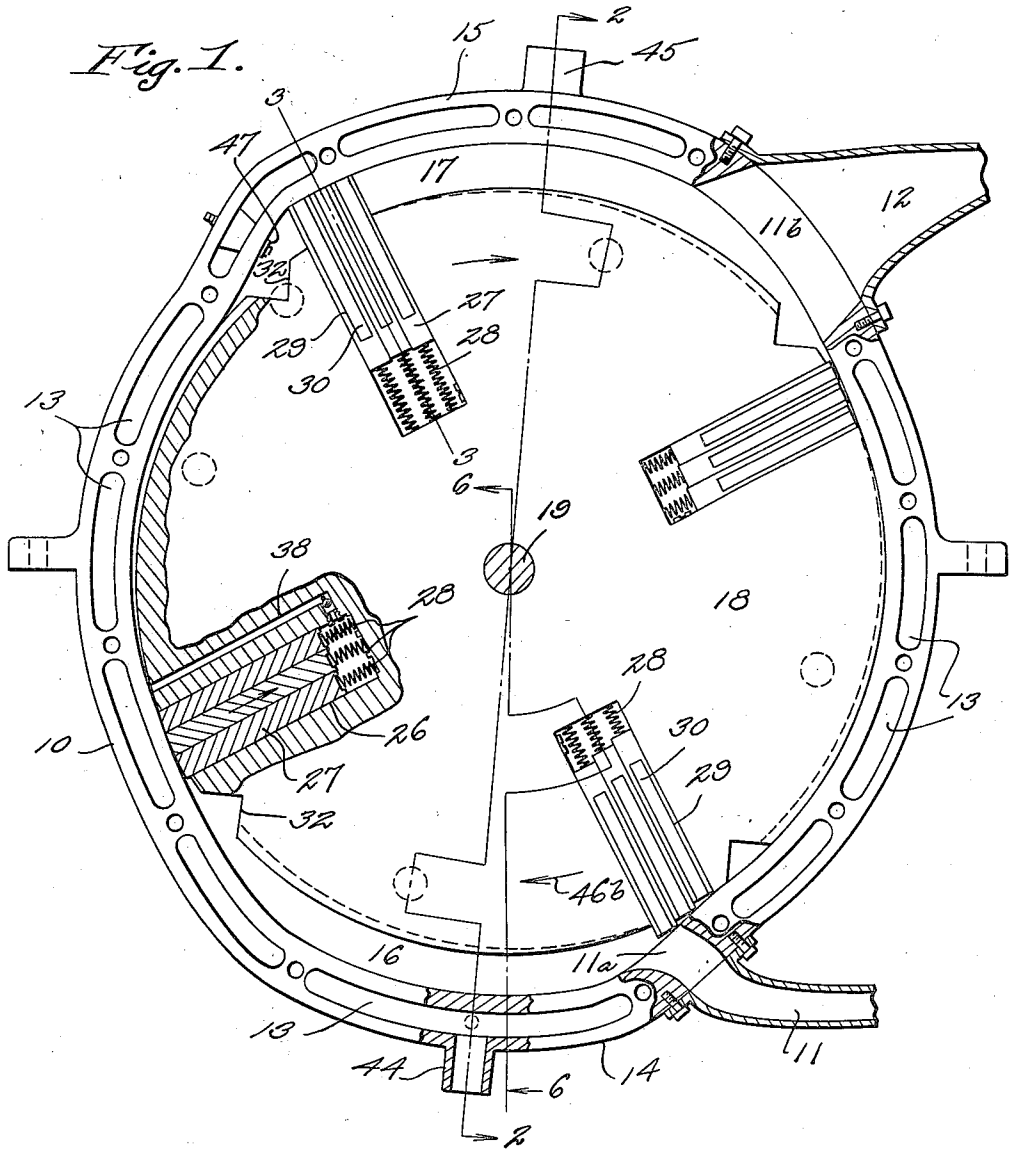
July 1, 1930. A. BLACKMAN 1,769,822

ROTARY MOTOR

Filed Nov. 16, 1927 3 Sheets-Sheet 1

Fig. 1.



