

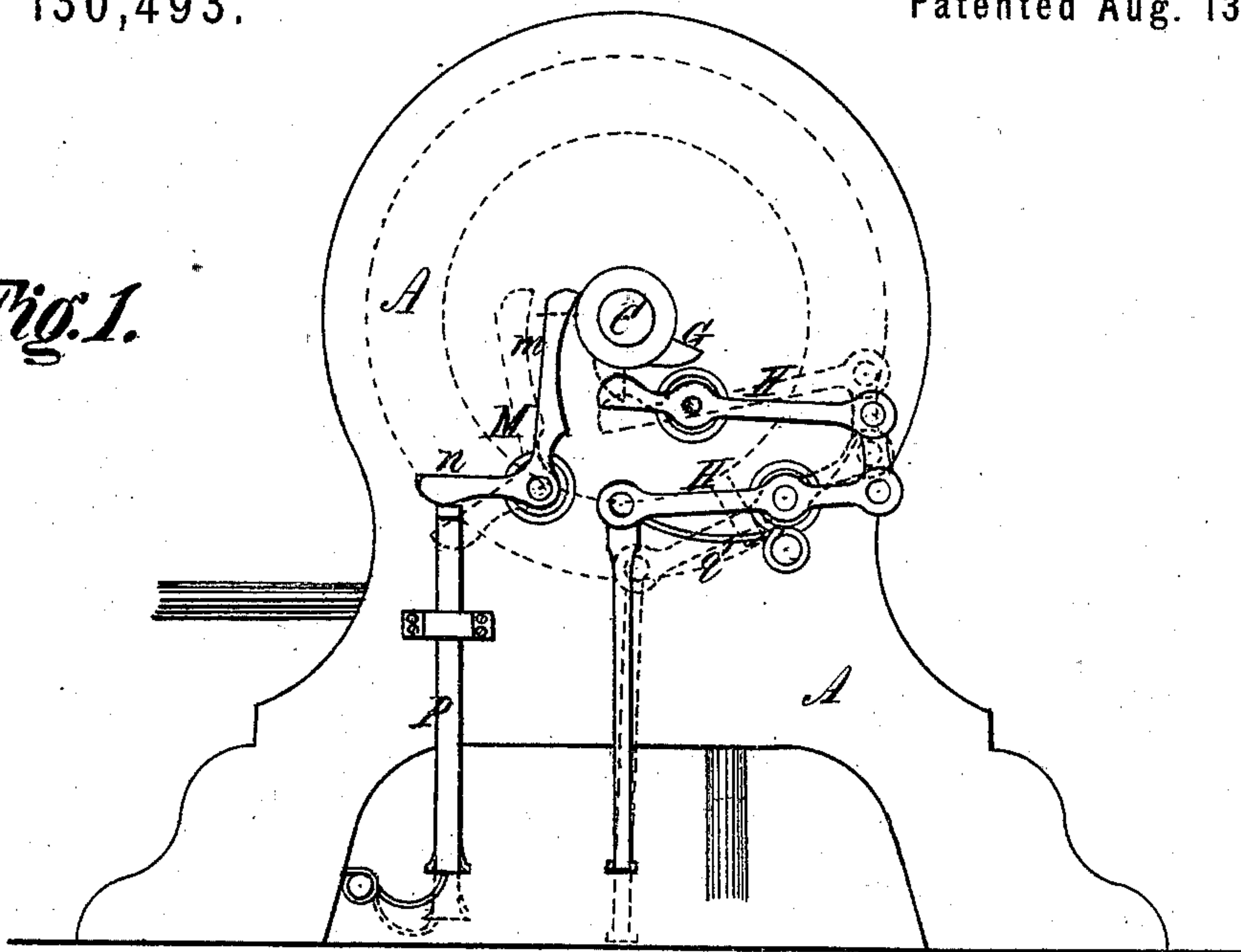
L. K. FULLER.

Improvement in Rotary-Engines.

