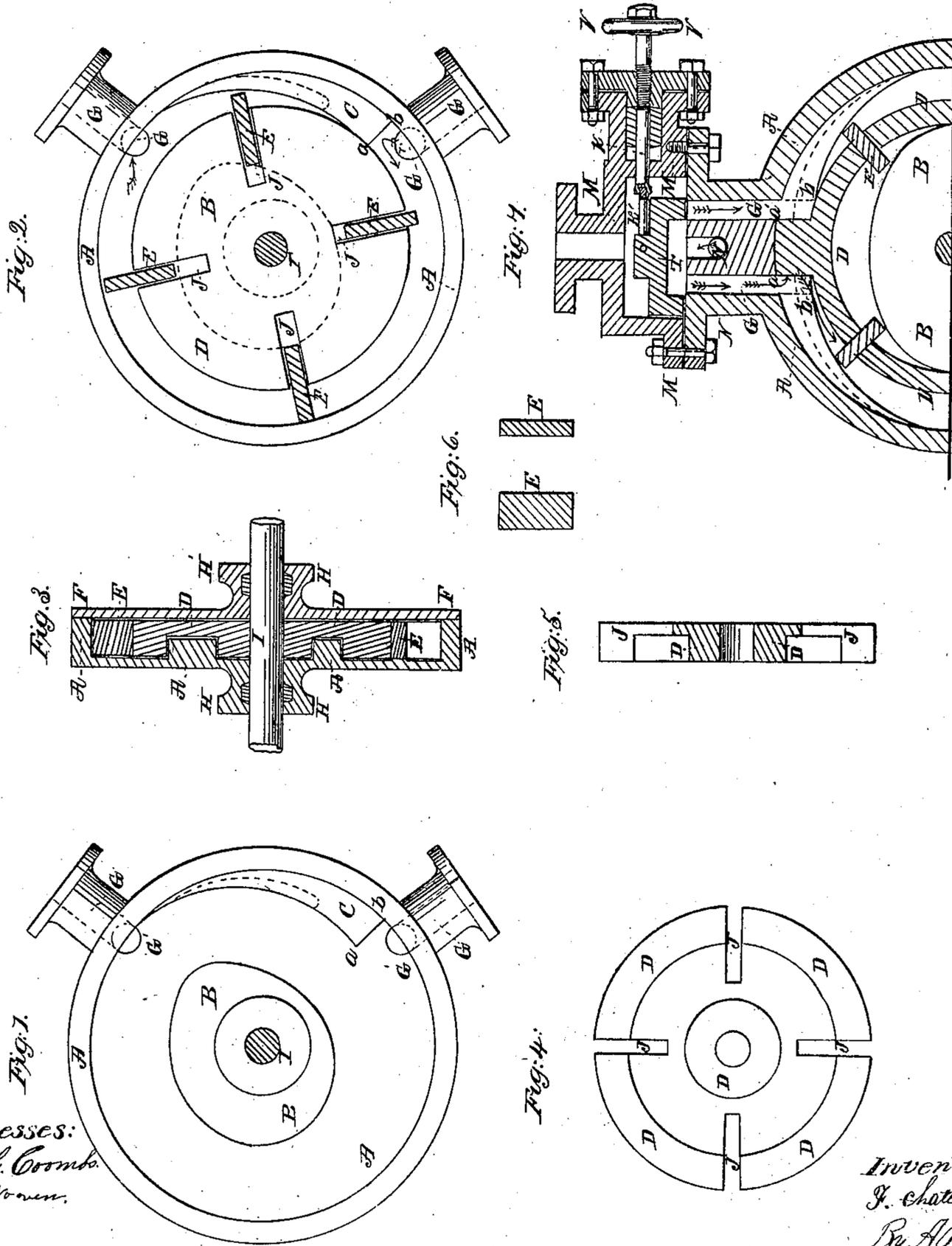


*F. Chatelain,*

*Rotary Steam Engine.*

*N<sup>o</sup> 54,079.*

*Patented Apr. 17, 1866.*



*Witnesses:  
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# UNITED STATES PATENT OFFICE.

