

(No Model.)

C. W. DOTEN.

ROTARY ENGINE.

No. 386,774.

Patented July 24, 1888.

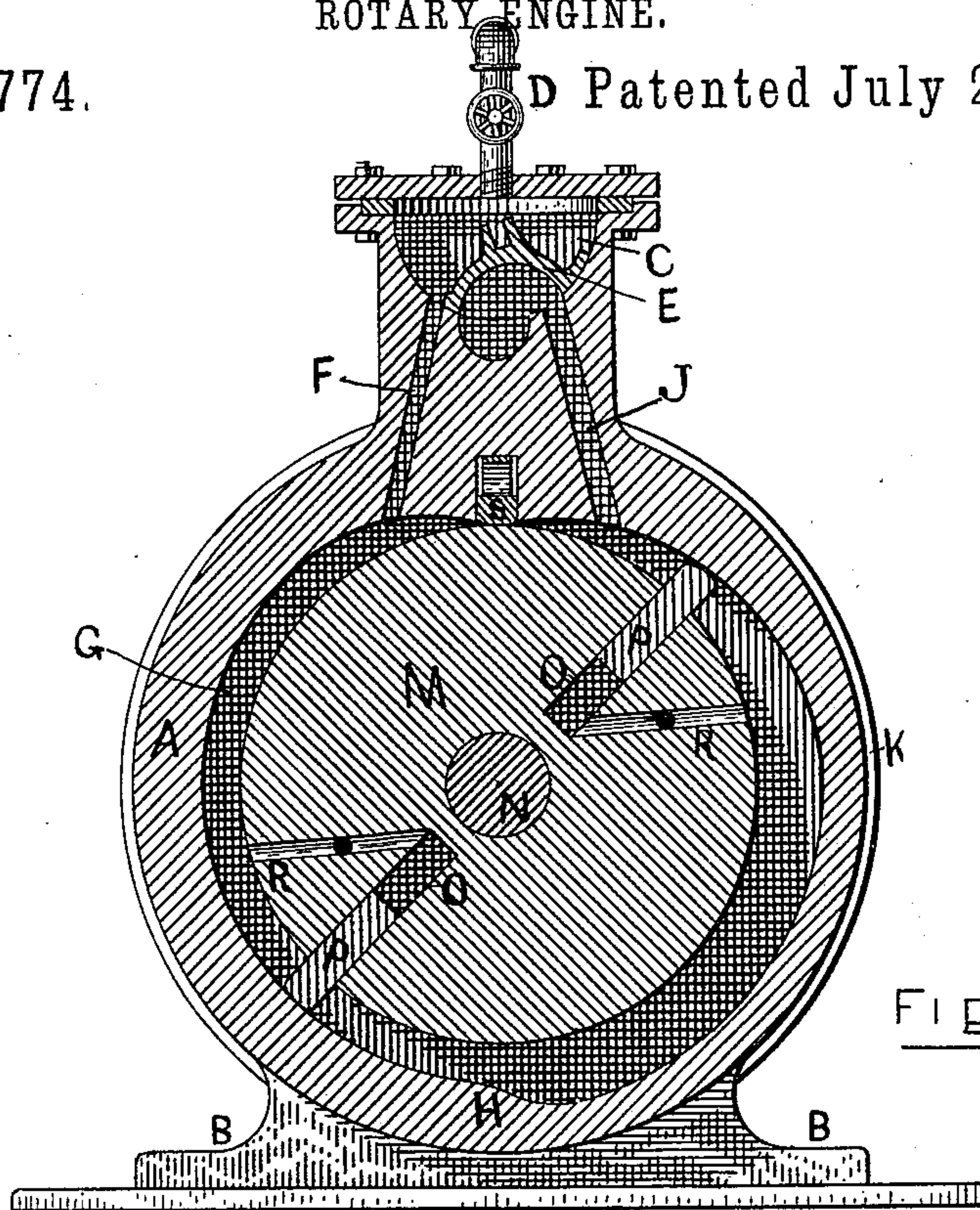


FIG. 1.

