2 Sheets—Sheet 1.

W. C. THOMPSON.

Rotary Steam-Engines.

No. 196,268. Patented Oct. 16, 1877.

Fig. 1.

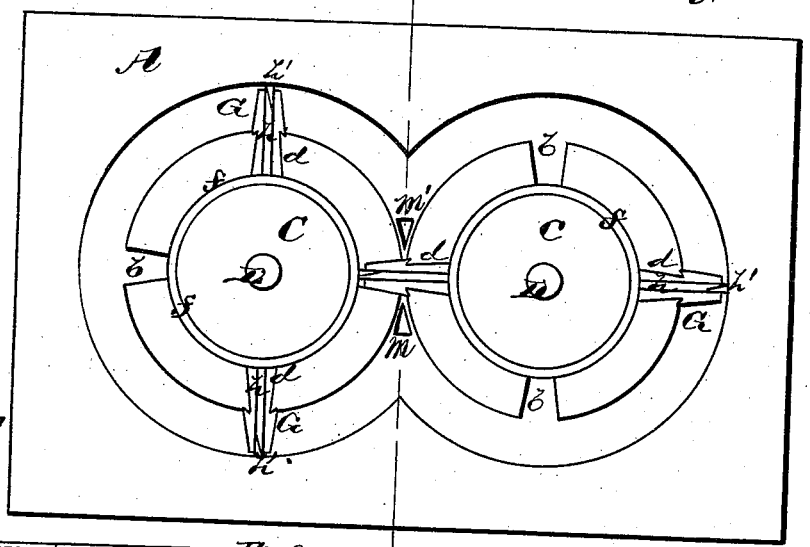


Fig. 6.

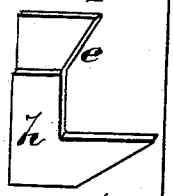


Fig. 7

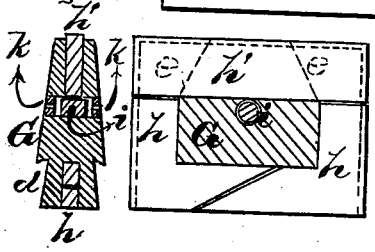


Fig. 8

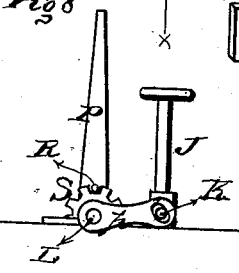


Fig. 9.

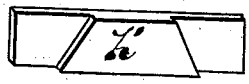
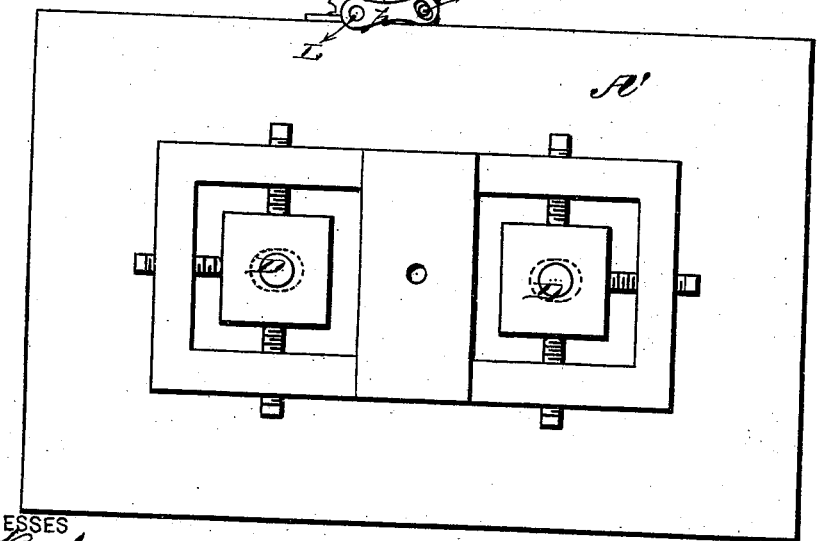


Fig. 2.



WITNESSES

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2 Sheets—Sheet 2.

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No. 196,268. Patented Oct. 16, 1877.

Fig. 3.