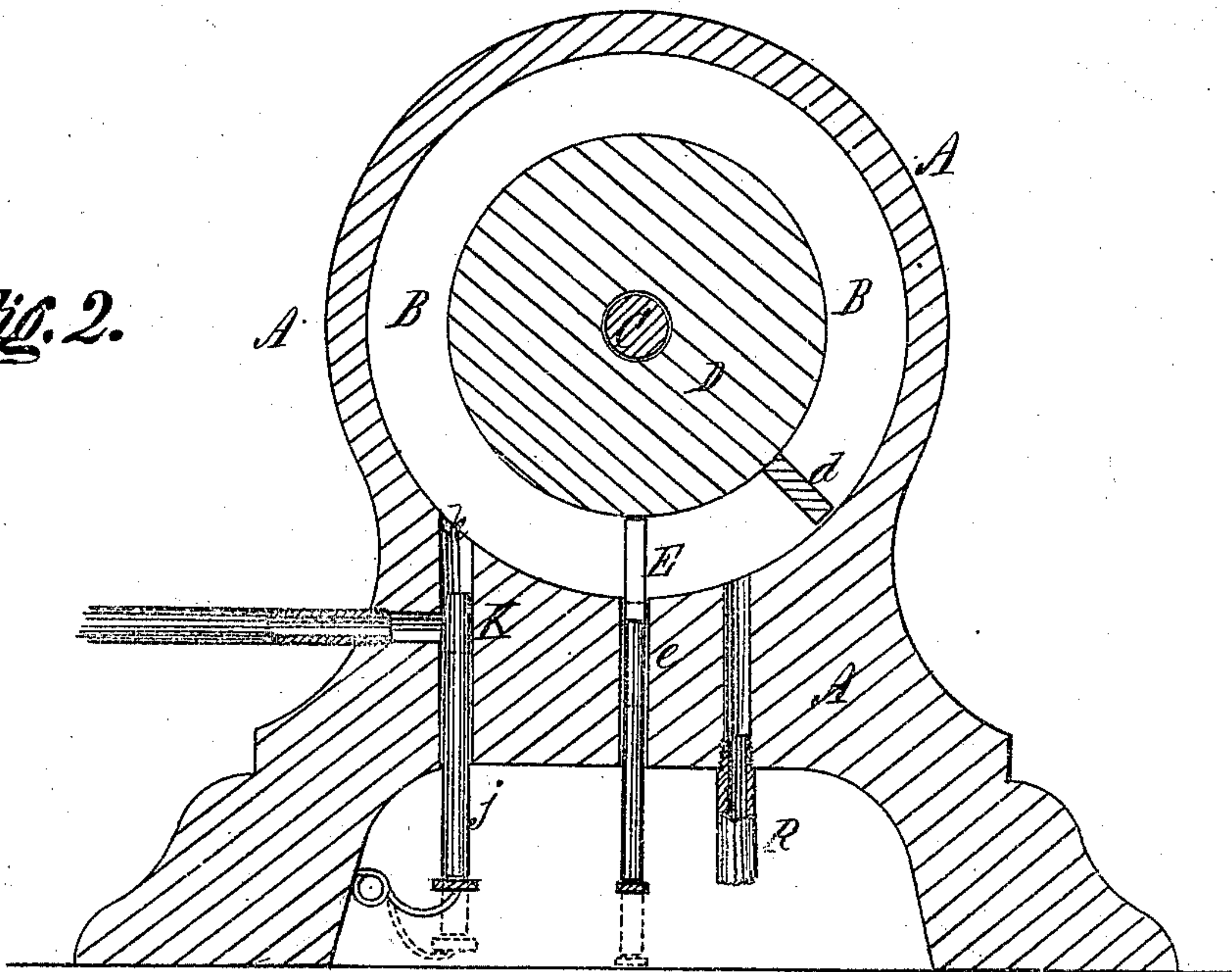
No. 130,493.

Patented Aug. 13, 1872.

