

(No Model.)

3 Sheets—Sheet 1.

W. D. THOMAS.
ROTARY ENGINE.

No. 601,914.

Patented Apr. 5, 1898.

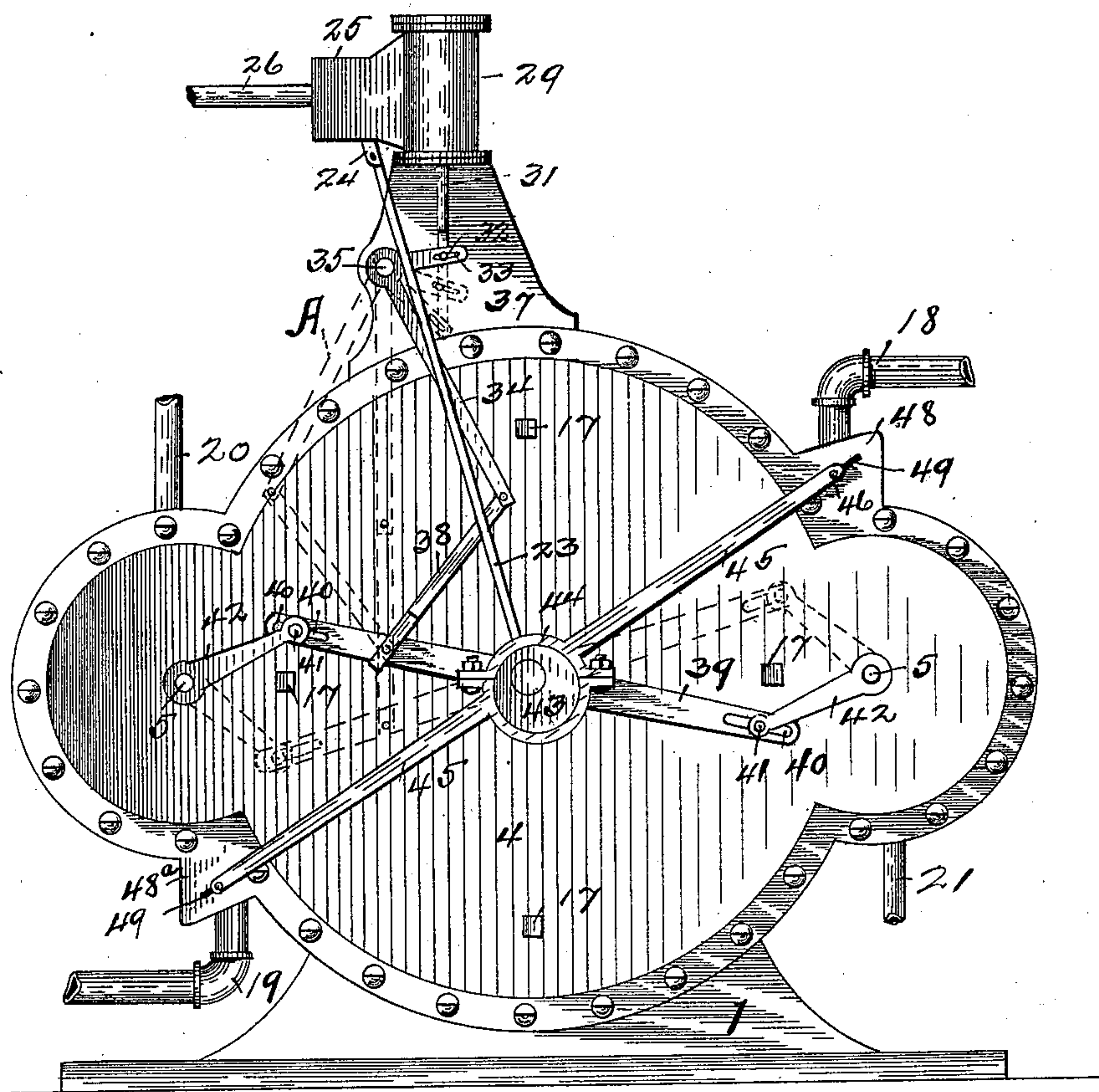


Fig. 1.

