

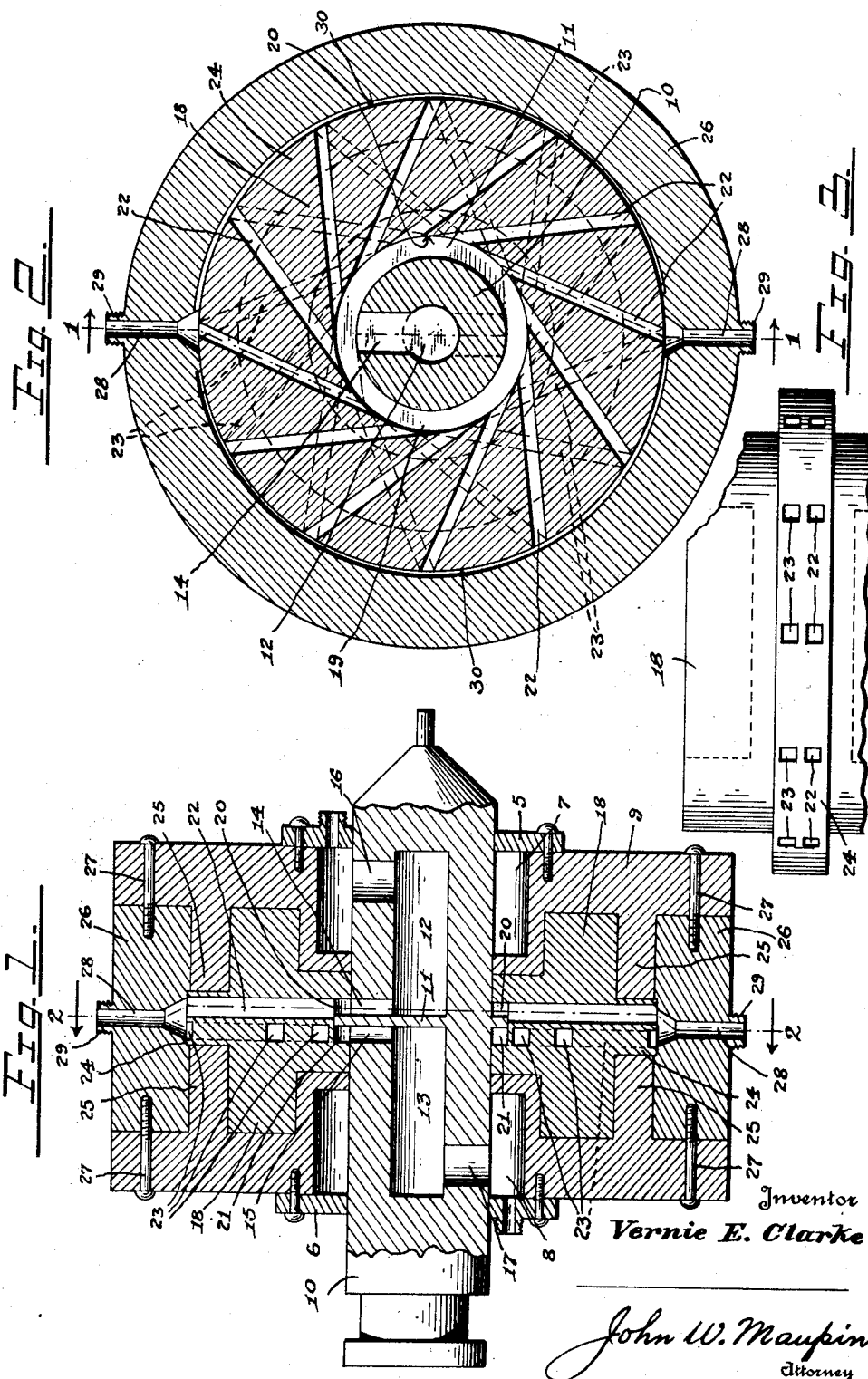
March 15, 1932.

V. E. CLARKE

1,849,478

ROTARY AIR ENGINE

Filed May 20, 1930



UNITED STATES PATENT OFFICE

VERNIE E. CLARKE, OF SEATTLE, WASHINGTON, ASSIGNOR TO CHRISTINE TREASURY, INCORPORATED, OF SEATTLE, WASHINGTON

ROTARY AIR ENGINE

Application filed May 20, 1930. Serial No. 453,980.

My invention relates to rotary air engines and certain objects of the invention are to provide an engine having central compartments disposed in its shaft and comprising a rotor member fixed to the shaft and having conduits extending therethrough in such tangential relation with the central shaft compartments that the passage of a power medium from the central compartments outwardly through the conduits will cause the engine to rotate either forward or backward as desired.

