

W. F. Vickery,

2. Sheets, Sheet. 1.

Rotary Engine

No. 108412.

Patented Oct. 18. 1870.

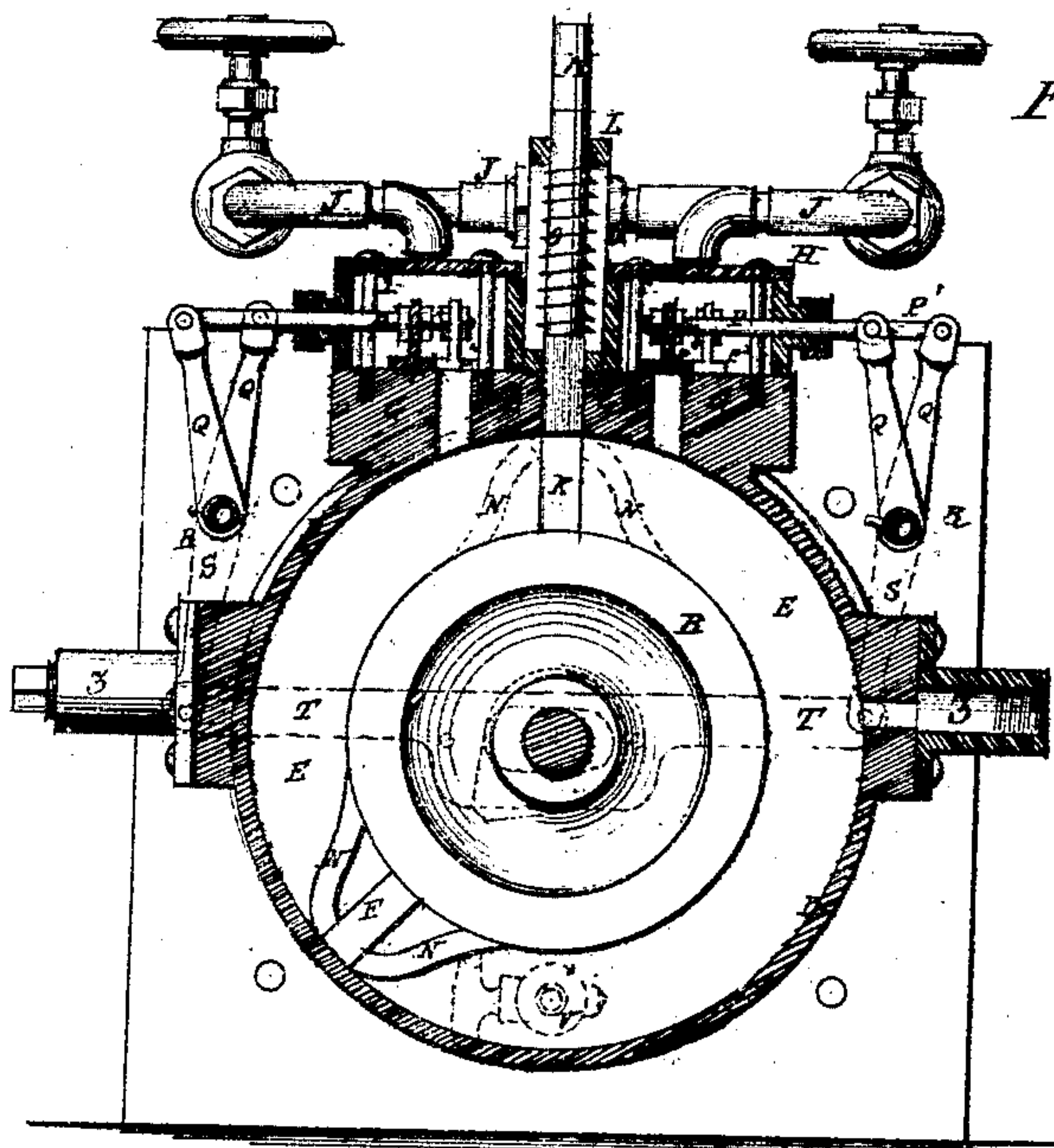


Fig. 1