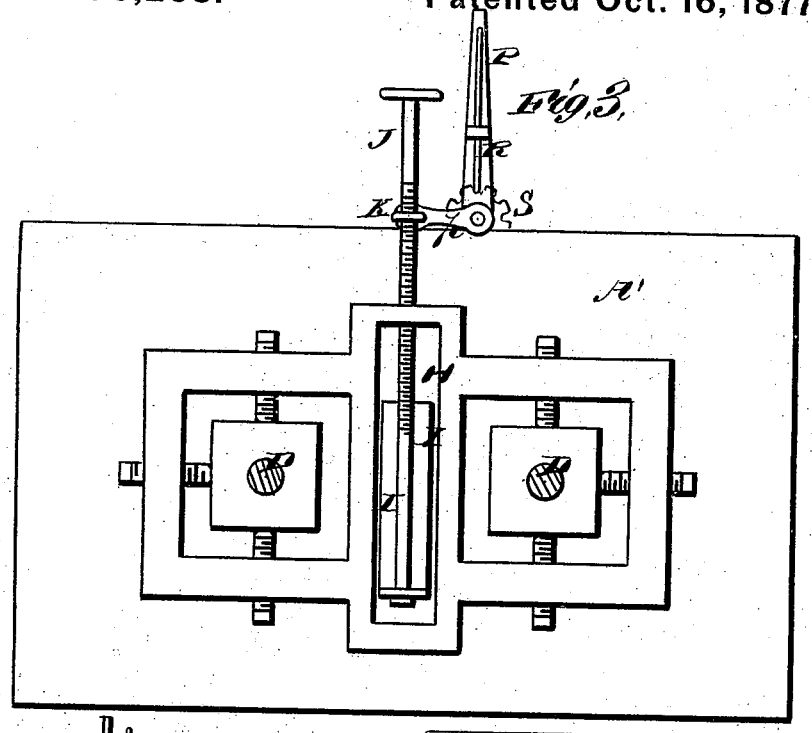


Fig. 4.

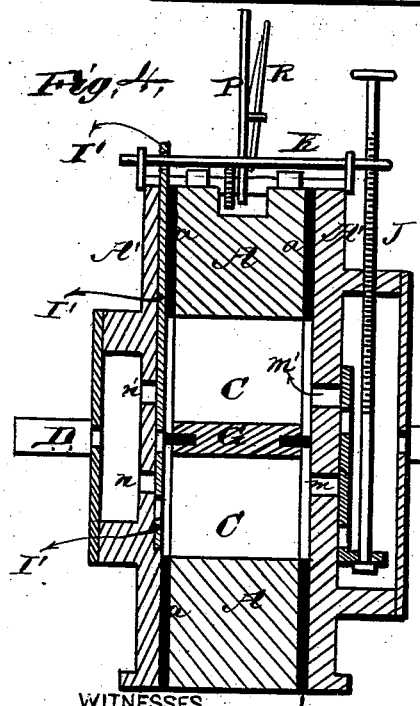
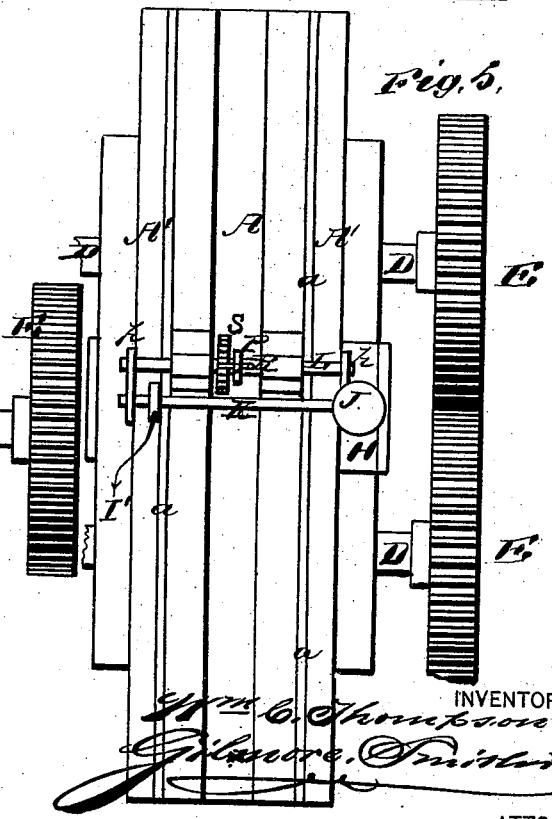


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM C. THOMPSON, OF TIPTON, TENNESSEE.

IMPROVEMENT IN ROTARY STEAM-ENGINES.

Specification forming part of Letters Patent No. **196,268**, dated October 16, 1877; application filed May 5, 1877.