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Inventor
By William D. Thomas.
Mury & Co. Attorney

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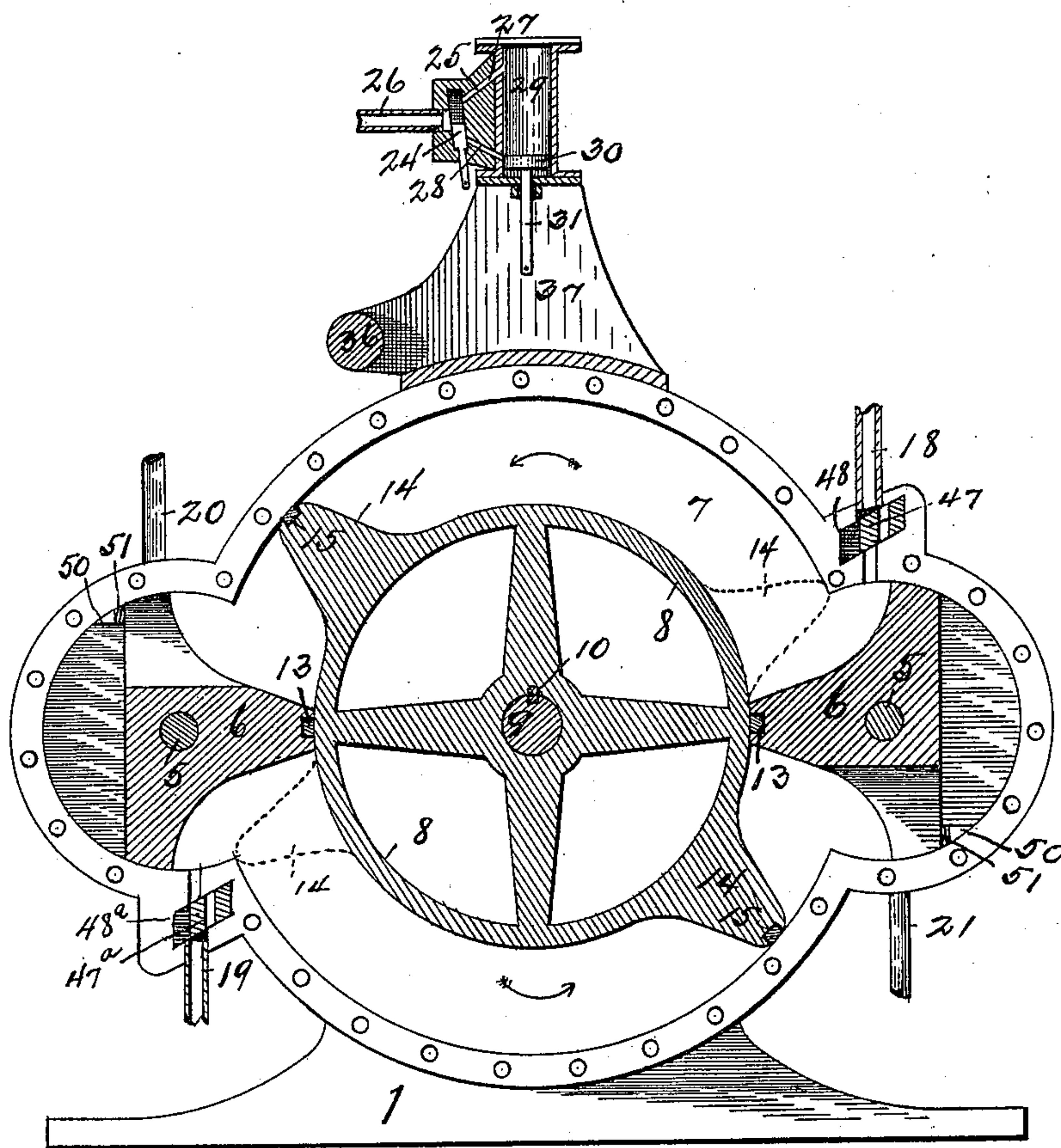


Fig. 2.