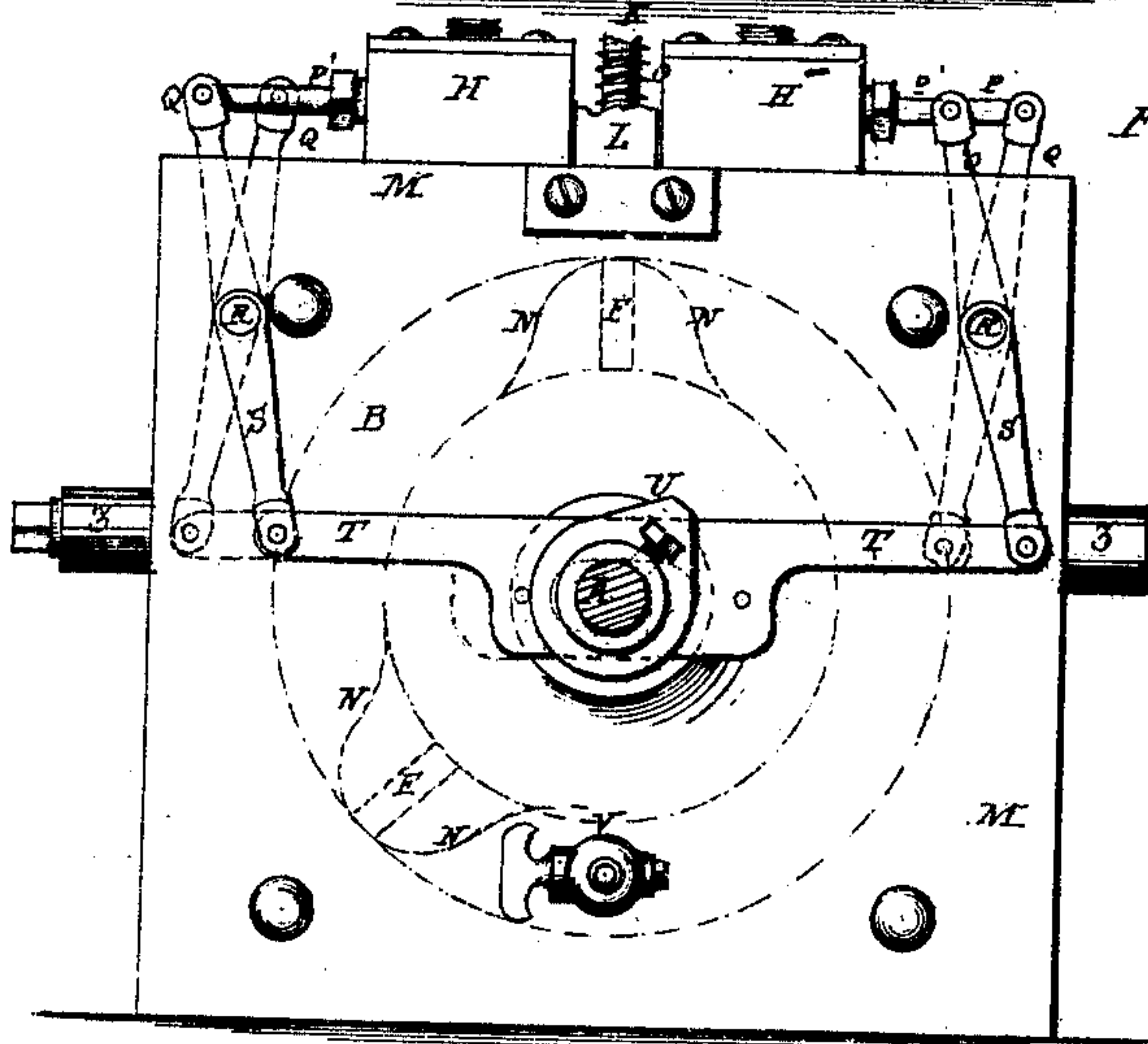


Fig. 2

Witnesses:

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C. J. Tate

Inventor:

