C. MULINEX.

ROTARY ENGINE.

APPLICATION FILED NOV. 4, 1918.

1,350,168.

Patented Aug. 17, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

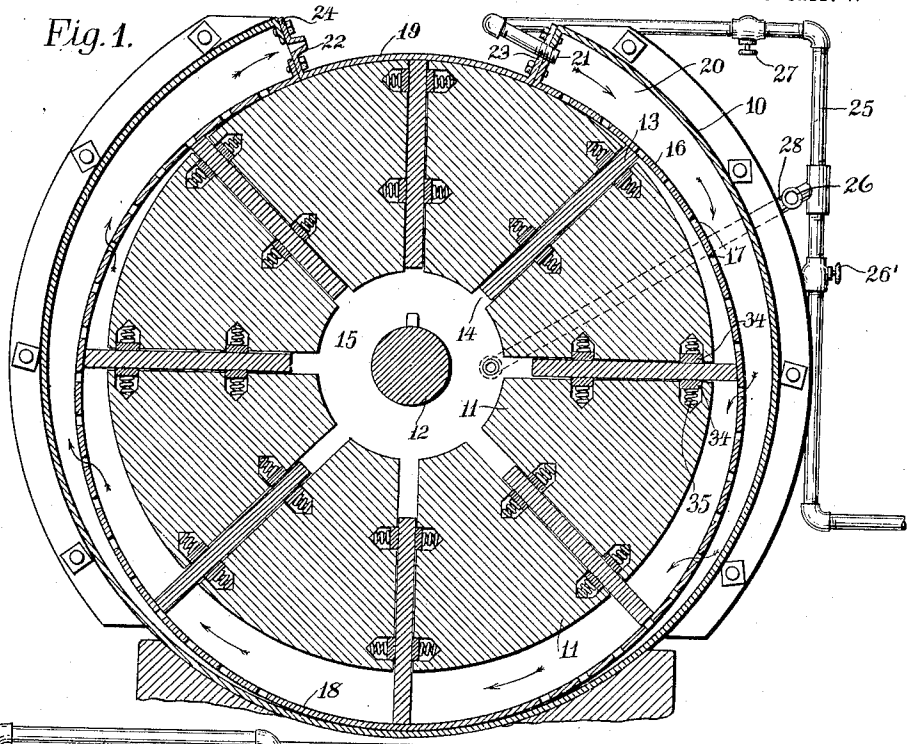
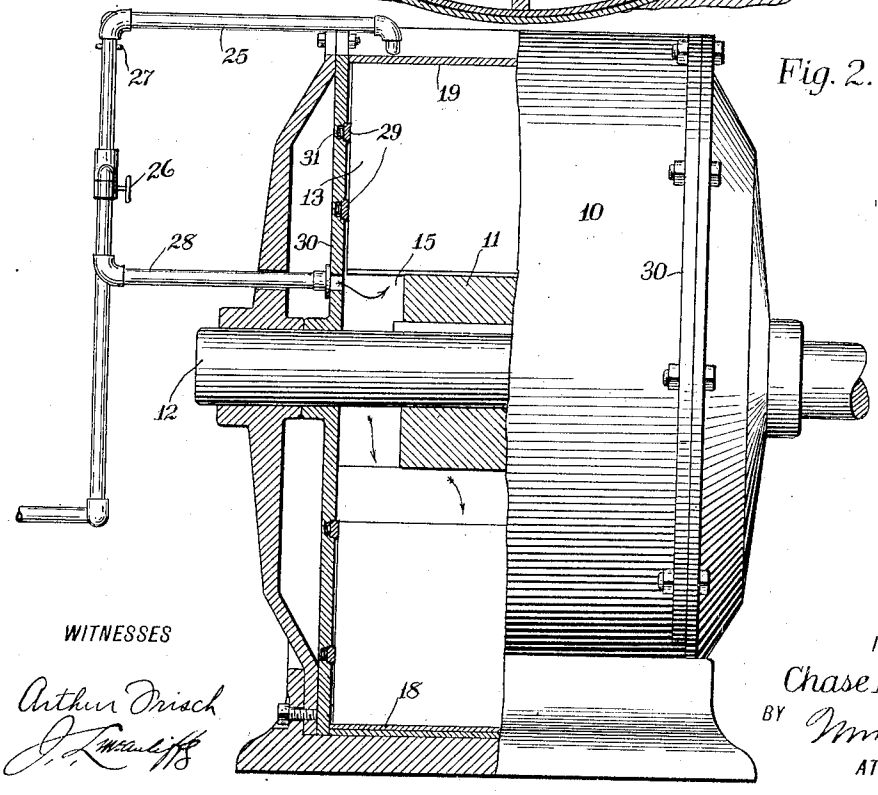


Fig. 2.



