

(No Model.)

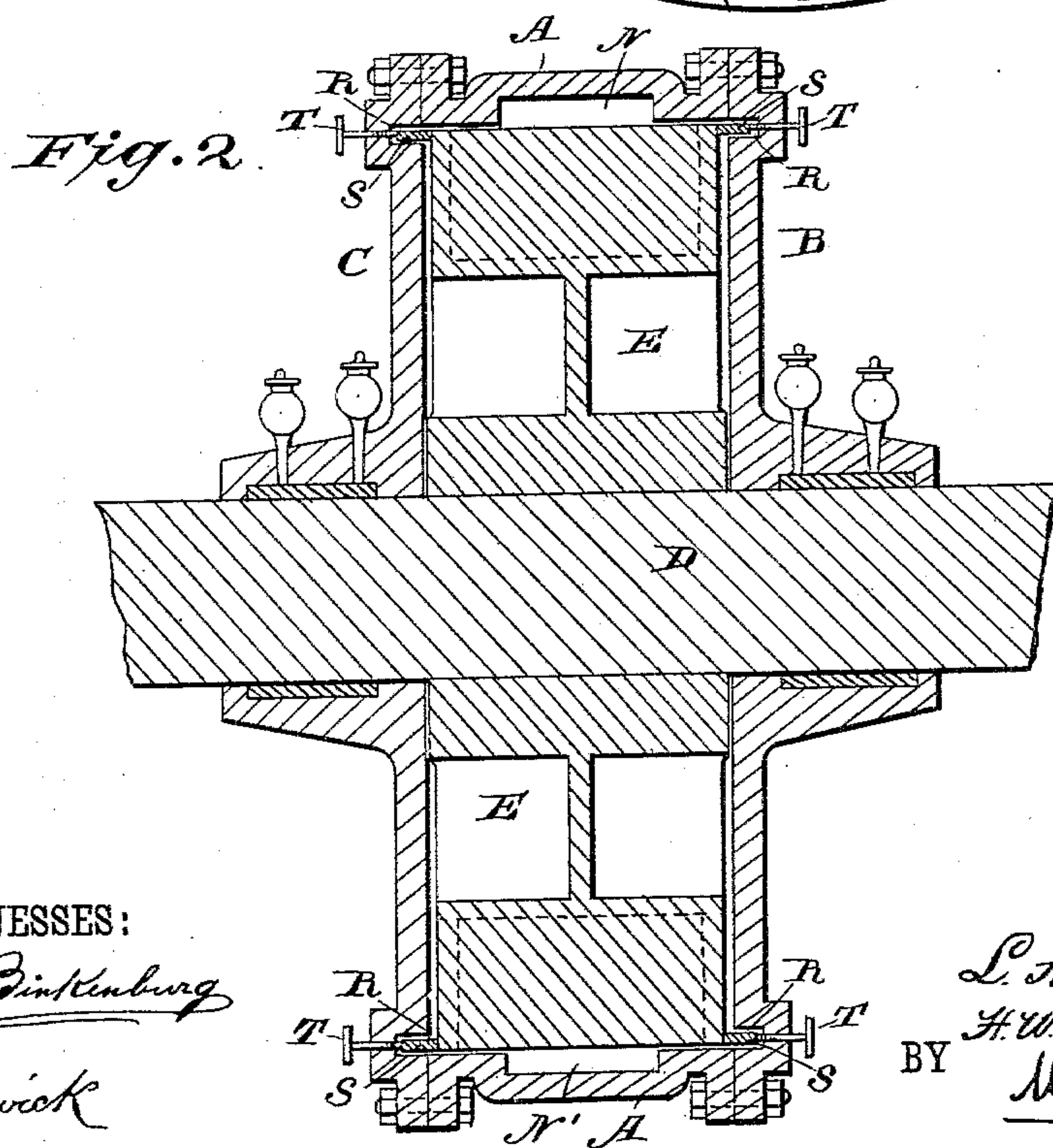
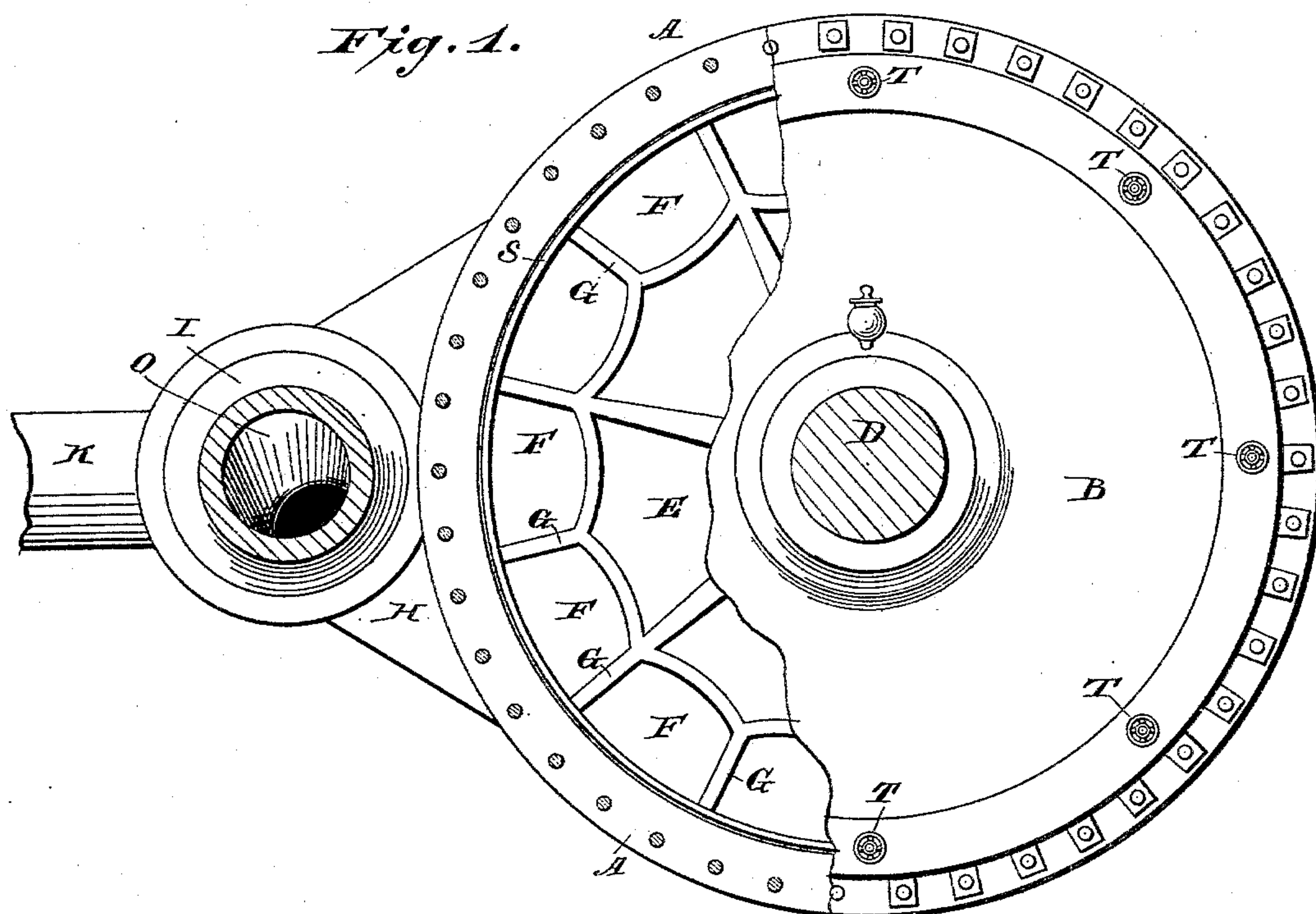
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L. A. PERROT & H. W. WARRINGTON.