Alexander Blackman
INVENTOR

BY Victor J. Evans
ATTORNEY

R. E. Wise
WITNESS:

July 1, 1930. A. BLACKMAN 1,769,822

ROTARY MOTOR

Filed Nov. 16, 1927 3 Sheets-Sheet 2

Fig. 2.

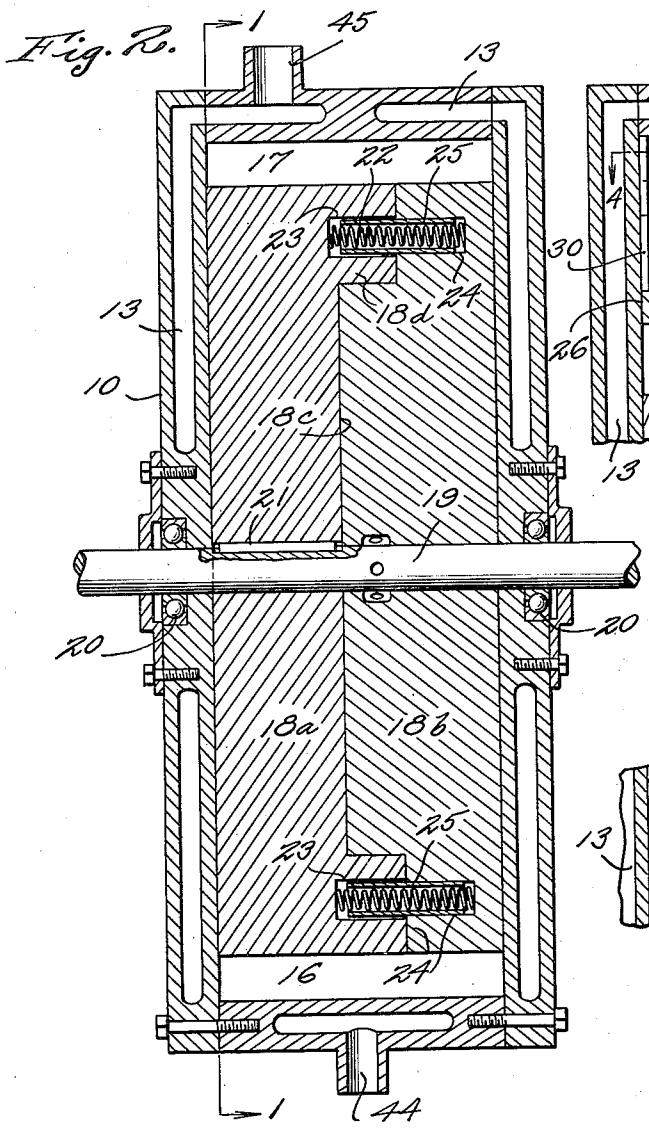


Fig. 3.

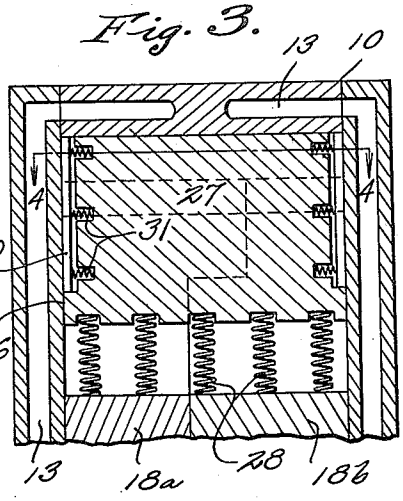
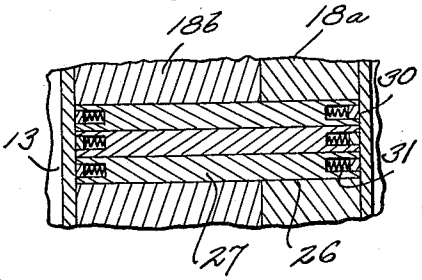


Fig. 4.



