

R. PICKENS.  
Rotary-Engine.

No. 212,622.

Patented Feb. 25, 1879.

Fig. 1.

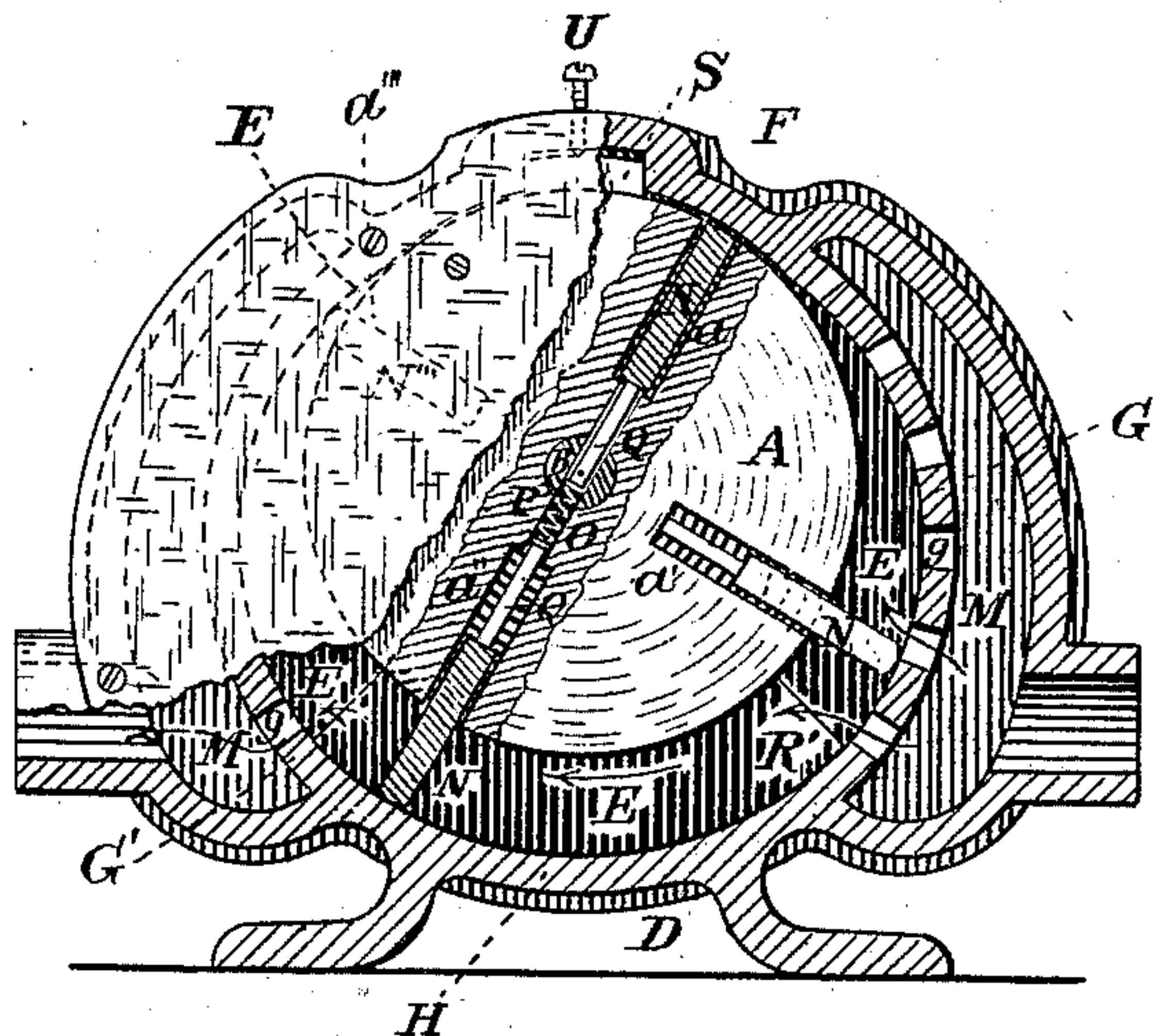


Fig. 2.

