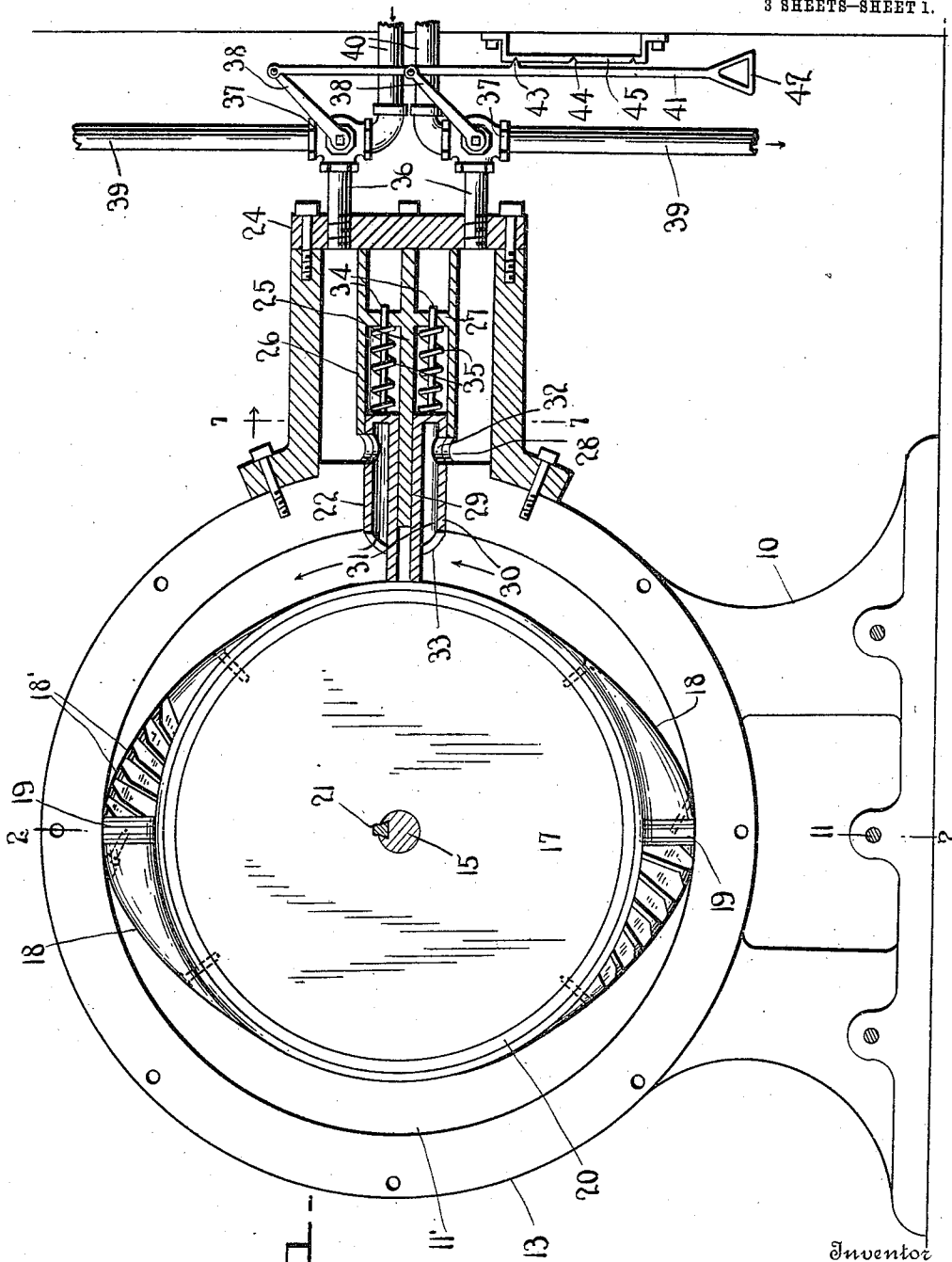


975,637.

A. RENIK.
 ROTARY ENGINE.
 APPLICATION FILED JULY 18, 1910.

Patented Nov. 15, 1910.

3 SHEETS-SHEET 1.



Witnesses

L. B. James
 L. V. Willis

Andrew Renik

By

Charles C. ...

