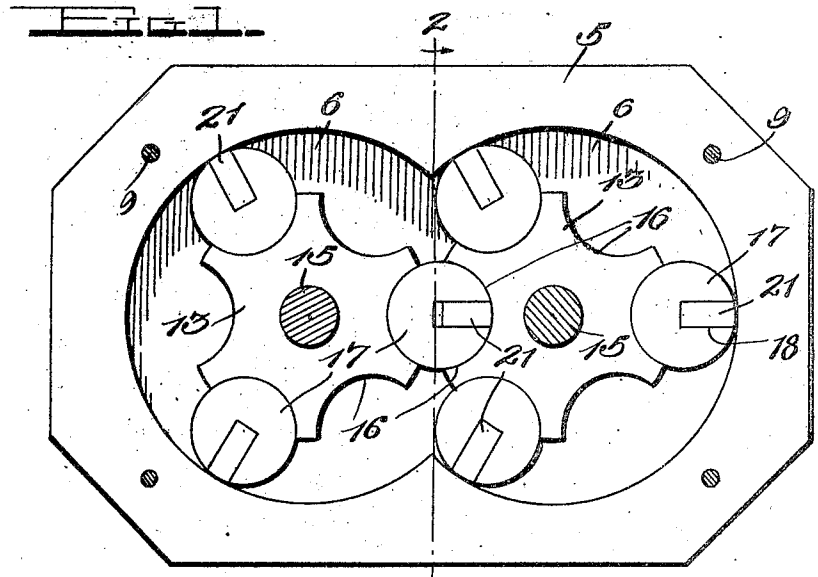
S. S. WILLIAMS.

ROTARY ENGINE.

APPLICATION FILED OCT. 19, 1912.

1,047,357. Patented Dec. 17, 1912.



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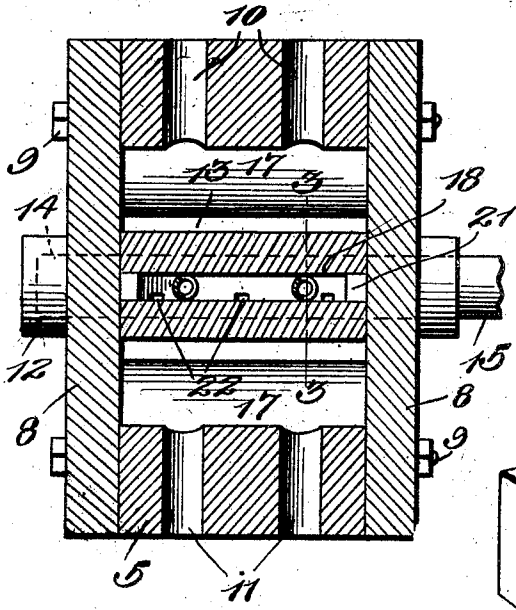

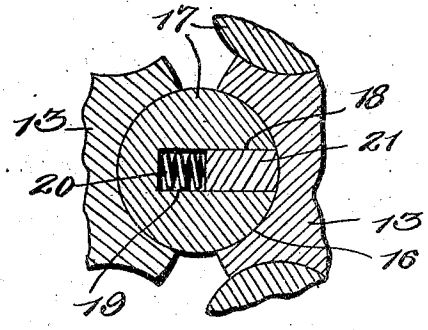

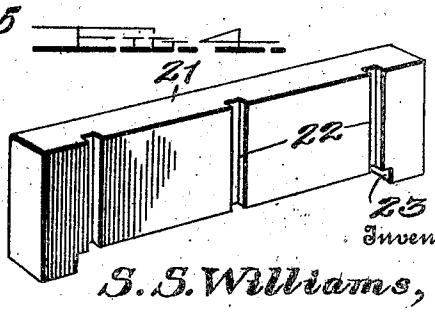

Witnesses

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UNITED STATES PATENT OFFICE.

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ROTARY ENGINE.

1,047,357. Specification of Letters Patent. Patented Dec. 17, 1912.

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To all whom it may concern:

Be it known that I, SILAS S. WILLIAMS, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to rotary engines and more particularly to pistons therefor, the invention having for its primary object to provide an improved mounting for packing strips carried by the piston, said packing strips engaging the wall of the engine cylinder.

A further object of the invention is to provide a rotary pump or engine having improved structural features whereby the operating efficiency, durability and reliability of the engine is materially enhanced.

With the above and other objects in view as will become apparent as the description proceeds, the invention consists in certain constructions, combinations and arrangements of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawing, in which—

Figure 1 is a side elevation, one of the face plates of the casing removed illustrating a rotary pump or engine embodying the present invention; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is a section taken on the line 3—3 of Fig. 2; and Fig. 4 is a detail perspective view of one of the packing strips.

