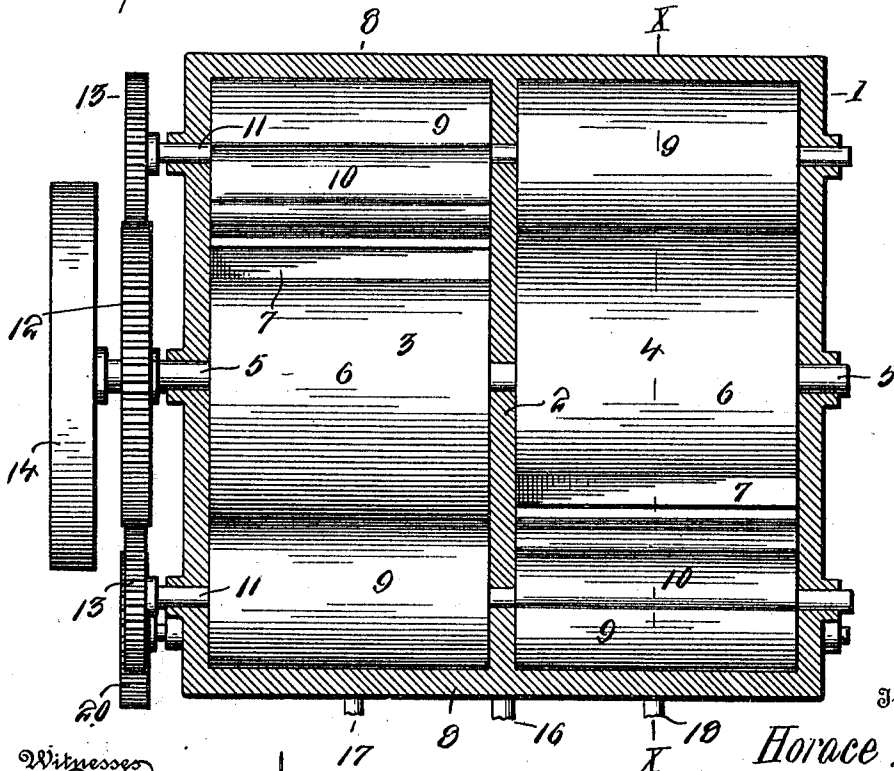
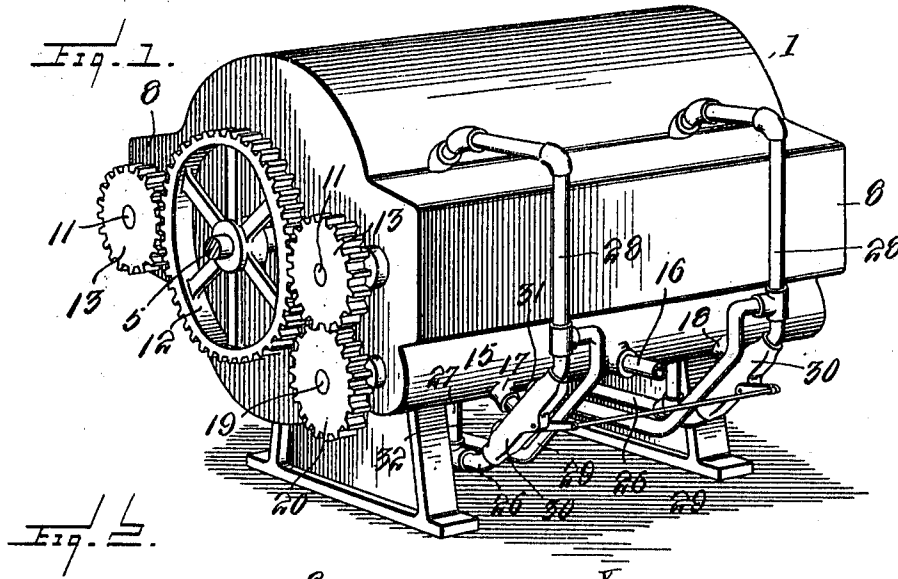


H. DOKE.
 ROTARY ENGINE.
 APPLICATION FILED MAY 7, 1910.

980,075.

Patented Dec. 27, 1910.

2 SHEETS—SHEET 1.



Witnesses
 E. R. Ruppert.
 U. B. Hillyard.

