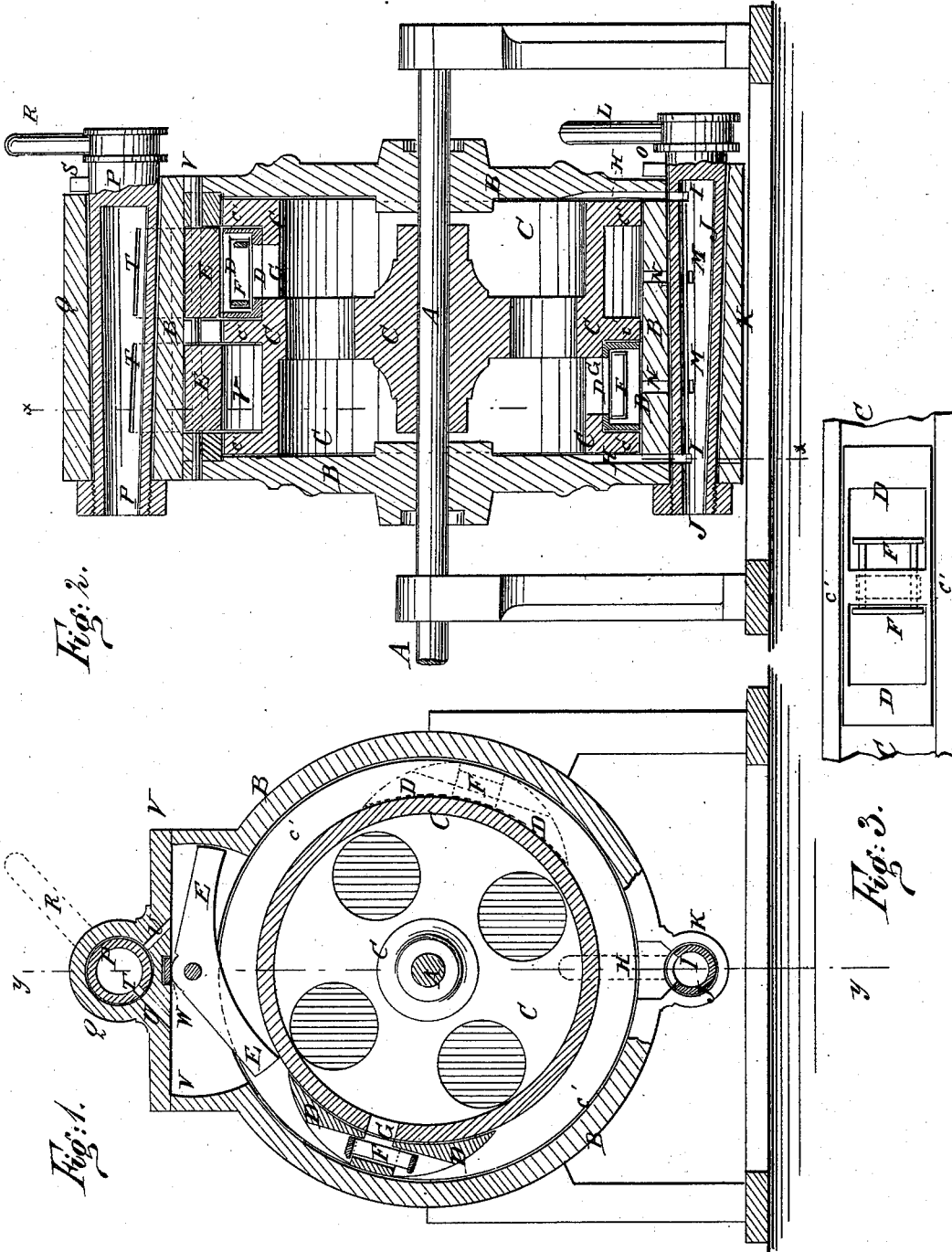


W. N. FORT.  
Rotary-Engine.

No. 216,170.

Patented June 3, 1879.



WITNESSES:

*Chas. Nida.*  
*C. Sedgwick*

INVENTOR:

*W. N. Fort*

BY

*Mum & Co*

ATTORNEYS.

# UNITED STATES PATENT OFFICE

WILSON N. FORT, OF LEWISVILLE, ARKANSAS.

## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **216,170**, dated June 3, 1879; application filed April 9, 1879.

*To all whom it may concern:*

Be it known that I, WILSON NELMS FORT, of Lewisville, in the county of La Fayette and State of Arkansas, have invented a new and useful Improvement in Rotary Engines, of which the following is a specification.