WITNESSES

Arthur Drisch

J. L. Macliff

INVENTOR

Chase Mulinex

BY Munn & Co

ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 3.

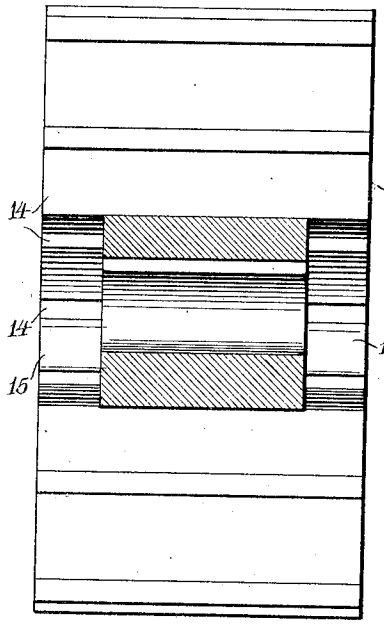


Fig. 4.

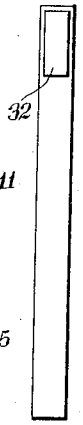


Fig. 5.

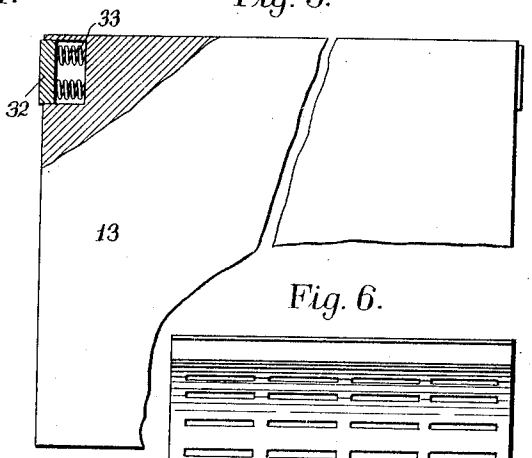


Fig. 6.

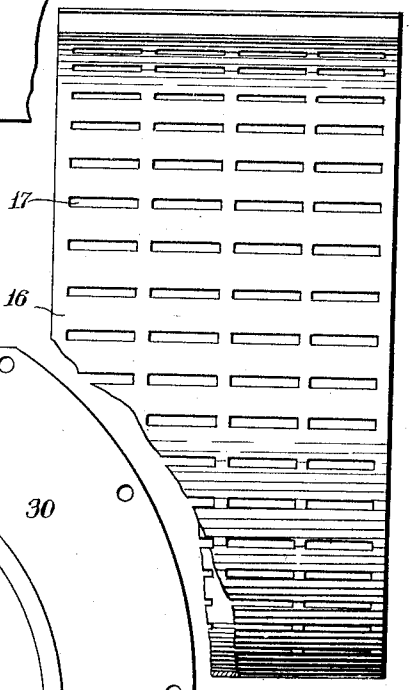
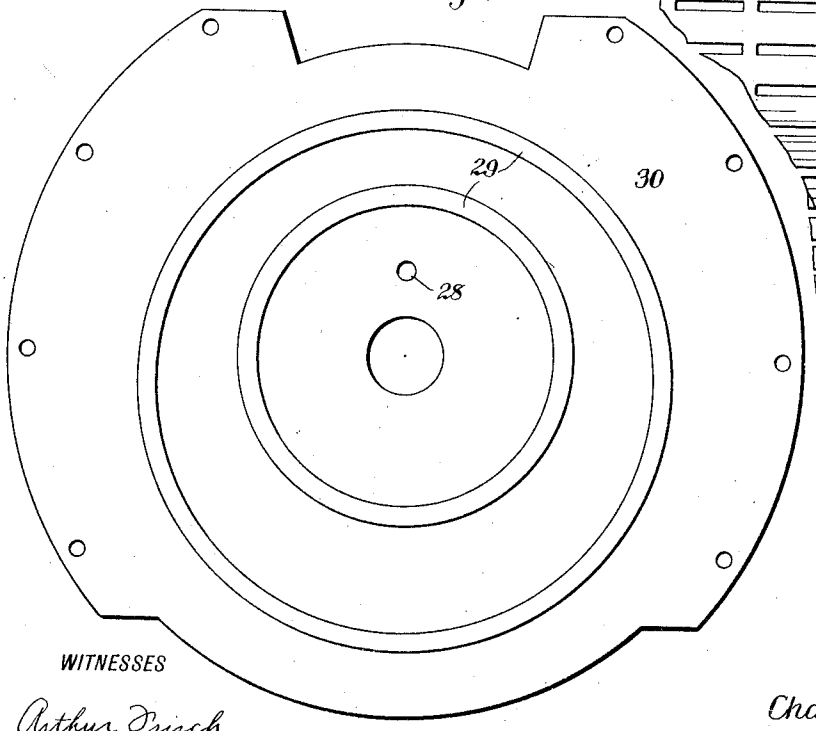