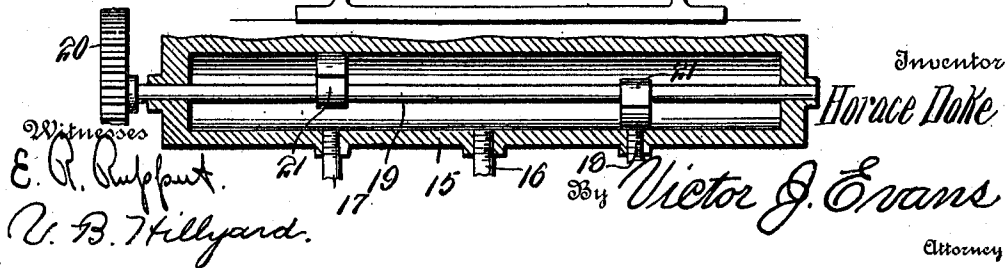
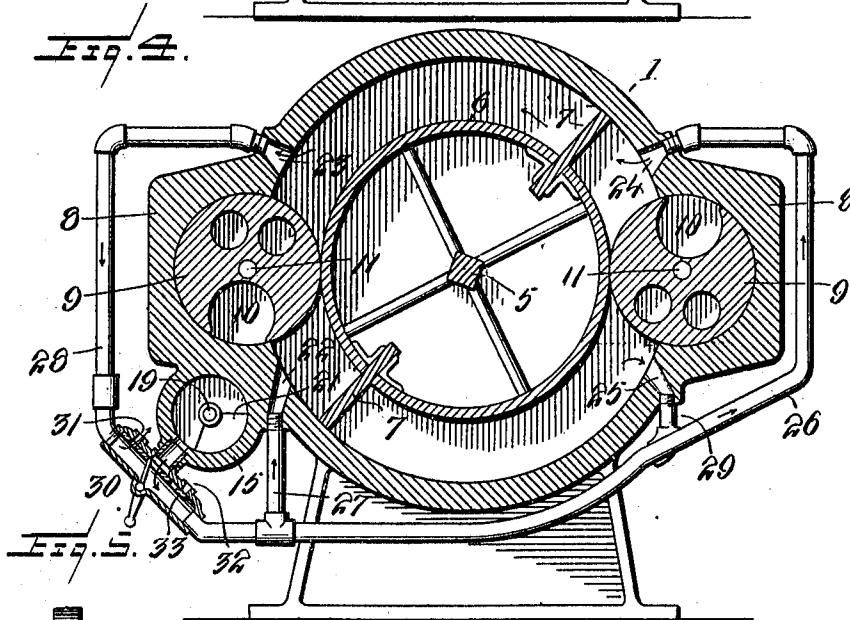
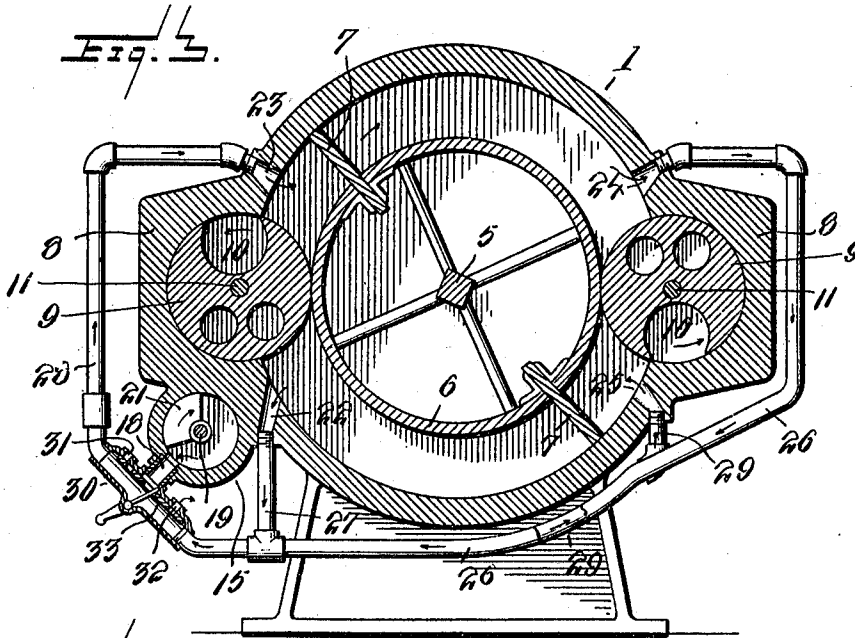
Inventor
 Horace Doke
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE,

HORACE DOKE, OF GREELEY, COLORADO.

ROTARY ENGINE.

980,075.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed May 7, 1910. Serial No. 559,979.

To all whom it may concern:

Be it known that I, HORACE DOKE, a citizen of the United States, residing at Greeley, in the county of Weld and State of Colorado, have invented new and useful Improvements in Rotary Engines, of which the following is a specification.

The present invention provides an engine of the rotary type involving a simple and novel construction and adapted to equalize the pressure upon the rotating member and which will cut off the motive medium at predetermined intervals and also enable the engine to be readily reversed.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claims.

Referring to the drawings, forming a part of the application, Figure 1 is a perspective view of an engine embodying the invention. Fig. 2 is a horizontal section. Fig. 3 is a transverse section on the line $x-x$ of Fig. 2, showing the valves set to drive the engine to the right. Fig. 4 is a view similar to Fig. 3, showing the valves set to drive the engine to the left. Fig. 5 is a horizontal section of the rotary valve and chest.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The engine comprises a casing 1, which may be suitably mounted upon a pedestal, base, or bed, and which is divided by a partition 2 so as to provide two chambers or cylinders 3 and 4. A shaft 5 passes centrally through the chambers or cylinders of the casing and is mounted in the partition 2 and in the ends or heads of the casing. A drum 6 is provided for each chamber or cylinder and is secured upon the shaft 5 so as to rotate therewith. Each of the drums 6 is supplied with blades 7 constituting pistons, two blades or pistons being supplied and arranged upon the drum at diametrically opposite points. The drums and pistons fit the chambers or cylinder steamtight so as to prevent any waste of steam or other motive medium. The casing 1 is formed at opposite points with chambers 8 in which are located rotary abutments 9, the latter projecting into the space of the chambers or cylinders and touching the drum 6 at oppo-

