

No. 652,440.

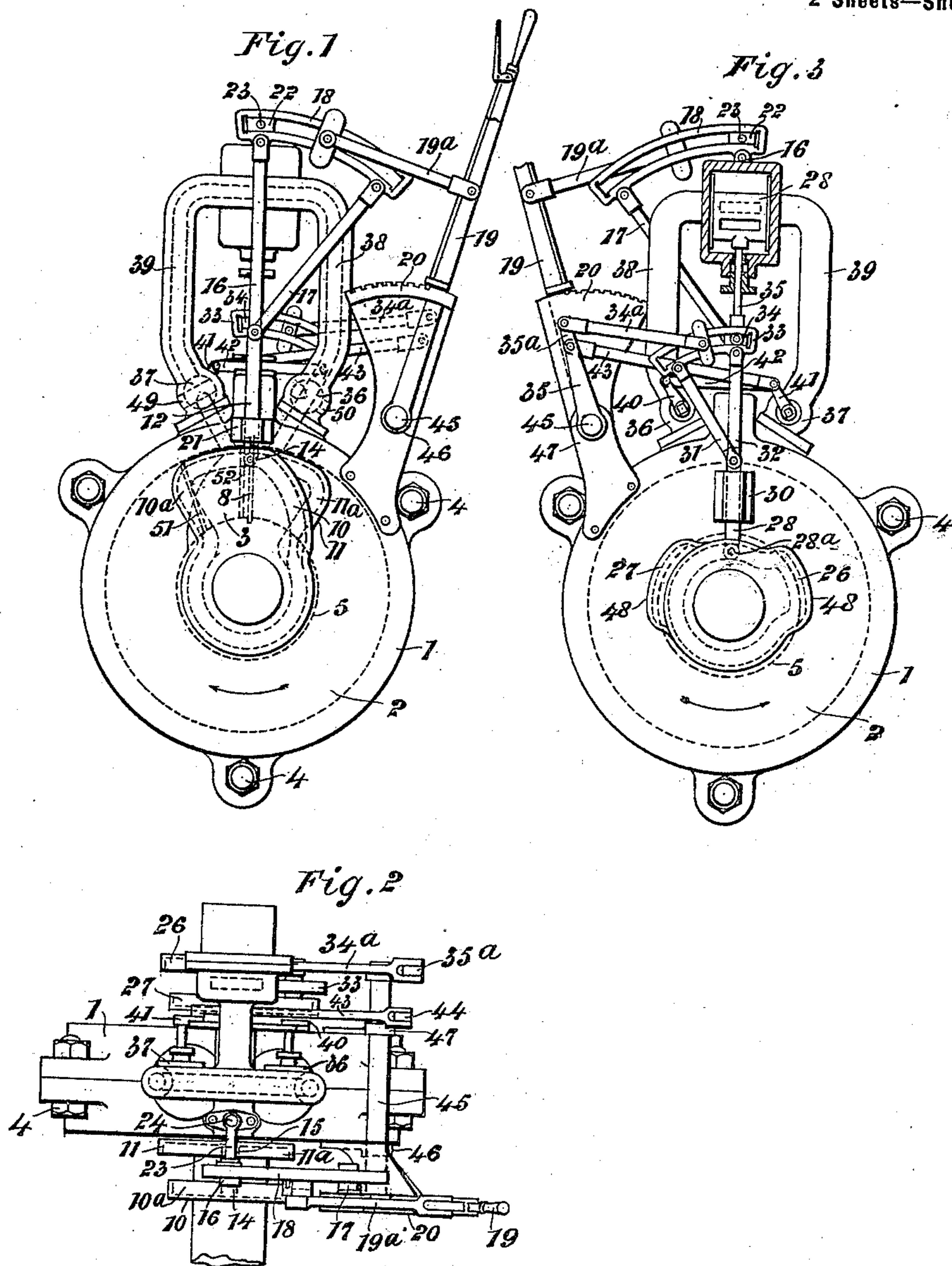
Patented June 26, 1900.

R. MCF. MURIE.
ROTARY ENGINE.

(Application filed Sept. 17, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

E. R. Bolton
Ordinary

Inventor:

Robert McFarlane Murie

By Richard R.

his Attorneys.