Alexander Blackman

INVENTOR

BY Victor J. Evans

ATTORNEY

R. E. Wise

WITNESS:

July 1, 1930. A. BLACKMAN 1,769,822

ROTARY MOTOR

Filed Nov. 16, 1927 3 Sheets-Sheet 3

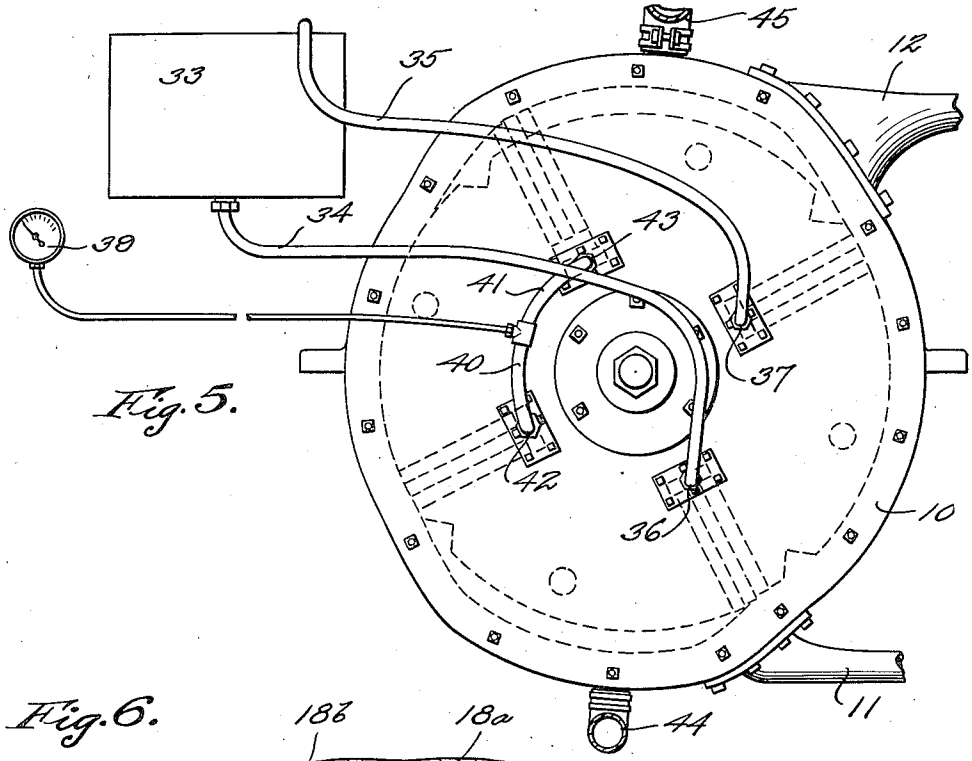
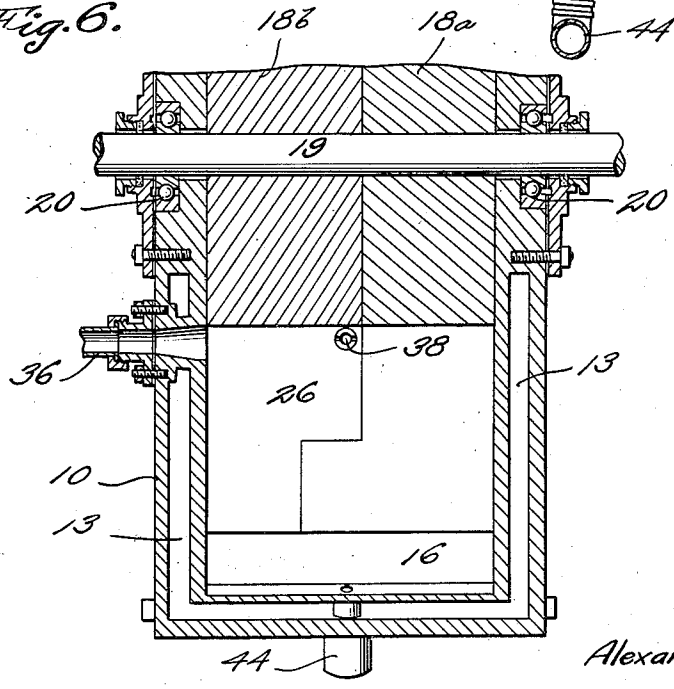


Fig. 5.