site points so as to preserve a steamtight fit. Each of the rotary abutments has a circular space 10 through which the pistons or blades 7 sweep in the operation of the engine. The shafts 11 upon which the rotary abutments 9 are mounted are journaled in the partition 2 and in the head or ends of the casing. The main shaft 5 is provided with a spur gear 12, which meshes with spur gears 13 secured to the projecting ends of the shafts 11. The spur gear 12 is twice the diameter of the spur gears 13, so that while the drum 6 is making one revolution the rotary abutments 9 make two revolutions. A fly wheel or band pulley 14 is secured to a projecting end of the shaft 5.

A valve chest 15 of approximately cylindrical form is located at one side of the casing and has an inlet 16 for the steam or other motive medium. Ports 17 and 18 are formed in a side of the valve chest and are in communication with the respective cylinders or chambers 3 and 4. A shaft 19 is located centrally within the valve chest and is mounted in the ends thereof and a projecting end has a spur gear 20, which is in mesh with one of the spur gears 13 so as to receive motion therefrom. The shaft 19 rotates at a uniform speed with the rotary abutments and is provided with valves 21 which are adapted to control the ports 17 and 18. The valves 21 are arranged upon opposite sides of the shaft 19 so as to alternately close the ports 17 and 18. The blades or pistons 7 of one drum are arranged relatively at a right angle to the pistons of the other drum, the arrangement being such that when the pistons of one drum are passing through the spaces 10 of the rotary abutments coöperating therewith the pistons of the other drum are being positively moved in the other cylinder or chamber. When the pistons or blades of the drum are passing through the spaces 10 of the rotary abutments the motive medium is cut off from the cylinder or chamber.

Each chamber or cylinder is provided with four ports 22, 23, 24 and 25, which are located upon opposite sides of the chambers 8 and which may constitute inlets or outlets according to the direction of rotation of the drums. A pipe 26 connects one of the ports, as 24, with the port 17 or 18 of the valve chest and branch pipes 27, 28 and 29 connect the respective ports 22, 23 and 25 with the pipe 26. A valve 30 is located in the

pipe 26 opposite the port by means of which communication is established between the pipe 26 and the valve chest and said valve 30 may be moved to cause the motive medium to enter the cylinder through the ports 23 and 25 or the ports 22 and 24 according to the direction of rotation of the drum. The ports 22 and 24 connect with the pipe 26 upon one side of the valve 30, whereas the ports 23 and 25 connect with the pipe 26 upon the opposite side of the valve 30. Outlets 31 and 32 are provided in the pipe 26 upon opposite sides of the valve 30 and the point of communication of the pipe 26 with the valve chest. These outlets 31 and 32 provide an escape for the spent motive medium. A cut-off 33 controls the outlets 31 and 32, so that one or the other of the outlets may be uncovered but not both at the same time. In the position in which the valves appear in Fig. 3 the motive medium passes from the steam chest into the cylinder so as to drive the drum in a clockwise direction, the exhaust steam or motive medium passing from the cylinder upon the opposite sides of the pistons out through the ports 22 and 24 and escaping through the outlet 32. In the arrangement shown in Fig. 4 the valve 30 and the cut-off 33 are changed so that the drum is driven in an anti-clockwise direction, the motive medium entering the cylinder through the ports 22 and 24 and the exhaust steam or spent motive medium escaping from a cylinder upon the opposite sides of the pistons through the ports 23 and 25 and passing off through the outlet 31.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that

such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention what is claimed as new, is:—

1. In an engine of the character described, the combination of a cylinder provided at opposite points with chambers, a drum arranged to rotate within the cylinder and provided at diametrically opposite points with pistons, rotary abutments arranged within said chambers and provided with cylindrical spaces for the said pistons to sweep through, means for simultaneously rotating the rotary abutments and drum so that said abutments make two revolutions for each revolution of the drum, a chest, connecting means between said chest and the cylinder and leading into the latter upon opposite sides of and adjacent the chambers thereof, a valve arranged to operate in the chest, a valve for directing the motive medium to two ports of the cylinder, and a cut-off for closing one of two outlets provided in the connecting means between the chest and cylinder.

2. In a rotary engine, the combination of a cylinder provided at opposite points with two ports, a drum arranged to operate in the cylinder and provided at opposite points with pistons, abutments located between the ports at opposite points of the cylinder, a chest, passages connecting the chest with the four ports of the cylinder, one of the pipes having outlets upon opposite sides of its connection with the chest, a valve located in the pipe for directing the motive medium to two of the said ports, and a cut-off for closing one of the outlets, whereby the spent motive medium may be exhausted from the other two ports.

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

HORACE DOKE.

Witnesses:

C. D. TODD,
FRANK DOKE.