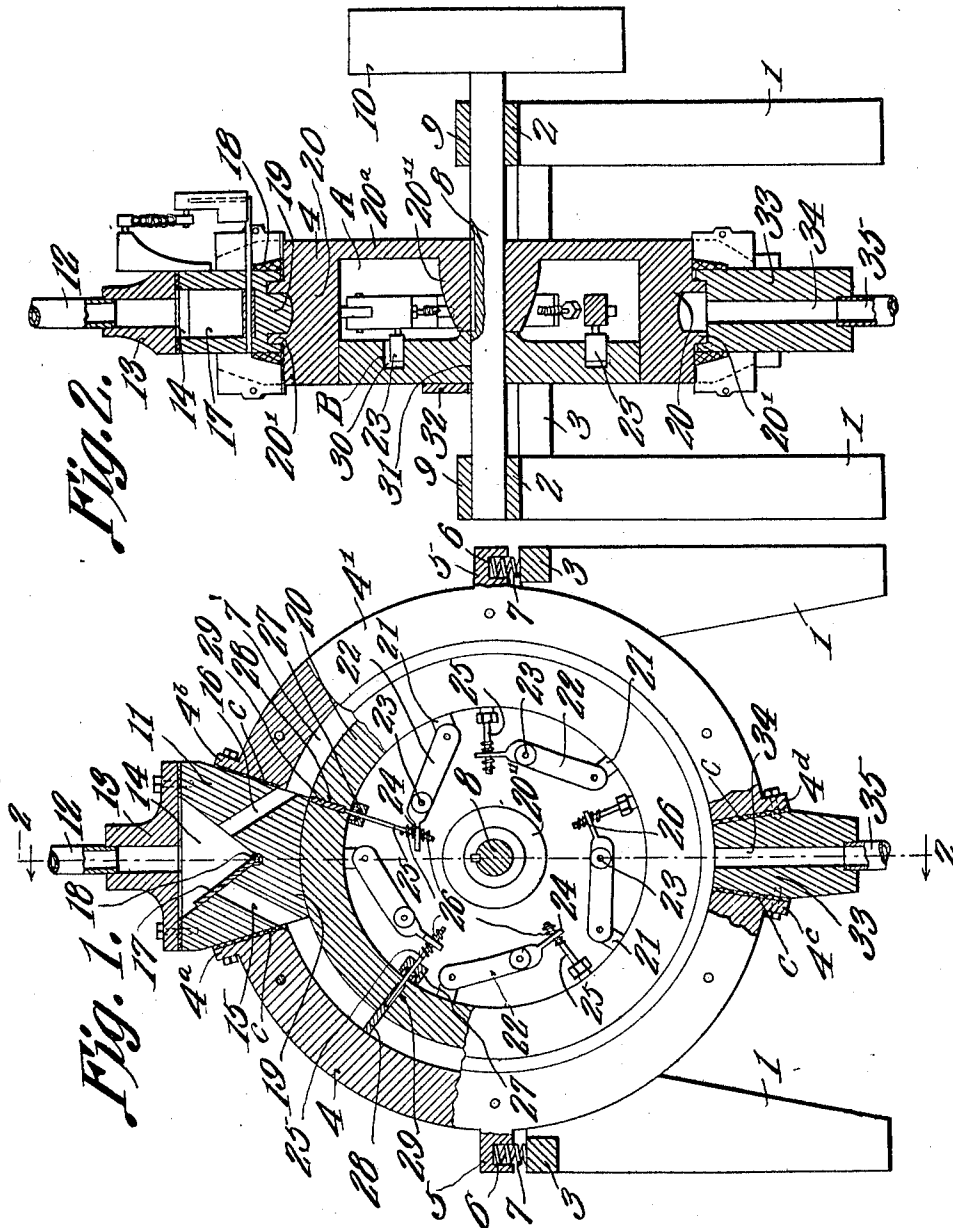


S. Sisson.  
 ROTARY ENGINE.  
 APPLICATION FILED JUNE 10, 1911.

1,020,848.

