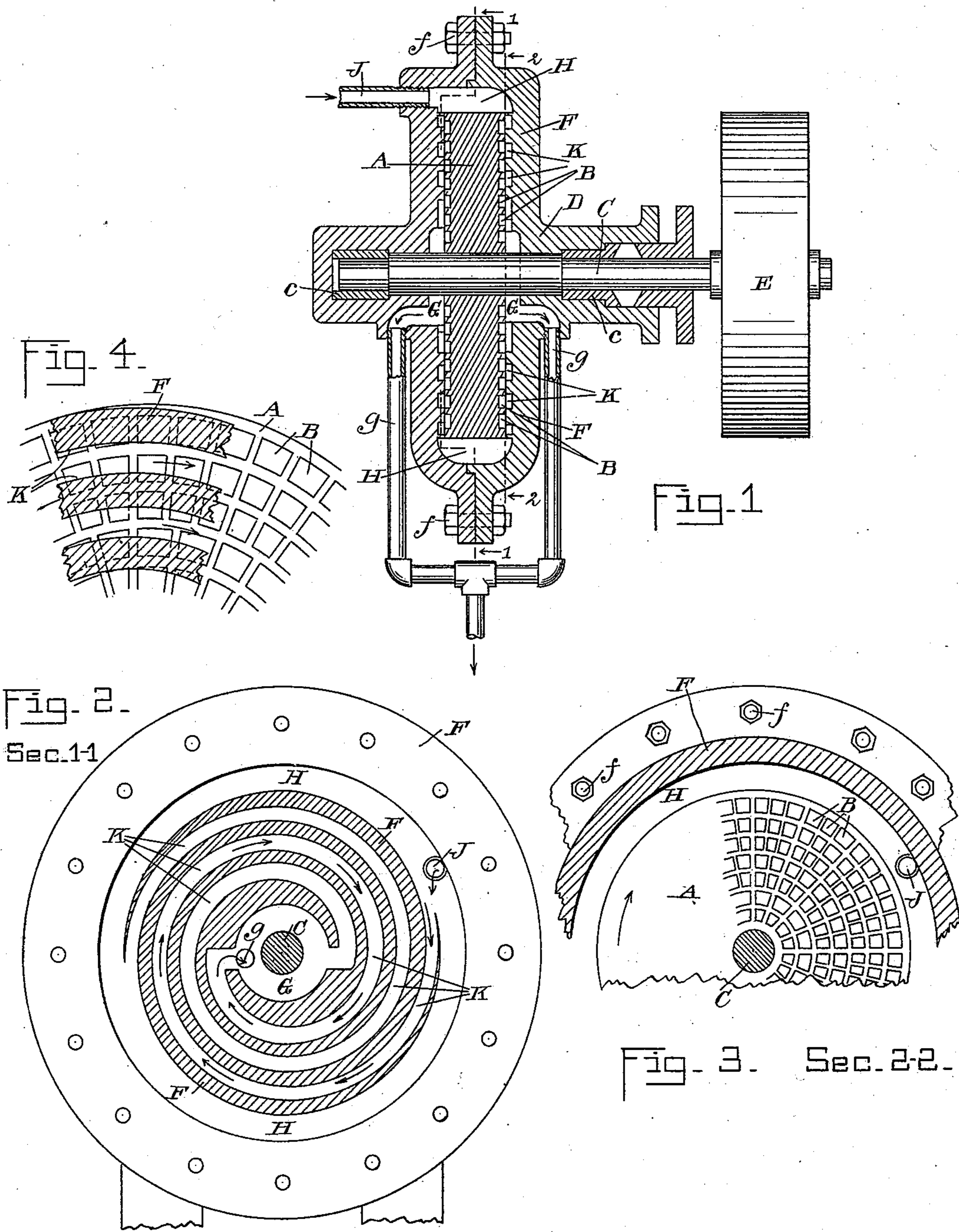


(No Model.)

J. F. McELROY.  
ROTARY ENGINE.

No. 504,536.

Patented Sept. 5, 1893.



Witnesses =

John W. Fisher.

Grace T. Many. by

Inventor,  
James F. McElroy.

Ward & Cameron.

Attorneys.

# UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR-HEATING COMPANY, OF WHEELING, WEST VIRGINIA.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 504,536, dated September 5, 1893.

Application filed June 24, 1893. Serial No. 478,728. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at the city and county of Albany, State of New York, have invented a new and useful Rotary Engine, of which the following is a specification.