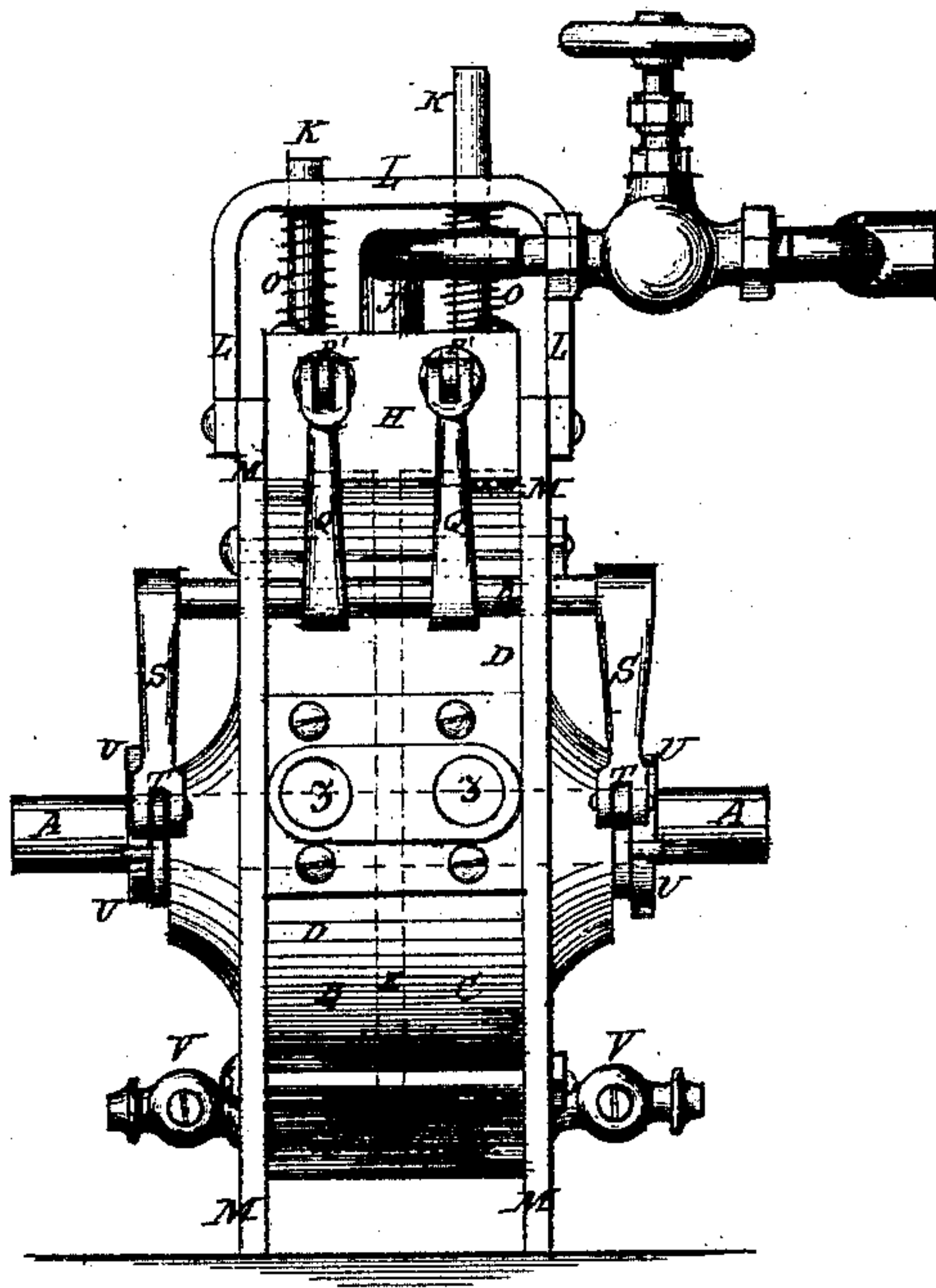
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*W. P. Vickery,* *2. Sheets, Sheet 2.*  
*Rotary Engine.*

*No. 108412.*

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*Fig. 3*



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# United States Patent Office.

WILLIAM P. VICKERY, OF EAST AUBURN, MAINE.

Letters Patent No. 108,412, dated October 18, 1870.

## IMPROVEMENT IN ROTARY STEAM-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, WILLIAM P. VICKERY, of East Auburn, in the county of Androscoggin and State of Maine, have invented a new and useful Improvement in Rotary Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1, Sheet I, is a vertical section of my improved rotary steam-engine.