Figure 1 is a cross-section of my improved rotary engine, taken through the broken line *x x*, Fig. 2. Fig. 2 is a vertical longitudinal section of the same, taken through the line *y y*, Fig. 1. Fig. 3 is a detail view of one of the pistons.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved rotary engine which shall be simple in construction, inexpensive in manufacture, and not liable to get out of order, and which shall be without dead-centers, and will run in either direction with equal facility.

The invention consists in the combination of the pistons provided with the valves, the double rock-valve, the hollow inlet-valve, and the hollow outlet-valve with the piston-wheel provided with the ports, the casing provided with the ports, the steam-chest provided with the ports, and the shaft, as hereinafter fully described.

A is the driving-shaft, which revolves in bearings in suitable supports, and which passes through and revolves in the heads of the cylinder or casing B. To the shaft A, within the cylinder B, is attached the hub of the piston-wheel C, which is made with a central web, and with its rim projecting upon both sides of the said web. The web of the piston-wheel C has a number of holes formed through it, so that the steam can pass through readily.

Upon the face of the piston-wheel C are formed a central and two side flanges, *c'*, forming two ring grooves or channels upon the said face. In the channels of the wheel C, and upon the opposite sides of the said wheel C, are secured the pistons D, which exactly fill up the space between the said piston-wheel and the wall of the cylinder B.

The pistons D are made with inclined or rounded sides, as shown in Fig. 1, so as to raise and pass the automatic double valve E. The pistons D have slots formed through them

from side to side, and in the said slots are placed the sliding valves F, which are so formed as to be closed upon either side by the pressure of the steam, the other end opening to allow the exhaust-steam to pass through the port G. The port G leads through the bottom of the piston D, and through the rim of the piston-wheel C. The exhaust-steam passes from the interior of the piston-wheel C through the ports H in the lower part of the shell of the cylinder B, and through the ports I in the side of the hollow rotating valve J into the interior of the said valve J, and escapes through its open end.

The valve J is tapered, works in a tapering cavity in a shell or box, K, formed upon or attached to the lower side of the cylinder B, is held in place and drawn forward to take up the wear by a nut screwed upon its smaller end, and is operated by a lever, L, attached to its larger end. The valve J is provided with two other ports, M, in line with its handle or lever, L, which, when the said lever is turned into a vertical position, come opposite the ports N, leading through the shell of the cylinder B, and opening into the two channels in the face of the piston-wheel C, to allow the water of condensation to be drawn off when desired.

The ports M N are closed when the lever L is turned into an inclined position. The movement of the valve J is limited by a stop, O, attached to it, and which moves in a notch in the bearings of the said valve.

The steam is introduced through the open end of the tapering hollow valve P, which works in the hollow tapering cavity of the box or shell Q, where it is held in place and drawn forward to take up the wear by a nut screwed upon its smaller end.

The valve P is turned by a lever or handle, R, attached to its larger end, and its movement is limited by a stop, S, attached to it, and which moves in a notch in the bearings of the said valve.

The valve P has a port, T, formed through its side in such a position that it may be brought opposite one or the other of the ports U to reverse the motion of the engine, as may be required. The ports U lead into the oppo-

site parts of the steam-chest V, which is divided into two parts by the double rock-valve E. The valve E is slightly curved, and is pivoted to the sides of the steam-chest V by a pin passing through the said sides, and through the upper middle part of the said valve E. The outer surface of the upper middle part of the double valve E is rounded off, and bears snugly against the packing W, inserted in a seat in the top of the steam-chest V, so that no steam can pass from the one part of the said steam-chest to the other.

With this construction, when steam is admitted through either of the ports U it forces down that end of the double valve E, enters the channel of the piston-wheel C, closes the valve F in the piston D, and forces the said piston D before it, turning the piston-wheel C, and giving motion to the shaft A.

The exhaust-steam in front of the piston D exhausts through the valve F, the port G, and the ports H I, and escapes through the open end of the hollow valve J.

The arrangement of the two pistons D upon the opposite sides of the piston-wheel C does away with all dead-points, and revolves the wheel C and shaft A with a steady uniform movement.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination of the pistons D, provided with the valves F, the double rock-valve E, the hollow inlet-valve P, and the hollow outlet-valve J, with the piston-wheel C, provided with the ports G, the cylinder B, provided with the ports H, the steam-chest V, provided with the ports U, and the shaft A, substantially as herein shown and described.

WILSON NELMS FORT.

Witnesses:

W. C. MERITT,  
W. L. NANCE.