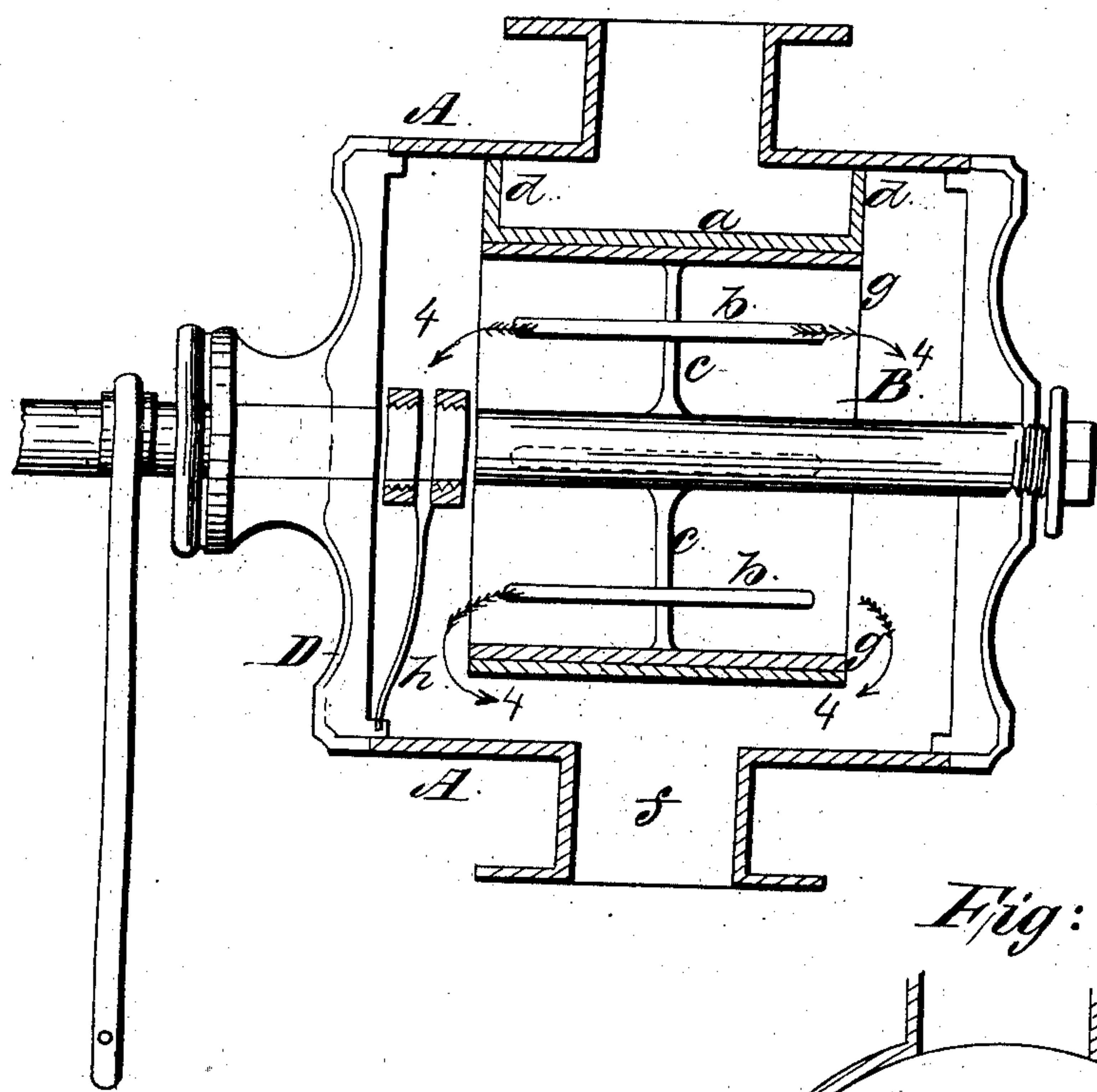
