

No. 747,418.

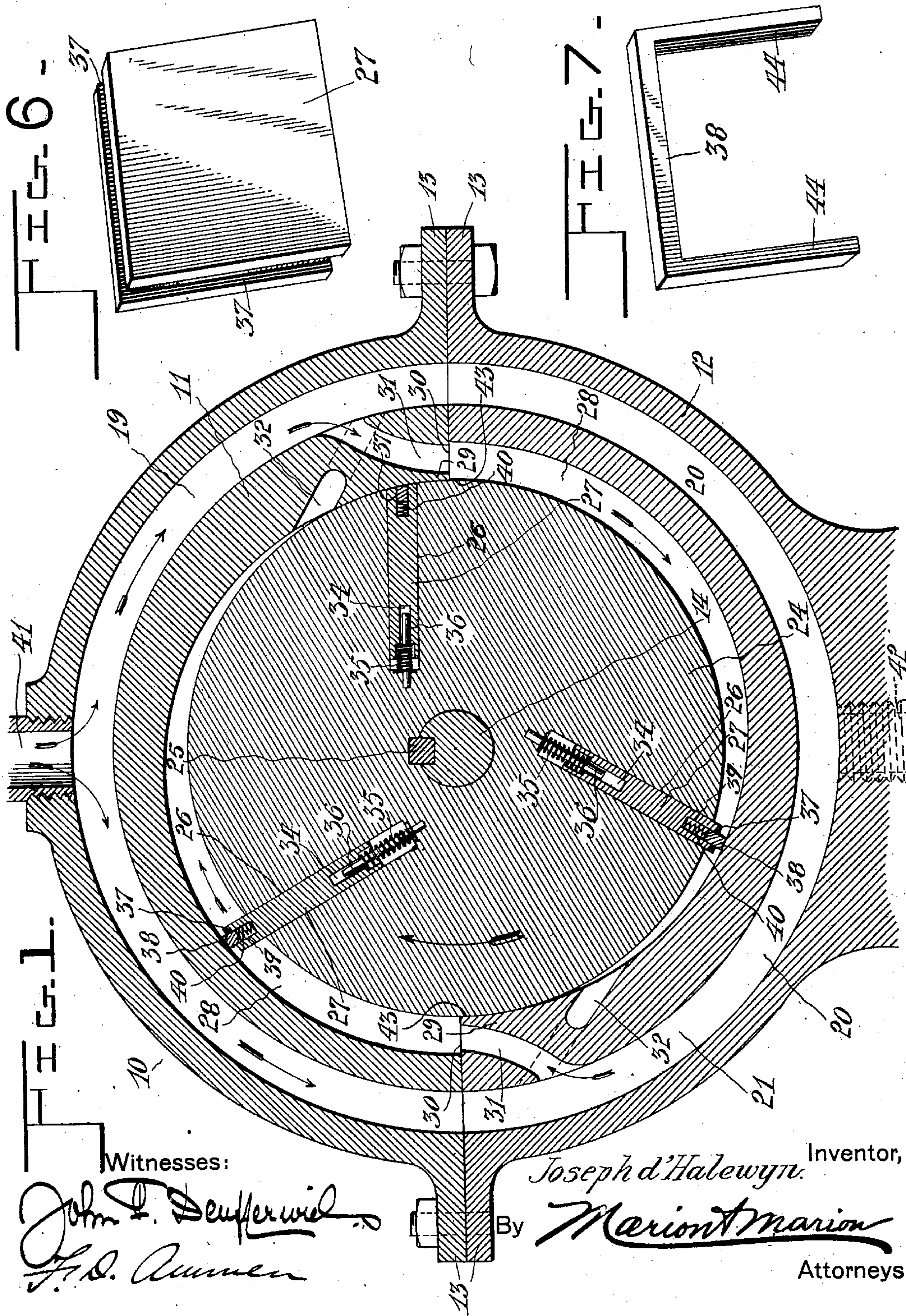
PATENTED DEC. 22, 1903.

J. D'HALEWYN.  
ROTARY ENGINE.

APPLICATION FILED MAR. 13, 1903.

NO MODEL.

3 SHEETS—SHEET 1.





No. 747,418.

