

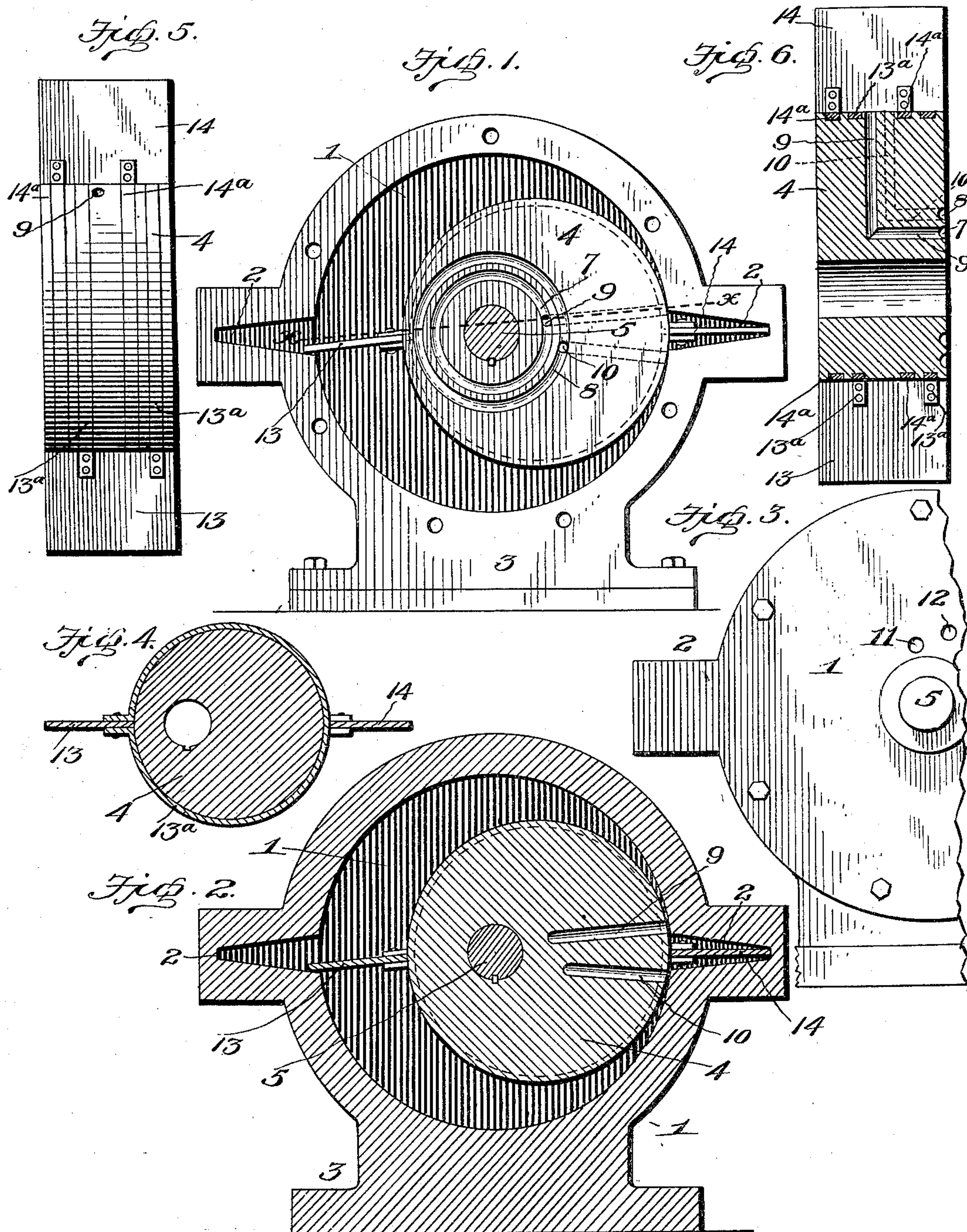
No. 701,299.

Patented June 3, 1902.

J. F. CRAIG & T. V. FLEMING.  
ROTARY STEAM ENGINE.

(Application filed Feb. 16, 1901. Renewed Apr. 24, 1902.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

JOHN F. CRAIG AND THOMAS V. FLEMING, OF PARIS, ILLINOIS.

## ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 701,299, dated June 3, 1902.

Application filed February 16, 1901. Renewed April 24, 1902. Serial No. 104,539. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN F. CRAIG and THOMAS V. FLEMING, citizens of the United States, residing at Paris, in the county of Edgar and State of Illinois, have invented certain new and useful Improvements in Rotary Steam-Engines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to rotary engines, and more particularly to that class known as the "eccentric-piston" type.

The object of the invention is to provide an engine of this character which shall be simple of construction, durable in use, and comparatively inexpensive of production, and by means of which a maximum amount of power may be obtained by the expenditure of a minimum amount of steam.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, which will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of an engine embodying our invention, one of the heads of the cylinder being removed. Fig. 2 is a vertical sectional view through the engine and piston, the parts being shown in the same position as in Fig. 1. Fig. 3 is a fragmentary end elevation of the cylinder, showing the inlet and exhaust ports. Fig. 4 is a vertical sectional view through the piston. Fig. 5 is a front view of the piston, and Fig. 6 is a sectional view on line  $x x$  of Fig. 1.

In the drawings, 1 denotes the engine-cylinder, provided with diametrically-opposed gate-chambers 2 and with a supporting-base 3, the chambers 2 flaring or diverging toward the cylinder-space to allow for the free action of the gates or abutments hereinafter described.

4 denotes an eccentric piston keyed to the shaft 5, which is journaled in suitable bearings in the heads of the cylinder. The piston has a steam-tight engagement with the interior wall of the cylinder in the usual manner and is provided in one of its ends

with annular concentric steam inlet and exhaust grooves 7 and 8, respectively, which communicate with angularly-arranged inlet and outlet ducts 9 and 10, respectively, and also with inlet and exhaust ports 11 and 12 in one of the heads of the cylinder.

13 and 14 denote gates or abutments mounted to work within the chambers 2 and connected to the piston by straps 13<sup>a</sup> and 14<sup>a</sup>, respectively, which are fitted in grooves formed in the face of the piston to lie flush with said face.

In operation steam is admitted through the port 11 in the head of the cylinder, enters the groove 7 in the head of the piston, thence passes into the angularly-arranged duct 9, and discharges into the cylinder at a point between the gate or abutment 13 and the point of contact of the piston with the wall of the cylinder, thus confining the steam between these two points and causing the rotation of the piston, while the used or exhaust steam is allowed to escape through the duct 10 into the groove 8 and from the groove 8 out through the port 12 in the head of the cylinder.

While we have shown and described the preferred embodiment of our invention, we would have it distinctly understood that we do not wish to be restricted to the precise construction and arrangement of parts herein set forth, but reserve to ourselves the right to make such changes as fall within the scope of our invention and are covered by the claims. For instance, if desired, instead of mounting the shaft to rotate and the casing to remain stationary we may reverse the order of things and fix the shaft and permit the cylinder to rotate. In this event the cylinder of course will not be provided with a base. Other forms of gate-operating mechanism may also be employed; but that shown is preferable, for the reason that it enables all of the operative parts of the engine to be entirely inclosed within the cylinder, and thereby be protected from injury from external sources.

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

1. In a rotary steam-engine, the combination with the cylinder, of an eccentric piston,

said cylinder being provided with gate or abutment chambers diverging toward the cylinder-space, gates or abutments adapted to work in said chambers, and means for positively reciprocating in alternation the gates or abutments within their chambers by the movement of the engine, substantially as set forth.

2. In a rotary steam-engine, the combination with a cylinder having gate or abutment chambers diverging toward the cylinder-space and arranged at diametrically opposite points in its circumference, and radially disposed, of an eccentrically-mounted piston provided with concentric inlet and exhaust ports on its ends communicating with inlet

and exhaust ports which extend through and lead out at the periphery of the piston at different points in the circumference of the piston, gates or abutments mounted to reciprocate in said chambers, and straps connecting the gates or abutments to the piston and designed to reciprocate said gates or abutments in alternation, substantially as set forth.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

J. F. CRAIG.

THOS. V. FLEMING.

Witnesses:

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