My invention relates to improvements in steam turbines; and the object of my invention is to produce a rotary engine operated by steam arranged in such a manner that the propelling fluid shall pass from the periphery of a cylindrical disk in a continuous course exhausting from near the center of said disk. I accomplish this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a horizontal section. Fig. 2 is a section along the line 1—1 on Fig. 1. Fig. 3 is a section along the line 2—2 on Fig. 1, and Fig. 4 is a detail view showing the cylindrical disk and grooved casing.

Similar letters refer to similar parts throughout the several views.

A represents a cylindrical disk provided on each lateral surface with a series of pockets or pits B. I key the disk A to a shaft C passing through its center and mount the shaft in suitable bearings *c c* in the frame D, placing at the end of the shaft C a pulley E.

The frame D is provided with two circular disks F on each side of the disk A; said circular disks F F being bolted together as shown at *ff*. The inner surface of said circular disk F of the frame D which is in contact with the movable disk A is provided with one or more spiral grooves K K extending from that portion of the disk F corresponding in position to the periphery of the movable disk A and passing about the disk F in a spiral path toward the center of the disk F and opening into a recess G about the shaft C, caused by cutting away the surface of the disk F. The recess G communicates with the pipes *g g* through which the steam exhausts from the engine. Around the periphery of the disk A, I arrange the channel H, within the disk F, and the operating fluid is conducted thereto by the pipe J. I usually construct the spiral grooves K K of constantly increasing width to allow for the expansion of the steam.

The operation of my engine is apparent.

The steam enters the annular channel H and passes about the periphery of the movable disk A and enters the groove K on each side of the interior of the disk F and passes in a continuous course toward the center of the movable disk A, and passing through the grooves K K, it strikes against the sides of the pits or pockets B on each side of the movable disk A and causes the movable disk A to revolve; the steam fills these pockets B in the movable disk A, and there is a constant pressure on both sides of the disk in the same direction, caused by the steam forcing its way from the grooves K K exhausting at the center.

By my invention, I get the full force of the steam applied in the most positive manner to the movable disk and taking the steam in a continuous uninterrupted passage, there is no opportunity of the force being applied to overcome any obstruction or perform any work, except that of causing the movable disks to revolve. If desirable, I may reverse the connections to the steam boiler, causing the operating fluid to enter at near the center and exhaust at the periphery. It is also apparent that I may connect two or more rotating disks causing the steam to pass from one to the other similar in construction to that already shown.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination of a shaft, a movable disk keyed thereto, a series of pits or pockets in the lateral surface of said movable disk, a frame in which said shaft is mounted, stationary disks attached to or forming a part of said frame, a spiral groove in the surface of the stationary disks adjacent to the movable disks, with means for conveying steam to said movable disk, with means for exhausting the steam therefrom, substantially as described and for the purpose set forth.

2. A rotary engine consisting of a movable disk keyed to a shaft, a series of pits or pockets in the lateral surface of said disk, a frame within which said shaft is suitably mounted, stationary disks arranged in said frame in such a manner that their interior surfaces will coincide with the lateral surfaces of the movable disk, a space between the periphery of the movable disk and the interior adjacent

surfaces of the stationary disks forming an annular steam chamber around the periphery of the movable disk, a spiral groove in the stationary disks extending from the periphery of the movable disk to near the center of the stationary disks, means for communicating steam to said steam chamber, and exhaust ports near the center of the stationary disks, substantially as described and for the purpose set forth.

3. In a rotary engine, a movable disk, a shaft mounted in a frame, said movable disk keyed to said shaft, a series of pits or pockets in the lateral surfaces of said movable disk, said frame provided with an inclosed chamber within which said movable disk may revolve, a means for conducting steam from near the periphery of said movable disk within said chamber in a continuous spiral path around the said chamber coming in contact with the sides of the pits or pockets in the surfaces of the movable disk and exhausting at or near

the center of the engine, substantially as described and for the purpose set forth.

4. In a rotary engine, the combination of a shaft, a movable disk secured thereto, a series of pits or pockets in the lateral surfaces of said disk, a frame in which said shaft is mounted, two stationary disks in said frame suitably fastened together, between which said movable disk is placed, said stationary disks provided with a means for conveying steam in a spiral path around the periphery of the movable disk to the center of the engine, a means for communicating steam to the space between the stationary disks, a means for exhausting the steam from near the center of the engine, substantially as described and for the purpose set forth.

JAMES F. McELROY.

Witnesses:

RALPH W. KIRKHAM,  
WILLIAM P. EDDY.