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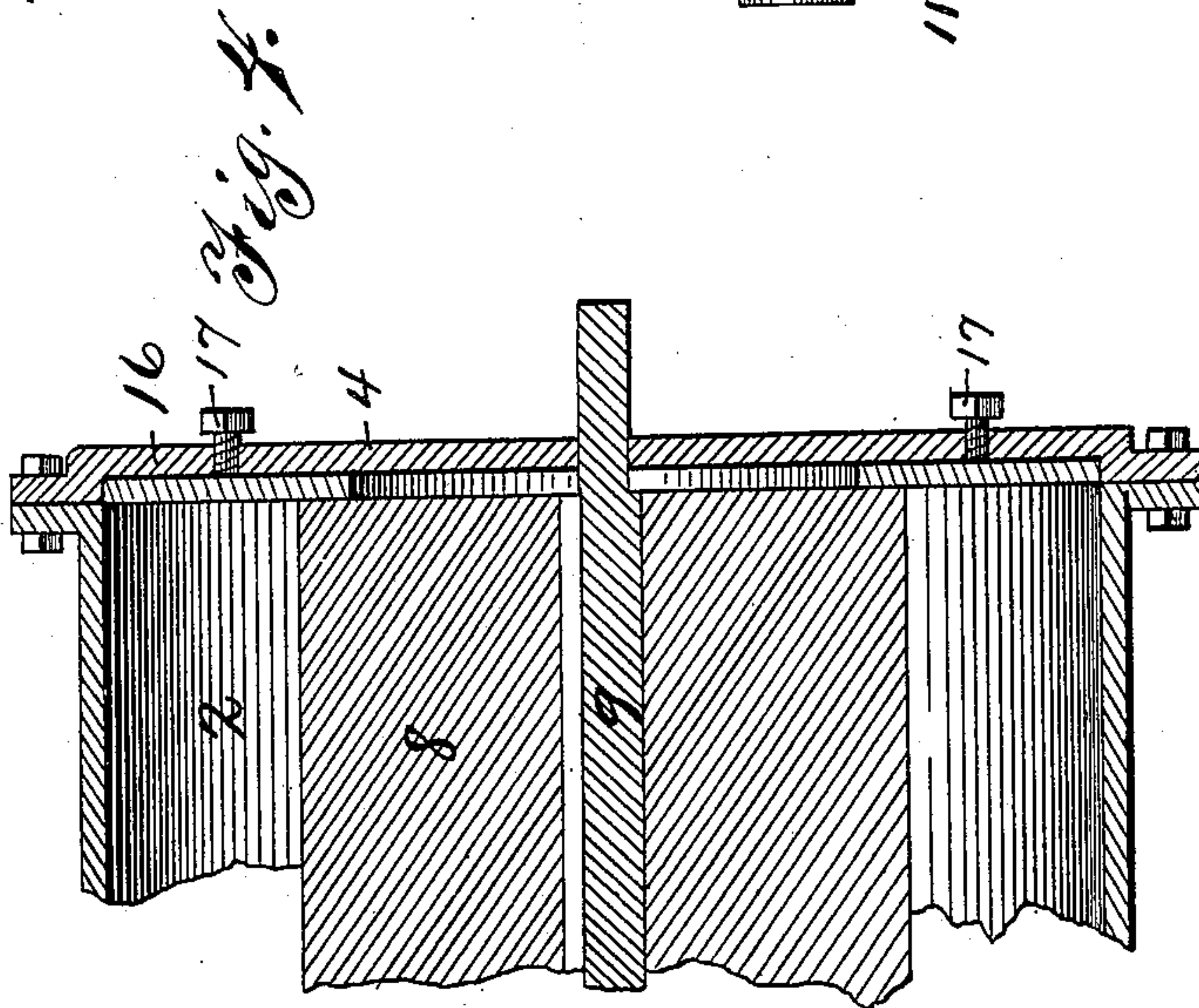
