

(No Model.)

C. CHAMBERLIN.
Rotary Engine.

No. 234,957.

Patented Nov. 30, 1880.

FIG. 1.

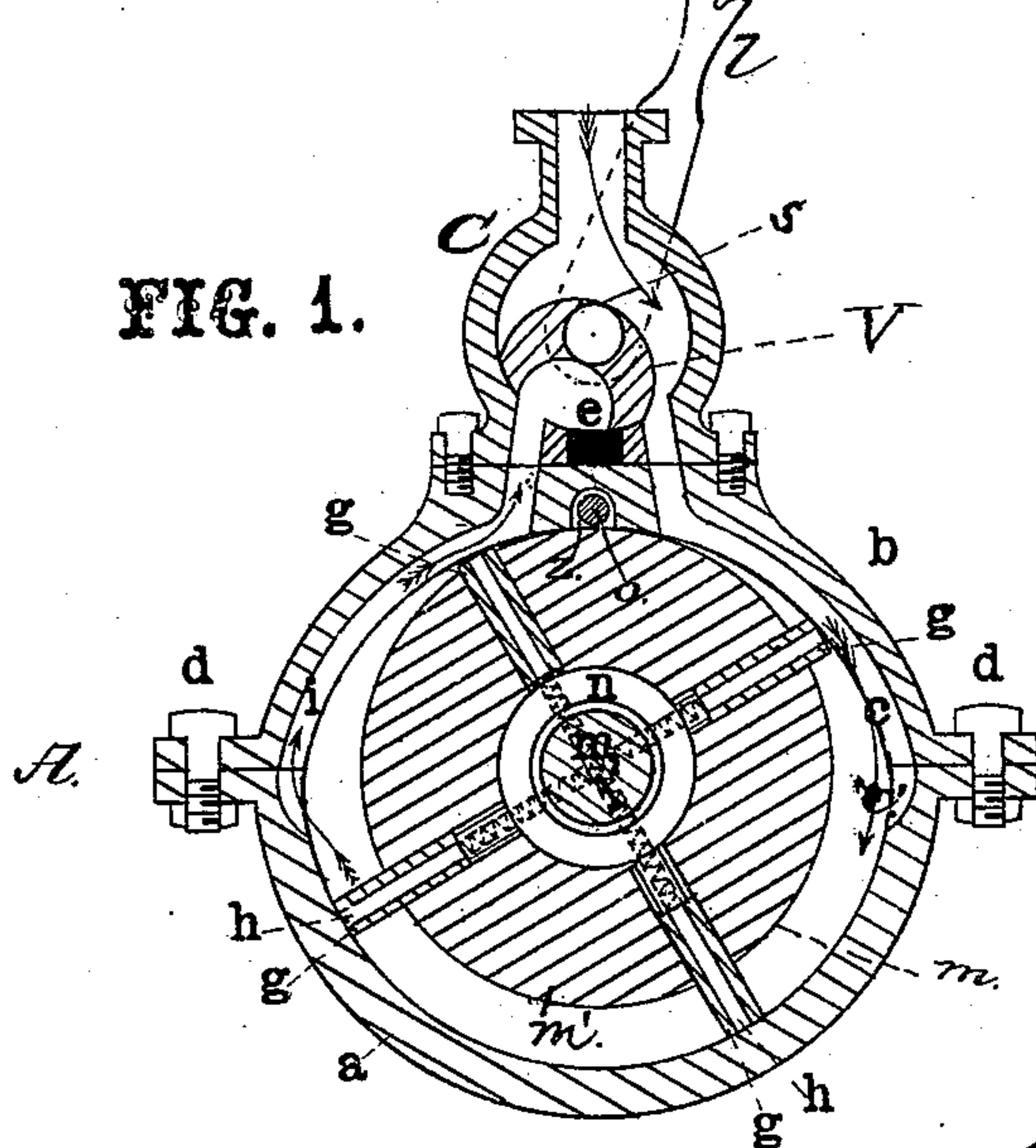


Fig. 3.

