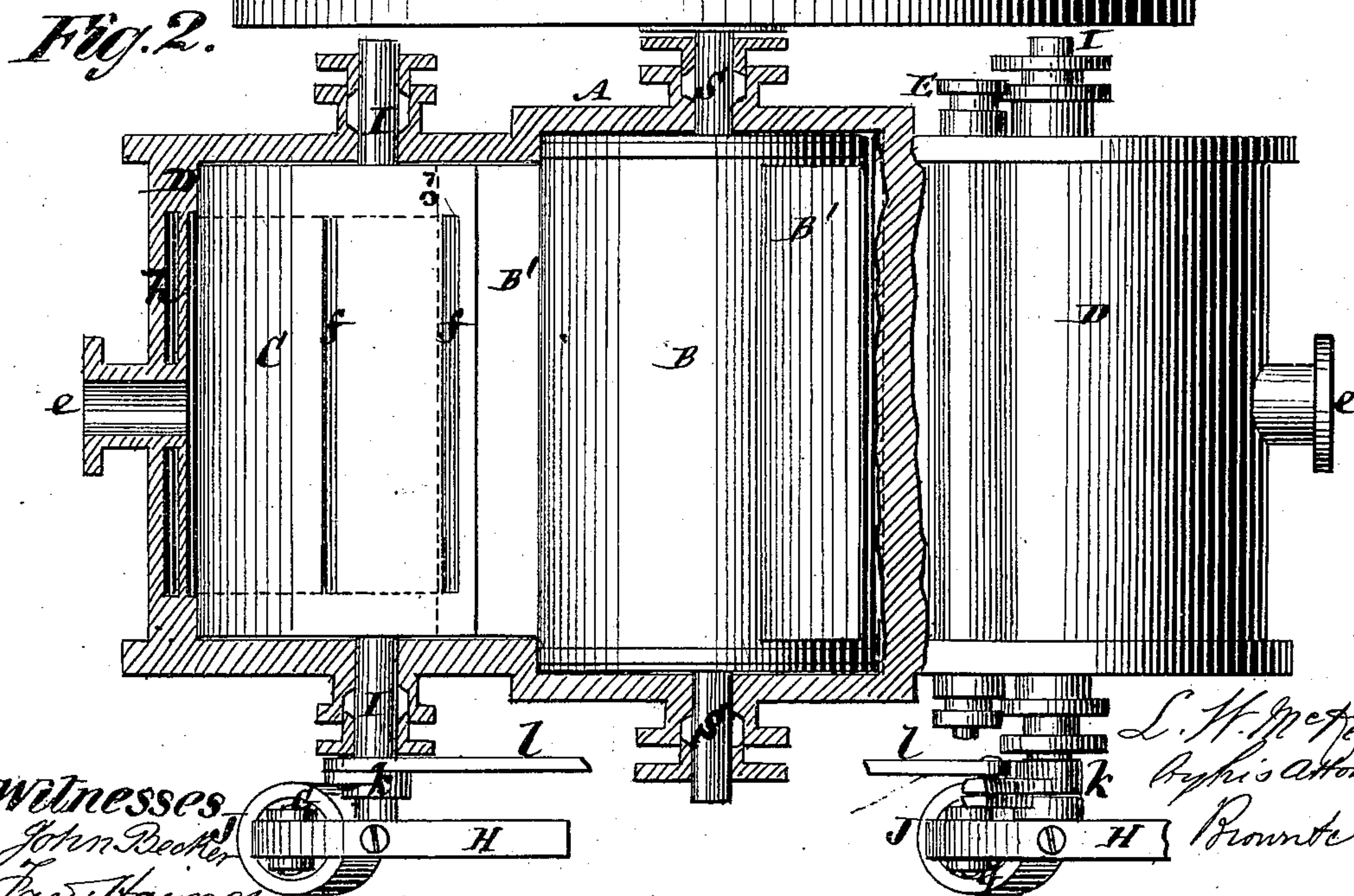