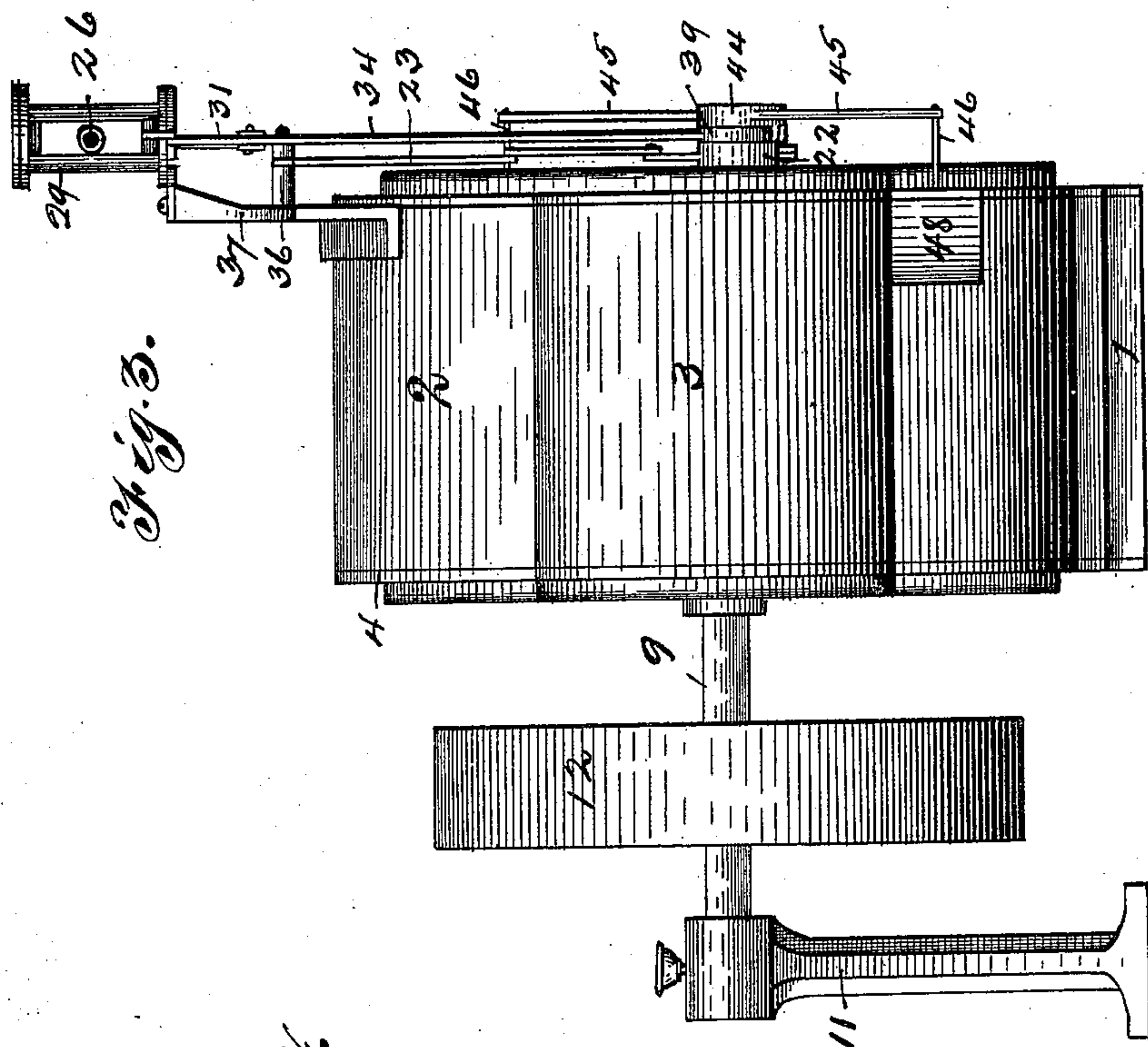
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3 Sheets—Sheet 3.