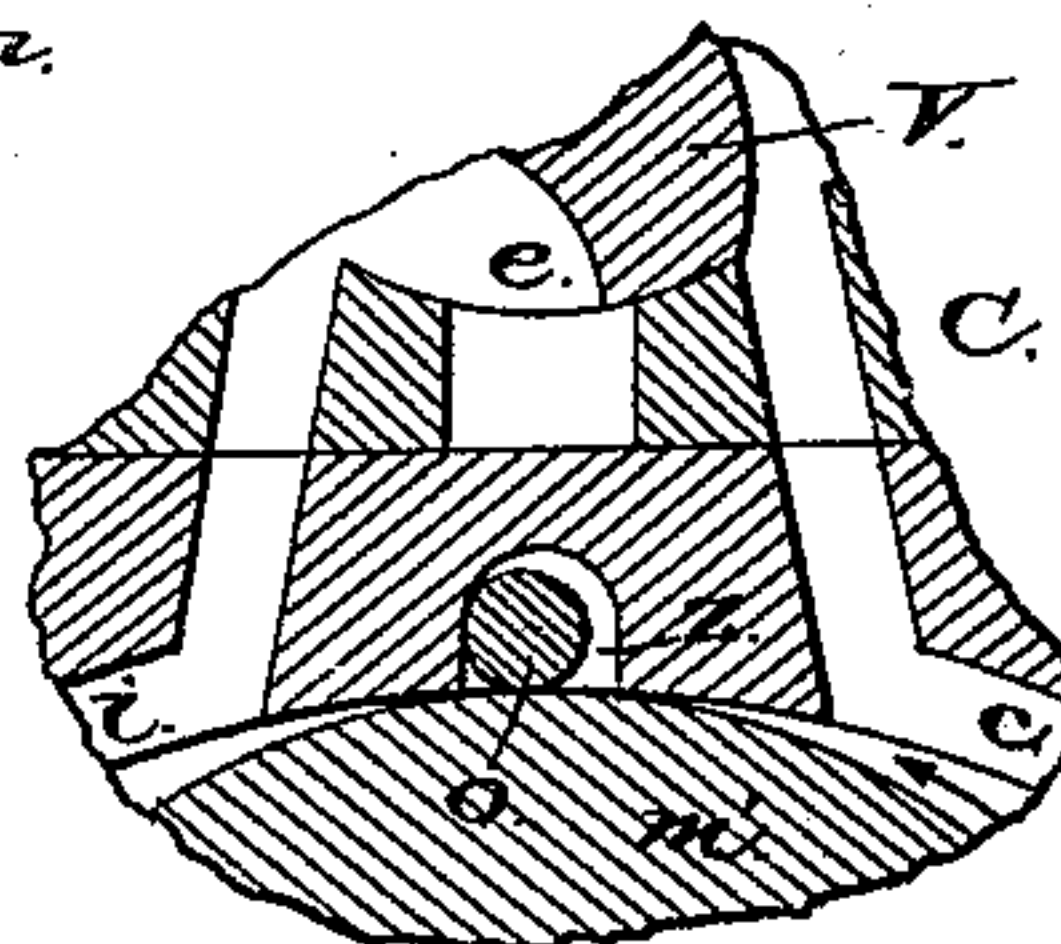
