No. 748,522. PATENTED DEC. 29, 1903.

W. OLEWINSKI.

ROTARY ENGINE.

APPLICATION FILED APR. 15, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

*Fig. 1.*

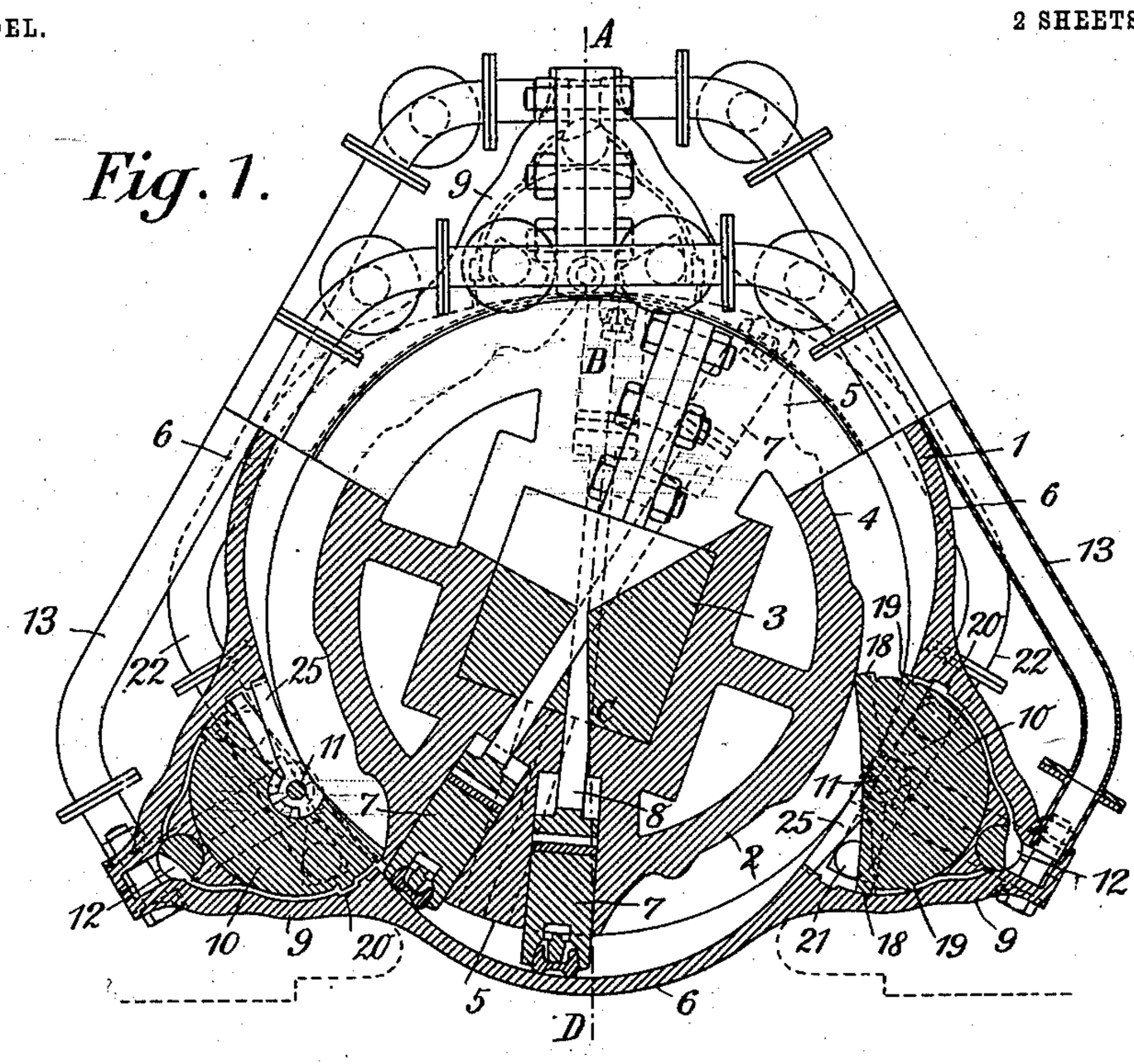


*Fig. 2.*




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# ROTARY ENGINE.