W. D. THOMAS.
ROTARY ENGINE.

No. 601,914.

Patented Apr. 5, 1898.



Witnesses
Frank H. Wright
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Inventor
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By Henry C. Grant, Attorney

UNITED STATES PATENT OFFICE.

WILLIAM D. THOMAS, OF ALLEGHENY, PENNSYLVANIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 601,914, dated April 5, 1898.

Application filed April 13, 1897. Serial No. 631,984. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. THOMAS, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in rotary motors or engines, the object being to construct a rotary engine or motor in which the steam or other motive power employed may be cut off at any
15 desired point of the revolution, and an engine that will be double-acting in its operation, so as to produce a continuity of motion and obtain a greater purchase; and the novelty of the invention consists in the construction and
20 arrangement of a power disk or wheel mounted upon a shaft and provided with abutments to receive the steam or other motive power, an eccentrically-mounted collar on the shaft of the power-wheel, whereby the steam is auto-
25 matically admitted above and below a piston-head arranged in the steam-cylinder mounted over the engine, and in rocker-valves which are mounted in the cylinder and are adapted to automatically open and close during the
30 revolution of the power disk or wheel; and to this end the invention consists in the novel construction, combination, and arrangement of parts, to be hereinafter more specifically described, and particularly pointed out in the
35 claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like figures of reference indicate similar
40 parts throughout the several views, in which—

Figure 1 is a front elevation of my improved motor. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a side elevation, and Fig. 4 is a sectional view of a portion of the cylinder and power disk or wheel.
45

Referring to the drawings by reference-figures, 1 denotes the base which supports the rim 2, provided with outwardly-extending portions 3, the sides or cylinder-heads 4 being
50 secured to the rim 2 by screws, rivets, or other

suitable means. Journaled within these sides and in the outwardly-extending segmental portions 3 of the same and within the similar portion of the rim 2 is a shaft 5, on which are secured the rocker-valves 6, extending out- 55 wardly into the cylinder 7, where they engage the outer periphery of the power disk or wheel 8, which is mounted upon the driving-shaft 9; secured thereto by means of a key 10, engaging the hub of the power disk or wheel 60 and in the driving-shaft 9, said driving-shaft being journaled in the sides 4 and supported at one end, which extends outwardly from the motor, by a standard 11, the belt or driving wheel 12 being secured on said shaft between 65 this standard and the motor.

The outwardly-extending portions of the rocker-valves, or those portions which extend into engagement with the power-wheel, are provided upon their engaging faces with a 70 packing-strip 13, and the disk or power-wheel is provided with abutments 14, having a packing-strip 15, which engages against the inner face of the rim 2, and in order to form a perfectly-tight cylinder and prevent the 75 steam from escaping to the ends of the power disk or wheel I have provided plates or rings 16, which are secured to the rims 2 by screws 17 or other suitable adjusting means. Steam-inlet ports 18 19 are provided, one above the 80 rocker 6 and the other below the opposite rocker 6, and the exhaust-ports 20 21 are arranged in a similar manner diametrically opposite from the inlet-ports, the exhaust being made through the rocker-valves 6. Mounted 85 on the opposite end of the shaft 9 from that carrying the driving or belt wheel 12 is an eccentric collar 22, to which is attached an arm or lever 23, passing upward and connected at its upper end to a valve 24, operat- 90 ing in a steam-chest 25, having an inlet-port 26 and outlet-ports 27 28, leading to the cylinder 29, in which is arranged a piston 30, having a piston-rod 31, with a pin 32 engaging in the slot 33 in the short arm of the crank 95 34, said crank being fulcrumed at 35 to a pin or support 36, carried by the brace or bracket 37, secured on top of the cylinder and supporting the steam-chest 25 and cylinder 29. The lower end of the crank 34 is pivotally at- 100

tached to one end of the arm 38, having its other end fulcrumed to a beam 39, swiveled on the side of the cylinder-head 4, said beam being provided with slotted ends 40 to receive pins 41 in the rocker-levers 42, said levers being secured to the shafts 5, which carry the rocker-valves 6. On this end of the shaft 9 is secured an eccentric disk 43, which receives the strap 44, formed in the inner ends of the rocking levers 45, which are fulcrumed at their outer ends to pins 46, said pins engaging in and operating the valves 47 47^a in the steam-chest 48 48^a in the cylinder proper, said pins 46 being adapted to travel during the rocking of the levers in slots 49, provided for same in the steam-chest.