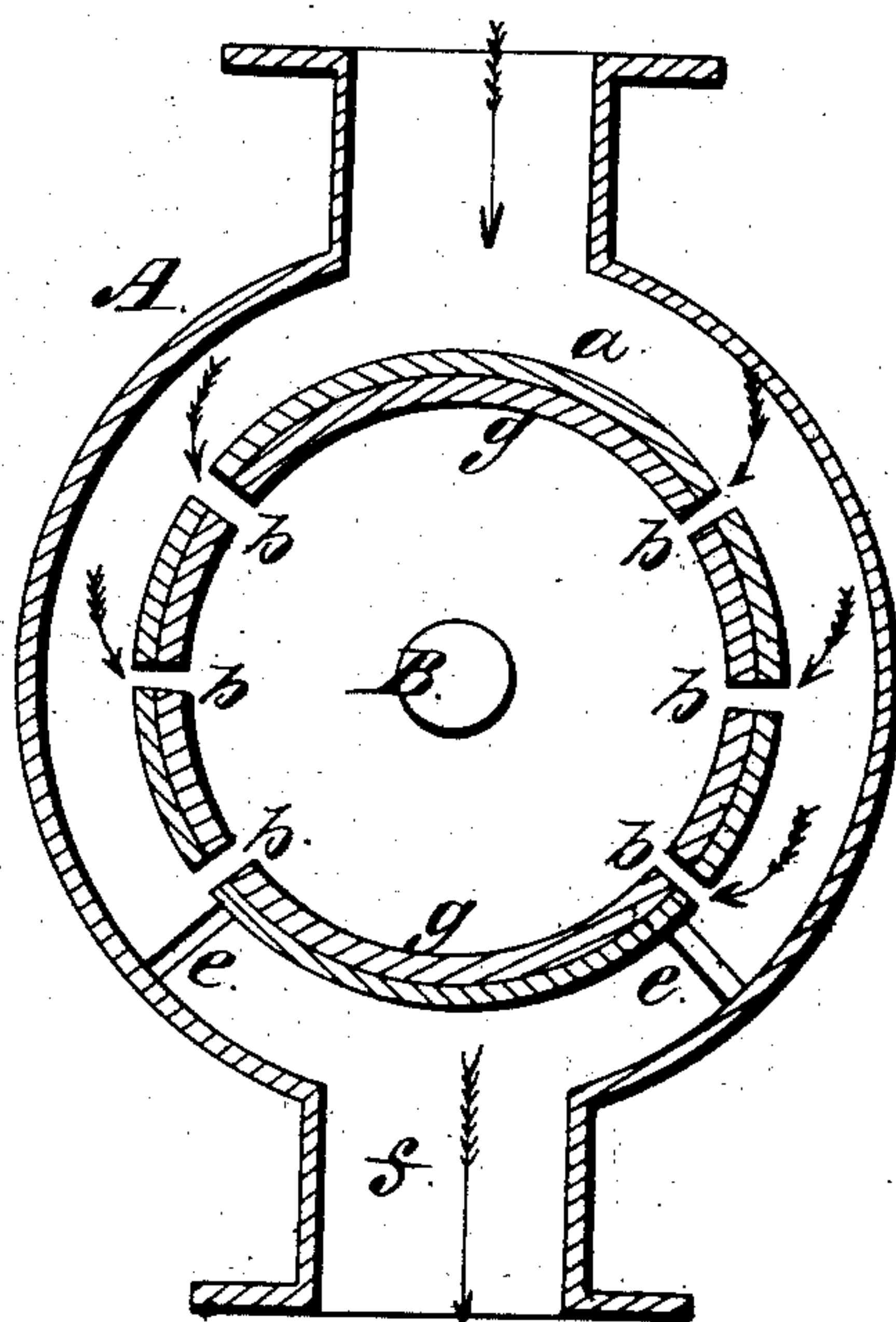