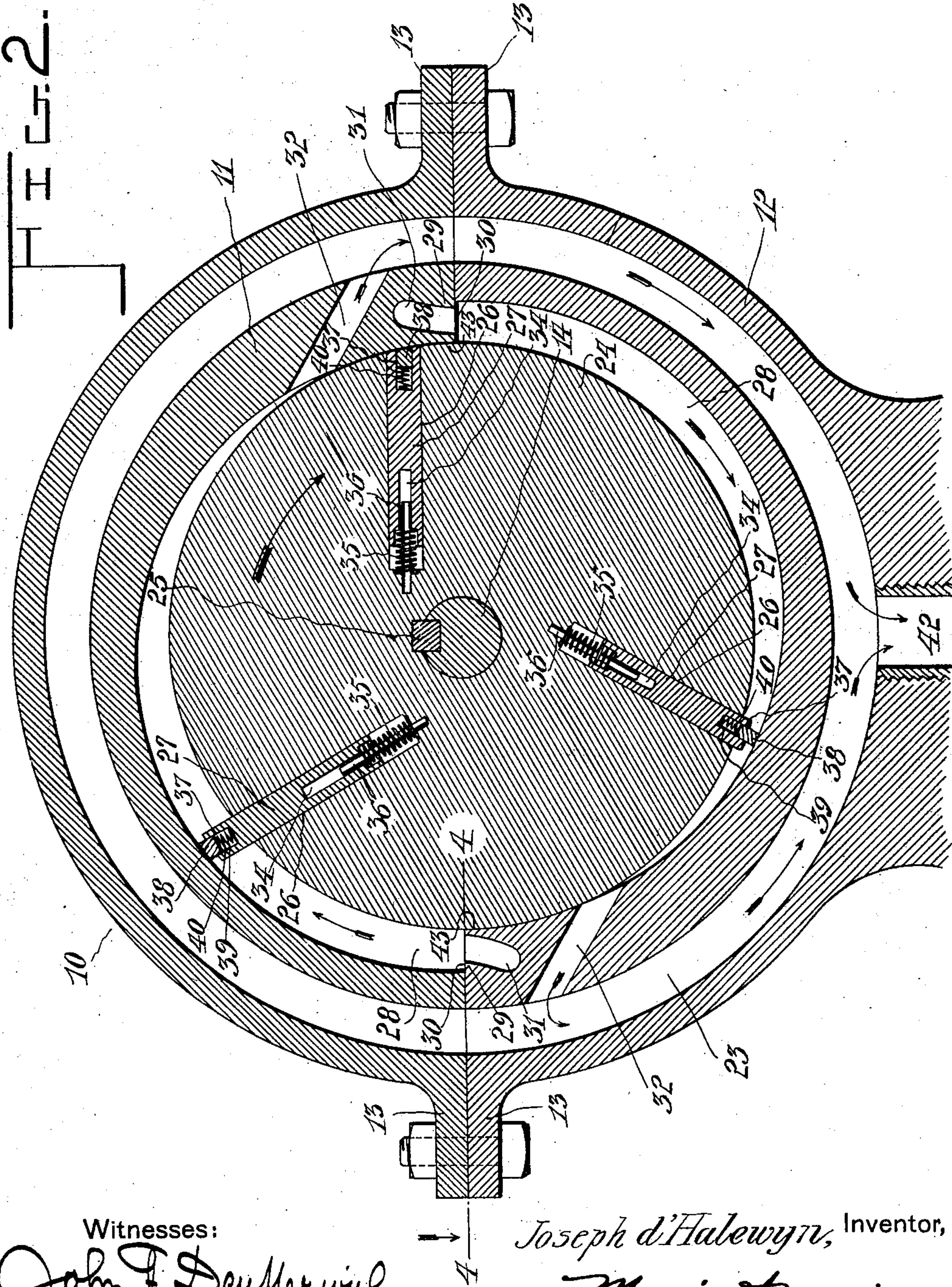
PATENTED DEC. 22, 1903.

J. D'HALEWYN.  
ROTARY ENGINE.

APPLICATION FILED MAR. 13, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:  
*John F. Deufferwiel*  
*J. D. Ammen*

*Joseph d'Halewyn*, Inventor,  
By *Marion & Marion*  
Attorneys



No. 747,418.