Fig. 7.



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Arthur Drisch

J. L. McAuliffe

INVENTOR

Chase Mulinex

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHASE MULINEX, OF TOLLEY, NORTH DAKOTA.

ROTARY ENGINE.

1,350,168. Specification of Letters Patent. Patented Aug. 17, 1920.

Application filed November 4, 1918. Serial No. 261,042.

To all whom it may concern:

Be it known that I, CHASE MULINEX, a citizen of the United States, and a resident of Tolley, in the county of Renville and State of North Dakota, have invented a new and Improved Rotary Engine, of which the following is a description.

My invention hereinafter referred to as relating to a rotary engine, is adapted for embodiment in either an engine or a pump and is adapted to employ any suitable motive fluid such as steam, air, or gas. The invention more particularly relates to a rotary engine employing radially disposed slidable pistons.

The general object of the invention is to provide an engine of the indicated type improved in various particulars with a view to increase the efficiency of the engine; to provide for the automatic sliding of the pistons to the power position and return without producing a side pressure thereon such as would cause a binding of the pistons in the rotor; and to provide a construction of a character to prevent leakage between the rotor and stator.

Further objects and advantages of the invention will appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a cross section of an engine constituting one embodiment of my invention;

Fig. 2 is a partly sectional side elevation thereof;

Fig. 3 is a central longitudinal section of the rotor;

Fig. 4 is an edge view of one of the pistons;

Fig. 5 is a fragmentary side view of one of the pistons, parts being broken away and others in section;

Fig. 6 is a partial side view of the eccentric guide wall for the pistons;

Fig. 7 is an inner face view of one of the heads of the cylinder or working chamber.

In carrying out my invention in accordance with the illustrated example, a stator is provided including a novel case 10 within which is a rotor 11 on a shaft 12. Said rotor has radially disposed pistons 13 slidable in slots 14 and the rotor has at the opposite ends thereof concentric chambers or recesses 15 directly about the shaft 12 to receive a motive fluid and communicate with the several slots 14. An eccentric guide wall 16 is disposed within the casing 10 between the same and the periphery of the rotor 11 to be eccentric to both the casing and rotor. The casing 10 and rotor 11 are concentric and the chamber 20 formed therebetween and in which the guide wall 16 is disposed, is a concentric chamber of equal dimensions throughout. Said guide wall has slots 17 or equivalent perforations to establish free communication between the interior and exterior of said guide wall, so that notwithstanding the eccentricity of the guide wall 16, there is no unequal pressure at the opposite sides of the pistons.

The pressure in the chambers 15 and slots 14 forces the pistons outwardly for maintaining said pistons in contact with said guide wall. The power arc through which the pistons 13 move at their maximum radial projection over the surface of the wall 16 is imperforate as at 18 and diametrically opposite said power arc is an imperforate area 19 over which the pistons move in returning. The areas as at 18 and 19, it will be observed, are true arcs, but of different radius, so that the pistons have no radial movement during the work arc in the moving over the area 19. The concentric chamber 20 for the motive fluid has an inlet 21 and an exhaust 22. These extend, in the illustrated example, through flanges 23, 24 on the arcuate plate forming the return surface at 19 for the pistons. Motive fluid from any source may be supplied through inlet 21, there being indicated a pipe 25 having valves 26′, 27 between which valves a branch 28 leads from said pipe 25 to one of the chambers 15, the pressure fluid thereby reaching the various slots 14, a valve 26 is provided in the branch pipe 28. Provision is made for packing the rotor 11 at the ends, for which purpose circular pack-