*J. H. Simmons,*  
*Rotary Steam Valve.*  
*No 17,643. Patented June 23, 1857.*

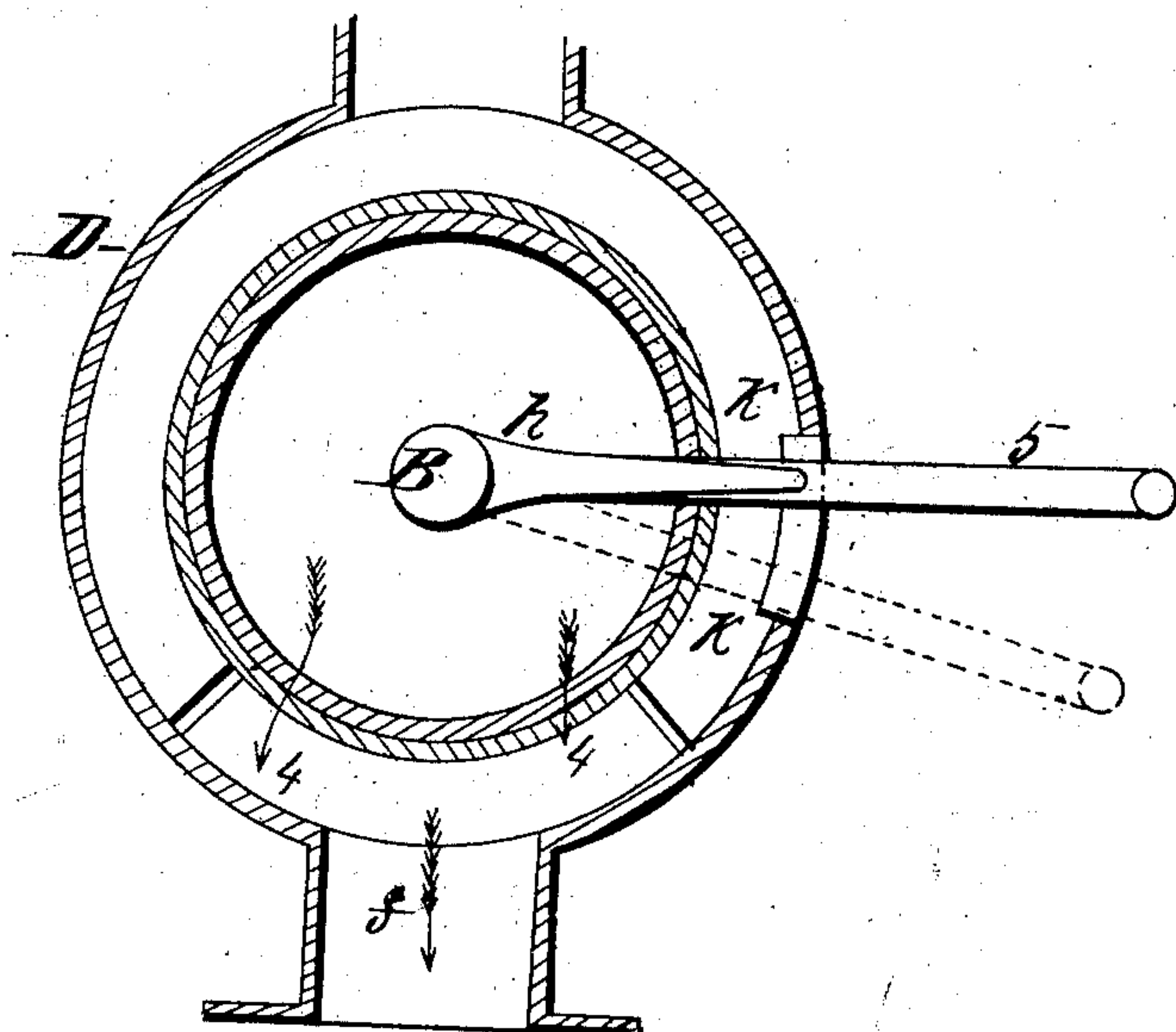
*Fig: 1.*



*Fig: 2.*



*Fig: 3.*





# UNITED STATES PATENT OFFICE.

JAMES H. SIMMONS, OF ERWIN, NEW YORK.

