# H. T. Briggs.

## Rotary Steam Engine.

No. 48,362. Patented June 27, 1865.

Fig: 1.

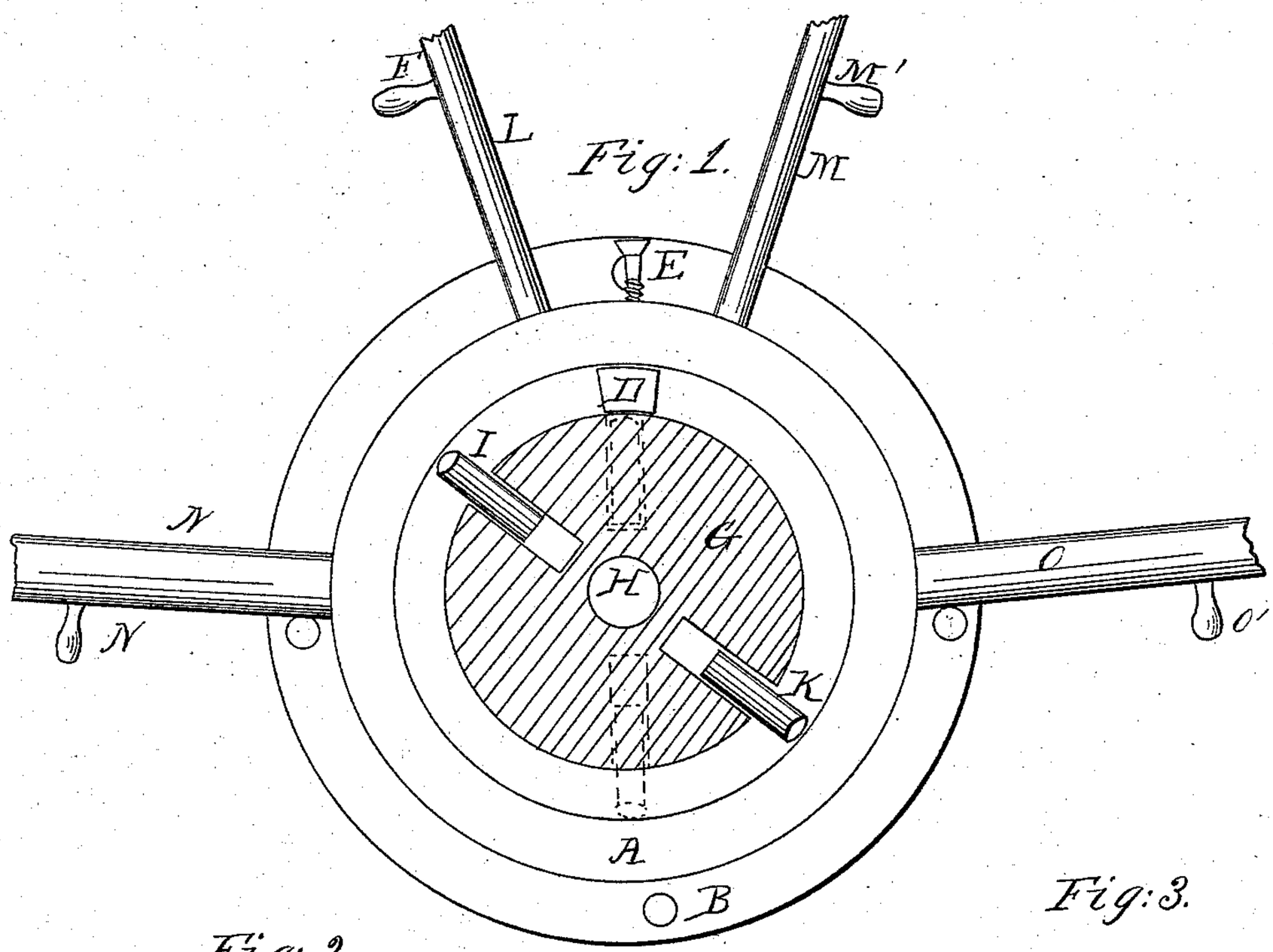



Fig: 2.