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*Thos. A. Weston.*  
*Charles M. Higgins*

*Inventor:*

*Levi K. Fuller*  
*Per Burke & Francis attys*



# UNITED STATES PATENT OFFICE.

LEVI K. FULLER, OF BRATTLEBOROUGH, VERMONT.

## IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 130,493, dated August 13, 1872.

### SPECIFICATION.

*To all whom it may concern:*

Be it known that I, LEVI K. FULLER, of Brattleborough, in the county of Windham and State of Vermont, have invented certain new and useful Improvements in Rotary Engines, of which the following is a description:

My invention relates to that class of rotary engines in which a radial piston is caused to revolve in an annular chamber by the pressure of steam acting directly upon it on one side, and against a butment fixed during the greater part of the revolution of the piston, and which is withdrawn at the approach of the latter to allow it to pass; and it consists in the special arrangement of the mechanism for operating and controlling the action of the inlet-valve and butment, which mechanism consists of a cam fixed upon the shaft of the revolving hub and piston, which cam in its revolution and at the proper moment strikes and depresses the end of a suitable compound lever, which conveys the motion thus imparted through a connecting and supporting-rod to depress the butment out of the annular space to allow the piston to pass, when said butment and the compound lever are forced back into their normal position automatically by a spring—the spring next striking an elbow and depressing the connections of and opening the induction-valve at the moment the piston has passed the same—said valve being again closed automatically by a spring.

In the drawing, Figure 1 is a front elevation of my rotary engine, the interior of the same, and the position of the operating mechanism when depressed being indicated by dotted lines. Fig. 2 is a central vertical longitudinal section of the engine.

Within the cylindrical steam-tight chamber B, formed in and inclosed by the casing A A and upon the shaft C, is mounted an enlarged hub or cylinder, D, from the periphery of which projects radially a stationary wing or piston, *d*, which corresponds with and fits into the cross-section of the portion of the chamber B remaining between the hub D, and is provided with suitable packing at its edges to insure a steam-tight joint between it and the sides of the chamber B. An abutment, E, rests within and completely closes the space B, preferably at its lowest point, during the greater portion of the revolution of piston; but when the latter approaches it is made to recede into a corresponding recess, *e*, to allow the piston to pass. This movement is

caused by the cam G, situated upon the shaft C, outside, striking against the end of a compound lever, H, suitably arranged and pivoted to the frame A, which movement is imparted through the connecting-rod *h* to the rod *e* and abutment E, depressing the latter, as described. The abutment and levers are returned automatically to their normal position after such action, by the elasticity of a spring, *i*, placed in any convenient position on the frame. The induction-valve K consists of a straight bore, *k*, into which the supply-pipe or channel opens at an angle—the opening or point of intersection being covered, and the supply of steam shut off during the major part of the revolution, by close-fitting pintle, *j*. At the moment the piston has reached or just passed the opening *k* the cam G reaches and throws out the arm *m* of the elbow M, which causes its other arm *n* to depress the connecting-rod P and lower the pintle *j* a sufficient distance to uncover the induction-channel and allow the steam to escape into the annular space B, behind the piston *d*, and between it and the butment E, when, the cam having passed and allowed a spring, *l*, to close the valve, it acts expansively to drive the piston forward—the exhaust steam in front of the piston escaping through the eduction R.

One advantage in my construction is, that I make the hub comparatively large in diameter, so as to reduce the motion necessary for the inserting and withdrawing of the butment to the minimum degree, simplifying the construction and operation of the parts, and reducing the bulk and cost.

What I claim as my invention is—

1. The cylinder or hub D, piston *d*, and abutment E, in combination with the cam G, for operating upon the compound lever H and elbow or bell-crank lever M, substantially as and for the purpose set forth.

2. In combination with the chamber B and piston D, the valve K, arranged and operated substantially as described, and for the purpose specified.

3. The combination of the pintle *j*, rod P, and elbow M, with and operated by the cam G, for the purpose described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEVI K. FULLER.

Witnesses:

N. P. CHASE,  
W. H. CHILDS.