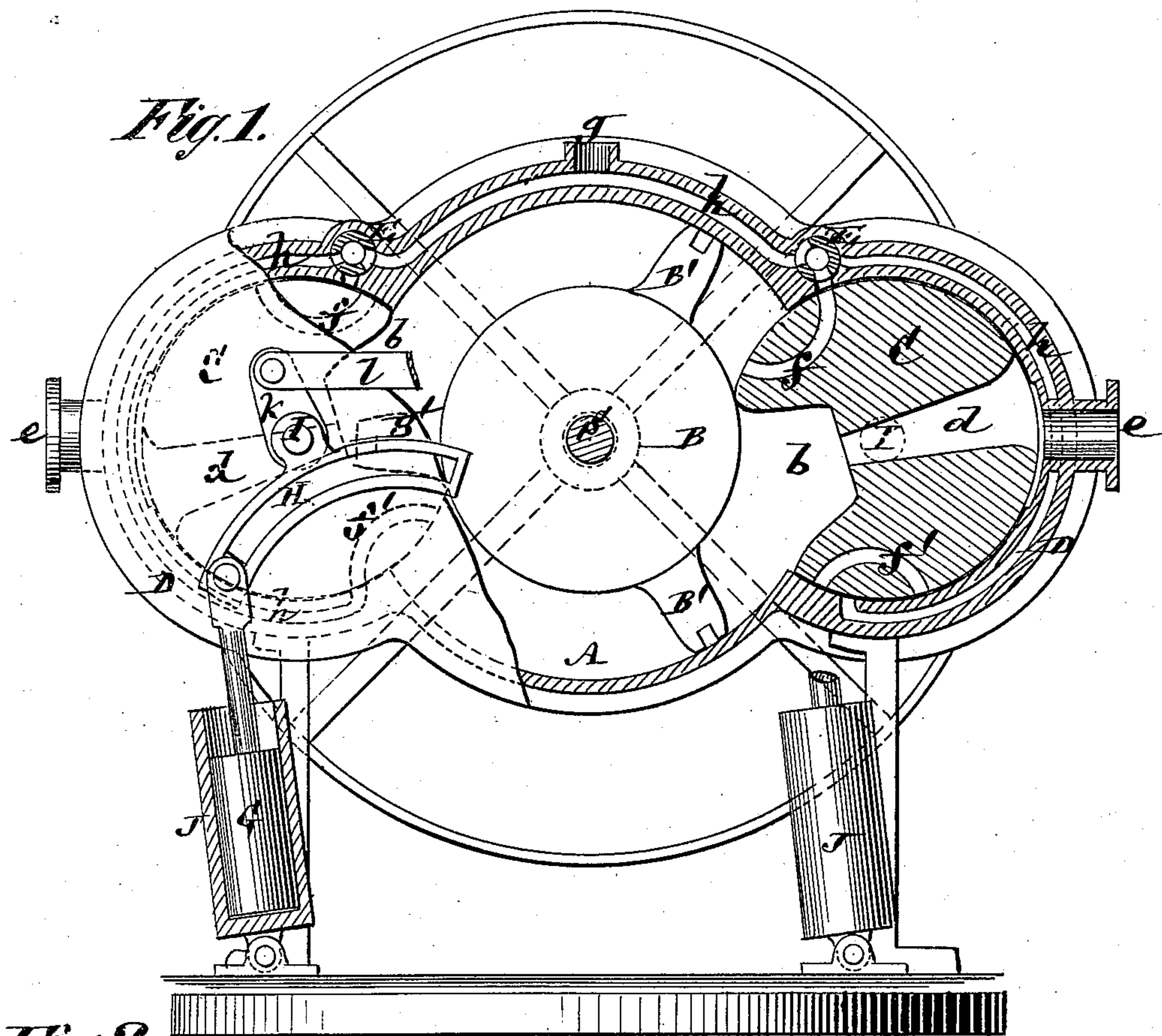