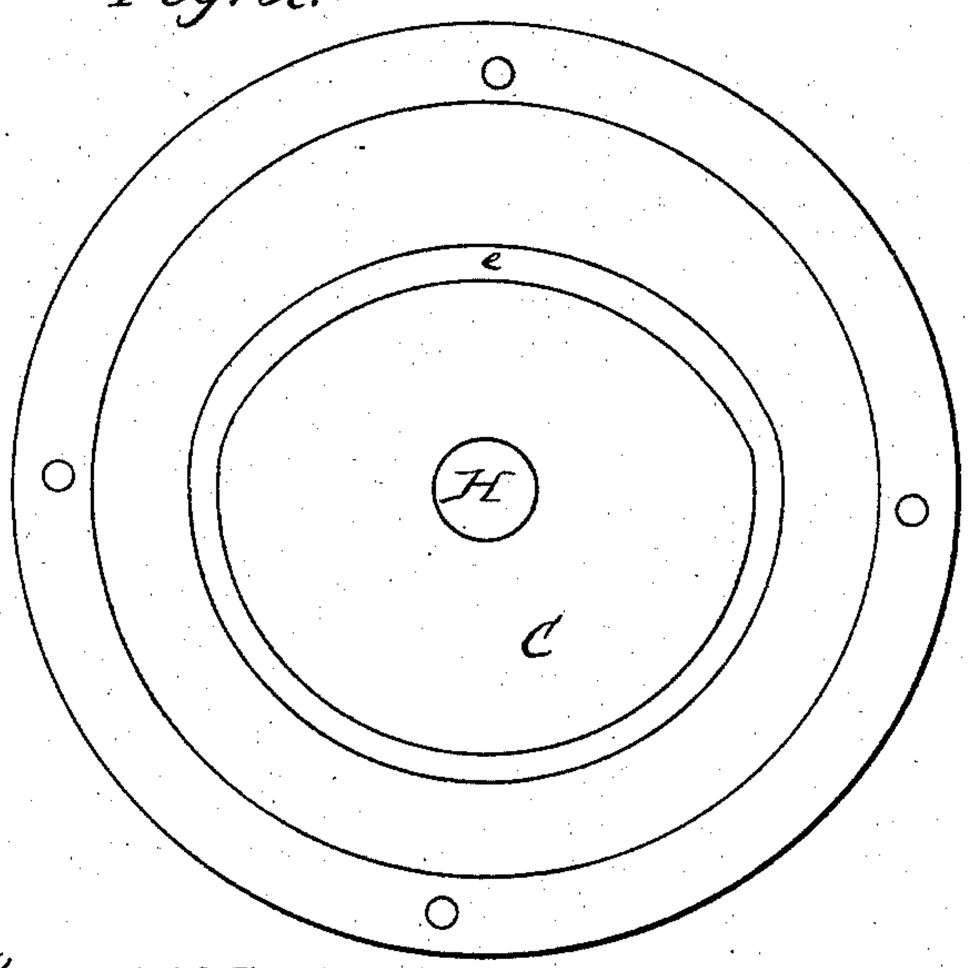
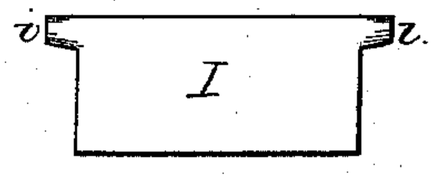



Fig: 3.




Witnesses.

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# UNITED STATES PATENT OFFICE.

HARISON T. BRIGGS, OF SOUTH BEND, INDIANA.

## IMPROVEMENT IN ROTARY STEAM-ENGINES.

Specification forming part of Letters Patent No. **48,362**, dated June 27, 1865.

*To all whom it may concern:*

Be it known that I, HARISON T. BRIGGS, of South Bend, in the county of St. Joseph and State of Indiana, have invented a new and useful Improvement in Rotary Steam-Engines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

It is well known that the principle of the rotary engine, or the continuous forward motion of the same, has advantages over the reciprocating stroke of the piston-engine; but in practice the friction and wear of a rotary engine render frequent repairs necessary to prevent leakage of steam and other difficulties.

The object of my invention is to simplify the construction of rotary engines and make them more durable and more easily repaired when necessary.

My invention consists in a peculiar construction and arrangement of rotary engines, and relates to that class of rotary engines in which valves or slides are employed in the wheel or revolving center of the engine.

In the accompanying drawings, Figure 1 is a side view of the interior of the engine, the cylinder-head being removed from the nearer side, so as to show the slides or valves. Fig. 2 is a view of the inside of the cylinder-head removed from the engine. Fig. 3 is a detached view of the slide or valve.

In the construction of my improved engine a strong cylindrical box or steam-cylinder is made in the ordinary manner. This cylinder is shown at A, Fig. 1. It is usually cast separately from the two end pieces or cylinder-heads B and C, and the three parts put together after being finished up. On one side of the cylinder A is fitted an adjustable partition, D, to be moved by set-screws E and F. The cylinder-heads are provided with eccentric grooves (one of which is seen at *e*, Fig. 2) for directing the valves, as will be hereinafter explained. The wheel or revolving center of the engine is shown at G, Fig. 1. This is cast with axles extending through the cylinder-heads. The end of the axle is shown at H, Fig. 1. The wheel or revolving center is provided with two slides or valves, I K, Fig. 1. Projections upon these valves (see *i*, Fig. 3) fit into eccentric grooves *e* in the cylinder-heads. By this means the valves are opened and closed as they are rotated. It will be seen by Fig. 2 that this eccentric groove *e* is of the proper form or curve to push back the valves so that they will pass the partition D.

The steam is admitted to the engine through one of the pipes L and M, and escapes through one of the exhaust-pipes N and O, and the engine can be rotated in either direction, according to the admission of the steam on the right or the left hand. All of these pipes are inserted into the circumference of the steam-cylinder.

The eccentric grooves for directing the valves may be made lower than is represented in the drawings, so as to be completely covered by the revolving center in order to prevent the leakage of steam.

The operation is as follows: In case the stop-cocks L′ and O′ are shut and the stop-cocks M′ and N′ are open, the steam will enter the cylinder from the pipe M, as indicated by the arrow, and pressure is applied upon the side of the slide or valve K, thus rotating the central wheel, G. As the valve K turns round with the central wheel and passes the end of the pipe N the steam escapes in the direction of the arrow. Before the valve K thus reaches the exhaust-pipe N the opposite valve, I, will have rotated far enough to impinge upon the side of the cylinder and thus become closed, so that the pressure or full head of steam is continually acting upon the engine.

By closing the valves M′ and N′ and opening the valves L′ and O′ the engine will be reversed.

The partition D is made adjustable by means of two set-screws, E and F. The eccentric groove *e* directs the valves past this partition.

I do not broadly claim a rotary engine provided with the means for reversing its motion; but

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

The arrangement of the ingress and egress pipes L M N O with reference to the arrangement of the valves I K and the adjustable partition D and central wheel, G, substantially as herein set forth.

HARISON T. BRIGGS.

Witnesses:
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W. SAUNDERS.