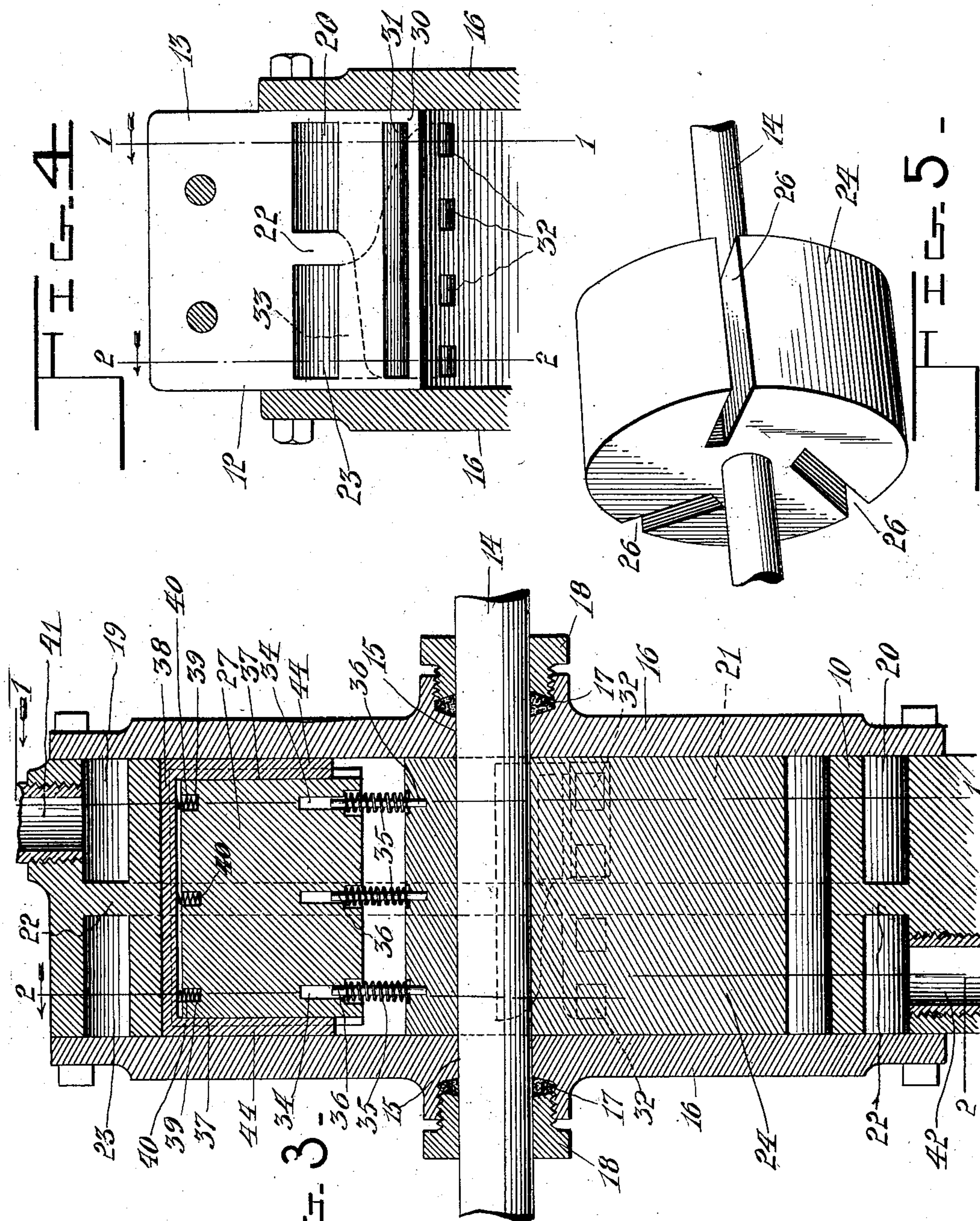
PATENTED DEC. 22, 1903.

J. D'HALEWYN.  
ROTARY ENGINE.

APPLICATION FILED MAR. 13, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:  
*John F. Deufferwiel*  
*H. D. Ammen*

*Joseph d'Halewyn*, Inventor,  
By *Marion & Marion*  
Attorneys



# UNITED STATES PATENT OFFICE.

JOSEPH D'HALEWYN, OF NOMININGUE, CANADA.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 747,418, dated December 22, 1903.

Application filed March 13, 1903. Serial No. 147,687. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH D'HALEWYN, a citizen of the French Republic, residing at Nominuingue, county of Labelle, Province of Quebec, Canada, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare that the following is 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.

My invention relates to rotary engines; and my object is to produce an engine of this type, which while it is simple in construction will be efficient in operation. The invention includes an improved arrangement of the steam-ports.

The invention consists in the construction and combination of parts to be more fully described hereinafter and definitely set forth in the claims.

In the drawings, which fully illustrate my invention, Figure 1 is a vertical transverse section taken substantially on the line 1 1 of Figs. 3 and 4. Fig. 2 is also a vertical transverse section and taken substantially on the line 2 2 of Figs. 3 and 4. Fig. 3 is a vertical longitudinal section. Fig. 4 is a section of a portion of a cylinder, illustrating especially the arrangement of ports. Fig. 5 represents in perspective the piston-drum. Fig. 6 is a perspective of one of the pistons, and Fig. 7 is a perspective also of a wearing-strip constituting a portion of each piston.