## CYLINDRICAL THROTTLE-VALVE FOR STEAM-ENGINES.

Specification of Letters Patent No. 17,643, dated June 23, 1857.

*To all whom it may concern:*

Be it known that I, JAS. H. SIMMONS, of Erwin, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Cylindrical Balance, Throttle, or Regulating Steam-Valves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

The nature of my improvement relates to such an arrangement of the several openings in the cylinders forming the valve, that the steam ways, ports, and openings may be controlled, with a very slight rolling motion of the spindle of the valve, and an equal bearing of steam from the boiler on the valve, shall be more perfectly obtained than heretofore, thereby constituting it a balanced valve (free from friction) in the strict sense of the term. I also by the employment of a latch and lever, can so set the latch, that a desired quantity of steam way may be obtained, and at the same time by said latch, control and shut entirely the throttle valve, in the event of the strap of the governor breaking, thereby preventing injury to the engine consequent to that accident.

To enable others skilled in the art to make and use my invention I would describe it as follows:

A represents the outer case of the valve.

(a) is an inner shell or the valve seat, of a diameter something less than the case. On the ends of (a) are raised flanges *d, d*, partially extending around it, so as to form a steam passage, dividing it from the exhaust chamber *f*.

(*g g*) is the cylindrical valve, fitting accurately within the shell (a). It is provided with ports or openings (*b, b, b, b b b*) for the entrance of steam from opposite sides of the valve.

B, is the valve-stem, passing centrally through the valve and supporting it by a flat disk *c, c*, connecting the stem and cylinder valve. The spindle is packed in the usual way and supported by a screw or bearing for the end of the same.

The latch (*h*) shown in Figs. 1 and 3 is secured on the stem B by screw or clamp

nuts. The outer end of said latch falls freely between the shoulders of a recess (*k k*) cut in the flange of head D.

The operation of the valve may be thus described, observing that I generally place the stem horizontally, (although it may be placed in any position.) The steam pipe from the boiler is connected with flange (*l*) and steam passes between the case A and inner shell (*a*). Then on the rotation of the stem B and valve attached, the multiplied ports, or openings (*b b*) are opened and the steam passes through them, and is discharged over the ends of the valve and seat, and enters the exhaust chamber (*f*) and passes to the cylinder. The course of the steam in its discharge is indicated by arrows 4 4 4 4, through the ports *b b* and its curved course over the ends of the cylinders forming the valve and its seat.

It will be noticed that the steam bears alike or equally on all sides of the valve and therefor gives it a degree of sensitiveness, to the operation of the governor.

The peculiarity of the valve as a balance one, lies in part in the construction of its valve and seat of a length, less than the outer case, so as to allow the steam to pass over the ends of the valve into the discharge, thus equally pressing on the ends as well as on the inside of the valve. When the valve is closed or partially so, and a part of its face beyond the openings in the seat, the balance is equally perfect as the steam presses upon like surfaces at opposite points, not only on the faces, but on the ends of the valve.

The peculiar operation of the latch (*h*) may be thus stated: On starting the engine, the latch is set by raising the lever 5 and with it the latch (both being secured on the stem B) so that the ports shall be fully open. When the engine is started then raise the lever 5, and consequently the latch, bringing the latter in contact with the upper shoulder of the notch *k* in cap D. It is then left in that position, and in the event of the strap of the governor breaking or flying off, or any sudden stoppage of the crank shaft, then the weight of the lever (5) will cause a change of position of the latch, from its contact with the upper shoulder of *k* to the lower shoulder of the notch, and in its turn-

ing, the openings or ports of the valve are closed and the ingress of steam prevented and a consequent stopping of the engine.

Having described my improvement what  
5. I claim as my invention and desire to secure by Letters Patent is—

The arrangement of the latch (*h*) upon the stem of the valve playing in the recess (*k*) within the interior of the head of the

cylinder, as set forth in the foregoing specification. 10

In testimony whereof I have signed my name before two witnesses.

JAMES H. SIMMONS.

Witnesses:

B. MATESON,  
WM. H. CALKINS.