Figure 2, Sheet I, is a side view of the same.

Figure 3, Sheet II, is an end view of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to rotary steam-engines, and consists in certain improvements thereon, which will be specified hereinafter.

A is the driving-shaft, from which the motion is communicated to the machinery to be driven.

To the shaft A are securely attached two solid wheels, B and C, so as to carry the said shaft A with them in their revolution.

D is the circular casing of the wheels B C, which is cast with a central partition-plate or diaphragm, E, through the center of which the shaft A passes, and which fits into the space between the two wheels B C, so as to entirely separate said wheels from each other.

The circular casing D is made larger than the wheels B C, so as to form an annular chamber around the faces of the said wheels B C.

Upon the face of each of the wheels B C is formed, or to it is attached, a piston, F, of such a size as to exactly fit into the annular chamber around the said wheels.

The two pistons F may be adjusted at any desired angle with each other, provided said angle be such that the two pistons can never both be at the same time in the space between the exhaust and inlet-ports, so that at least one piston may always be in the space between the inlet and exhaust-ports, thus guarding against the possibility of the engine having any dead point.

G are the valve-seats, through which are formed the ports, through which the steam enters the engine.

H are the steam-chests, in which the valves I work, and into which the steam passes through the pipes J.

Each wheel has its own inlet-port and valve, and when the engine is so constructed that the wheels B C may be driven in both directions, two sets of ports and valves must be used.

K are drop-valves, which compels the steam to act only on one side of the piston, and which work in slots in the upper side of the casing D, one upon each side of the partition E, and the upper ends of which pass through guide-holes in the upper or horizontal part of the bar L, the ends of which are attached to the side plates M of the engine, as shown in figs. 2 and 3 of the drawing.

The drop-valves K are raised to allow the pistons F to pass by the inclines N, formed upon or attached to one or both sides of the said pistons F, according as the engine is designed to move in one or both directions.

The drop-valves K are forced down, upon the passage of the pistons F, by the springs O, coiled around their stems, and the upper ends of which rest against the guard and guide-bar L, their lower ends resting upon the shoulders of the drop-valves, or upon stops attached to the stems of the said drop-valves.

The drop-valves K are always placed between the exhaust-ports and the inlet-ports, so as to be raised after the steam has been exhausted and before it is again admitted.

When the engine is constructed to run in both directions it should have two sets of exhaust-ports, as shown in figs. 1 and 2, one or the other of which should be used, according as the steam is admitted upon one or the other side of the drop-valves F.

P<sup>1</sup> are the stems of the valves P<sup>2</sup>, the outer ends of which are pivoted to the crank-arms Q, which are rigidly attached to the rock-shafts R, pivoted to the side plates M of the engine, or to other suitable supports.

Each of the rock-shafts R is made in two parts, working independently of each other, and to the outer end of each of said parts is rigidly attached a crank-arm, S.

The two crank-arms S, upon the same side of the engine, are connected by a connecting-bar, T, to the ends of which the said crank-arms are pivoted, and through a slot in the middle part of which the shaft A passes.

The bars T are operated to open and close the valves P<sup>2</sup> at the proper time to admit and cut off the steam by the cams U, attached to the shaft A, and operating upon the said bars T, as shown in figs. 2 and 3.

V are stop-cocks, connected with the lower parts of the chambers of the engine, for the purpose of drawing off the water that may be formed in said chambers by the condensation of the steam.

The exhaust-ports Z Z are located on each side of the case, and in a plane at right angles to the shaft, one pair thereof being plugged up, according to the direction in which the wheels are expected to move,

while the other pair allow the exit of the steam when the piston has passed them.

I do not claim, by themselves, the diaphragm E or the two pistons F F, neither do I claim the manner of preventing any dead point in the rotary motion of the engine.

Having thus described my invention,

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

The combination, in a rotary steam-engine, of the two independent pistons F F, the cams N N, each

operated in its separate cylinder, with the spring slides K K, the reciprocating slotted rod T, having the two pins shown on the shaft A, so as to be alternately driven by the cam V in a horizontal direction on each side thereof, as and for the purpose set forth.

WM. P. VICKERY.

Witnesses:

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