

(No Model.)

J. T. DAVIS.
ROTARY ENGINE.

No. 268,005.

Patented Nov. 28, 1882.

Fig: 1.

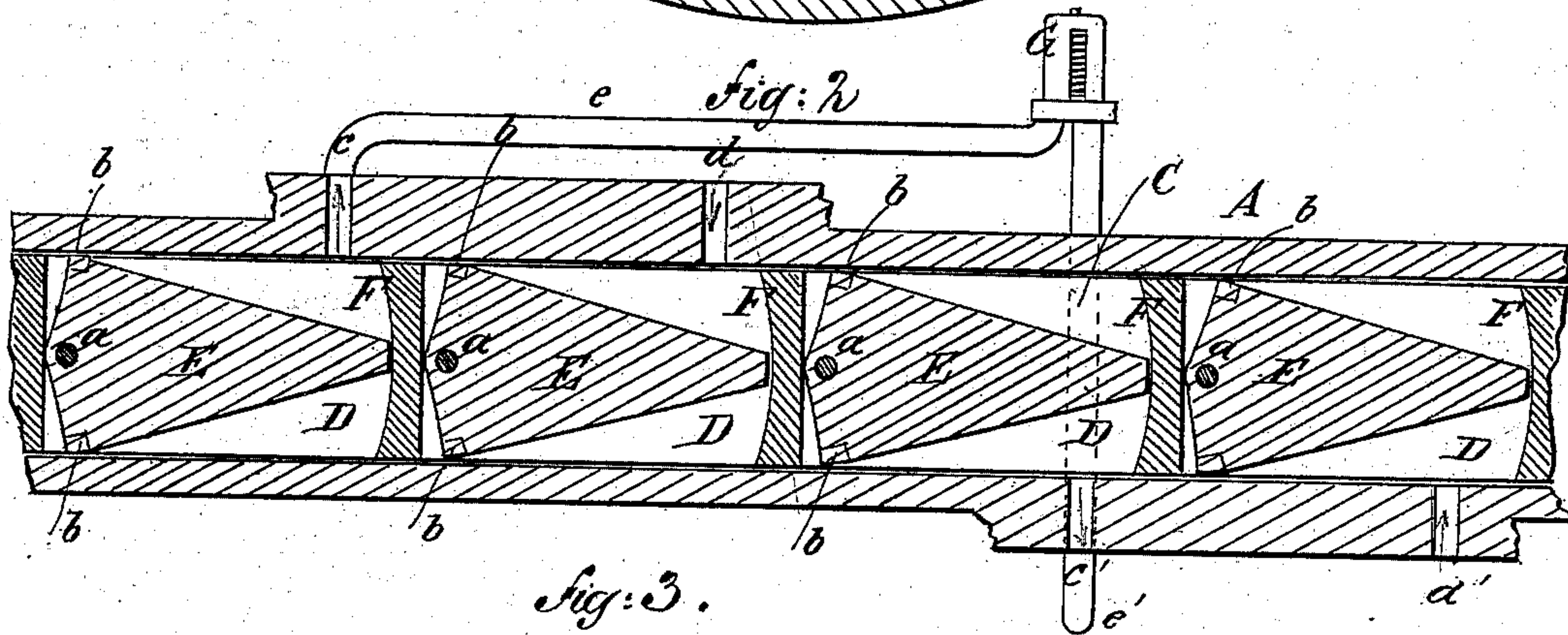
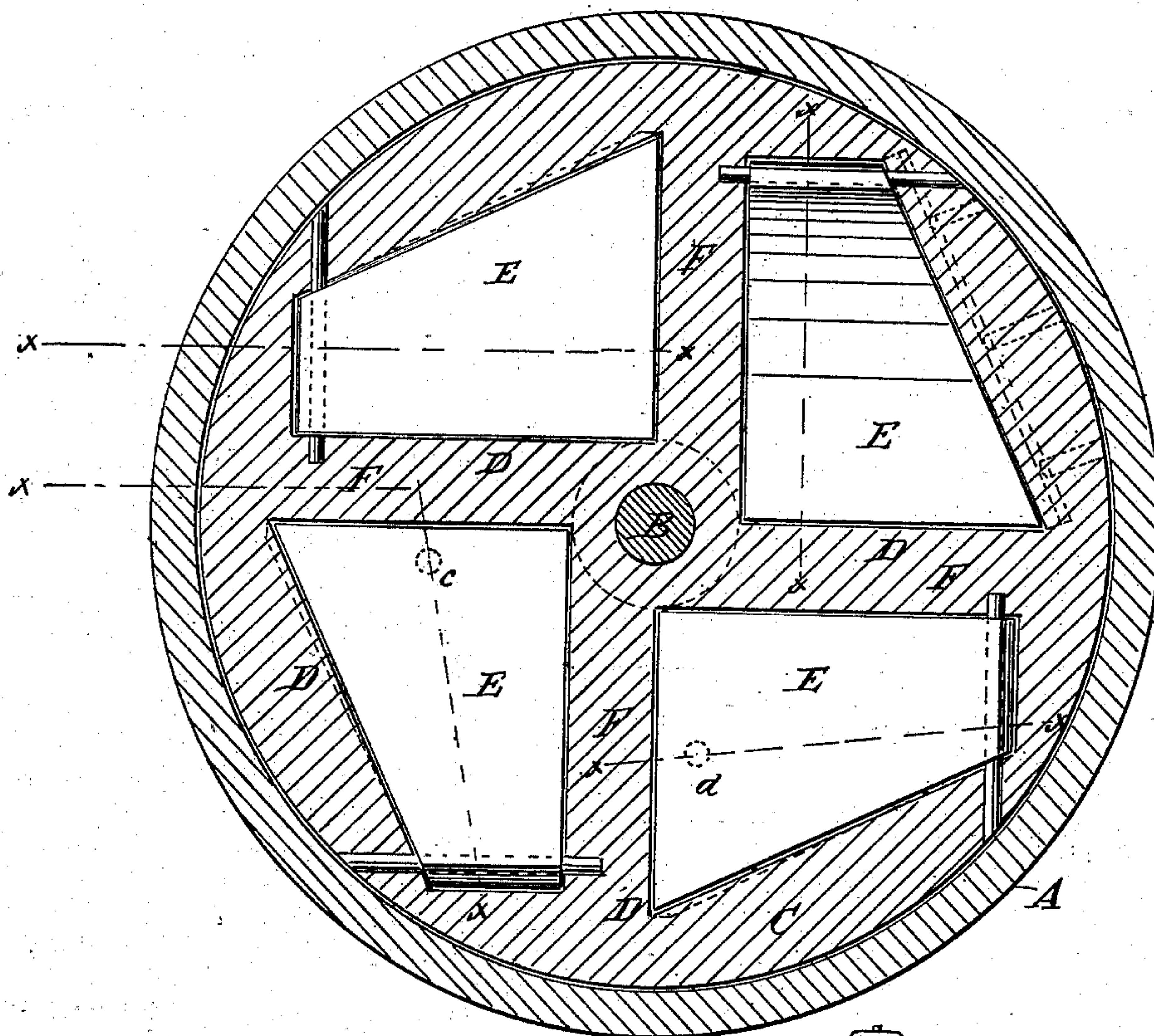
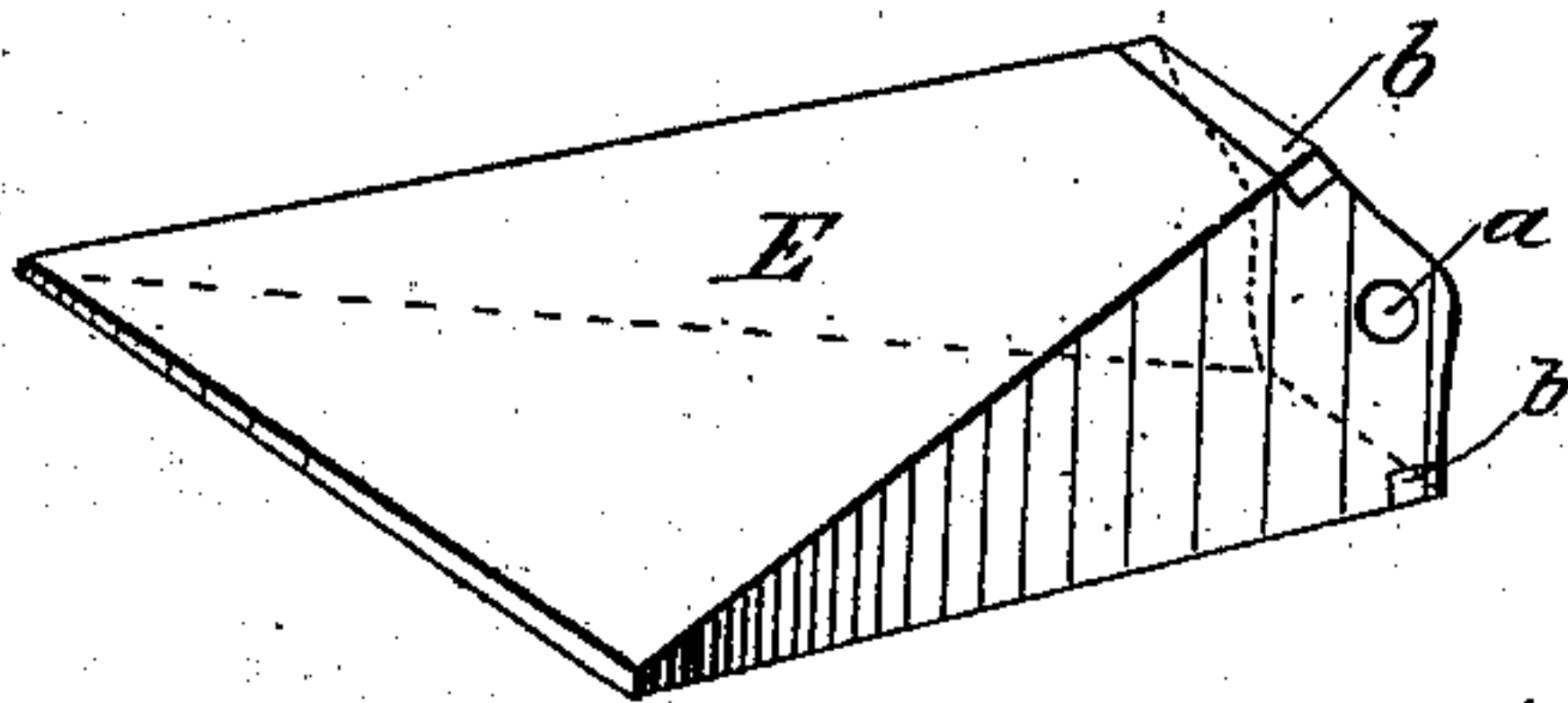