ROTARY ENGINE.

No. 369,469.

Patented Sept. 6, 1887.



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2 Sheets—Sheet 2.

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Fig. 3.

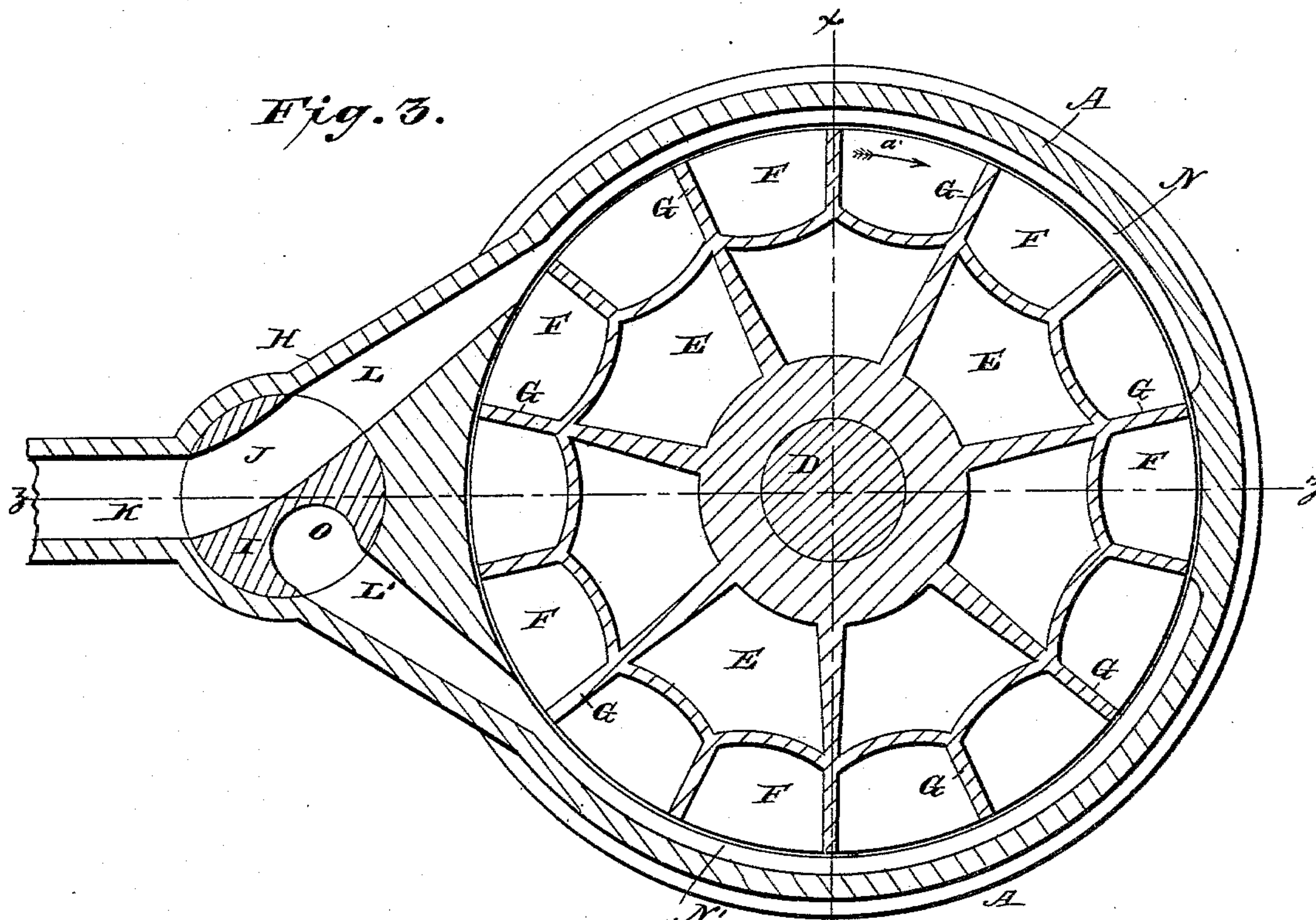
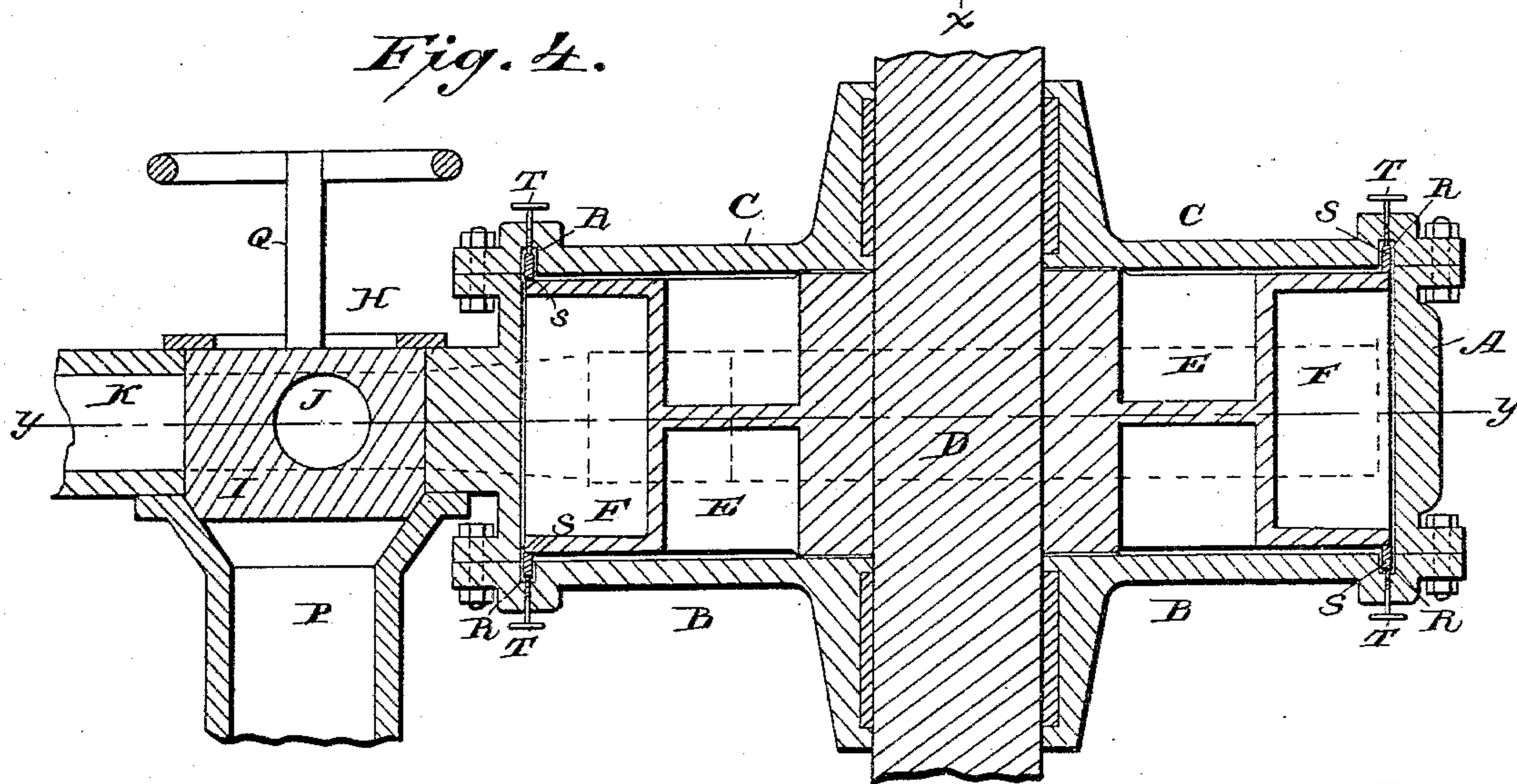