Throughout the drawings and specification the same numerals of reference denote like parts.

Referring more particularly to the parts, 10 represents the cylinder of my engine, which, as indicated, comprises substantially two parts or sections 11 and 12, respectively, the former constituting a cover and the latter of which constitutes a base for the engine, to which the cover 11 is bolted, flanges 13 being provided for this purpose. It should appear that these two parts, which constitute the cylinder, connect with each other in a plane which passes through the axis of the shaft 14, which shaft is rotatably mounted, as indicated, in openings 15 of the side plates

16 of the cylinder, suitable stuffing-boxes 17 being provided at this point with glands 18.

The cover 11 and the base 12 are provided, respectively, with chambers 19 and 20, which, as indicated, conform substantially to the shape of the cylinder, and these chambers connect, as shown, so that they form a continuous annular chamber 21, surrounding the inner portion of the cylinder for substantially one-half its length. This chamber 21 constitutes the live-steam chest. A web or wall 22 separates this chamber 21 from a similar chamber 23, which is formed in a similar manner in the cylinder-wall. This chamber 23 constitutes an exhaust-chamber into which the exhaust-steam passes as it escapes from the interior of the cylinder.

Upon the aforesaid shaft 14 there is rigidly mounted a drum 24 by means of a suitable key 25, and it should appear that this drum is cylindrical in form and provided with preferably three substantially radially-disposed recesses or openings 26. In these recesses are carried the pistons 27, the construction and arrangement of which will be more fully described hereinafter. Each of the members 11 and 12 is provided with a substantially semicylindrical bore 28, which bores, it will be observed, are not coaxial with the shaft 14, but disposed, respectively, on the opposite sides of the same. From this arrangement it should appear that the drum 24 is eccentric with respect to the bores 28, and it should further appear that shoulders or abutments 29 are formed which are disposed, respectively, on opposite sides of the shaft and in the plane of connection of the parts 11 and 12, and it should be understood that these abutments extend continuously between the aforesaid side plates 16. Their radial faces are provided with admission-ports 31, which lead from the aforesaid chamber 19. It should be observed that these ports extend substantially over the entire length of the cylinder and are substantially rectangular in form. At the points indicated adjacent to these ports 31 exhaust-ports 32 are located, there being preferably four at each side of the cylinder and disposed as shown. They cut through the aforesaid bores 28 in the man-



ner indicated and communicate with the exhaust-chamber 23. As indicated in Fig. 4, the ends of these ports are inclined, as indicated by the dotted lines 33, so that they communicate with their respective chambers and pass around each other, as will be readily understood. It should be understood that the rotation takes place in the direction of the arrow shown in Figs. 1 and 2, the steam entering the space behind the pistons, operating to impel the same forwardly. These pistons are provided on their inner faces with recesses 34, preferably three in number, which afford means for mounting small helical springs 35, which constrain the said pistons outwardly and assist in maintaining a good contact with the cylinder-wall at their outer edges. For the purpose of maintaining these springs 35 in position they are provided, respectively, with stems 36, the inner extremities of which are mounted in the bottom of the aforesaid recesses 26. At their outer edges and on their side edges the pistons 27 are provided with grooves or recesses 37, in which are respectively mounted packing-strips or frames 38, one of which is clearly illustrated in Fig. 7. These strips 38 are of such length that they abut on each side against the inner faces of the aforesaid side plates 16, comprising lateral extensions 44 at these points, which lie in the grooves in the manner shown, and in the aforesaid grooves 37 along the outer edges the pistons are provided with small recesses 39, in which are mounted, respectively, small helical springs 40, which thrust outwardly against the inner sides of the packing-strips and maintain their outer faces in contact with the wall of the cylinder, as will be readily understood. The construction of one of these pistons 27 is very clearly illustrated in Fig. 6.

Steam is supplied to the chamber 19 through the live-steam pipe 41, and exhaust takes place at the outlet 42.

From the arrangement described it should appear that the chamber 19 constitutes, as it were, a jacket substantially surrounding the interior of the cylinder. Of course as the rotation of the drum 24 takes place the springs 35 and 40 contract or expand, so as to allow the pistons to accommodate themselves to the relative positions of the drum and the cylinder-wall. When passing at the points 43, of course the pistons are drawn completely within the body of the drum. Immediately on passing the faces 30 the springs 35 operate to project the pistons outwardly, so that they are brought against the inner wall of the cylinder just beyond this point, the entering steam at the ports 31 impelling them forwardly and causing the rotation of the drum and shaft, as will be readily understood. It should be understood that the springs 35 are solely for the purpose of constraining the pistons themselves, while the springs 40 are to constrain the packing-strips. Evidently

these packing-strips can be replaced by others when they become so worn as to be unserviceable.

