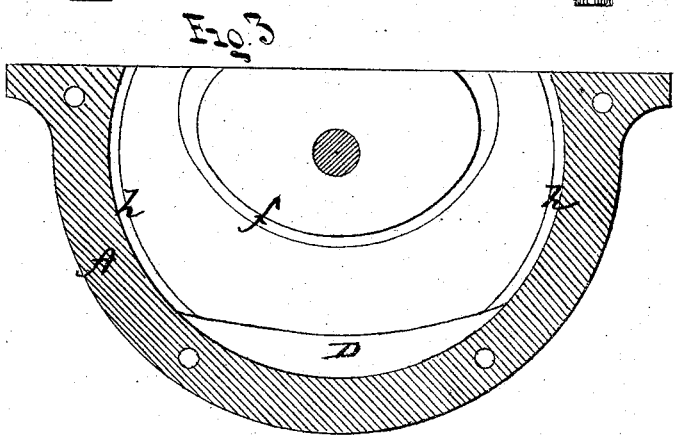
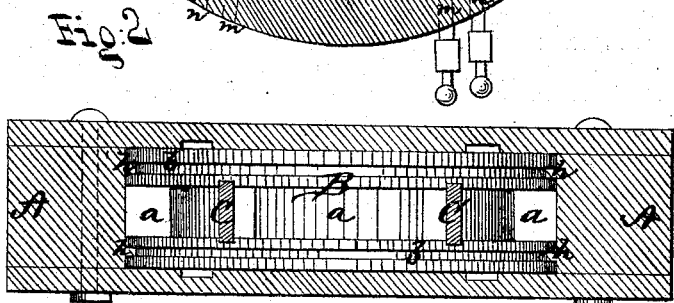
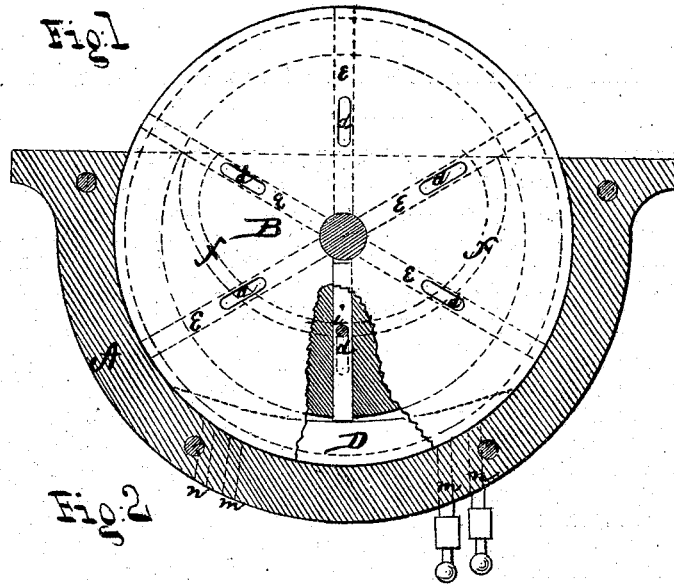


WARREN CASE.

Rotary Engines.

No. 116,022.

Patented June 20, 1871.



Witnesses:
A. A. Yeatman,
Harry C. Scott.

Inventor
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attys.

UNITED STATES PATENT OFFICE.

WARREN CASE, OF TROY, ILLINOIS.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 116,022, dated June 20, 1871.

To all whom it may concern:

Be it known that I, WARREN CASE, of Troy, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in the construction and arrangement of a rotary engine, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing which forms a part of this specification, and in which—

Figure 1 is a side view of the rotating wheel, with the casing in vertical section. Fig. 2 is a plan view of the wheel, with the casing in horizontal section; and Fig. 3 is an inside view of the casing.

A represents a cylindrical casing, within which is placed the wheel B. This wheel is, around its periphery, provided with a wide groove, *a*, of any suitable depth, and on each side of said groove is a narrow groove, *b*, as shown in Fig. 2. The wheel is also provided with channels *e e*, radiating from the center at equal distances apart, said channels being a little wider than the groove *a*, so that valves C C, placed in these channels, will make steam-tight partitions across the said groove *a*. The valves C C slide in the channels *e e*, and are provided in their sides with pins *i*, which project through slots *d d* and a trifle beyond the sides of the wheel B. The pins *i i* work in grooves *f* in the sides of the casing A. At any desired point, preferably the top of the casing A, is placed a block, D, of Babbitt metal or other suitable material, which block is made so as to fit for a certain distance at its center in the groove *a* of the wheel B and fill the same up, forming a perfect packing at this point. Toward each end the block D is inclined, as shown in Figs. 1 and 3. A suitable opening may be made in case A to run in more Babbitt metal in case the block D should get worn. Around the entire inside circumference of the

casing A are formed flanges or tongues *h h*, which fit in the grooves *b b* in the wheel B, forming steam-tight joints. It is evident that the same object may be accomplished by putting the flanges or tongues on the wheel and the grooves in the casing. Through the casing A, at and through each end of the block D, are two ports, *m* and *n*, one of said ports on each side being the steam-inlet and the other the outlet. These ports are provided with stop-cocks, arranged in such a manner that by closing the steam-port the air-port is simultaneously opened, and vice versa. Either one of said ports may be the steam-inlet. Supposing the steam-inlet *m* on one side is opened, the air-port at that side is closed. On the other side it is just the reverse—the steam-port is closed and the air-port open.

Now, steam passing in through the open port *m* fills the groove *a* between the block D and the nearest valve C, which is held out close to the casing by the pins *i i* in the groove *f*. The steam, acting on this valve, turns the wheel B on its shaft E until the next valve passes over the steam-inlet, when the steam will act on this valve, and so on. The steam confined between the valves is exhausted through a port situated opposite the block D, on the other side of the casing. The wheel revolving, there is always more or less air between the valves after the steam is exhausted, which in some degree will retard the speed, if left therein, as each valve approaches the block D. For this reason I have supplied the air-ports *n n*. The air-port at the other end of the block D from where steam is admitted being open, the air is forced out through the same as the valve reaches the block; and as the valve is forced inward by this block to pass the same the air is entirely exhausted. By shutting off the steam on one side and admitting it on the other side the wheel is reversed.

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

1. The sliding valves C C operating in the radiating channels *e e*, and circumferential groove *a* on the wheel B, substantially as and for the purposes herein set forth.

2. The wheel B, provided with circumferen-

tial grooves *a* and *b b*, channels *e e*, and slots *d d*, all substantially as and for the purposes herein set forth.

3. The grooves *b b* and tongues *h h*, constructed in the wheel B and casing A, substantially as and for the purposes herein set forth.

4. The combination of the casing A, wheel B, sliding valves C C, block D, steam-ports *m m*, air-ports *n n*, all constructed and arranged

to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of May, 1871.

WARREN CASE.

Witnesses:

O. H. BRIGHTWELL,

E. HOWARD.