The operation is as follows: Assuming that all parts are in their respective positions and the power wheel or disk is in the position shown in dotted lines in Fig. 2, the valves 47 and 47^a are open to admit the steam or other motive power, which acts on rockers 6 and abutments 14, causing the power-wheel to revolve in the direction shown by arrows until the abutments 14 come almost in contact with the rocker-valves 6, in which position the steam is exhausted through these rocker-valves and the exhaust-ports 20 21. The eccentric 22 is adjusted so that at this time it opens valve 24 through the connection with arm 23 and admits steam through port 25 into the cylinder 29, where it acts on piston 30, forcing the same downward, operating the crank 34, arm 38, beam 39, and rocker-arms 42, thus moving rocker-valves 6 into position to allow abutments 14 to pass, and by reason of the combination of the arms and levers, the piston still continuing downward, brings the rocker-valves back to their original position, at which time the crank 34 and arm 38 will be in the position shown in dotted lines, Fig. 1, at *a*, thus being in the position to again receive steam. During this operation, the eccentric 43 is so moved with the shaft 9, as to cause the same to operate the rocker-levers 45 and close and open the inlet-valves 47 47^a, which continues to move the power-wheel until the abutments 14 can come in close contact to the rocker-valves 6, when the adjustment of the eccentric 22, through the connections above described, opens valve 24 to admit steam through port 28 to the bottom of cylinder 29 and operate the piston-head in the upward direction, which opens and closes the rocker-valves 6, as above, and brings the connections back to their original positions. In order that the rocker-valves 6 may retain their position under pressure, an adjustable block 50 and spring 51 are secured in the cylinder, against which the rockers rest, and in order to prevent any leakage of steam I have provided the plate or ring 16, which is adjusted against the wheel and abutments by the set-screw 17.

Having fully described my invention, what

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

1. In a rotary motor, a cylinder having a steam-chest provided with inlet-valves, a power-wheel mounted upon a driving-shaft, rocker-valves mounted within said cylinder, a steam-chest and cylinder, arranged above the main cylinder, and eccentric connections from the driving-shaft to the inlet-valves and to the steam-chest above the main cylinder whereby the inlet-valves are automatically opened and closed, a beam swiveled to the cylinder-head, the ends of said beam being pivotally secured to the rocker-lever and crank-arms, connections between the piston operating in the cylinder above the main cylinder and the said beam, whereby said rocker-valve is made to perform two operations at one stroke of the piston, and permit the uninterrupted movement of the power-wheel, substantially as shown and described.

2. In a rotary motor, a cylinder, a power-wheel mounted upon a driving-shaft in said cylinder, said power-wheel having abutments, rocker-arms mounted in the cylinder, a steam-chest and cylinder arranged above the main cylinder, a piston operating in said cylinder, a beam swiveled on the cylinder-head, the ends of said beam being pivotally secured to the rocker-lever and crank-arms, connections between said piston and the said beam, whereby said rocker-arms are permitted to perform two complete operations at one stroke of the piston, a ring or plate secured to the cylinder-head, a steam-chest and inlet-valves for said main cylinder, and eccentric connections from the driving-shaft with the inlet-valves, and the valves controlling the steam-chest above the main cylinder whereby the inlet-ports are automatically opened and closed, and the rocker-arms are operated so as to permit the uninterrupted movement of the power-wheel, substantially as shown and described.

3. In a rotary motor, a cylinder, having a steam-chest provided with inlet-valves, a power-wheel mounted upon a driving-shaft, rocker-valves mounted within said cylinder, a steam-chest and cylinder arranged above the main cylinder, and eccentric connections from the driving-shaft to the inlet-valves and to the steam-chest above the main cylinder, whereby the inlet-valves are automatically opened and closed and the rocker-valves operated to permit the uninterrupted movement of the power-wheel, substantially as shown and described.

4. In a rotary motor, a cylinder and a power-wheel mounted upon a driving-shaft in said cylinder, said power-wheel having abutments, rocker-valves mounted in the cylinder, a steam-chest and cylinder arranged above the main cylinder, a ring or plate secured to the cylinder-heads, a steam-chest and inlet-valves for said main cylinder, and eccentric connections from the driving-shaft with the inlet-

valves and the valve controlling the steam-
chest above the main cylinder, whereby the
inlet-ports are automatically opened and
closed, and the rocker-arms are operated so
5 as to permit the uninterrupted movement of
the power-wheel, substantially as shown and
described.

In testimony whereof I affix my signature
in presence of two witnesses.

WILLIAM D. THOMAS.

Witnesses:

JOHN NOLAND,
GEO. B. PARKER.