Fig. 6.



Alexander Blackman
INVENTOR

BY Victor J. Evans
ATTORNEY

R. E. Wise
WITNESS:

Patented July 1, 1930

1,769,822

UNITED STATES PATENT OFFICE

ALEXANDER BLACKMAN, OF PENSACOLA, FLORIDA, ASSIGNOR TO PATENT FINANCE AND HOLDING COMPANY, A CORPORATION OF FLORIDA

ROTARY MOTOR

Application filed November 16, 1927. Serial No. 233,690.

The present invention relates to rotary motors which may be either gas, steam or air driven.

An object of the invention is to improve the construction of motors of this type and to increase the efficiency thereof.

Further objects are the provision of an improved compressing and exploding system and to provide novel means for lubricating parts of the motor.

Other objects and advantages will appear from the subjoined specification and will be set forth in the appended claims.

In the drawings:—

Figure 1 is a section on the line 1—1 of Figure 2 showing the rotor and the valve members in relation to the casing.

Figure 2 is a section on line 2—2 of Figure 1 looking in the direction of the arrows and showing further the relation of the rotor to the casing and of the rotor sections to each other.

Figure 3 is a detail view showing the relation of the vane members to the rotor and to the casing, Figure 3 is taken on the line 3—3 of Figure 1.

Figure 4 is a section on line 4—4 of Figure 3 showing further the relation of the vane members to the rotor and to the casing.

Figure 5 illustrates a lubricating system in connection with the rotary motor, and

Figure 6 is an enlarged fragmentary sectional view taken on line 6—6 of Figure 1 further illustrating the connection of the lubricating system and the rotor and rotor casing.

Referring to the drawings in detail, 10 designates a casing of the rotary engine, 11 is the intake conduit and 12 is the exhaust leading respectively to and from the intake port 11^a and the exhaust port 11^b. The casing may be water cooled and is provided with a plurality of channels 13 for this purpose. The casing is substantially circular in vertical section forming a rotary fit between bulges or enlargements of the casings as shown at 14 and 15 providing respectively charging and explosion chambers 16 and 17. Mounted within the casing is a cylindrical rotor 18 which is supported upon a shaft 19 extending transversely of the casing and is journaled in the side walls as at 20. The rotor is comprised of two sections 18^a and 18^b which have interfitting male and female portions 18^c and 18^d, the portion 18^a being keyed to the shaft 19 by the spline 21 against rotation relative to the shaft.

The sections 18^a and 18^b are slidable lengthwise of the shaft and are pressed outwardly against the side walls of the casing by means of coiled springs 22 set in sockets 23 and 24 respectively in the sections 18^a and 18^b of the rotor. The sections are prevented from relative rotary movement by means of members 25. Radially formed in the rotor are pockets 26 in which are mounted vanes 27 acting as valves in the nature of flat blades which are pressed outwardly against the inner periphery of the casing by means of coiled springs 28. These blades may be set at any angle to the periphery found convenient or necessary, as shown they extend radially outward and the number of sets of blades may be varied as found convenient and desirable. The pockets are preferably large enough to contain three of said blades as shown clearly in Figure 1 and the blades are preferably grooved as at 29 along their side edges to accommodate expansion strips 30 which are spring pressed outwardly against the sides of the casing to insure tight fit. Strips 30 and the springs 31 for pressing them outwardly are clearly illustrated in Figures 3 and 4 of the drawings. Rearwardly of each blade receiving pocket, the rotor is formed with a notch 32 into which substantially all of the charge drawn into the charging chamber 16 is compressed before exploding upon itself reaching the beginning of the explosion chamber.