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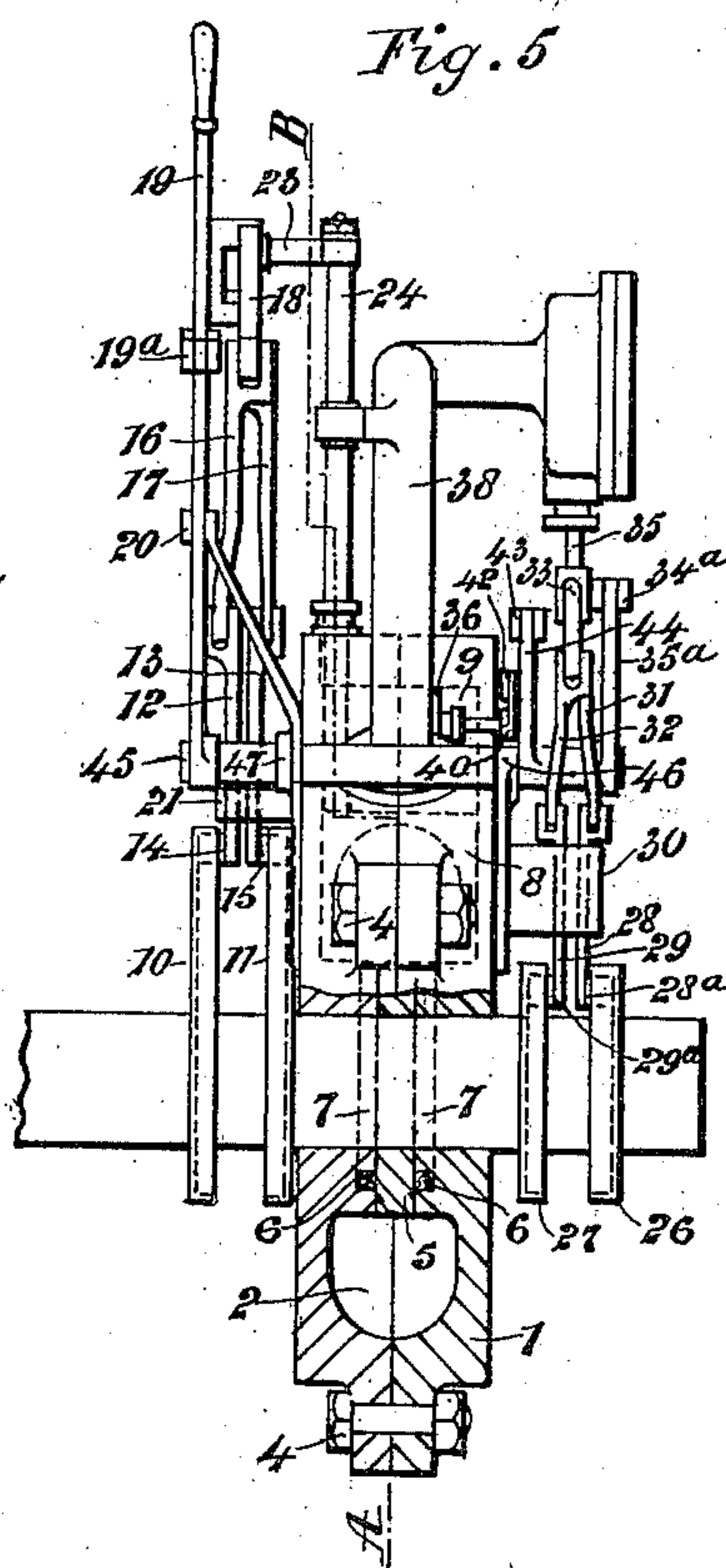