With the above and other objects in view which will appear as the description proceeds, the invention consists of the novel construction, adaptation, combination and arrangement of parts hereinafter described and claimed. These objects are accomplished by devices illustrated in the accompanying drawings, wherein:—

Figure 1 is a view in longitudinal vertical section of the engine taken substantially on a broken line 1, 1 of Fig. 2;

Fig. 2 is a view in transverse vertical section of the same taken on a broken line 2, 2 of Fig. 1; and

Fig. 3 is a plan view of the engine rotor member.

Referring to the drawings throughout which like reference numerals indicate like parts, the numerals 5 and 6 designate end closure plates through which the power medium, such as compressed air, steam or the like, is conducted into either of two cylindrical chambers 7 or 8 provided in the engine casing designated as a whole by the numeral 9 and having inlet ports for entry of the power medium.

A relatively large shaft 10 is journaled through the end plates 5 and 6 and casing 9 and is provided with a central longitudinal chamber having a discharge port extending radially through the shaft at its central portion. A circular partition 11 divides said longitudinal chamber transversely into two equal and separate compartments 12 and 13 and likewise divides said discharge port into outlets 14 and 15. An intake port 16 forms a communication between the cylindrical chamber 7 and the compartment 12 and an

intake port 17 connects the chamber 8 with the compartment 13.

A rotor member, designated as a whole by the numeral 18, is fixed to the shaft 10 and is enclosed by the engine casing 9. Said rotor is provided with an annular chamber 19 surrounding said shaft and embracing both the outlets 14 and 15. The circular partition 11 extends exteriorly of the shaft and impinges the outer wall of said annular chamber thus dividing same into two separate compartments 20 and 21. As clearly shown in Fig. 2 of the drawings, a plurality of spaced outlet vane ports 22 extend tangentially from the annular compartment 20 through the rotor member 18 while a plurality of corresponding vane ports 23 extend tangentially from the annular compartment 21 at points disposed on the opposite side of said compartment from the tangential disposition of the first-named ports with respect to the compartment 20. Thus the vane ports 22 will slant in a different direction from the vane ports 23 as will be understood.

The vane ports 22 and 23 have their outlets through an annular flange 24 formed on the periphery of the rotor member 18 and said annular flange has its bearing between the aligned annular flanges 25 of the engine casing 9 which flanges also provide a bearing for the periphery of said rotor member as a whole. The engine casing is annularly recessed between said annular flanges 25 and its outer cylindrical surface and a heavy collar or band 26 is set into said recess and secured to the engine casing by screws 27. Diametrically opposite discharge ports 28 extend through said collar and their inner ends are enlarged to embrace the path of the discharge ends of the two sets of vane ports 22 and 23 and thus register with all of said ports in their rotary movement. The outer ends of said discharge ports are provided with threaded projections 29 to which discharge or exhaust pipes may be connected.

Referring to Fig. 1 and assuming that compressed air is being supplied to the cylindrical chamber 7 and through the port 16 to the compartment 12 within the shaft 10, from said compartment the air will pass through the

outlet 14 into the annular compartment 20 from which compartment it will pass outwardly through the vane ports 22 and the discharge ports 28 thus causing the rotor member 18 to turn in a counter-clockwise direction.

5 On the other hand, if we assume that compressed air is being supplied to the compartment 8 same will pass through the port 17, compartment 13, outlet 15, annular compartment 21 and then outwardly through vane

10 ports 23, discharge ports 28, and will thus cause the rotor to revolve in the reverse or clockwise direction.

As shown in Fig. 2, spaces 30 are provided

15 on the inside of the collar 26 extending on both sides from each of the discharge ports 28 nearly half way around or close to the oppositely disposed discharge ports whereby an air cushion is provided for the rotor flange

20 member 24 and at the same time means is provided for the air to pass from said spaces outwardly through the discharge ports. From the foregoing description as a whole it will be apparent that means for admitting pressure medium to the vane ports is provided at

25 all times regardless of the position of the shaft 10 and the rotor 18 and whether same is at rest or in motion.

Having thus described my invention, it being understood that minor changes in its construction and arrangement may be resorted to without departing from the scope and spirit of the invention, what I claim and desire to secure by Letters Patent of the United States

30 is:—

A rotary air engine having in combination a rotary element, a casing for said rotor, a shaft fixed to the rotor and having a twin chamber therein with an inlet and an outlet

40 opening for each of its halves, said rotor having an annular chamber for each of said outlets and disposed in constant communication therewith, said rotor also having a system of vane outlet ports arranged in tangential communication with one of said annular chambers

45 and another corresponding system of vane ports arranged in opposite tangential relation with the other annular chamber, said casing having a cylindrical chamber for each of the compartments of the shaft twin chamber and communicating therewith by means of the

50 aforesaid inlets, and means for supplying a power medium to either of said cylindrical chambers.

55 In testimony whereof I affix my signature.
VERNIE E. CLARKE.