To all whom it may concern:

Be it known that I, WILLIAM C. THOMPSON, of Tipton, in the county of Tipton and State of Tennessee, have invented a new and valuable Improvement in Rotary Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of my rotary engine with the head removed. Fig. 2 is a side view with the head in position. Fig. 3 is a side view. Fig. 4 is a transverse vertical sectional view. Fig. 5 is a plan view; and Figs. 6, 7, 8, and 9 are details.

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

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the shell of the engine, provided with heads A′ A′, fastened thereto by bolts or screws, with packing *a* between the parts, to render it perfectly steam-tight.

Within the shell A are two cylinders, C C, secured upon center shafts D D, and governed in their movements by the gear-wheels E E, as shown. The surfaces of the two cylinders run in contact with each other, and are provided with pistons or wings G G, which are set out against the inside of the shell, and in their revolution sweep the course of grooves *b*, made in the surfaces of the cylinders.

The inner end of each wing or piston G is formed with a dovetailed projection or tenon, *d*, which enters a corresponding groove in the face of the cylinder, so that the wing or piston will be stationary therein, while at the same time, when the head of the shell is taken off, it can be readily removed, if required.

In all four edges of the wing or piston is made a continuous groove for the reception of metallic packing-bars *h h* and *h′*. The bars *h h* are made in L shape, fitting in the ends and bottom of the piston, the inner ends of said two packing-bars being beveled and overlapping each other, so that they can spread outward and yet continue to form a joint at the bottom. The upper end of each L-shaped bar *h* is split and one portion cut off square, while the other half is extended inward, forming a beveled projection, as shown at *e*. The top packing-bar *h′* is split at both ends, one half extending flush with the outer edge of the packing-bar *h*, while the other half is cut off to correspond with and abut against the shoulder *e* of the said bar *h*.

It will thus be seen that when steam is admitted into the continuous groove under the packing-bars *h h* and *h′*, the L-shaped bars *h h* will spread outward, and then the top bar *h′*, while at all times the corners and steam-tight joints are preserved.

In the ends of the cylinders C is arranged suitable spring-packing *f*.

In each side of each wing or piston G is inserted a hollow plug, *k*, through which steam is admitted under the packing-bars, and between the two plugs is a smaller plug, *i*, which acts as a valve, in the following manner: The steam, entering from one side of the piston, moves this plug or valve to the opposite side, closing the plug *k* on that side, so that the steam cannot escape, but will necessarily act on the packing-bars. In like manner, when the engine is reversed, the steam enters from the opposite side and forces the plug or valve *i* to the other side, closing that opening.

The steam is admitted into the shell A from a steam-chest, H, through either one of two ports, *m m′*, in the head A′ on that side, said ports being located one above and the other below the point where the wings or pistons G enter the grooves *b*. Within this chest is a valve, I, operated, by means of a screw-rod, J, in such a manner that the valve may be made to open either of the ports *m m′* more or less, as may be required. The rod J screws through an eye in one end of a rod, K, which is supported in two arms, *p p*, projecting from a shaft, L, which has its bearings in suitable boxes on top of the engine. This shaft is provided with a lever, P, having a spring pawl or dog, R, taking into a stationary rack, S, for holding the valve I in either position.

The steam is exhausted through corresponding ports *n n′* in the opposite head of the engine, and a valve, I′, is placed in a groove on

the inner side of said head, to open either of said ports or close them both, as required, and this valve is connected to the other end of the rod K, so that both valves I and I′ will be operated simultaneously by the use of the lever P.

The valve I′ being placed on the inside of the engine, in a groove in the head, the steam keeps it packed at all times, so that no steam can escape except through the exhaust-port that is open for the time being.

By the use of the lever P the valves are operated so as to admit the steam through either one of the ports *m m′*, and exhaust through the corresponding port *n* or *n′*, or shut off the steam altogether.

What I claim as new, and desire to secure by Letters Patent, is—

1. The piston G, having a continuous groove in its edges for the reception of the L-shaped packing-bars *h*, having overlapping adjoining ends and split upper ends with shoulders *e*, and packing-bars *h′*, having their ends cut to correspond with the ends of the bars *h*, in combination with the hollow plugs *k k* and movable valve *i*, substantially as described, and for the purpose set forth.

2. In a rotating engine, the exhaust-valve I′, arranged in a groove on the inside of the head, for the purposes set forth.

3. The combination of the inlet-valve I, exhaust-valve I′, arranged in a groove on the inside of the head, rod K, shaft L, with arms *p p*, and lever P, pawl R, and rack S, all constructed as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM C. THOMPSON.

Witnesses:

ROBERT EVERETT,

C. H. MCEWEN.