Connected with the mechanism above described is a lubricating system comprising a lubricant basin or tank 33 having a discharge pipe 34 leading from the bottom thereof and a return pipe 35 leading to the top of the tank. The discharge pipe 34 is connected with the side of the casing at a point 36 where the vane blades 26 begin their radially outward movement relative to the rotor that is at a point where the said blades

enter the charging chamber of the rotary engine. The pipe 35 on the other end is connected to the walls of the casing at a point 37 after the vane blades have moved inwardly at the end of the expansion chamber. By this means the blades are caused to pump their own lubricating oil to and from the basin 33. Channels may be provided as at 38 to permit a certain portion of the oil so pumped into the vane pockets to flow to the periphery of the rotor. A gauge 39 may be provided connected to the rotor casing by means of pipes 40 and 41, the ends of which communicate with said casing at the point of compression 42 and the point of expansion 43 of the vanes in their pockets, said gauge serving as a register of the pressure of the lubricant. The oil being pumped into the gauge when the point 42 is reached and being allowed to return to the pockets when the valve has entered the expansion chamber 17. The water for cooling may be supplied through the conduit 44 and may have its exit through the pipe 45 connected with the cooling chamber 13.

The operation of the device is as follows: A charge of gas is drawn into the charging chamber 16 from a source of supply through the pipe 11, the vanes 27 entering the chamber as the rotor rotates in the direction of the arrow at 46^b, in Figure 1, compressing the gas as the rotor moves in a clockwise direction and as the chamber 16 narrows to the left end thereof, the charge finally rests almost completely in the notch 32 until the explosion chamber is reached when the charge is allowed to expand slightly prior to being exploded by the spark device at 47 whereupon the explosion of the charge causes a pressure against the blades 27 and a consequent tangential impulse to the rotor, the charge being exhausted by the succeeding blade through the aperture 11^b at the right side of the explosion chamber. Springs 28 will maintain the blades at all times in contact with the periphery walls of the casing and the springs 31 will maintain the sealing strips 30 in contact with the side walls thereby providing the equivalent of piston rings and diminishing the leakage to a negligible minimum. In the mean time, lubricant will be pumped as above described to and from the vane pockets and will by this constant pumping action maintain the mechanism in a clean and well lubricated condition.

Having described my invention what I claim is:—

1. A device of the character described comprising a substantially cylindrical casing having bulges therein to form charging and explosion chambers, a cylindrical rotor in said casing having vane pockets formed radially therein, vanes in said pockets and compressible means lying between the inner ends of said vanes and the bottoms of said pockets urging the vane members outwardly against the inner periphery of the casing, a lubricating system comprising a lubricating basin, a pipe leading from the bottom of said basin and communicating with said casing at a point where the vane members move outwardly under the influence of said spring and a pipe leading from said casing to said basin and communicating with said casing at a point where the vane members move inwardly against the influence of said spring.

2. A device of the character described comprising a substantially cylindrical casing having bulges therein to form changing and explosion chambers, a cylindrical rotor in said casing having vane pockets formed radially therein, said rotor having solid male and female sections arranged for interfitting relation and spring pressed apart, stop members carrying the springs and having engagement terminally thereof with the sections to prevent independent circumferential movement thereof, vanes in said pockets and compressible means lying between the inner ends of said vanes and the bottoms of said pockets urging the vane members outwardly against the inner periphery of the casing, a lubricating system comprising a lubricating basin, a pipe leading from the bottom of said basin and communicating with said casing at a point where the vane members move outwardly under the influence of said spring, and a pipe leading from said casing to said basin and communicating with said casing at a point where the vane members move inwardly against the influence of said spring.

In testimony whereof I affix my signature.

ALEXANDER BLACKMAN.