FIDELE CHATELAIN, OF LILLE, FRANCE.

## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 54,079, dated April 17, 1866.

*To all whom it may concern:*

Be it known that I, FIDELE CHATELAIN, of Lille, in the Empire of France, have invented certain new and useful Improvements in Rotary Engines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

This rotary engine, which can be used as a motor actuated by steam, air, or gas, or as a pump or draining-machine, is characterized by the combined action of two cams acting alternately on the valves of a circular piston.

From the drawings which accompanies this specification it will be easy to understand the construction of this machine, which can be made of any metal, of different dimensions, and may be adjusted horizontally, vertically, or obliquely.

The action of the steam, gas, or air may impel the piston either to the left or right.

Figure 1 represents the interior face of the shell A, which forms part of the casing of the machine, from which the piston is removed in order to show plainly the two essential parts, namely, the cam B and the cam C. Fig. 2 is an interior view of the machine provided with the piston D and the valves or pallets E. Fig. 3 is a cross-section through the middle of the complete machine, closed by a plane cover, F.

G is the induction-pipe, through which the steam, air, or gas enters if the engine is to act as a motor actuated by an elastic fluid, or the water if it is to act as a pump.

G' is the eduction or exhaust pipe. On that part of the interior surface of the shell A between the two pipes, G and G', as represented in the drawings, a fixed cam, C, is placed. The other principal cam, B, is at the center of the shell A.

On the exterior of the shell A and the cover F are the stuffing-boxes H H', traversed by the revolving shaft I, which is firmly secured to the piston D.

The cover F and the shell A constitute the fixed casing of the engine, and the piston D is the movable part transmitting motion to the shaft I, by which the transmission of motion to other machinery is effected.

Fig. 4 is an elevation, and Fig. 5 a cross-section, of the piston D, which is a disk with

an annular recess on its face, in which is lodged the central cam, B. It is provided also with four or more radial slots, in which the valves or pallets E glide freely. These pallets are entirely unattached to the piston. Fig. 6 represents two sections, at right angles to each other, of one of these pallets. In the rotation of the piston D these pallets are intended to be pushed in and out of their slots by the alternate action of the cams B and C.

The engine, when used as a motor, is operated as follows: The steam entering the pipe G meets the face *a b* of the fixed cam C, Fig. 2, and reacts against the first pallet, E, which the fixed cam B causes gradually to emerge from the corresponding slot of the piston D. A rotary movement is thus communicated to the piston D, and successively by each pallet, as, meeting the cam C, which forces it into corresponding slot of the piston D, it presents itself, in its turn, to be acted on by the steam. When the steam shall have acted on the pallet it is discharged through the exhaust-pipe G'. Thus the action of the steam on the pallets causes the continued rotation of the piston, and consequently of the shaft I, which transmits the motion.

In the machine just described the revolution of the circular piston can only be in one direction. In case it is necessary to revolve the piston in either direction, I adopt the disposition of the parts represented in Fig. 7, which allows the movement of the piston to be reversed. The steam enters either through one or the other of the ports or inlets G G', and strikes, in the manner above described, against the face *a b* or *a' b'* of the medial points of support C. The steam will react in the same manner on the pallets E, contained in the slots of the circular piston D.

Above the ports G G' is placed the sliding valve T, which is used to cut off the steam from one or the other of these ports. This valve is moved by means of a little hand-wheel, V, on the shank K of which is cut a screw. This shank connects with the rod K' of the sliding valve T, inclosed in the steam-chest M, and gives to this rod a rectilinear motion, which causes the valve to open or close one or the other of the inlets G G'. The exhaust-pipe N is used for the discharge of the steam from either port G or G'.

Having thus described my invention, I claim—

The arrangement, in rotary steam-engines constructed as described, of the two cams with reference to the sliding pistons and the revolving cylinder, for operation as herein shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

F. CHATELAIN.

Witnesses:

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