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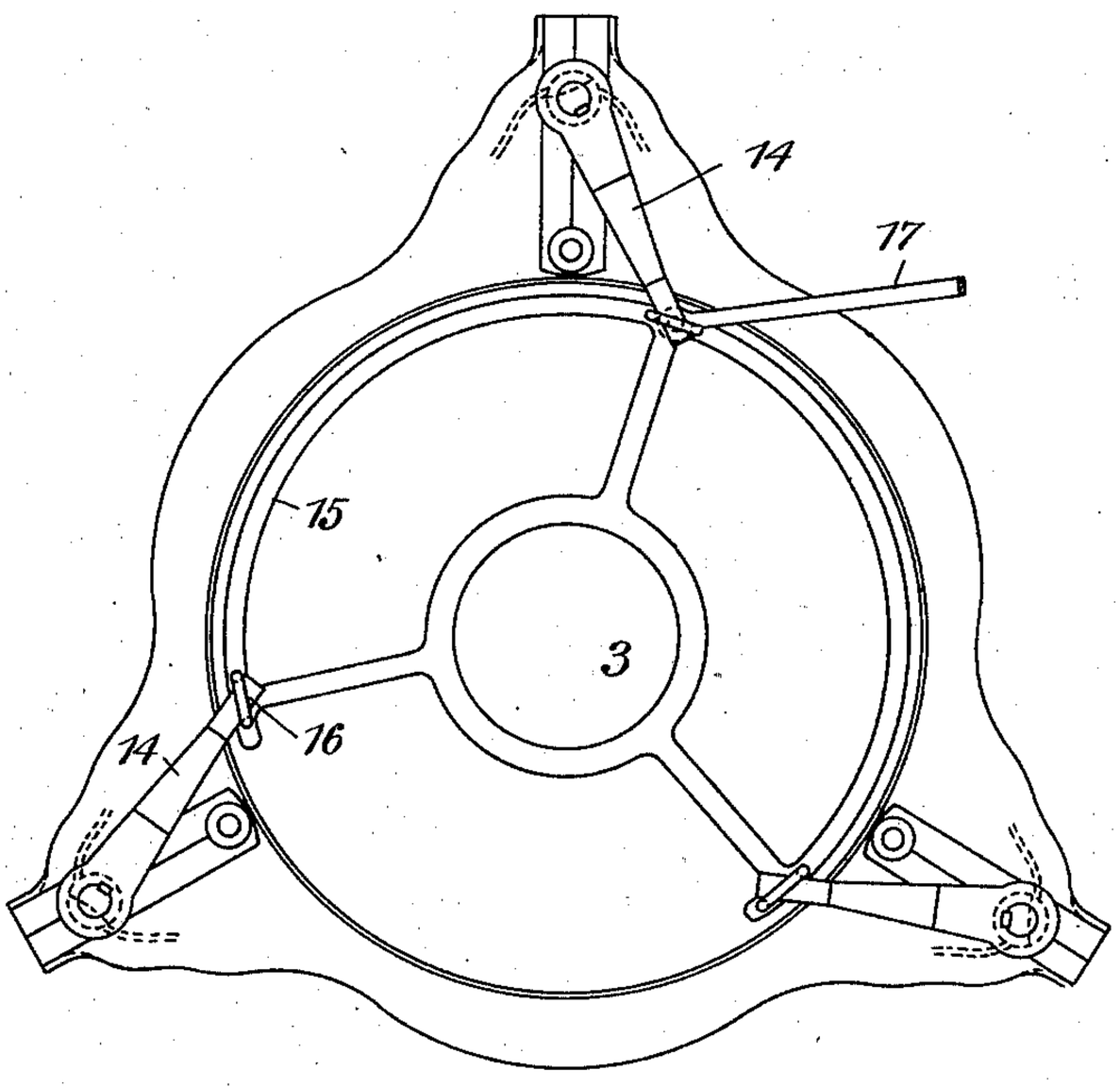
NO MODEL. 2 SHEETS—SHEET 2.

*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

WINCENTY OLEWINSKI, OF LEMBERG, AUSTRIA-HUNGARY.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 748,522, dated December 29, 1903.

Application filed April 15, 1903. Serial No. 152,797. (No model.)

*To all whom it may concern:*

Be it known that I, WINCENTY OLEWINSKI, engineer, a citizen of France, residing at Lemberg, Austria-Hungary, 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.