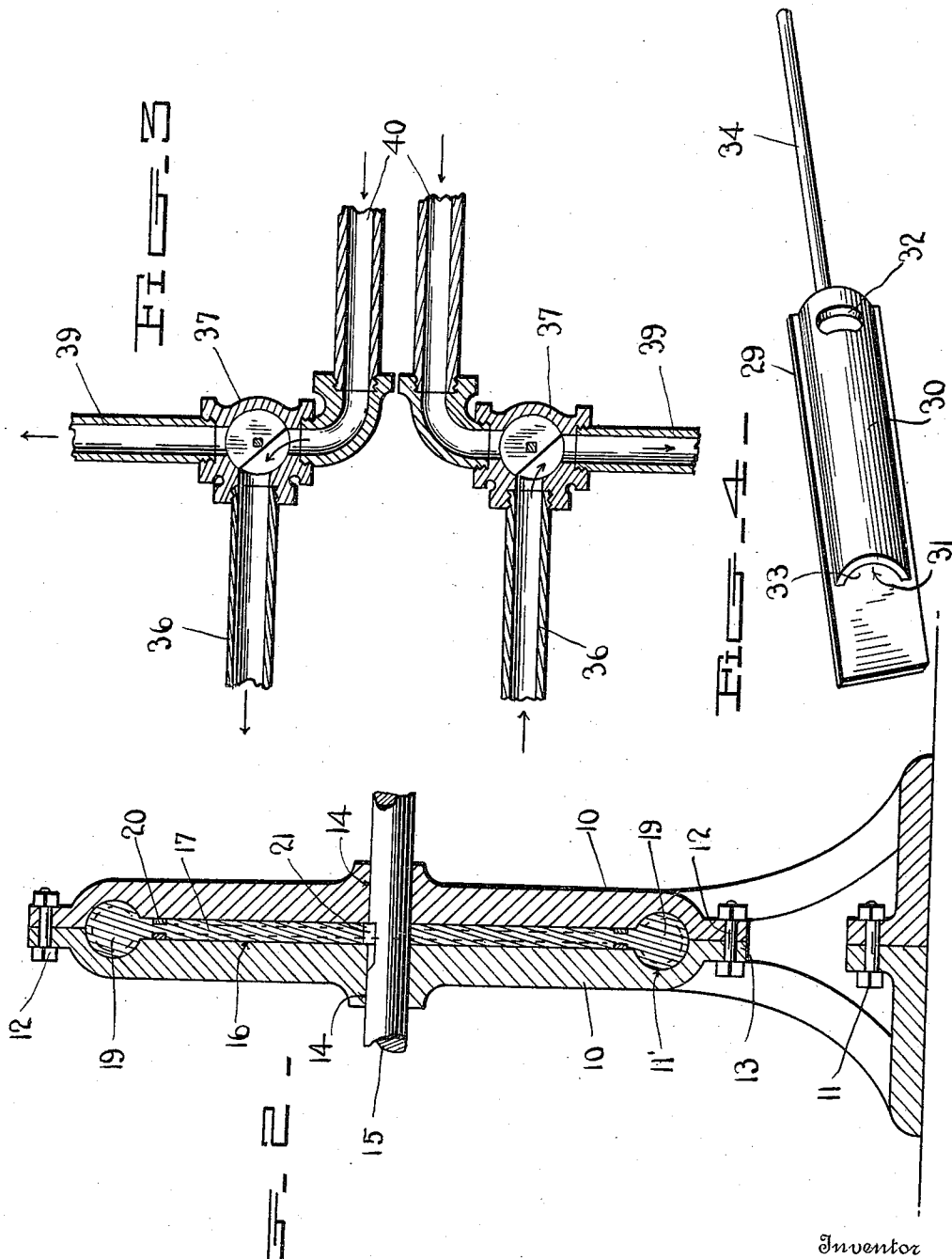
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3 SHEETS-SHEET 2.



