

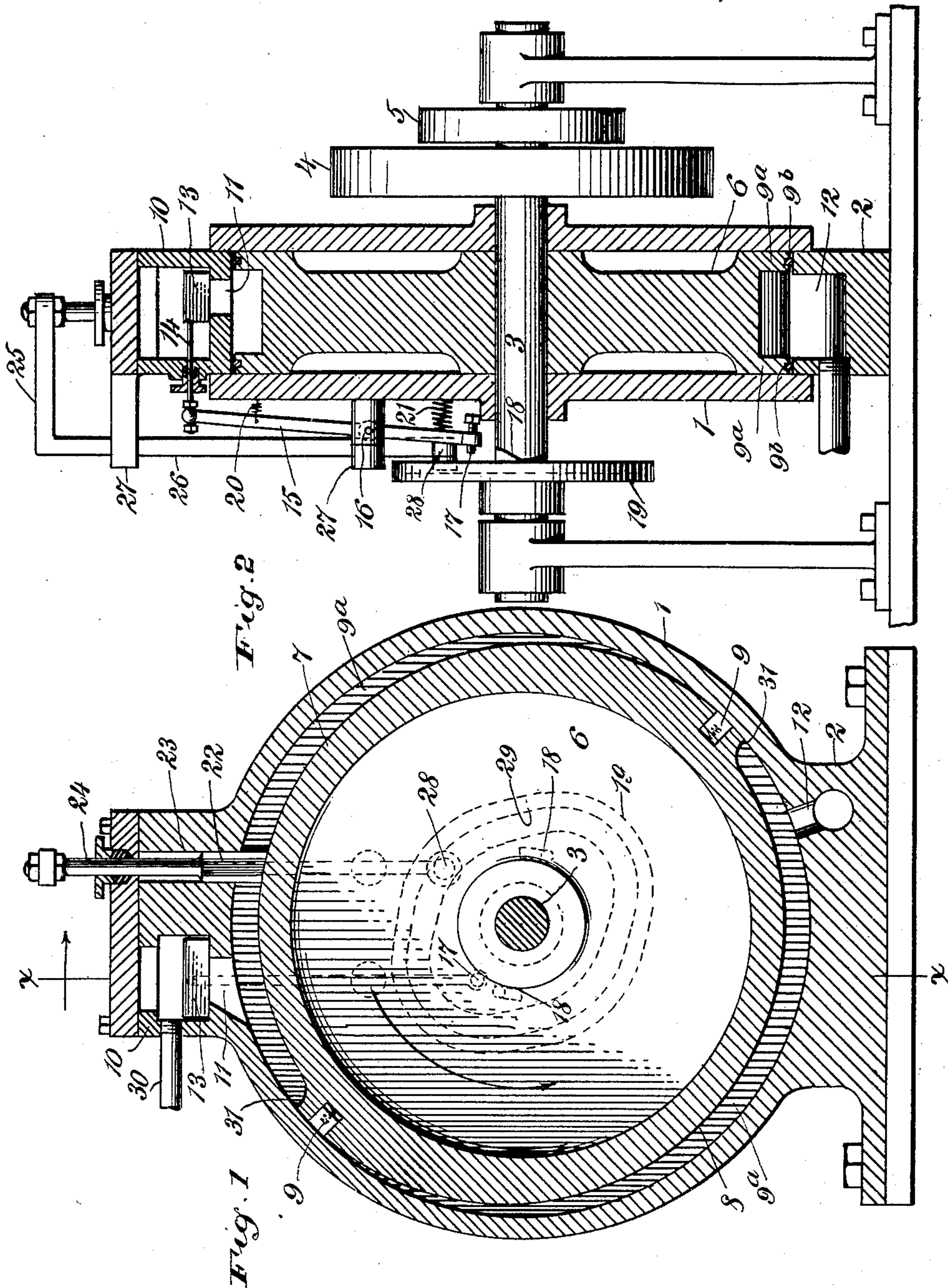
No. 711,354.

Patented Oct. 14, 1902.

C. E. SHUMWAY.
ROTARY ENGINE.

(Application filed Jan. 30, 1902.)

(No Model.)



WITNESSES:
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UNITED STATES PATENT OFFICE.

CHARLES E. SHUMWAY, OF ALBION, MICHIGAN.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 711,354, dated October 14, 1902.