My present invention relates to an engine with rotary piston which is controlled in the well-known manner by admission-valves and oscillatory slides or abutments operated by the pressure medium. In an engine of said kind I provide on the surface of the oscillatory slides or abutments such projections that the steam entering through the admission-ports and said slides opens the oscillatory slides and turns them into the admission position whatever the direction of rotation of the piston may be, while the oscillatory slides are subsequently returned by the rotating piston into their initial position.

In order to make clear my invention, I have illustrated one construction of my new engine in the accompanying drawings, in which—

Figure 1 is a partly-sectional side view. Fig. 2 is a sectional elevation on line A B C D in Fig. 1. Fig. 3 is a side view of the mechanism for controlling the movement and the admission of steam.

The rotary body or piston 2 is keyed on the shaft 3, which extends through the cylinder-casing 1 and moves within the latter. The rotary body has two external longitudinal grooves, Figs. 1 and 2, on opposite sides and two end flanges 4. The periphery of said flanges 4 is provided with one or several grooves in which circular projections on the facing internal surfaces of the casing 1 engage, so that a steam-tight connection between the casing and the rotary body is obtained. The above-mentioned longitudinal grooves of the rotary body are separated from one another by two longitudinal ribs 5, which when rotating slide on the concentric internal surfaces of the cylinder-casing 1. In order to better utilize the power of the steam, the casing is internally provided with three recesses or outwardly-extending pockets 6. The longitudinal grooves in the rotary piston contain movable and spring-packing-provided bars 7 in order to make a steam-tight contact with all parts of the inner face of the casing. Said bars 7 slide in the grooves in the ribs 5, and opposite ones are connected in pairs by means of rods 8 in such a way that if a bar on the one side of the rotary body is pressed into the latter the bar connected with said first bar and lying on the opposite side is forced out from the rotary body in order to make a steam-tight contact on said opposite side. These bars are in pairs, the connection of opposite pairs crossing at the center of the piston.

Between the pockets 6 are arranged, for instance, three abutment-casings 9 on the cylinder-casing 1, which, as illustrated, can be cast in one with said casing or in any other way fastened thereon. Each casing 9 contains a partially-cylindrical abutment 10. The part of the cylinder cut away, as shown in Fig. 1, is struck to a radius from the center of the rotary piston, so that the latter, with its projections, can freely slide along the inner surface of the abutments when they are in the position shown in the upper part of Fig. 1 with dotted lines. Each abutment is fastened on a shaft 11, laterally journaled in the casing 1, so that each abutment may oscillate through a certain angle round its shaft within its casing. Between the abutment and its casing a space, however, is left, Fig. 1, for the admission of steam. A valve 12 is arranged at the top of each abutment-casing, said valve being a cylindrical body 12, of which a part is cut off, as in the abutments 10. The steam-admission pipe 13 opens in a port in each slide-casing above the valve 12. The steam-pipes can be connected together, which, however, does not form an essential of my present invention.

The valve 12 is cut off in such a way that the regulation both of the flow of steam and its direction can be effected thereby. For this purpose a lever 14, Fig. 3, is keyed on each valve 12 outside the casing 1 and engages at its end in a loop 16, fastened on an arc 15. The latter is loosely mounted on the shaft 3 and can be turned on said shaft by means of an arm 17 in the required direction, whereby the position of the valve 12 is altered accordingly.

The space between each slide 10 and its casing is thus divided into two independent channels by the valve 12, which channels lead the steam either on the one or the other side of the abutment 10, according to the direction in which it is desired the piston shall rotate. In the position shown in Fig. 1 the steam enters on the right side of the abutment 10, so that the rotary piston 2 will rotate oppositely to the hands of a clock.