While I have shown in the accompanying drawings the preferred form of my invention, it will be understood that I do not limit myself to the precise form shown, for many of the details may be changed in form or position without affecting the operativeness or utility of my invention, and I therefore reserve the right to make all such modifications as are included within the scope of the following claims or of mechanical equivalents to the structures set forth.

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

1. In a rotary engine, in combination, a pair of sections coöperating to form a cylinder, and a steam-chest in the wall thereof, a rotary piston mounted within said cylinder, said sections being united substantially in the plane of the axis of said drum, the interior wall of said cylinder comprising substantially radially-disposed faces, there being ports leading through said faces from said steam-chest.

2. In a rotary engine, in combination, a pair of sections which coöperate to form an interior cylinder, said sections having communicating chambers completely surrounding said interior cylinder and constituting respectively a steam-chest and an exhaust-chamber, the interior wall of said cylinder comprising substantially radially-disposed faces, admission-ports leading through said faces from said steam-chest, and outlet-ports in the wall of said cylinder and leading to said exhaust-chamber.

3. In a rotary engine, in combination, a pair of sections which coöperate to form an interior cylinder, a rotary piston mounted within said cylinder, said sections having abutting faces, said faces projecting the one beyond the other at the interior wall of said cylinder, whereby abutments are formed, there being admission-ports through said faces at said abutments.

4. In a rotary engine, in combination, a pair of sections which coöperate to form an interior cylinder, a rotary drum mounted within said cylinder, said sections comprising chambers which coöperate to form respectively a steam-chest and an exhaust-chamber, said sections having abutting faces lying substantially in the plane of the axis of said piston, said faces projecting respectively beyond each other at opposite sides of said cylinder, whereby abutments are formed, there being ports leading through said faces at said abutments from said steam-chest, and exhaust-ports in the lateral wall of said cylinder adjacent to said admission-ports and leading to said exhaust-chamber.

5. In a rotary engine, in combination, a pair of sections which unite to form an interior cyl-



inder, said sections having a pair of chambers separated by a peripheral wall, which chambers coöperate respectively to form a continuous steam-chest within the wall of said cylinder and an exhaust-chamber, a rotary piston mounted in said cylinder, said sections having abutting faces which lie substantially in the plane of the axis of said piston, said faces projecting respectively at each side of said piston, whereby abutments are formed, therebeing admission-ports through said faces leading from said steam-chest, and exhaust-ports adjacent thereto leading through the lateral wall of said cylinder to said exhaust-chamber.

6. A cylinder for rotary engines comprising sections, said sections comprising chambers which coöperate respectively to form a steam-chest and an exhaust-chamber, said sections having substantially radially-disposed abutting faces, said faces projecting beyond each other to form abutments, there being ports in said projecting faces leading from said steam-chest, and exhaust-ports leading to said exhaust-chamber.

7. In a rotary engine, a cylinder composed of sections, said sections comprising substantially radially-disposed abutting faces, said faces projecting beyond each other so as to form abutments within the cylinder, said sections comprising chambers which coöperate respectively to form a steam-chest extending continuously around the cylinder, and an exhaust-chamber, there being admission-ports

in said projecting faces leading from said steam-chest, and exhaust-ports in the inner wall of said cylinder and leading to said exhaust-chamber.

8. In a rotary engine, in combination, a rotary drum having substantially radially-disposed recesses, pistons movably mounted in said recesses, said pistons having recesses formed in the inner edges thereof, springs mounted in the recesses of said pistons and thrusting against the bottoms of said first recesses, said pistons having longitudinally-disposed grooves in the outer edges and sides thereof, packing-strips carried in said grooves, and springs behind said packing-strips.

9. In a rotary engine, in combination, a rotary drum having substantially radial recesses therein, pistons mounted in said recesses, said pistons having recesses in the inner edges thereof, stems received by said recesses, helical springs surrounding said stems and adapted to constrain said pistons outwardly, said pistons having longitudinally-disposed grooves in the outer edges and sides thereof, packing-strips mounted in said grooves, and helical springs therebehind constraining the same.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOSEPH D'HALEWYN.

Witnesses:

J. A. MARION,  
F. D. AMMEN.