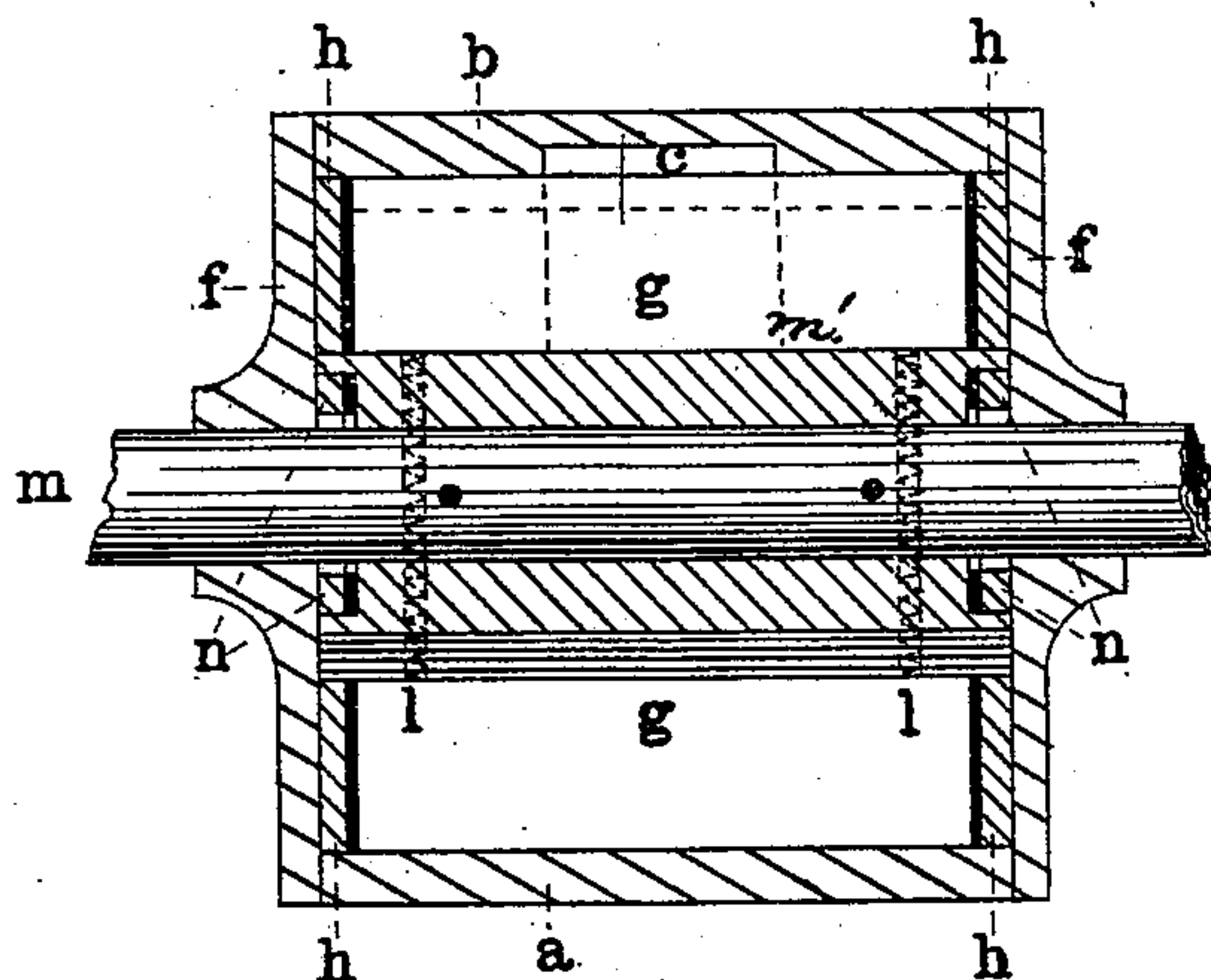