Patented Mar. 19, 1912.

2 SHEETS-SHEET 1.



Witnesses

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by

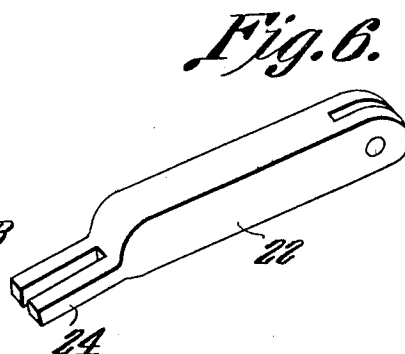
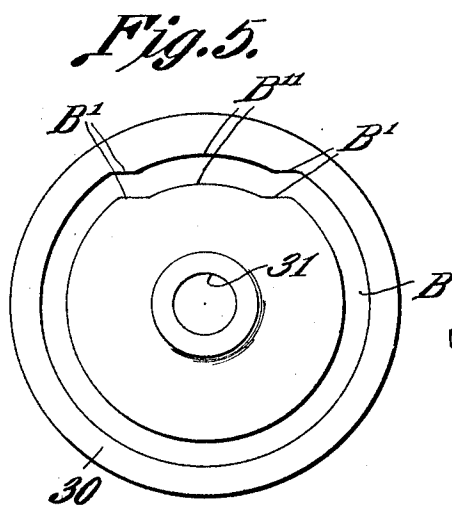
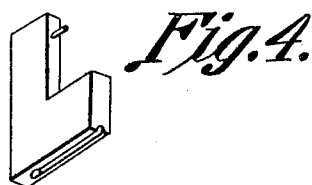
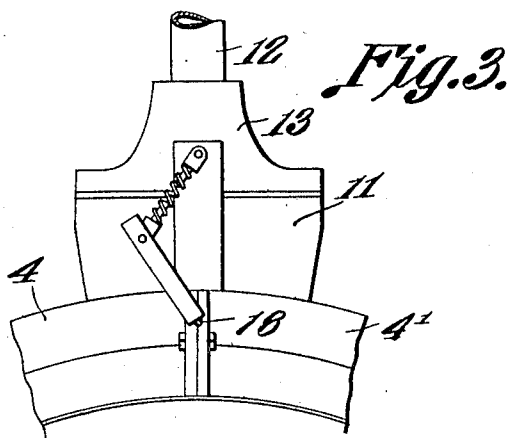
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 Attorneys

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# UNITED STATES PATENT OFFICE.

STRAWTHER SISSON, OF HAZEL, KENTUCKY.

## ROTARY ENGINE.

1,020,848.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed June 10, 1911. Serial No. 632,385.

*To all whom it may concern:*

Be it known that I, STRAWTHER SISSON, a citizen of the United States, residing at Hazel, in the county of Calloway and State of Kentucky, have invented a new and useful Rotary Engine, of which the following is a specification.

This invention relates to an improvement in rotary engines, the primary object of the invention being the provision of a rotary engine, having a sectional stationary member, and co-acting rotor, combined with a series of pressure fluid receiving pistons mounted in and bodily carried by the rotor, and adapted to be projected beyond the periphery of the rotor and receded within the same, by the co-action of a stationary cam disk, the sectional member and said cam disk being so arranged as to permit the rotation of the rotor, and all operate in conjunction to produce the proper rotation of the rotor with the maximum amount of power generation and economical power consumption.

A further object of this invention is the provision of a rotary machine, which may be used either as a rotary pressure fluid controlled motor or engine, or as a rotary pumping machine, the machine, when used as a motor or engine, being actuated by a pressure fluid, while when operating as a pumping machine, will have its rotor operated to elevate water by the suction action of the rotor and its paddles or pistons.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings:—Figure 1 is a side elevation of the machine, with the cam disk removed, and a portion of the segmental ring casing and rotor in section. Fig. 2 is a central vertical sectional view through the complete machine. Fig. 3 is an enlarged detail elevation of the valve operating mechanism. Fig. 4 is a detail perspective view of the valve removed from the machine. Fig. 5 is a detail plan view of the inner face of the cam disk. Fig. 6 is a de-

tail view of one of the pistons and its operative connections removed from the rotor.