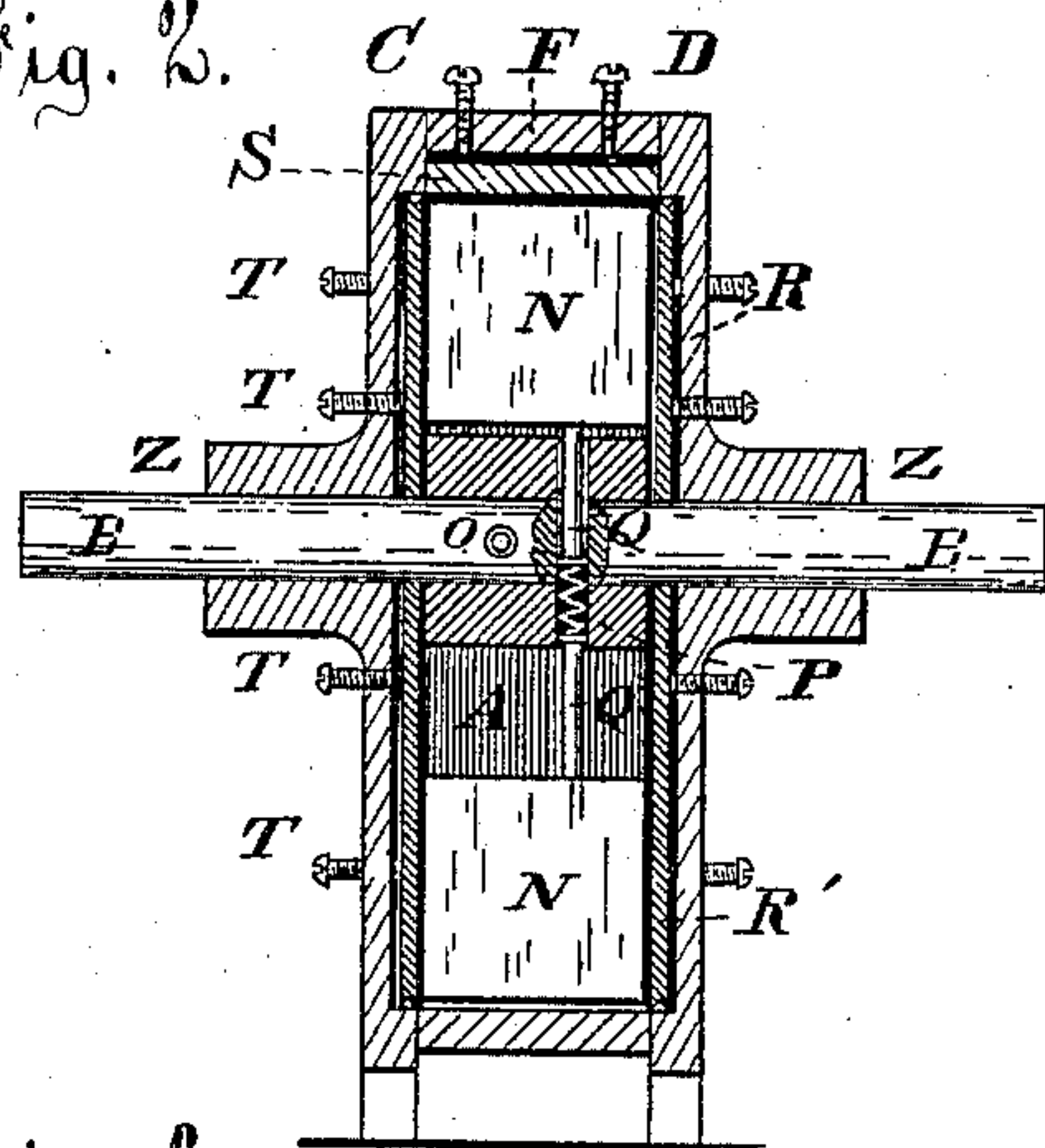


Fig. 3.