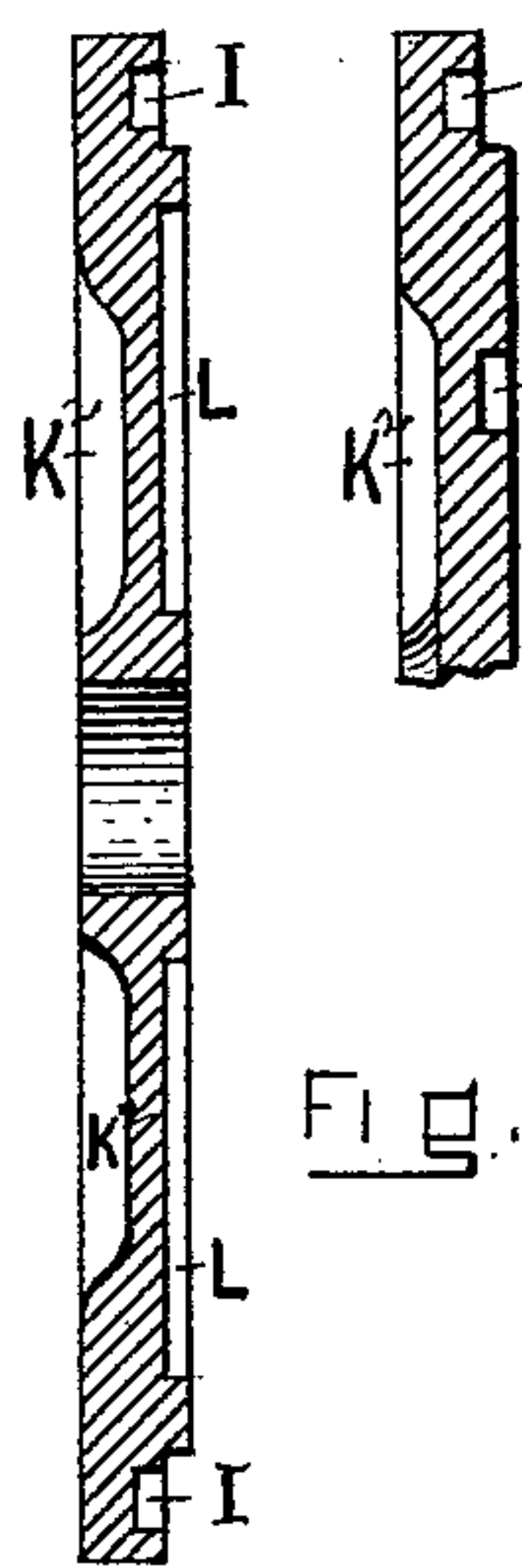


FIG. 3.



FIG. 4.