Referring to the drawings, the numeral 1 designates the legs of the base, which carry the longitudinal strips 2, and the transverse strips 3, for the support of the machine.

When the machine is used as a rotary pressure fluid engine, it is constructed as follows, that is it comprises the main segmental casing or ring composed of the sections 4 and 4', respectively, provided with the lugs 4<sup>a</sup>—4<sup>c</sup> and 4<sup>b</sup>—4<sup>d</sup>, respectively, which provide means for the attaching of the segments to the inlet chest 11 and the exhaust member 33, the detail description of which will appear later.

Formed integral with the sections 4 and 4', and disposed diametrically to each other are the lugs 5, having the recesses 6, for the reception of the coiled springs 7, which rest upon the transverse strips 3, and thus provide a cushioned supporting means for the main casing of the engine.

The shaft 8, is journaled in the bearings 9, carried by the longitudinal strips 2, and rotates freely in the center of the plate 30, of the main casing. Mounted upon the end of the shaft 8, is a balance wheel or belt wheel 10, by means of which power is transmitted from the engine to any desired machinery.

Secured to the casing by means of the lugs 4<sup>a</sup> and 4<sup>b</sup>, is the pressure fluid admitting chest 11, which has the inlet pipe 12, in communication with the dome plate 13, into the chamber 14 of the chest 11, said chamber 14, being substantially tri-angular shaped in longitudinal cross section, and provided therefor with the inclined lower walls, from the respective ones of which lead the forward inlet port or channel 15, and the reverse inlet port or channel 16. These ports form a communication between the chest 11, and the chamber 7', between the circumferential flanges 20', of the rotor 20, and the inner circumferential face of the casing, the chest 11, being provided with the projection 19, which is adapted to fit fluid pressure tight within the flanges 20', and thus provide a division wall between the reverse and forward impact of the pressure fluid within the chamber 7.

The rotor 20, is keyed upon and rotatable with the shaft 8, and its hub 20'' and disk portion 20<sup>a</sup>, provide a chamber A, for the reception of the mechanism for operating

the pistons 28, as will presently appear. Carried by the rotor at equi-distant points upon the periphery of the rim forming the chamber A, are a series of eyed lugs 21, each  
 5 one of which has pivoted thereto a lever 22, carrying the anti-frictional pin or stud 23, and the reduced angular terminal 24, in which is slidably mounted the stem 25, held  
 10 24 by means of the opposed coiled springs 26. Each one of these stems passes through the stuffing boxes 27, and carry the pistons 28, mounted for projection and recession within the transverse radially disposed  
 15 peripheral slots or channels 29, formed in the rim of the rotor. In order to actuate the said pistons 28, and cause their projection and recession, at the proper time, and in succession, a disk or plate 30, is mounted  
 20 to fit within the open end of the chamber A, of the rotor, so that the said rotor may rotate therearound. The strip or plate 32, is secured across the outer face of the plate or disk 30, and holds the said disk in such  
 25 stationary position, the said plate 32 having its ends in engagement with the respective sections of the main casing, while the shaft 8, passes through the central openings 31 thereof, and is mounted for rotation therein.  
 30 Upon the inner face of the disk 30, is provided the cam slot or recess B, in which fit and contact at all times the respective anti-frictional studs 23 of the piston operating levers 22, the said cam recess being provided  
 35 with the two eccentric portions B', and the curved portion B'', while the remainder of the recess is concentric and of a larger diameter than the portion B''. By this means, as the rotor is rotated, the studs 23, passing  
 40 within the recess B, will be actuated thereby to be reeded as they pass through the portions B' and B'', which are opposite and in line with the projection 19 of the chest 11, while the remainder of the recess B, will hold  
 45 the pistons projected and into the chamber 7, formed by the flanges 20' and the main casing.