Witnesses
L. B. James
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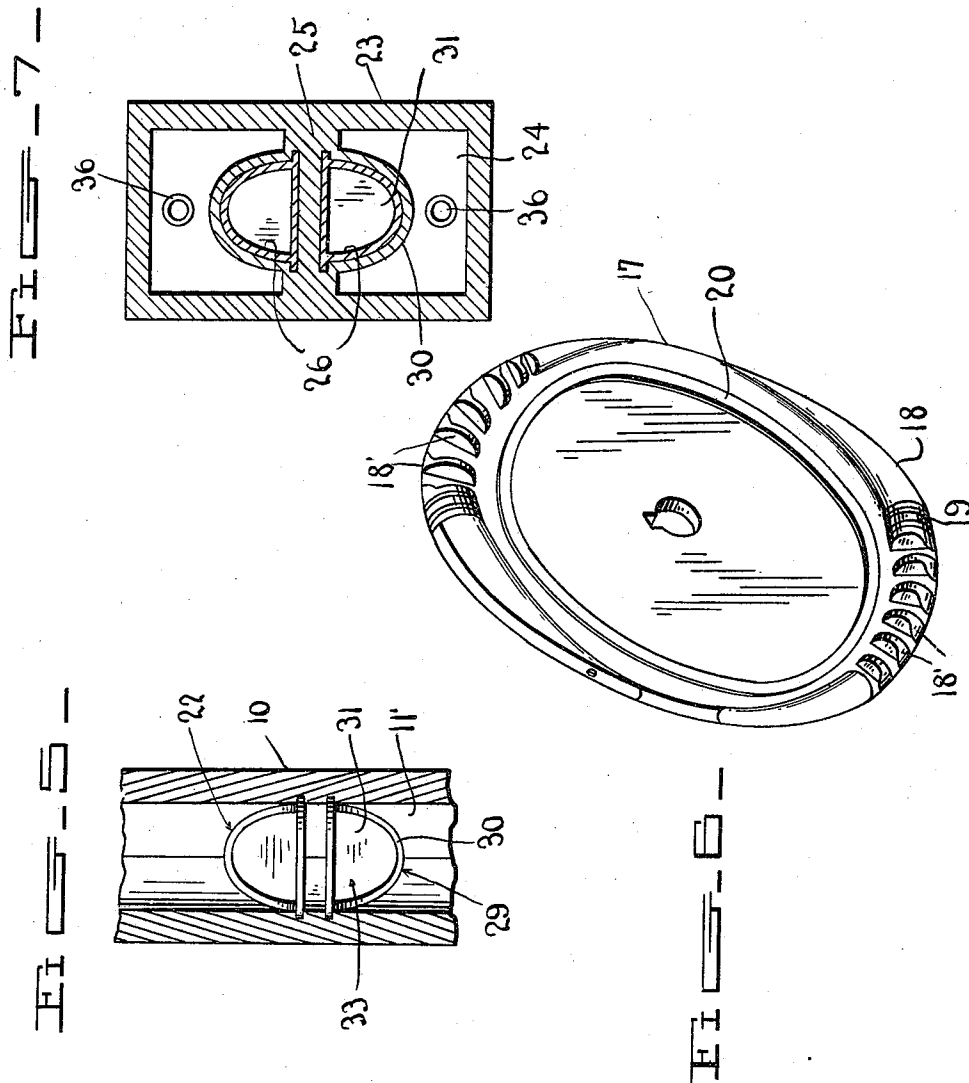
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 3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ANDREW RENIK, OF KENOSHA, WISCONSIN.

ROTARY ENGINE.

975,637.

Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed July 16, 1910. Serial No. 572,330.

To all whom it may concern:

Be it known that I, ANDREW RENIK, a citizen of the United States, residing at Kenosha, in the county of Kenosha, State of Wisconsin, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to rotary engines and has special reference to a novel arrangement of abutment and valves for such an engine.

One object of the invention is to improve the arrangement of abutments in an engine of this description.

A second object of the invention is to provide a novel and improved form of control for the steam in such an engine.

With the above and other objects in view, as will be hereinafter apparent, the invention consists in general of a stator having an annular steam chamber, a piston provided rotor, and abutments and valve gearing of novel and improved construction.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and Figure 1 is a vertical section through an engine constructed in accordance with this invention, the section being taken transverse the axis of rotation. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is an enlarged detail section through the valves. Fig. 4 is a detail perspective view of one of the abutments. Fig. 5 is a section through a portion of the steam chamber showing the abutments. Fig. 6 is a perspective view of the rotor removed from the stator. Fig. 7 is a section on the line 7—7 of Fig. 1.

This invention comprises a stator which is preferably made in two parts each of which is indicated by the numeral 10 and these parts are secured together by suitable bolts 22 passing through lugs in the base and other bolts 12 passing through flanges 13 formed around the periphery of the body, the latter being circular in outline. Extending around each of the parts 10 is an

annular channel 11', the two channels being so positioned that when the parts are together the channels form an annular steam chamber substantially circular in cross section. Centrally of the body of the stator there is provided a pair of alined bearings 14 through which passes a shaft 15. In the space between the channels 11' and the shaft 15 the stator halves 10 have their inner faces spaced apart as indicated at 16.