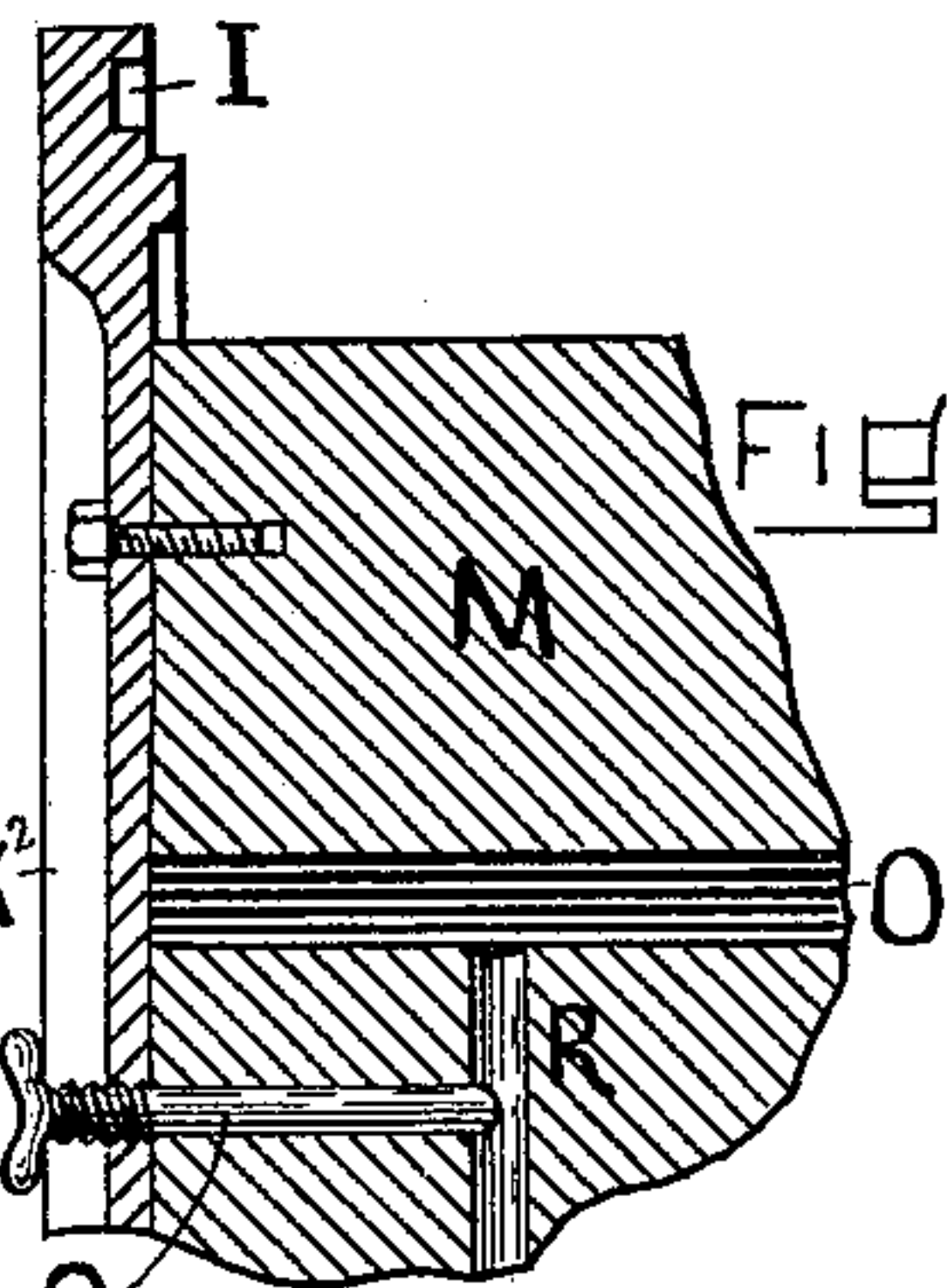