FIG. 2.



WITNESSES:

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COLUMBUS CHAMBERLIN, OF LOUISVILLE, KENTUCKY.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 234,957, dated November 30, 1880.

Application filed May 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, COLUMBUS CHAMBERLIN, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and valuable Improvement in Rotary 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 transverse section of my improved rotary engine, and Fig. 2 is a longitudinal central section thereof. Fig. 3 is a detail, showing the action of the rolling abutment.

This invention has relation to improvements in rotary steam-engines; and the nature of the invention consists in an engine constructed substantially as hereinafter shown and described.

In the annexed drawings, the letter A designates the steam-cylinder composed, essentially, of two sections, *a b*, bolted together at their meeting edges at *d* and closed at their ends by the heads *f*. The lower section, *a*, is perfectly semi-cylindrical, and the upper section is also a section of a cylinder less than a half, and of greater diameter than the section *a*. The section *b* is therefore eccentric relative to the section *a* and the main shaft *m*, which is concentric with the lower section, *a*. The shaft *m* is of steel, and has cast thereon a cylindrical drum, *m'*, concentric with the lower section of the cylinder.

c indicates a recess cast in the inner wall of the section *b* and extending down, as at *c'*, below the joint of the sections; and *i* is a similar recess on the other side of said section, serving as an exhaust-port for the steam entering through recess *c*. These passages or recesses *c i* open into a cylindrical chamber, C, to which the steam-pipe is coupled, and their functions are interchangeable—that is, the port *i* is used for the admitting of steam, and the port *c* for its exhaustion, by means of a crescent-shaped rock-valve, V, operated by a suitable lever, *l*, applied upon a shaft, *s*, axially arranged in said chamber.

Between the upper extremities of the passages *c i* is a cylindrical rod, *o*, arranged in a

recess, *z*, formed in the partition between the upper ends of passages *c* and *i* at the top of the steam-chamber, and extending from end to end thereof, which rod is held down on the periphery of the drum by steam-pressure. The steam entering at the induction-port presses forward to rotate the drum, and also backward into recess *z*, between the partition and the drum *m'*, forcing the rod *o* against the far side of the recess, as clearly indicated in Fig. 3, which prevents the frictional contact of the drum from moving the rod away from its position, thus forming a steam-tight rolling abutment.

The recess *z* only opens into the steam-chest A, and the rod is actuated by steam entering this opening, and there is no danger of the same becoming clogged, as it would if the entrance of steam into such recess were through a small tube.

In the drum *m'* are formed longitudinal radial slots or recesses, in which are inserted the pistons *g*, having each a straight metallic packing, *h*, fitted into its ends and held against the heads *f* by a suitable elastic backing.

The pistons are held in steam-tight contact with the inner walls of the steam-cylinder by means of the spiral springs *l'*, extending through the main shaft and bearing at their ends against the inner edges of the pistons.

In the ends of the cylindrical drum *m'* are formed annular grooves in which are placed the metallic packing-rings *n*, held against the heads *f* by means of elastic backings. Stuffing-boxes are thus dispensed with. Steam entering the passage *c* acts on each successive piston *g* after it passes the lower end of the said passage only, and ceases to act the moment it passes the end of passage *i*. At this point the eccentricity of the upper section of the steam-chest compresses springs *l'* and pushes the pistons back into the slot in the drum, so that its end readily passes the abutment *o*. This pressure is exercised equally on the opposite piston *g* as the springs *l'* extend through the shaft *m* and bear against it, and there is absolutely no steam-pressure upon the pistons while moving in or out, which occurs only in the steam-chamber above the drum. There being no moving in or out of the pistons after they enter the cylindrical part *a* of

the steam-chest, there is no excessive friction created therein, and simple spring-pressure will hold the same out.

I am aware that a rolling abutment constituting a steam-packing is not new, being shown in Patent No. 115,854. I do not therefore claim this.

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

10 The combination of a steam-chest, A, consisting of the lower semi-cylindrical section, *a*, and upper eccentric semi-cylindrical section, *b*, having grooves *c* and *i*, said grooves entering section *a*, and leading upwardly into chamber
15 C, and having a partition between their upper

ends, rolling abutment *o*, located in recess *z*, having an opening only in steam-chest A in said partition, the drum *m'* cast upon shaft *m*, and both having slots therethrough, sliding pistons *g*, and springs *l'* within said slots, and 20 packing around said pistons and at end of drum, all arranged substantially as specified.

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

COLUMBUS CHAMBERLIN.

Witnesses:

JOHN FOWLER,

ALEXANDER ELWELL.