The rotor comprises a disk 17 having cam portions 18 formed thereon, these cam portions serving to support pistons 19. These cam portions 18 are furthermore provided in certain instances with wings 18' which serve to better direct and distribute the incoming steam as well as to add to the efficiency of the engine. The pistons 19 fit closely in the annular steam chamber and in order to prevent steam from leaking down into the space wherein the disk 17 rotates suitable packing strips 20 are provided which extend around the inside of the stator; one of these strips being shown clearly in its relation to the parts in Fig. 1. This rotor is secured to the shaft by means of a suitable key 21 so that as the rotor is moved the shaft 15 will revolve.

At one side of the stator there is provided an opening 22 and covering this opening is a steam chest 23 fitted with a suitable cover 24. This steam chest is divided by a partition 25 into two parts and this partition carries casings 26 wherein are guide members 27. The casings 26 are each provided with an opening 28 which leads from the body of the steam chest into the casing.

The partition 25 extends into the opening 22 and slidable through the two parts of this opening, thus divided by the partition, is a pair of abutments 29. Each of these abutments has a flat back which rests against the partition and a squared end 30 which fits closely in the steam chamber when the abutment is projected inward. Through each abutment extends a steam passage 31 having a lateral opening 32 which is adapted to register with the respective opening 28 when the abutment is in its inward position. The steam passage, furthermore, has an opening 33, this latter opening affording communication with the steam chamber of the stator. Projecting from each of the abutments and through the respective guides 27 are stems 34 and surrounding these stems are coil springs 35, one end of each spring bearing

against the end of a respective abutment while the other end of said spring bears against the respective guide 27. By this means the abutments are constantly urged to their inward position.

Extending through the head 24 are steam pipes 36 which are connected to two-way valves 37 each having a handle 38. Extending from each of the two-way valves 37 is an exhaust pipe 39 and communicating with said valves are steam pipes 40. The handles 38 are connected by a link 41 provided with a handle portion 42 and on this link is a projection 43 adapted to engage in one of the notches 44 of a plate 45 fixedly secured in the path of said projection 43. By means of the link 41 the two valves may be simultaneously actuated and from an inspection of Fig. 3 it will be noted that when the valves are in the position there indicated steam will be admitted to one side of the steam chest and exhausted from the other while when the valves are rotated ninety degrees the two sides of the steam chest will act in the opposite manner, that is to say, steam will be exhausted from what was previously the admission side and admitted through what was previously the exhaust side.

In the operation of the device let it be assumed that the parts are in the positions indicated in Figs. 1 and 3. Steam will then flow in the direction of the arrows from the pipe 36 through the registering openings 28 and 32, thence through the abutment and into the steam chamber of the stator. Here the steam will act against the upper piston 19 of Fig. 1 and cause the stator to rotate in a direction opposite the hands of a clock. Meanwhile the steam which has been previously admitted to the steam chamber will follow the direction of the arrows shown below the abutments and pass out through the lower abutment, registering ports 32 and 28 and the exhaust side of the steam chest 23. As the rotor continues its movement the cam portions 18 will force the abutments outward against the action of the springs 35. This will close off both the valves formed by these abutments and the casings 26 and the inertia of motion in the rotor will carry the parts around until the abutments are again moved inward and the ports 28 and 32 brought into registry. When this takes place a further supply of steam will be admitted and the other piston 19 will be im-

pelled around. In case that it is desired to use the engine for movement only in one direction the cam portions 17 may be modified by the omission of alternate portions so that the abutments will move abruptly back after the piston 19 has passed. In this case the valve arrangement may also be eliminated as one of the pipes 36 will always be the steam supply pipe and the other will always be the exhaust pipe.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope of the appended claims.

Having thus described the invention, what is claimed as new, is:—

1. In a rotary engine, a stator having an annular steam chamber, a steam chest having a pair of spaced openings communicating with said chamber, a partition in said steam chest between said openings, a casing on each side of said partition provided with a lateral steam port, a pair of hollow abutments each mounted to slide in one of said casings and provided with a steam passage having a lateral port adapted to register with the port of the respective casing, a rotor provided with means for moving said abutments outward, springs in said casings urging said abutments inward, steam pipes communicating with the valve casing on each side of the partition, and means to control the direction of flow through said steam pipes.

2. In a rotary engine, a stator having an annular steam passage, a rotor revoluble in said stator and provided with a piston moving in said passage, a cam rib leading from said piston and provided with a series of lateral disposed wings, and an abutment slidable into and out of said passage, and means to supply steam to the passage between the abutment and piston.

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

ANDREW RENIK.

Witnesses:

KAZMIER NOWACKI,
JOSEF SZUMANSKI.