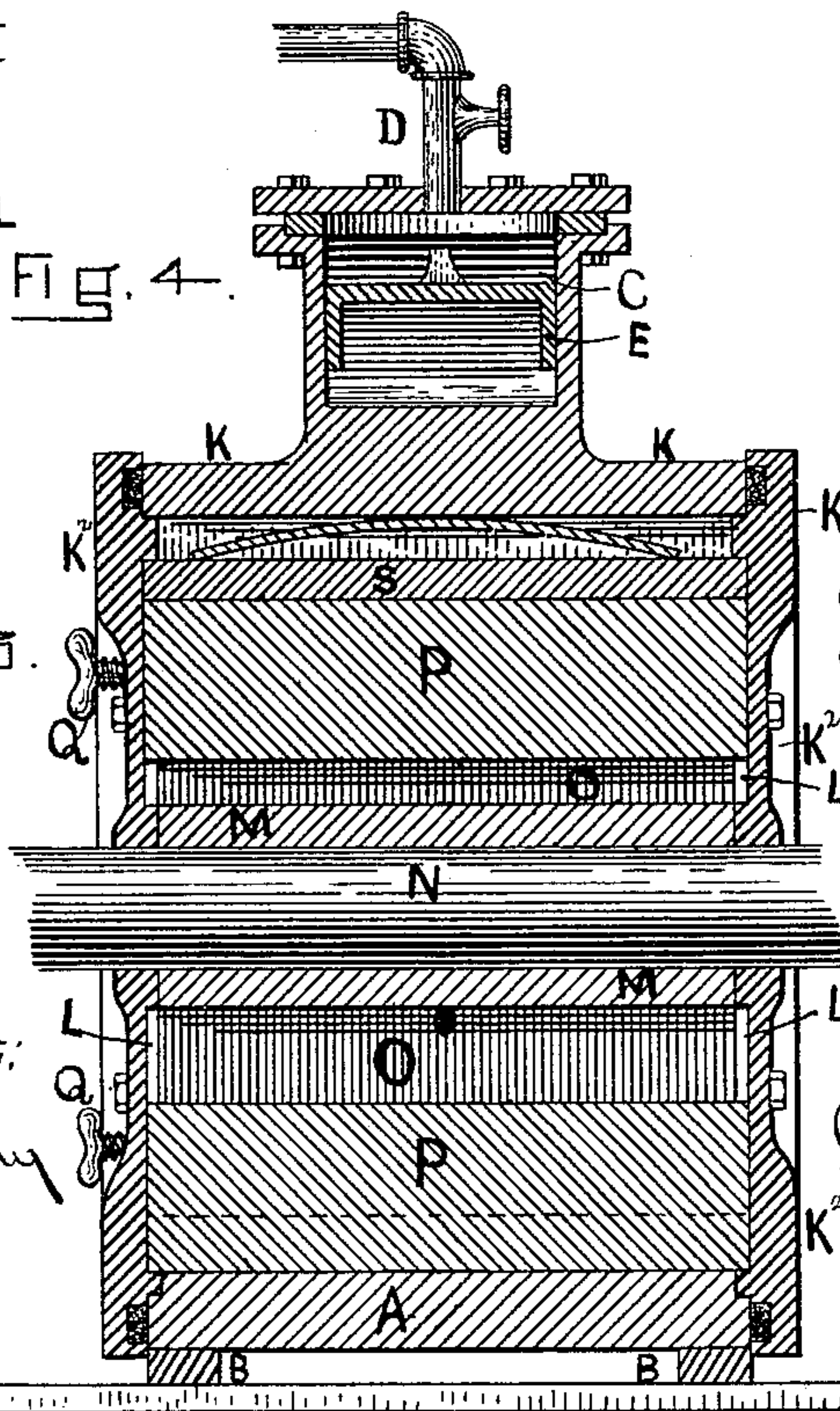


