Fig. 3.

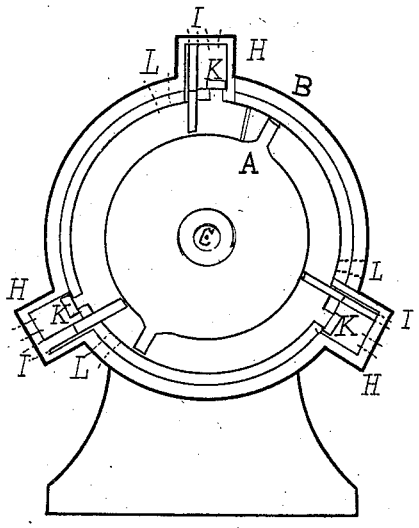


Fig. 2.

Witnesses:—
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UNITED STATES PATENT OFFICE.

GEORGE LILLY, OF YORK, WISCONSIN.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **193,338**, dated July 24, 1877; application filed November 27, 1876.

To all whom it may concern:

Be it known that I, GEORGE LILLY, of York, in the county of Dane and State of Wisconsin, have invented an Improvement in Steam-Engines, of which the following is a specification:

The object of my invention is to provide a steam-engine which shall apply the power of the steam directly to a shaft producing a rotary motion, to apply the steam in such a manner as to use the expansive force of the steam in the cylinder, and relates to a class called rotary engines.

In the drawings, Figure 1 is a view of the outside of the engine; Fig. 2, a cross-section of cylinder; Fig. 3, a cross-section through the piston-shaft. Fig. 4 are detailed views, showing the adjustable block O.

In the drawings, C, Fig. 3, represents a shaft, rotating in bearings D D. On said shaft C is a pulley, E, balance-wheel F, rotating piston A, and a wheel, G, for moving the laterally-sliding valves and sliding abutment. Enveloping the rotary piston A is a cylinder, B. This cylinder is made fast at the bottom, so that the piston may revolve within it. A circular hollow space is left between its internal periphery and the periphery of the piston, in which the piston (shown at A, Figs. 2 and 3,) revolves. It also has on the periphery steam-chests H H H, into which the steam passes from the boiler.

Within each steam-chest is a sliding abutment, which, when withdrawn, permits the passage of the piston A; but when closed confines the steam between itself and the piston in the hollow space previously mentioned in the cylinder. A laterally-sliding valve, K, Fig. 3, permits the entrance and cuts off the steam from the cylinder. An orifice, at L, Fig. 2, permits the exhaust steam to escape after having been used. A wheel, G, Fig. 3, on piston-shaft C revolves with the piston, but on the outside of the cylinder, and has formed on its periphery at points at equal distances from each other cam-shaped projections M, Figs. 1 and 3, which as it revolves withdraws the sliding abutments I I I, Figs. 2 and 3, to permit the piston A to pass. A cam-lug, N, Figs 1 and 3, on the side of said wheel, opens the laterally-sliding valve K, which remains open, admitting the steam to the cylinder until it is shut by an adjustable block at O, Fig. 4. This block being adjustable permits the entrance of the steam from the boiler to be cut off at one-third or other portion of the distance between the steam-chests, thus using the steam expansively to finish that portion of a revolution.

It operates as follows: The wheel G revolving withdraws the sliding abutment, the piston-block passes, when the steam in the steam-chest forces the sliding abutment back into the cylinder. The laterally-sliding valve is then opened admitting the steam to the cylinder and forcing the piston to turn with the shaft C. The valve is shut by the adjustable block or cam on wheel G, and the expansive force of the steam carries the piston-block to the next sliding abutment, which is raised as before.

There being an even number of piston-blocks and an odd number of steam-chests the pressure of the steam is always on the piston from one or other of the steam-chests.

I claim as my invention—

The combination, with a cylinder having an annular space near its periphery, revolving piston A, steam-chest H, sliding abutment I, and laterally-sliding valve K, of the wheel G, provided with cam-projection M and cam-lug N, adapted to operate the abutment and valve directly, as shown, and adjustable block O for closing the valve or cutting off the steam at any desired portion of the distance between the steam-chests, the several parts constructed and arranged to operate in the manner herein shown and described.

GEORGE LILLY.

Witnesses:

NEIL MCFADYEN,

HARVEY ROWELL.