ing strips 29 are provided on the inner face of heads 30 provided in the stator, said strips being pressed outward by springs 31 at the back of the same. In order to pack the pistons 13 at the side edges, I provide in each side edge a packing strip 32 beneath which are springs 33. The strips 32 have a length greater than the maximum stroke of the pistons to insure an effective packing of a piston at the sides by extending over the surfaces of the heads 30 radially outward of outer strip 29 and between the latter and the circular guide 16, and thereby prevent leakage. In addition to the packing elements 29, 32, I provide packing strips 34 in the rotor 11 in the opposite walls of the slots 14, there being springs 35 at the back of said strips 34 to press the same against the opposite side surfaces of the pistons to prevent leakage of the motive fluid through the slots.

By the described arrangement the circular packing elements 29 prevent leakage radially outward from a chamber 15 between the rotor 11 and the opposite cylinder heads. The packing elements 32 prevent leakage annularly at the periphery when the pistons are projected into the chamber 20 and the elements 34 prevent leakage from the chamber 15, through the slots 14.

In starting the engine the valves 26′ and 26 are open to supply a motive fluid through the branch 28 to the adjacent chamber 15 and slots 14, thereby causing the pistons 13 to be subjected to a pressure tending to force them radially outward. The valve 27 is then opened to direct motive fluid to the chamber 20 through the inlet 21, thereby causing the pressure of the same to act on the pistons to turn the rotor, the motive fluid exhausting at the opposite side of the power area through the perforated guide wall 16 and exhaust 22. With the engine in operation centrifugal force will throw the pistons radially outward only subject to the guiding action of the wall 16, and the valve 26 may then be closed.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the mechanical details herein illustrated, since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

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

1. A rotary engine including a cylindrical casing, a rotor concentric in the casing and spaced therefrom to provide an intervening concentric chamber adapted to receive a motive fluid, radially disposed pistons carried by the rotor and slidable therein, a cylindrical guide wall in said chamber and eccentric to the motor and rotor, said wall presenting imperforate arcuate areas approximately diametrically opposite each other, over which areas the pistons operate without radial movement in their positions of maximum and zero projection respectively, the remaining portions of said guide wall being perforated so that the pistons move over a perforated area of the wall in their forward and return strokes to and from the position of maximum projection, said chamber having an inlet and an exhaust for motive fluid respectively at opposite sides of that imperforate area over which the pistons travel in their position of zero projection.

2. A rotary engine including a cylindrical casing, a rotor concentric in the casing and spaced therefrom to provide an intervening concentric chamber adapted to receive a motive fluid, radial pistons carried by the rotor and slidable therein, an eccentric cylindrical guide wall in said chamber presenting imperforate areas constituting arcs of circles diametrically opposite each other, over which areas the pistons operate without radial movement in their positions of maximum and zero projection respectively, the remaining portions of said guide wall being perforated so that the pistons move over the perforated area of the wall in their forward and return strokes to and from the position of maximum projection, said chamber having an inlet and an exhaust for motive fluid respectively at opposite sides of that imperforate area over which the pistons travel in their position of zero projection.

3. A rotary engine including a casing, presenting heads at opposite ends, a rotor concentric with the casing and spaced therefrom to provide an intervening concentric chamber, said rotor having depressions at the ends adjacent to the axis and having radial slots extending from said depressions to said concentric chamber, pistons slidable in said slots, an inlet and an exhaust for said chamber, a perforate guide wall in circular form in said chamber eccentric to the rotor and casing, a fluid supply pipe connected with said inlet, a branch from said inlet pipe to one of said depressions, and valves in said branch pipe and in said fluid supply pipe between said branch pipe and said inlet.

4. A rotary engine including a casing presenting heads at opposite ends, a rotor concentric with the casing and spaced therefrom to provide an intervening concentric chamber, said rotor having radial slots extending to said concentric chamber, pistons slidable in said slots, an inlet and an exhaust for said chamber, a perforate guide wall in circular form in said chamber eccentric to the rotor and casing, means to supply motive fluid to said chamber and radial

slots, and packing means for the pistons, said packing means including annular spring-pressed strips on the heads of the casing at the inner faces and contacting with the side edges of the pistons radially inward from the outer ends of the latter, spring-pressed packing strips carried by said pistons at the side edges thereof radially outward from the said strips, and spring-pressed packing strips on the rotor in the opposite walls of the slots and contacting with the respective pistons at opposite sides.

CHASE MULINEX.