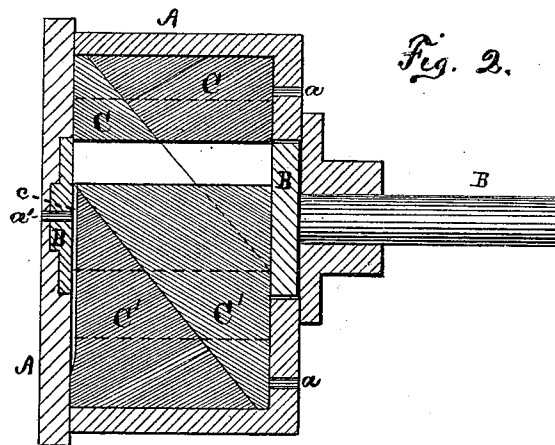
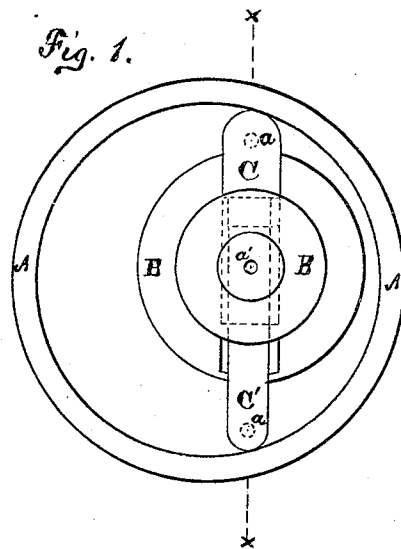


W. LYON.
ROTARY-ENGINE.

No. 174,546.

Patented March 7, 1876.



Witnesses.
E. B. Corby
H. C. Tunbridge.

Inventor.
Wm. Lyon.
By O. Drake, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM LYON, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **174,546**, dated March 7, 1876; application filed November 29, 1875.

To all whom it may concern:

Be it known that I, WILLIAM LYON, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Rotary Engines and Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 the letters of reference marked thereon, which form a part of this specification.

The nature and object of this invention are to produce a rotary engine in which the piston shall be absolutely self-packing, both vertically and horizontally, and that shall in its construction combine simplicity, durability, and cheapness.

My invention consists, chiefly, in the peculiar construction and operation of the piston, by means of which these advantages are secured, as will be hereinafter more fully set forth and described.

The accompanying drawing fully illustrates my invention, in which Figure 1 is an end view of an engine combining my improvements, one end of the case being removed; and Fig. 2 is a section of the same, taken through lines *a*, similar letters of reference indicating corresponding parts in the several figures.

In carrying out my invention I use a cylindrical or oval case, A, constructed in the ordinary manner, in which the piston rotates, the latter being composed of a shaft, B, and four triangularly-shaped plates, C and C', the two former plates, C, being somewhat thicker than the latter plates, C', and are grooved to admit said plates C', so that the latter may move freely back and forth therein, the whole forming when in juxtaposition, as indicated and shown in Figs. 1 and 2, an oblong square. That portion of the shaft B which rotates within the case A is enlarged and provided with a slot through its center, in which the four plates above referred to fit, and also move freely therein, their ends being rounded and abutting against the sides of the case A, all as shown and indicated in Fig. 1. The center of motion for the piston, as will be observed by reference to the same figure, is placed at

one side of the case A, but not so that said shaft will come in contact with the side thereof, as an open space is left between the two.

The steam which causes the piston to rotate enters at one of the ports *a*, (shown and indicated in Fig. 2,) and exhausts at the other.

The piston—that is, that portion composed of the four triangularly-shaped plates above referred to—which is caused to expand and contract as it rotates, in order to secure a continued bearing against the sides of the case A, is also operated by steam, which enters through a port, *a'*, in the opposite end of said case A and center of the shaft B, thence through a groove, *c*, in the edge of one of the plates C', into an open space or chamber formed between the ends of the plates C' and the bottom of the groove in the plates C, thereby forming, by its propulsive and expansive force and the peculiar construction and adjustment of the plates C and C', as clearly shown in the drawing, a complete, automatic, and absolutely perfect packing, both vertically and horizontally, as will be obvious.

The bottom and top plates C and C' should be made of different kinds of metal, varying in hardness, the two whose ends present the greatest surface against the sides of the case being the harder, or such as will wear away slower than the others, the object of which is that, as the latter wear away, the plates adjust themselves so as to compensate for such wear and tear, and thus are self-packing, as above set forth.

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

In a rotary engine or pump, the combination, with the case A, of the slotted shaft B and the four triangularly-shaped plates C and C', constructed, adjusted, and arranged to operate substantially as herein set forth and shown, for the purposes specified.

In testimony that I claim the foregoing as my own invention, I affix hereto my signature in presence of two witnesses.

WILLIAM LYON.

Witnesses:

OLIVER DRAKE,
H. C. TUNBRIDGE.