(No Model.) 2 Sheets—Sheet 1.

H. W. WHITE.

ROTARY ENGINE.

No. 506,758. Patented Oct. 17, 1893.

Fig. 1.

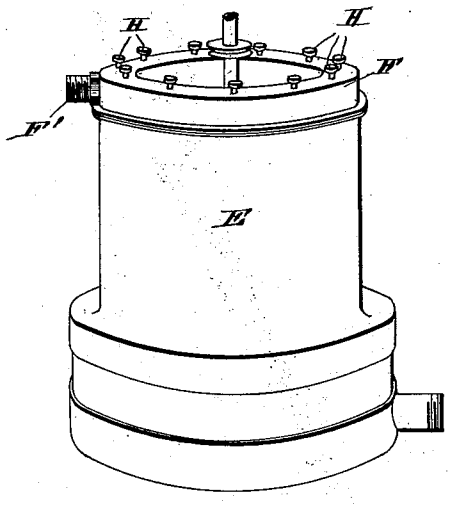


Fig. 2.

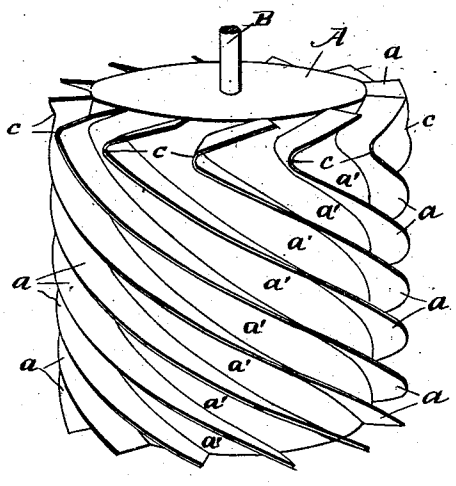
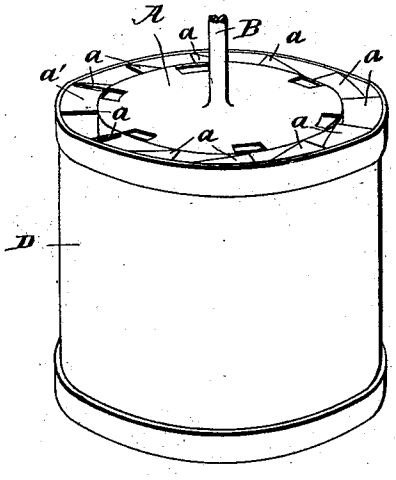


Fig. 3.



Witnesses
Samuel Ker.
Philip Le Masi

Inventor
Hiram W. White
by E. W. Anderson.
his Attorney

(No Model.)

2 Sheets—Sheet 2.

H. W. WHITE.

ROTARY ENGINE.

No. 506,758. Patented Oct. 17, 1893.

Fig. 4.

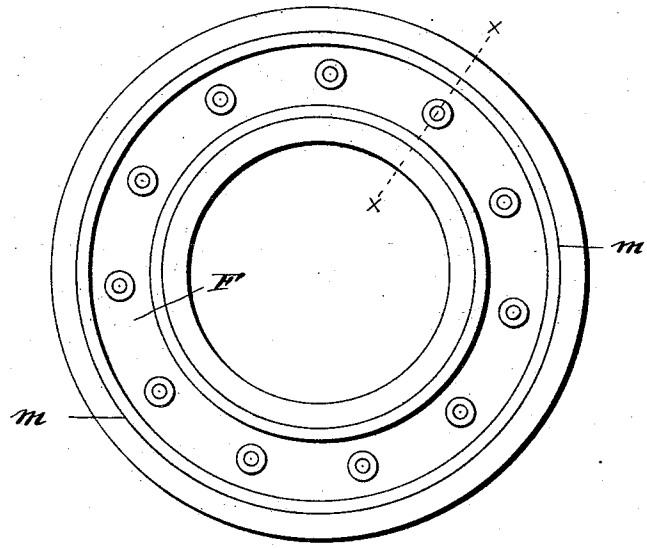


Fig. 5.

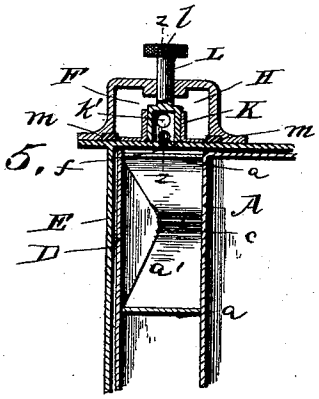


Fig. 6.

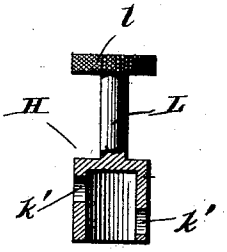
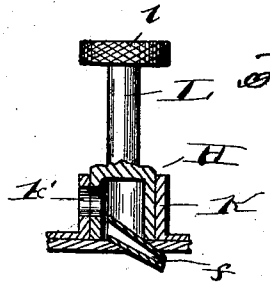


Fig. 7.