Application filed January 30, 1902. Serial No. 91,860. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SHUMWAY, a citizen of the United States, and a resident of Albion, in the county of Calhoun and State of Michigan, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

This invention relates to improvements in rotary engines operated by steam-pressure; and the object is to provide an engine of simple construction and having no parts liable to get out of order.

I will describe a rotary engine embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures. Figure 1 is a sectional elevation of a rotary engine embodying my invention, and Fig. 2 is a section on the line *xx* of Fig. 1.

Referring to the drawings, 1 designates the engine-cylinder, supported on a suitable base 2, and having bearings in the side wall of the cylinder is the driving-shaft 3, having belt-wheels 4 5 on one end. Mounted on the shaft within the cylinder is the piston 6, having its opposite peripheral portions extended eccentrically with the shaft, forming steam-pockets 7 8, and at the abutment end of each steam-pocket is a steam packing-block 9. At its opposite sides the piston is provided with annular flanges 9^a, provided with packing-rings 9^b, which form steam-tight joints between the piston and cylinder, as the flanges form the side walls of the pockets. A steam-chest 10 communicates with the interior of the cylinder through a port 11, and the exhaust is through a port 12, here shown as in the base of the engine. Movable in the steam-chest 10 for controlling the inlet of steam through the port 11 is a slide-valve 13, the stem 14 of which extends outward through a wall of the steam-chest and connects with an actuating-lever 15, pivoted to a stud 16 on the cylinder. The lower end of this lever is designed to be engaged by a part carried by the shaft 3 for moving the valve 13 in a direction to open the port 11.

As here shown, the lower end of the lever 15 is provided with an adjustable tappet 17,

which may be in the form of a screw and adapted to engage with each one of the cam-shaped lugs 18 on the opposite sides of the shaft. These lugs may be connected directly to the shaft or they may be connected to the hub portion of a cam-wheel 19, attached to the shaft. Obviously when a lug 18 engages with the tappet 17 the lever will be drawn in a direction to move the valve to open position, and when a lug releases the tappet springs are provided for moving the valve to closed position. I have here shown a drawing-spring 20 between the cylinder and the upper portion of the lever and a pushing-spring 21 arranged between the cylinder and the lower portion of the lever.

An abutment-block 22 is movable into and out of the cylinder to engage on the periphery of the piston. This abutment may slide in a guideway 23, formed in a wall of the steam-chest, and its stem 24 extends upward through a stuffing-box in the top wall of the steam-chest and connects with a horizontally-disposed portion 25 of a lifting-rod 26, movable in guides 27 on the cylinder and having at its lower end a lug 28, which engages in the cam-groove 29 of the cam-wheel 19.

In operation steam is admitted to the steam-chest above the slide-valve through a pipe 30. When a cam-lug 18 engages with the lower portion of the lever 15, as before described, the valve 13 will be moved to open the port 11, and as the steam passes through said port the valve will be immediately closed by means of the springs connecting with the lever. Then the steam will act by expansion against the abutment 22, which of course is positively moved downward to engagement with the periphery of the piston by means of the cam-wheel and against the end wall 31 of a pocket in the piston. While the steam is operating in one pocket the exhaust will take place from the other pocket through the port 12.

It may be here stated that while I have shown but two pockets for receiving the steam a greater number may be formed. In such case, however, the cam-slot 29 will be differently arranged to operate the abutment 22 at the proper times, as will also be changed the number of cam-lugs 18 for operating the slide-valve.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. A rotary engine comprising a cylinder, a shaft extended through the cylinder, a piston mounted on said shaft within the cylinder and having steam-pockets, a steam-chest communicating with the cylinder, a slide-valve for controlling said communication, a stem extended from said slide-valve through a wall of the steam-chest, a lever having connection with said stem, a tappet on the other end of said lever, cam-lugs carried by the shaft for engaging with said tappet, and an abutment movable into and out of the cylinder, substantially as specified.

2. A rotary engine comprising a cylinder, a shaft extended through the cylinder, a piston mounted on said shaft within the cylinder and having eccentric peripheral portions

forming steam-pockets, packing-blocks at the abutment ends of said pockets, a steam-chest communicating with the cylinder, a slide-valve for controlling said communication, a stem extended from said slide-valve through a wall of the steam-chest, a lever having connection with said stem, an adjustable tappet on the other end of said lever, cam-lugs carried by the shaft for engaging with said tappet, a spring for rocking the lever in one direction, and an abutment movable into and out of the cylinder, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. SHUMWAY.

Witnesses:

JNO. M. RITTER,
C. R. FERGUSON.