Referring in detail to the drawing 5 designates the body of the engine casing which is provided with two internal communicating chambers 6 each of which is of substantially circular form. The ends of these chambers are closed by means of the face plates 8 which are bolted or otherwise secured to the body of the casing as indicated at 9. The engine casing is centrally provided with inlet and outlet ports 10 and 11 respectively which open into the casing at the communicating point of the chambers 6 and at diametrically opposite sides thereof. Pipes are connected to these ports and to a source of fluid supply, said pipes being provided with suitable valves whereby the fluid may be admitted to the engine casing from either side thereof and exhausted from the opposite side.

One of the face plates 8 of the casing is provided with step bearings 12 which receive the bearing studs 14 on one end of the pistons 13. The rods 15 of the pistons extend through openings in the other face plate of the engine casing. Each of the pistons is provided with a series of parallel peripheral grooves or channels 16 which are of substantially semi-circular form. In these grooves or channels, the cylinders 17 are secured in any preferred manner. Each of these cylinders is provided with a longitudinal groove or kerf 18, the base wall of which is provided with recesses or sockets 19 to receive the coil springs 20. These springs bear against the packing strips 21 preferably of brass and force the same outwardly so that their outer edges are disposed beyond the peripheries of the cylinders 17. The inner edges of the packing strips 21 are cut away as at 23 and spaced from the base walls of the grooves 18 in the cylinders. Each of the packing strips is provided in one side with a plurality of channels 22 through which the actuating fluid may enter beneath said packing strips and assist the springs 20 in forcing said packing strips outwardly into engagement with the casing walls. Thus a very tight frictional engagement of the outer edges of the packing strips with the walls of the circular chambers 6 of the engine casing will be maintained.

The engine operates in a similar manner to rotary pumps or engines of this type which are well known in the art, the cylinders and channels of the rotary pistons receiving the impact of the fluid as it is admitted to the engine casing, whereby said pistons are driven. The cylinders 17 are arranged alternately with relation to the open grooves or channels 16 of the pistons and as the pistons rotate in opposite directions, the cylinders of one piston are received in the channels of the other piston.

From the foregoing it is believed that the construction and many advantages which accrue to my pump or engine will be clearly understood. The inlet and outlet ports are preferably arranged in pairs and are disposed at opposite sides of the longitudinal center of the pistons so that the impelling force of the actuating fluid will be properly distributed and a maximum of working energy thus secured. The packing strips car-

tied by the rotary pistons may be readily renewed when they become too far worn for further effective service, the expense incident to such renewal being trivial.

It will of course be apparent that a greater number of the piston cylinders in which packing strips are arranged may be employed if desired. It is also manifest that many other changes in the form, proportion and arrangement of the several elements may be resorted to without sacrificing any of the advantages or departing from the spirit of the invention.

Having thus described the invention, what is claimed is:

1. The combination with an engine casing having substantially circular communicating chambers, of a rotary piston arranged in each of said chambers, each of said pistons having a plurality of parallel longitudinal peripheral channels, cylinders arranged in alternate channels of the pistons, and radially movable packing strips mounted in each of the cylinders, the cylinders on one piston being adapted for engagement in the channels of the other piston.

2. The combination with a casing having substantially circular communicating chambers and inlet and outlet ports communicating with the chambers, of a rotary piston mounted in each of said chambers, each of said pistons being provided with a plurality of parallel longitudinal channels, cylinders secured in alternate channels of the pistons, each of said cylinders being provided with a longitudinal groove, a packing strip arranged in said groove and provided in one face with channels through which the actuating fluid may enter beneath the packing strips to force the same outwardly into engagement with the wall of the casing, the cylinders on one piston being adapted for engagement in the longitudinal channels of the other piston.

3. The combination with a casing having substantially circular communicating chambers and inlet and outlet ports opening into the casing at the communicating point of said chambers, of a rotary piston mounted in each of said chambers, each of said pistons having a plurality of parallel longitudinal peripheral channels, cylinders secured in alternate channels of the piston, each of said cylinders being provided with a longitudinal groove, a metal packing strip arranged in said groove, coil springs disposed between the packing strip and the base of the groove to force said packing strip outwardly beyond the periphery of the cylinder, said packing strip being provided in one side with a plurality of channels through which the actuating fluid may enter beneath said packing strip and assist the springs in forcing said strips outwardly, the cylinders of one piston being adapted to enter the channels of the other piston.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

SILAS S. WILLIAMS.

Witnesses:

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F. L. PALMER.