Witnesses
Samuel Ker,
Philip Le Masi.

Inventor
Hiram W. White
by E. W. Anderson.
his Attorney

UNITED STATES PATENT OFFICE.

HIRAM W. WHITE, OF YANKTON, SOUTH DAKOTA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 506,758, dated October 17, 1893.

Application filed September 19, 1891. Renewed March 27, 1893. Serial No. 467,879. (No model.)

To all whom it may concern:

Be it known that I, HIRAM W. WHITE, a citizen of the United States, and a resident of Yankton, in the county of Yankton and State of South Dakota, have invented certain new and useful Improvements in Rotary Engines; and I do 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a perspective view. Fig. 2 is a perspective view of the rotary piston wheel, the outer casing detached. Fig. 3 is a perspective view of the rotary piston wheel, complete. Fig. 4 is a bottom plan view of the water or steam chest. Fig. 5 is a section on the line *x*—*x* Fig. 4. Fig. 6 is a detail of one of the valves. Fig. 7 is sectional view of one of the valves on the line *z*—*z*, Fig. 5.

This invention has relation to rotary motors adapted to be operated by either water or steam power, and it consists in the novel construction and combination of parts as hereinafter described.

In the accompanying drawings illustrating the invention, the letter A designates a rotary piston wheel, which is held on a vertical shaft B. This wheel comprises a cylinder preferably hollow, provided on its outer surface with a series of inclined spiral flanges *a*, forming corresponding grooves or channels *a'*. The grooves enter from the upper end at an angle oblique to the surface thereof, extending in the direction of the movement of the wheel to the points *c*, where each makes an acute angle with itself, thence running in the reverse direction spirally and obliquely to the bottom of the wheel preferably at an angle of about forty-five degrees.

D designates a second hollow cylinder, open at top and bottom which is placed around the wheel A tightly, so that each groove or channel forms a closed pocket or chamber. The whole is inclosed in an outer casing or cylinder E, in which it turns, and at the upper portion of said casing is the annular steam or water chest F, which is located above and directly over the mouths of the grooves or channels.

F' is the supply pipe, through which the steam or water is admitted to the chamber F. Water or steam from this chamber enters the mouths of the grooves or channels, and is thrown against the angles at *c*, giving a forward movement to the wheel, which, with gravity, causes the water or steam to travel downward along the spiral flanges. That which enters each channel is confined therein, thereby utilizing not only its pressure or head, but also its weight, and producing a maximum of power from a minimum amount of water or steam. As the water travels down the channels in a direction reverse to the direction of the revolution of the wheel, it is not carried by the motor after its force is spent, but is thrown entirely off and away by centrifugal force; so that all friction and backlash is prevented, and the full power of the motor made available. This motor is especially adapted for use by the flow of water from artesian wells, but is capable of use where ordinary water motors are now employed.

The shaft B is provided with suitable bearings, and may be supplied with any suitable gearing for transmitting power.

By regulating the head or pressure in the steam or water chest, the speed of the motor may be regulated to the desired power.

Each port *f* in the steam chest is provided with a valve H, by means of which the water or steam may be entirely shut off from said port, or its admission therethrough regulated. Said valve may be of the form shown, comprising an outer cylinder K bolted to the bottom of the steam chest around a port, and having therein openings or ports *k'*. Sliding in this cylinder, and carried by a stem L which projects through a stuffing box at the top of the chest, is a second cylinder K' also having ports or apertures *k'* therein. On the projecting end of the spindle is a hand nut *l*, by means of which the spindle may be operated to regulate the valve. The bottom of the chest has annular grooves *m* provided with packing, which fit on the upper edge of the cylinder or casing E, the whole being secured to place by bolts.

Having described this invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination with the rotary wheel or cylinder, and its inclosed spiral pockets or channels, of the outer inclosing casing E, the annular pressure chest F, supported on the upper end of said casing, said chest having annular grooves *m*, in its bottom provided with packing and receiving the upper edge of said casing, and the valved ports in the bottom of said chest communicating with the mouths of said inclosed pockets or channels, substantially as specified.

2. The combination with the rotary wheel, its inclosed spiral pockets or channels, and the surrounding casing, of the pressure chest F, supported on said casing, the ports in the bottom of said chest, the valves H, one for each port, said valves comprising each an outer cylinder K, bolted to the bottom of the chest around a port, and having therein openings or ports *k*, a second cylinder K′ sliding in said outer cylinder, and also having ports, a stem projecting upwardly from said inner cylinder, a stuffing box in the chest for said stem, and a hand nut on the upper end of said stem, substantially as specified.

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

HIRAM W. WHITE.

Witnesses:

PHIL. K. FAULK,

ISAAC PILES.