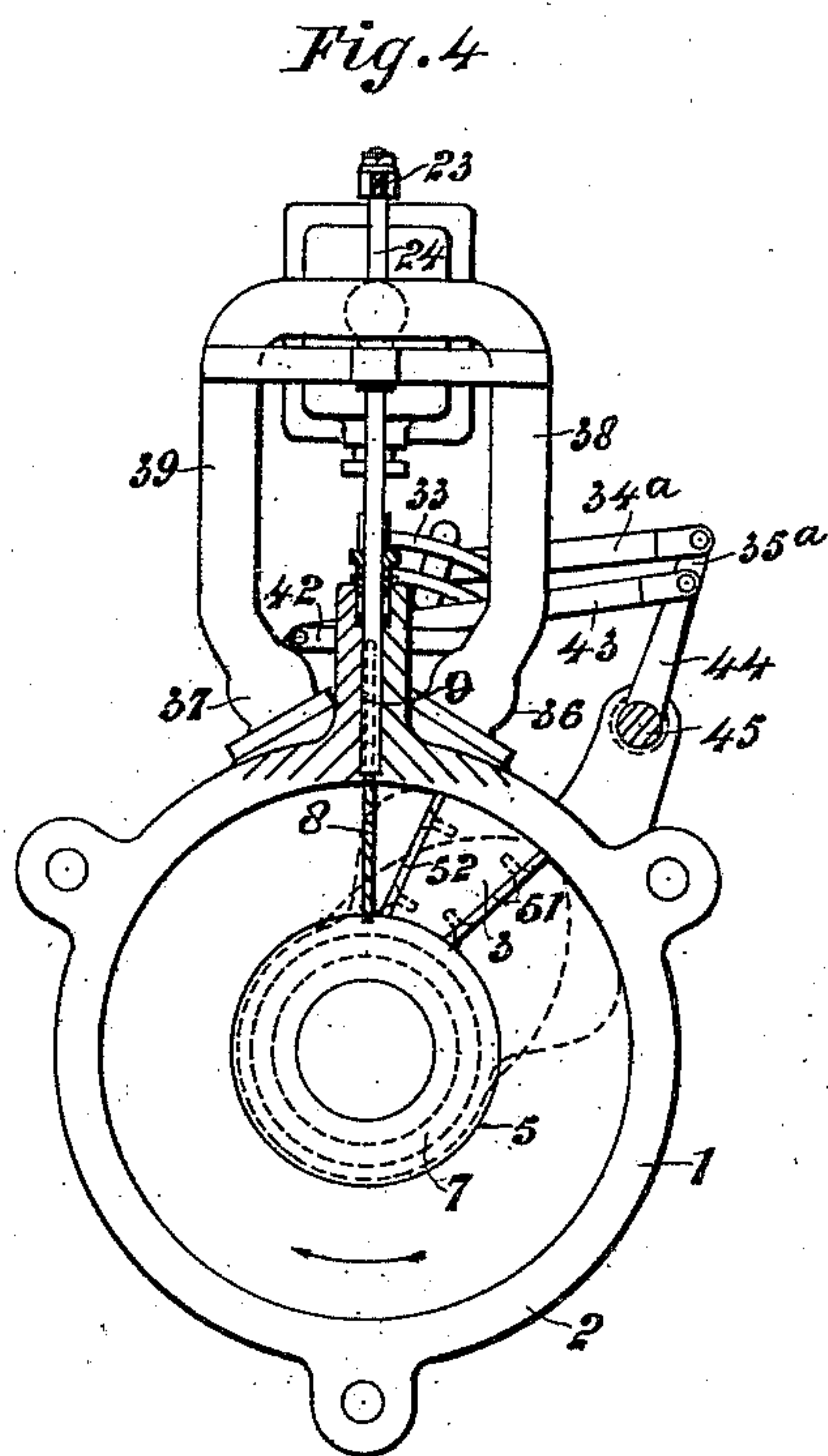
R. McF. MURIE.