Mounted between the lugs 4<sup>a</sup> and 4<sup>a</sup>, of the sections of the casing, is the exhaust  
 50 member 33, which is provided with the exhaust port 34, which communicates with the chamber 7, and is provided with the exhaust conduit 35.

Where the lugs or rings 4<sup>a</sup>, 4<sup>b</sup>, 4<sup>c</sup> and 4<sup>d</sup>  
 55 are fastened to the valve casing 11, and exhaust block 33, steam packings *c* are employed, to prevent any loss of steam by leakage.

The paddles 28, have projections to correspond to and fit in the parallel slots, in which the flanges 20' also fit, thus presenting the greatest possible impact surface.

From the foregoing description taken in connection with the drawings, the operation  
 65 of the machine when used as a pressure fluid

actuated rotary engine, is as follows:— Steam is admitted through the inlet pipe 12, into the chamber 14, and by means of the valve 17, the same may be conveyed or directed through either inlet port 15 or 16, 70 where it enters the chamber 7, between the periphery of the rotor and the periphery of the chamber 7 of the main casing. The pressure fluid thus admitted, as there are a series of the pistons 28 provided in the rotor is bound to impact the one nearest that is projected into the chamber 7, and between the inlet port and exhaust port, thus imparting to the rotor a rotary motion in the desired direction. As the pressure fluid 80 passes from the inlet to the outlet, it has an expansive action upon the piston, the cam recess of the disk 30, actuating the pistons in succession so that they are drawn within the radial slots 29, of the rotor, as each successive one passes below the projection 19, 85 of the chest 11.

Clutch and governor mechanisms and also lubricating devices may be applied to this engine, to regulate its speed, to transmit 90 power therefrom, and to lubricate the moving parts.

When the machine is employed as a pump, the shaft 8 is rotated, and consequently the rotor, the water being sucked or drawn in 95 through the conduit 35, and carried by the pistons 28, through the desired side of the chamber 7, and out either port 15 or 16, through the chamber 14, and outlet 12. Thus a rotary pump, of a valveless type is 100 produced, which will act upon movement in either direction, the valve 17 being either dispensed with or held in a vertical position if desired, or said valve may be held to close the desired unused port, which will 105 prevent the water from flowing down upon the other side of the chamber 7.

What is claimed, is:—

In a rotary engine, the combination of a base, a segmental ring having oppositely 110 disposed supporting lugs to engage the base, said ring having oppositely disposed blocks, one of which is a valve casing having two admission ducts leading to the inner side of the ring while the other of which has an exhaust duct, a valve mounted in the casing 115 to control the respective ducts leading therefrom, a rotatable shaft, a rotor keyed to said shaft and provided with two circumferential ridges forming a pressure fluid acting chamber between the periphery of the rotor and the inner face of the ring, said rotor being provided with an open ended chamber in the body thereof, and having a series of radial slots leading into the pressure fluid acting chamber therefrom, a series 120 of pistons disposed for radial movement in said slots, a stem to each piston projecting into the chamber of the rotor, levers pivoted to the inner wall of said rotor chamber and 130

having their outer ends engaging the stems  
of the pistons, a stud carried by each lever  
and projecting outwardly, a disk closing the  
chamber of the rotor and provided with  
5 a cam groove into which the studs of all  
said levers ride, and means for holding the  
disk in a stationary position whereby the  
rotation of the rotor and the co-action of the  
studs with the groove of the disk will cause  
10 the pistons to be projected and retracted

relatively to the pressure fluid chamber of  
the engine.

In testimony that I claim the foregoing  
as my own, I have hereto affixed my signa-  
ture in the presence of two witnesses.

STRAWTHER SISSON.

Witnesses:

M. L. CHUNN,  
F. G. ROANE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."