

May 1, 1923.

S. E. KOCHENDARFER

1,453,683

ROTARY ENGINE

Filed Nov. 28, 1919

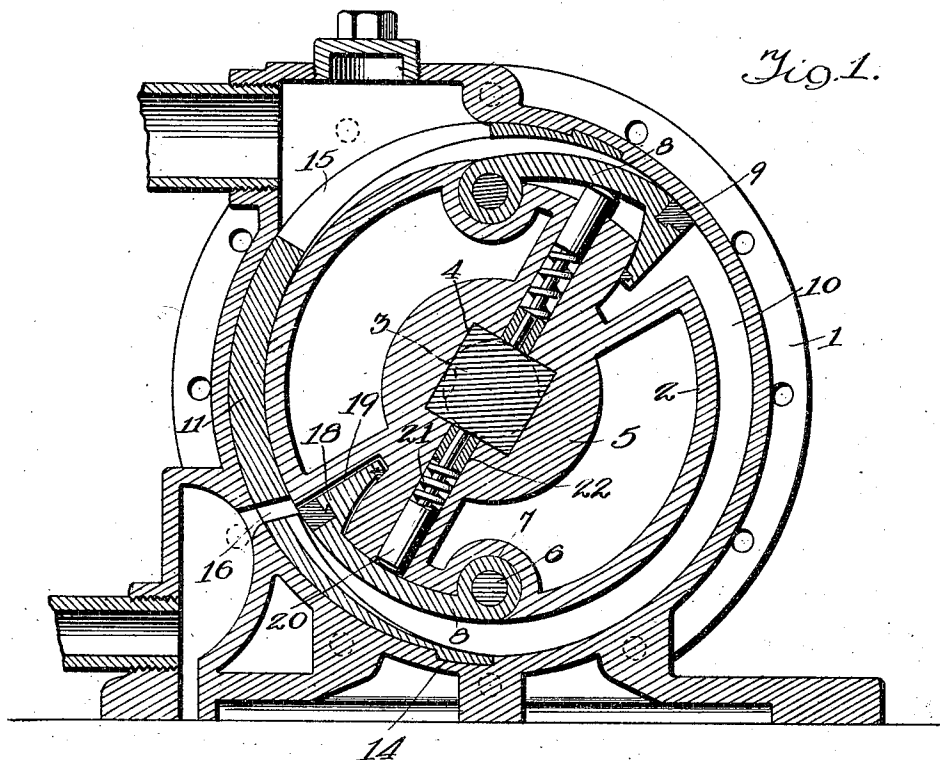
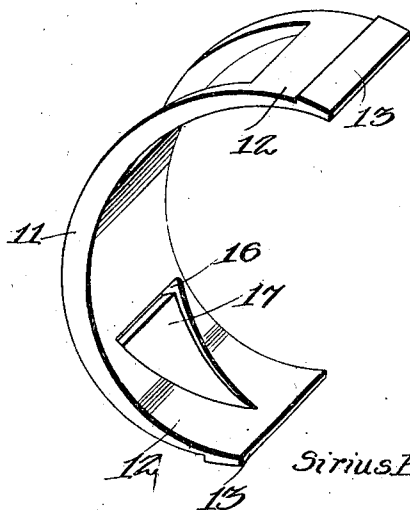


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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ROTARY ENGINE.

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To all whom it may concern:

Be it known that I, SIRIUS E. KOCHENDARFER, a citizen of the United States, and a resident of Washington, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention relates to improvements in rotary engines, and it consists in the constructions, combinations, and arrangements herein described and claimed.

An object of my invention is to provide a rotary engine which embodies improvements over my Patent 1,302,930 of May 6, 1919, and 1,344,137 of June 22, 1920, one of the outstanding features of the present construction being an inserted renewable cam crescent with embodied means for controlling the motive fluid as appears more fully below.

A further object of the invention is to provide a rotary engine embodying means for automatically and gradually cutting off the flow of fluid into the working chamber, with means consisting of the mutually associated and cooperating piston and cam crescent against which it works during a portion of the rotation.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which:—

Figure 1 is a vertical longitudinal section of the improved rotary engine, and

Figure 2 is a detail perspective view of the inserted renewable cam crescent.

In carrying out my invention I provide a stator 1, in which the rotor 2 is concentrically mounted on the engine shaft 3, which is round at the ends as shown in cross section but non-circular in the middle, as at 4, so that the hub 5 can be firmly mounted with no danger of the rotor turning on the shaft. Pivoted at 6 in suitable recesses 7 in the rotor 2, are the oscillating pistons 8, the free ends of which, which have suitable hardened inserts 9, bearing against the periphery of the working chamber 10.

A so-called cam crescent 11 is inserted in the stator 1 so as to fill one side of the working chamber 10, substantially as shown in Figure 1. In the present instance, the crescent 11 fills the left side.

The ends of the crescent taper out as at 12, but instead of terminating in knife edges, the ends are substantially thickened at 13

for the double purpose of preventing the "fraying out" which would certainly occur in the case of knife edges, and to provide keys, as it were, to seat in the recesses 14 and thus assist in holding the crescent 11 in position.

This cam crescent 11 is removable, should it become worn, because it is simply inserted in position and is not necessarily rigidly fixed in place because the nature of its mounting in the stator 1 will serve to hold it immovable. It has a large exhaust port 15 at the top and a narrow inlet port 16 near the bottom.

This latter port merges with a V-shaped recess 17 which gets smaller and smaller toward the bottom in the direction of rotation of the rotor, until it finally terminates in a point at the surface of the crescent.

Take for example the position of the engine in Figure 1. Steam enters the port 16, flows behind the head 18 of the piston in the recess 19, thus pressing the free end of the piston in contact with the periphery of the working chamber, the steam also flowing through the tapering recess 17 into the working chamber where it exerts its pressure on the head 18 of the other and uppermost piston.

As the rotation continues, the lowermost piston in moving over the tapering steam recess 17, gradually reduces the area of the steam opening until the point of mergence of the recess with the surface of the crescent 11 is reached, when the steam is entirely cut off. That is to say, the steam is then cut off so far as its pressure against the uppermost piston is concerned, the lowermost piston now being active in moving the rotor.

Approximately at the same time of cutting off the steam from the uppermost piston, that piston reaches the leading edge of the exhaust port 15, when the exhausting of the spent steam commences.

The foregoing conveys a full idea of the operation of the engine, structural details, such for example as how the parts of the stator are put together and how the engine is mounted, etc., being omitted, because these are matters that are easily taken care of in the manufacture of the engine. It may be observed, however, that the pistons are held outwardly by means of the plungers 20, pressed by springs 21 in recesses 22 in the rotor. This arrangement is slightly different from the showing in my patent above

mentioned, but the purpose of the arrangement is the same.

While the construction and arrangement of the rotary engine herein described and claimed, is that of a generally preferred form, obviously modifications and changes may be made without departing from the spirit of the invention or the scope of the claim.

10 I claim:—

A rotary engine comprising a stator having inlet and exhaust openings, a rotor peripherally spaced from the stator to provide a working chamber, a crescent inserted

to fill one side of the working chamber and 15 cover said openings, the crescent being tapered at the ends to provide cam approaches, one having a large exhaust port fitting over the exhaust opening, the other having a narrow inlet port fitting over the inlet opening 20 and merging with a recess in the face of the crescent which tapers and diminishes in depth in the direction of rotation of the rotor; and a pair of pistons carried by the rotor having means to keep them in contact 25 with the working chamber wall.

SIRIUS EDWARD KOCHENDARFER.