Fig: 3.

WITNESSES:

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JOHN T. DAVIS, OF NEW YORK, N. Y., ASSIGNOR TO ORRILL DAVIS AND
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ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 268,005, dated November 28, 1882.

Application filed March 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. DAVIS, of the city, county, and State of New York, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side sectional elevation of my improved rotary engine. Fig. 2 is a sectional view taken on the line xx in Fig. 1, showing the relation of the pistons to each other and to the valves and steam-supply and exhaust ports. Fig. 3 is a detail view of one of the valves.

In my rotary engine four laterally-swinging valves are pivoted in as many chambers in a piston-wheel capable of turning between the flat sides of the steam-cylinder. Steam is admitted alternately on opposite sides of the valves, and the steam admitted upon one side, after doing its work, acts as a cushion for the valve, preventing it from being drawn forcibly against the side of the cylinder.

In the drawings, A is the steam-cylinder, in the sides of which the shaft B is journaled axially. A wheel, C, filling the cylinder A, is fixed on the shaft B, and is capable of turning in the cylinder A. There are in the wheel C four chambers, D, of trapezoidal form, in which are pivoted the wedge-shaped valves E—one valve in each chamber. The pivot a of the valve is at the base or thicker portion, and in the sides of the thicker portion of the valve there are packing-strips b , which fit steam-tight against the flat sides of the cylinder. The free end of the valve E is capable of moving along the concave face of the piston F, forming the partition which separates one chamber D from another.

Steam is admitted to the cylinder through ports $d d'$ and exhausted through ports $c c'$. The pistons F control the admission of steam to the chambers D through the ports $d d'$, and on passing the ports $c c'$ they allow the steam to escape, so that it will be seen steam is admitted on both sides of the case, and is introduced

on one side of a valve and then on the other. By this arrangement the steam acting on the valve on one side forces the valve against the steam that has been admitted on the other side of the previous chamber, and thus cushions on it until the pressure becomes equal on both sides, at which point the port is opened opposite the inlet of the steam. At the same moment the steam is cut off by the rotary action of the pistons, and the escape of the steam on the one side allows the lost steam introduced to work expansively for a portion of the revolution, when the inlet of the steam on the opposite side of the valve again forces the valve over against the expanded steam until the escape-port is opened by the revolution of the valves and the steam last introduced works expansively.

By the use of four valves in the steam-cylinder I can operate on two valves at the same time and exhaust with two, giving me the advantage of the area of two pistons in the same cylinder, thus doubling the power of the engine, and by the introduction of steam on both sides of the valves I secure the advantages of having the lost steam introduced to cushion against before being exhausted, giving me the benefit not only of a more perfect action of the valves, but the continued benefit of the pressure of the steam on both sides of the valve on the face of the pistons.

To limit the steam-pressure on the exhaust side of the valves, and to insure a sufficient pressure for the valves to cushion against, I connect the exhaust-ports $c c'$ by pipes $e e'$ with an ordinary safety-valve, G, which is adjusted to the required pressure.

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

1. A rotary engine having laterally-swinging valves pivoted in separate chambers of a piston-wheel turning between the flat sides of a steam-cylinder and receiving steam on opposite sides thereof, whereby said valves are cushioned by the steam after it has been used, as described.

2. The combination, with a case, chambers, and cylinder, of pistons F, controlling the in-

let and outlet of the steam and causing it to enter first on one and then on the other sides of the valves, for the purpose specified.

3. The combination, with the steam-cylinder of a rotary engine, of four valves arranged to operate in pairs, as described, whereby the area of two pistons is secured in the same cylinder, for the purpose set forth.

4. In a rotary steam-engine having the cyl-

inder A, chambered wheel C, and swinging valves E, the combination of the safety-valve G with the exhaust-ports *c c'*, for limiting the steam-pressure on the exhaust side of the piston F, and valves E, as herein specified.

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Witnesses:

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