FIG. 5.

FIG. 2.

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# UNITED STATES PATENT OFFICE.

CLARK W. DOTEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF THREE-  
FOURTHS TO EUGENE H. MORSE, SAMUEL P. BLACKBURN, AND  
CALVIN A. AUSTIN, ALL OF SAME PLACE.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 386,774, dated July 24, 1888.

Application filed July 16, 1887. Serial No. 244,566. (No model.)

*To all whom it may concern:*

Be it known that I, CLARK W. DOTEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Rotary Steam-Engines, of which the following is a specification.

The object of my invention is to provide a cheap, simple, convenient, and economical rotary steam-engine; and it consists in the peculiar construction of the interior of the steam-cylinder by enlarging the area of the cylinder at one side; and it further consists in the construction, combination, and arrangement of the several details of construction, as hereinafter more fully described, and specifically set forth in the claim.

Figure 1 represents a vertical central cross-section of a rotary steam-engine constructed according to my invention. Fig. 2 represents a vertical central longitudinal section through the cylinder and pistons. Fig. 3 represents a cross central section of one of the cylinder-heads removed. Fig. 4 represents a cross section of a portion of a cylinder-head, taken at a right angle to the former, showing the groove for the piston. Fig. 5 represents a section of a portion of a head and hub secured together, showing details of construction.

A represents a short horizontal steam-cylinder, provided near each end with suitable projections, B, upon the lower side thereof, and which form supports or a base, which may be firmly secured in position, or as desired. The top portion of the cylinder is provided with a steam-chest, C, having connected therewith a steam-pipe, D, and supplied with the usual valve, hand actuating-wheel, and other devices heretofore employed in this class of engines.

The interior of the said steam-chest C is provided with a sliding or oscillating valve, E, adapted to be actuated in the usual manner to reverse the engine as desired. From the lower portion of the steam-chest extends the steam-inlet passage F, which opens into or enters the "high-pressure" portion G of the steam-cylinder, which extends from the inlet F to a point, H, at or near the bottom of the cylinder, as shown. I enlarge the steam-space within the cylinder from the point H for the greater portion of the opposite half of the cyl-

inder to a point near the outlet or exhaust passage J, as shown in Fig. 2. The steam-cylinder thus constructed is provided at opposite ends with heads K<sup>2</sup>, the inward faces of which are provided each with an annular groove, I, provided with a suitable packing, which forms a steam-tight joint with the ends of the cylinder, as shown in Fig. 2. These heads K<sup>2</sup> project slightly within the opposite ends of the cylinder, and are provided each with two grooves, L, each groove extending from a point near their centers outwardly toward their peripheries to a point at the greatest diameter of the interior of the cylinder, and are formed at opposite sides from the center of the heads and in line with each other, as shown. These heads are firmly bolted or secured to the central hub, M, which is secured to the shaft or axis N, passing longitudinally through the center of the hub and heads, so that the same may be rotated together. The said hub M is provided at opposite sides with a deep groove, O, extending longitudinally through the same from end to end, and within these grooves are fitted the pistons P, which are forced or pressed outwardly in contact with the irregular-formed interior surface of the cylinder by steam, which passes into the hub M through the holes R, formed at opposite sides, so as to terminate at the bottom of the grooves O beneath the pistons P, and thereby force their outward opposite edges in close contact with the cylinder, as shown. Now, in order that the amount or pressure of steam acting upon the inward edges of the said pistons may be regulated, I provide an adjustable thumb-screw, Q, which passes through a screw-threaded hole in the head or heads K<sup>2</sup> and within a hole formed in the hub M, which intersects the steam-pressure holes R, so that the point end of the screw-bolt Q may be made to enter more or less into the said holes or passages R by screwing or turning the same in the right direction.

It will be seen and understood that the ends of the said pistons P extend within the grooves L, formed in the inward faces of the heads K<sup>2</sup>, and slide therein when the engine is in motion, so as to form a steam-tight joint therewith. Now, in order to compensate for undue amount of wear at the top portion of the

interior surface of the cylinder between the steam-inlet passage F and exhaust-passage J, I provide a spring-bar, S, which is held down into close contact with the face of the periphery of the said hub M by a suitable spring, so as to form a steam-tight joint therewith, as usual.

It will be seen and understood that the position of the hub M and sliding pistons P has been changed or partially rotated within the steam-cylinder from the position shown in Fig. 1 to the position shown in Fig. 2, which represents the pistons in a vertical position, or one piston resting at the top of the cylinder directly over the center of the axis and the

other piston at the bottom of the cylinder and in the vertical plane of the former one.

Having thus described my invention, what I claim is—

A rotary engine consisting of a cylinder having a greater area of steam-space provided in the exhaust portion than in the inlet portion, and provided with a hub having two pistons, and having the heads of the cylinder provided with packing, which forms joints with the opposite end faces thereof, as described.

CLARK W. DOTEN.

Witnesses:

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