ROTARY ENGINE.

(Application filed Sept. 17, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT MCFARLANE MURIE, OF DUNEDIN, NEW ZEALAND.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 652,440, dated June 26, 1900.

Application filed September 17, 1898. Serial No. 691,206. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MCFARLANE MURIE, a subject of the Queen of Great Britain, residing at 2 Commercial Chambers, Manse street, Dunedin, Otago, New Zealand, have invented an Improved Rotary Engine, of which the following is a specification.

This invention relates to rotary engines, and has for its object to provide an effective and simple rotary engine wherein the steam may be used expansively and which may be reversed as readily as an ordinary reciprocating engine. To this end I provide an annular cylinder fitted with a piston affixed to or made solid with the driving-shaft and capable of traversing the said annular cylinder. A slide extends radially across this annular cylinder and is raised as required by cams to allow the piston to pass. When the slide is closed, steam is admitted between the same and the piston, which is then driven around the cylinder, the exhaust-steam escaping through an exhaust-port. Ordinary reversing link-motion operated by a reversing-lever alters the period at which the slide moves and a similar link-motion and cams alter the movement of the slide-valve to reverse the engine and a connecting-rod operates two cocks to convert the exhaust into the steam-supply pipe, and vice versa.

Drawings setting forth the invention are appended to and form part of this specification, and a detailed description will now be given while referring to the said drawings.

Figure 1 is a side view of the engine. Fig. 2 is a plan of the same. Fig. 3 is a view of the other side of the same. Fig. 4 is a vertical section on the line A B, Fig. 5. Fig. 5 is a side view of the engine.

Similar figures of reference indicate corresponding parts.

Referring to the drawings, the cylinder 1 has an annular groove 2, wherein the piston 3 fits and moves, and is made in two parts, secured together by bolts 4 and made steam-tight against the collar 5 of the piston by means of packing-rings 6, let into grooves 7, cut in the parts of the cylinder. The slide 8 fits in a groove 9 and is operated by cam 10 for forward movement (shown by the arrow) and by cam 11 for backward movement of the

engine. The slide-rods 12 and 13 have friction-wheels 14 and 15, respectively, which engage with the grooves 10^a and 11^a in cams 10 and 11, respectively, and are connected to the connecting-rods 16 and 17, respectively. The other ends of the said rods 16 and 17 are connected to the reversing-link 18, reversal of which is accomplished by means of the reversing-lever 19, rod 19^a, and quadrant 20. The rods 12 and 13 move in the slide 21. The block 22 fits upon an arm 23, mounted upon the end of slide-rod 24, Fig. 5, which is coupled to the slide 8.

The cams 26 and 27 operate the slide-valve 28, Fig. 3, by means of slide-rods 28 and 29, moving in slide 30, friction-wheels 28^a and 29^a, connecting-rods 31 and 32, reversing link 33, block 34, and valve-rod 35. The link 33 is reversed by means of reversing-rod 34^a and arm 35^a. The three-way cocks 36 and 37 convert the pipes 38 and 39 into exhaust and steam pipes, and vice versa, when they are moved through ninety degrees by means of the levers 40 and 41, connecting-links 42, rod 43, and arm 44. The reversing-rod 19^a and arms 35 and 44 are secured to the rocking shaft 45, which has bearings 46 and 47.

With the cams 10 and 11 and the piston in the positions shown on Fig. 1 the slide 8 is raised by cam 10 to allow the piston to pass, and when in the position shown on Fig. 4 the cam is lowered after the piston has passed, and when the piston has reached the position shown on Fig. 4 the slide-valve 28 is raised by cam 26 to admit steam to the cylinder. The steam cut-off is determined by the length of the higher portions 48 of the cams 26 and 27. As shown on Fig. 1, steam may pass from the slide-valve through pipe 38 and cock 36 to the cylinder and the exhaust-steam through cock 37 and port 49 to the atmosphere or elsewhere, as desired. When the lever 19 is moved to the other end of the quadrant, arms 35^a and 44 will also move and the steam then pass from the slide-valve to the cylinder through the cock 37 and the exhaust-steam escape through the cock 36 and port 50.

I prefer to shape the piston as shown on Fig. 4 and attach washers 51 and 52, of leather or the like, upon the ends of the same to make it steam-tight, and I prefer the section of the

annular groove 2 to be as shown on Fig. 5; but a rectangular or circular section may be employed with good results.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

10 In a rotary engine, a cylinder having an annular groove or piston-chamber, a shaft passing through the cylinder, a piston carried by said shaft and traveling in said groove, a slide moving radially of said groove, a pair of cams with connections to the slide for operating
15 connections, a second pair of cams carried by

said shaft, a valve-chest and slide-valve therein, operating connections between the valve and said cams means for reversing said connections, steam-pipes connecting with said valve-chest adapted to alternately act as supply and exhaust ports and reversing-valves located in said pipes, all of said reversing parts being connected and adapted for simultaneous operation, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses. 25

ROBERT MCFARLANE MURIE.

Witnesses:

A. J. PARK,
J. IMRIE.