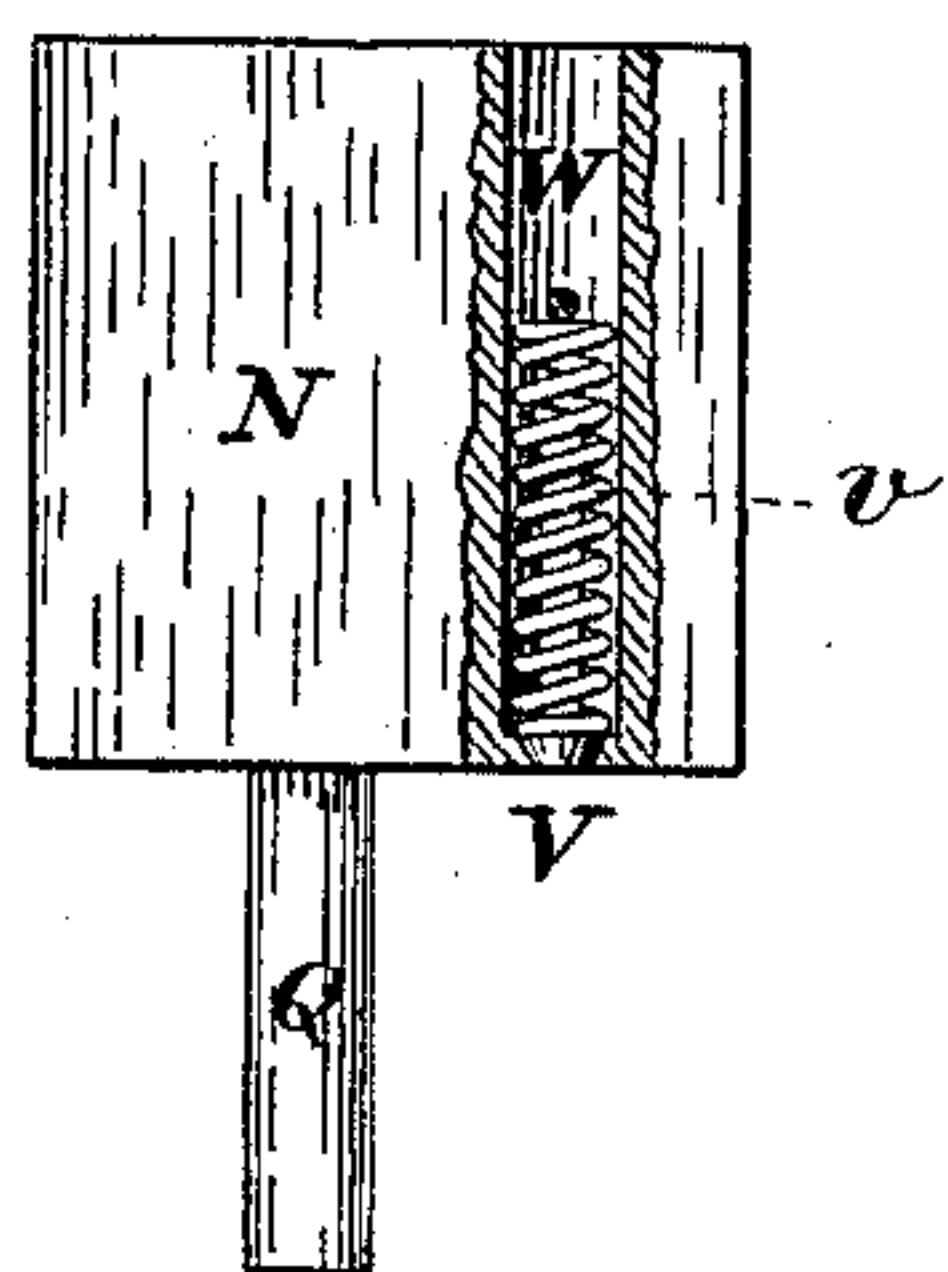
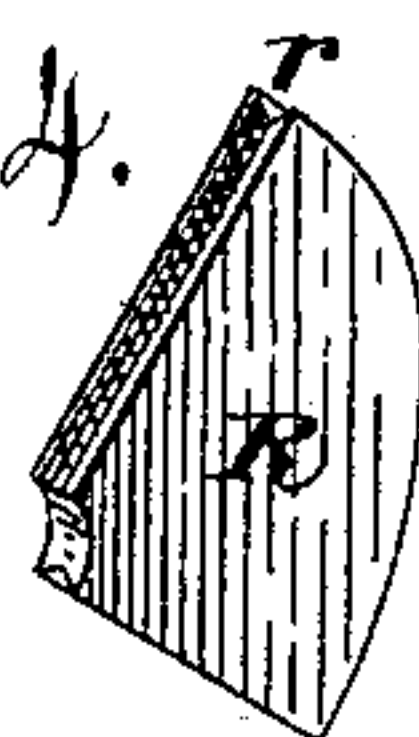