Fig. 4.



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LOUIS A. PERROT AND HARRY W. WARRINGTON, OF RICHMOND, VIRGINIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 369,469, dated September 6, 1887.

Application filed April 20, 1887. Serial No. 235,476. (No model.)

To all whom it may concern:

Be it known that we, LOUIS ALBERT PERROT and HARRY WALLACE WARRINGTON, both of Richmond, in the county of Henrico and State of Virginia, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

The object of our invention is to provide a new and improved rotary engine which is simple and durable in construction, very effective in operation, and easily reversed.

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

Figure 1 is a side elevation of our improvement with part of the head broken out. Fig. 2 is a vertical cross-section of the same on the lines *xx* of Fig. 3. Fig. 3 is a central sectional elevation of the same on the lines *yy* of Fig. 4. Fig. 4 is a sectional plan view of the same on the lines *zz* of Fig. 3.

On the cylinder A, of suitable size, are secured the two heads B and C, in which is mounted to turn the main shaft D, on which is secured the wheel E, fitting in the cylinder A between the heads B and C.

In the rim of the wheel E are formed the cross-buckets F, open at the outer ends and closed at both sides of the rim, and separated from each other by the radial partitions G.

One side of the cylinder A is extended outwardly, forming the offset H, in which is held to turn the valve I, provided with the opening J, adapted to connect the steam-inlet pipe K with either the channel L or L', each leading into a recess or groove, N or N', respectively extending from the said channels L or L' in opposite direction to the other side of the cylinder A, and terminating a short distance from each other, as shown in Fig. 3. In the valve I is also formed the opening O, leading from the exhaust-pipe P inwardly, and being adapted to connect with either channel L or L'. On the valve I is secured a handle, Q, for turning the valve I so that the opening J connects the steam-inlet pipe either with the channel L or L', while at the same time the exhaust-pipe P is connected with the channel L' or L, respectively.

In each of the heads B and C is formed an annular groove, R, in which is held a packing-

ring, S, adapted to be pressed against the face of the wheel E by set screws T, screwing in the said heads B and C from the outside and butting with their inner ends against the rings S. The bearings in the heads B and C are provided with suitable oilers, to lubricate the main shaft D.

The operation is as follows: When the valve I is in the position shown in Fig. 3, then the steam, entering the inlet-pipe K, passes through the opening J in the valve I and passes into the channel, from which it passes into the groove N and into buckets F in the wheel E, which is turned in the direction of the arrow *a'* by the steam pressing against the partition G in the direction of the arrow *a'*. When one of the buckets F passes the end of the groove N, then the pressure of the live steam supplied by the pipe K and the groove N is shut off, and when the respective bucket opens, on the further rotation of the wheel E, into the groove N', then the steam in the bucket F escapes and passes along the groove N' into the channel L', and finally escapes through the opening O in the valve I into the exhaust-pipe P. When the operator desires to reverse the engine, he then turns the valve I by means of the handle Q until the opening J connects with the channel L', and the opening O then connects with the channel L. The steam from the inlet-pipe K then passes first into the channel L' and the groove N', and acts on the partitions G in the opposite direction, as before described, thus reversing the engine. The steam then exhausts through the groove N, the channel L, and the opening O.

The inlet-pipe K can be closed by the valve I by turning the latter until the openings J and O do not connect with the channel L and L' and the pipe K.

Suitable means can be employed to hold the valve I in a locked position.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination, with a cylinder, of a wheel having buckets in its rim and separated from each other by partitions, the said wheel fitting in the said cylinder, a shaft carrying the said wheel and mounted in the heads of the said cylinder, an extension formed on the said cylinder and having

channels leading in opposite directions to the said buckets in the wheel, and a valve held in the said extension and provided with a steam-inlet opening and an exhaust-opening connecting with the said channels, substantially as described.

2. In a rotary engine, the combination, with a cylinder having the grooves N and N', of a wheel having buckets in its rim and separated from each other by partitions, the said wheel fitting in the said cylinder, a shaft carrying the said wheel and mounted in the heads of the said cylinder, an extension formed on the said cylinder and having two channels extending in opposite directions and opening into the grooves N and N', respectively, a valve held in the said extension and provided with a steam-inlet opening and an exhaust-opening arranged to connect with the said channels, a steam-inlet pipe connecting with the said inlet opening of the valve, and an exhaust-pipe connecting with one end of the exhaust-opening in the said valve, substantially as described.

3. In a rotary engine, the combination, with a cylinder having the grooves N and N', of a wheel having buckets in its rim and separated from each other by partitions, the said wheel fitting in the said cylinder, a shaft carrying the said wheel and mounted in the heads of the said cylinder, an extension formed on the said cylinder and having two channels extending

in opposite directions and opening into the grooves N and N', respectively, a valve held in the said extension and provided with a steam-inlet opening and an exhaust-opening arranged to connect with the said channels, a steam-inlet pipe connecting with the said inlet-opening of the valve, and an exhaust-pipe connecting with one end of the exhaust-opening in the said valve, and means, as described, for turning the said valve, as set forth.

4. In a rotary engine, the cylinder A, having the grooves N and N', leading to the channels L and L', the extension H, in which the said channels L and L' are formed, the valve I, having the openings J and O, adapted to connect with the said channels L and L', the steam-inlet pipes K, adapted to connect with the said opening J, and the exhaust-pipe P, adapted to connect with the opening O, in combination with the wheel E, having the buckets F, separated from each other by the partition G, and the main shaft D, carrying the said wheel E and being mounted in the heads of the said cylinder A, substantially as shown and described.

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