Each abutment 10 has close to its recess two ribs 18 and 19 on either side, which project sufficiently to slide on the walls of the casings 9 and serve for rocking the abutment. If the abutment stands in the position shown in the upper part of Fig. 1, where the rotary piston 2 is passing over said slide, the steam will press on the right-hand-side rib 19, supposing the valves 12 are in the illustrated position. If the rotary piston 2 rotates farther in the same direction and if its projection 5 passes the abutment 10, the latter will be turned by the steam, as illustrated in Fig. 1 at the left-hand side at the bottom. The abutment-casing 9 has close to its inner edge a groove 20, which may be brought opposite the rib 19, as illustrated in Fig. 1 at the left-hand side at the bottom. The steam has thus an exit through this groove 20 and will enter the small chamber formed behind the bar 7 between the casing 1 and the abutment 10. In this instance the steam, on the one hand, presses against the bar 7 and the projection 5 of the rotary piston 2, whereby the latter is rotated, and, on the other hand, against the rib 19 of the abutment 10, whereby the latter is kept bearing against the recessed part of the rotary piston, so that a steam-tight connection is produced and the abutment 10 is further rotated round its axis.

The movement of the abutment naturally depends, essentially, upon the outer form of the rotary piston. With the form illustrated the abutment is intermittently turned back a little if it bears against the projections of the rotary piston, so that the steam admission is cut off from time to time and the expansion of the steam is utilized. In such a case the abutment comes into the position shown at the right hand at the bottom in Fig. 1 and then simultaneously opens the exhaust-steam channel 21, through which the steam is led either to a condenser or directly into the open air. The channels 21 are in communication with pipes 22, which lead the whole steam to a common exhaust 23. Bridge-bars 25 are arranged in recesses 24 of the abutments 10, Fig. 2, which bars serve to bridge the recess formed by rocking the abutment and to support the bars 7, thereby preventing the spring parts of said bars from falling out.

The operation of my engine is as follows: By means of the arm 17 and the levers 14 the position of the valves 12, and thus the direction of rotation of the engine, is first determined and steam is admitted. As the abutments 10 are arranged symmetrically with respect to the parts 5 and 7, the engine will start from every position. The steam moves the abutments 10 so that my engine works completely automatically. The admission can be regulated by moving the arm 17, which, if desired, can be combined with any known automatic regulating means, such as a centrifugal governor. The engine is reversed by displacing the arm 17 in such a way that the valves 12 are first turned into a position in which they shut off the steam admission, and then when further rotated lead the steam to the other side of the abutments 10. The rotary piston being symmetrical, the engine works equally well in both directions.

It should be added that for the operation of my engine instead of steam air or water under pressure or any other substance may be equally well employed which acts similarly to steam.

I claim—

1. In a rotary engine in combination, a rotary piston having projectable bars adapted to contact with the inner periphery of the cylinder-casing, a casing having a series of recesses and oscillatory abutments journaled therein, said abutments being sufficiently smaller than the recesses to provide steam-passages between and having ribs adapted to close said passages, a reversing-valve for each abutment adapted to communicate with said steam-passages at either side of the center, shifting levers for said valves, and a frame pivoted concentric the engine center and having a sliding engagement with all of said valve-levers, whereby they may be all shifted together.

2. In a rotary engine in combination, a rotary piston having projectable bars adapted to contact with the inner periphery of the cylinder-casing, a casing having a series of recesses and oscillatory abutments journaled therein, said abutments being sufficiently smaller than the recesses to provide steam-passages between and having ribs adapted to close said passages, the piston having an irregular or cam surface adapted to actuate said abutment to secure a cut-off of the steam, a reversing-valve for each abutment adapted to communicate with said steam-passages at either side of the center, shifting levers for said valves, and a frame pivoted concentric the engine center and having a sliding engagement with all of said valve-levers, whereby they may be all shifted together.

3. In a rotary engine in combination, a rotary piston having longitudinal grooves in its periphery and sliding bars therein adapted to be projected to contact with the inner surface of the cylinder-casing, said grooves and bars being arranged in connected and oppositely-disposed pairs, a cylinder-casing having outwardly-swelling pockets and abutment-chambers between said pockets, oscillating abutments in said chambers, said chambers and abutments being proportioned to provide

steam-passages at each side thereof, and the abutments having ribs adapted to close said steam-passages, bridge members pivoted concentrically of said abutments and adapted to engage the casing to bridge the recess formed when the abutment is rocked, the casing having exhaust-ports communicating with the recess formed by rocking the abutments, and means for admitting the steam to the passage at either side of said abutments at will.

In witness whereof I hereunto set my hand in presence of two witnesses.

WINCENTY OLEWINSKI.

Witnesses:
ALVESTO S. HOGUE,
AUGUST FUGGER.