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **212,622**, dated February 25, 1879; application filed October 11, 1878.

*To all whom it may concern:*

Be it known that I, ROMAN PICKENS, of St. Albans, Kanawha county, West Virginia, have invented a new and useful Improvement in Rotary Engines, of which the following is a specification:

My invention relates to improvements in those rotary engines in which a disk having radially-sliding propelling-blades revolves within and touches tangentially a hollow drum, through one side of which steam enters, and, pushing before it the blade, which is for the time being between it and the exhaust on the other side, escapes at the latter just as the next following blade comes into effective action, so as to cause a continuous rotation of such disk.

In the accompanying drawings, Figure 1 is a partially-sectioned end elevation of an engine embodying my invention. Fig. 2 is a sectional view. Fig. 3 is a partly-sectioned side view to a larger scale of one of the piston-blades. Fig. 4 is a perspective view of one of the setting-up plates.

A represents a cylindrical piston-head or disk firmly fixed upon a shaft, B, which is journaled in the heads C D of a chamber, E. The shell of this chamber is composed of a curved plate of four arcs, of which the uppermost arc, F, fits closely the cylindrical periphery of the piston-head, and connects by easy curves G G' with the lowermost arc, H, which, while (like arc F) concentric with the piston-head, is of somewhat larger diameter. A crescent-formed chamber, E, is thus formed. The portions G G' are traversed by numerous orifices *g g'*, which communicate with side ducts M M', of which either duct—say *m*—communicates with the steam-supply, and the other with the exhaust.

The piston-head has four radial slots, *a a' a'' a'''*, which penetrate from its periphery to near its center, which slots contain as many blades or piston-plates N N' N'' N''', each of which, on reaching the arc H, becomes and continues for one-fourth of the revolution of the head the effective surface of propulsion.

Each slot communicates with that diametrically in line with it by a channel, O, that contains a spiral spring, P, and the stems Q of the piston-plates. Those portions of the inner walls of the heads opposite the parts F and H are recessed to hold quadrant-shaped plates R and R', which are capable of being set up as they were by means of set-screws T. In the edge of each quadrant-plate is a gutter, *r*, for a suitable packing-gasket. The portion of the shell immediately over the piston-head is recessed to receive a block, S, which block is set up by means of screws U.

For use with water or other incompressible fluid a safety-vent may be provided in the form of a small valve, V, held to its seat by spring *v*, and occupying a passage, W, from the inner to the outer edge of the piston-plate. This permits escape of any imprisoned liquid.

Z may represent the locations of suitable stuffing-boxes for the shaft B.

A suitable branched pipe provided with a three-way cock may be employed to throw the steam into either passage M or M', and at the same instant open the other to exhaust, and thereby reverse the engine when desired. This rotary engine may be employed as a steam or water propelled engine, as a pump or a gas or water meter, or as a blower.

I claim as new and of my invention—

1. The shaft B, whose radially-slotted disk A has radially-shifting blades N, whose stems Q are separated by spiral spring O, in combination with the described shell F G G' H, communicating by ports *g'* with supply and exhaust passages M and M', and having the grooved segmental set-up plates R R', substantially as set forth.

2. In a rotary engine, the valve-guarded vent V *v* W in the piston plate or blade N, substantially as and for the purpose explained.

In testimony of which invention I hereunto set my hand.

ROMAN PICKENS.

Attest:

GEO. H. KNIGHT,  
WALTER KNIGHT.