L. W. McKENNEY.  
Rotary Engines.

No. 153,175.

Patented July 21, 1874.



Witnesses,  
John Becker  
Fred. Haynes

L. W. McKenney  
By his Attorneys  
Brown & Allen



# UNITED STATES PATENT OFFICE.

LOUIS W. MCKENNEY, OF JERSEY CITY, NEW JERSEY.

## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **153,175**, dated July 21, 1874; application filed June 17, 1874.

*To all whom it may concern:*

Be it known that I, LOUIS W. MCKENNEY, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain Improvements in Rotary Engines, of which the following is a specification:

This invention relates to that class of rotary engines in which the steam is introduced to a close cylinder or chamber for operation on a revolving piston in connection with oscillating abutments. The invention consists, generally, in a novel construction of the oscillating abutments, which are operated by the piston while in motion, and are constructed to form a constantly open and free exhaust for the spent steam; also with passages for the live steam, subject to the control of valves, for operating the engine in either or both directions. It also includes mechanism in connection with said abutments, whereby weights operating within dash-pots serve to adjust the abutments to their proper relative positions in connection with the piston, to insure the operation of the engine in either direction.

In the accompanying drawing, Figure 1 represents a partially transverse section of an engine constructed in accordance with the invention. Fig. 2 is a partly sectional plan of the same.

A is the stationary cylinder of the engine, and B B' the revolving piston therein—B being the revolving hub of the piston, and B' the radial arms thereof, of which there may be two, three, or more, but preferably three, for operation in connection with a pair of opposite oscillating abutments, C C, whereby a dead-center is avoided, and two of the radial arms of the piston are always under propelling action by the steam. S is the main shaft. The oscillating abutments C C are arranged to vibrate within partial cylinders D D, on opposite sides of the cylinder A, and are formed with cavities *b* on their inner faces, to provide for the passage or working of the radial arms B' of the piston, and oscillation of such abutments by said arms, also which abutments are furthermore provided with central or constantly-open exhaust-passages, *d*, in communi-

cation with outlets *e*, and are also provided with passages *f f'*, for passing the live steam to the cylinder, according to the direction in which the engine is required to be run.

The steam is introduced by an inlet, *g*, to a jacket or passage, *h*, partly including the cylinder A and partial cylinders D D, subject to the interposition of valves E E, which may be two-way cocks, or of circular construction. These valves, accordingly as they are turned, serve either to shut off the steam from the engine or to conduct it by the passages *f* or *f'* to the interior of the cylinder A—that is to say, by the passage *f* in the one abutment C, and by the passage *f'* in the other abutment, at one and the same time. As the parts are represented in Fig. 1 of the drawing, the engine is supposed to move in direction of the arrow in said figure, the steam introduced by the passage *f* of the right-hand abutment C, and by the passage *f'* of the left-hand abutment C, serving to act upon the backs of at least two of the radial arms B' of the piston B, while the spent steam in advance of the radial arms of the pistons passes off through the passages *d d* of the oscillating abutments, and the live steam presses upon the abutments to keep them in close contact with the hub B of the piston. The radial arms B' of the pistons, as they come round, passing within the cavities *b* of the abutments, strike or act upon the latter to move them, so that the passages *f f'* of the two abutments are changed as regards their communication with the cylinder A and steam-inlet *g*, through the valves E E, to continue the motion of the piston in the same direction, the passages *d* in all such actions of the abutments being open to the exhaust.

The abutments C C are primarily adjusted to their usual position on or against the hub B of the piston by means of a weight, G, connected with either abutment by or through a slotted arc, H, attached to the axial shaft I of each abutment, and extending equally, or thereabout, on both sides of said shafts, said weights moving up or down in dash-pots J, to ease the oscillating action of the abutment by the ra-



dial arms of the piston. The dash-pots J are free to vibrate on a base center or axis, and the axial shafts I of the abutments C C are connected by cranks and rod *k k l*, so that the abutments may be turned by an ordinary lever, to change their normal positions as regards their surfaces, above or below their cavities *b* in contact with the hub of the piston, on opposite sides of the latter, to reverse the action of the engine, such adjustment also moving the slotted arcs H, so that the weights G are thrown to opposite sides of the axial shafts I of the abutments. Said weights serve to return the abutments to their contact with the hub of the piston each time they are lifted by the radial arms of the pistons during the rotation of the latter.

Although the invention has here been described as relating to rotary engines, it is equally applicable to pumps, so far its novel features are concerned, by appropriately modifying the ports and using necessary adjuncts.

I claim—

1. The combination of the oscillating abutments C C, having cavities *b* on their inner faces, and exhaust-passages *d d*, with the revolving piston B B', substantially as shown and described.

2. In combination with the oscillating abutments C C, having cavities *b* on their inner faces, the inlets *f f'* in said abutments, the exhaust-outlets *d*, the valves E E, the passages *h*, and the revolving piston B B', essentially as shown and described.

3. The weights G and vibrating dash-pots J, in combination with the slotted arcs H, the oscillating abutments C, having cavities *b* on their inner faces, the valves E, the passages *h f f'*, and the exhaust-outlets *d*, substantially as specified.

LOUIS W. McKENNEY.

Witnesses:

MICHAEL RYAN,  
FRED. HAYNES.