(No Model.)

W. H. ROACH.

ROTARY ENGINE.

No. 249,402. Patented Nov. 8, 1881.

Fig. 1

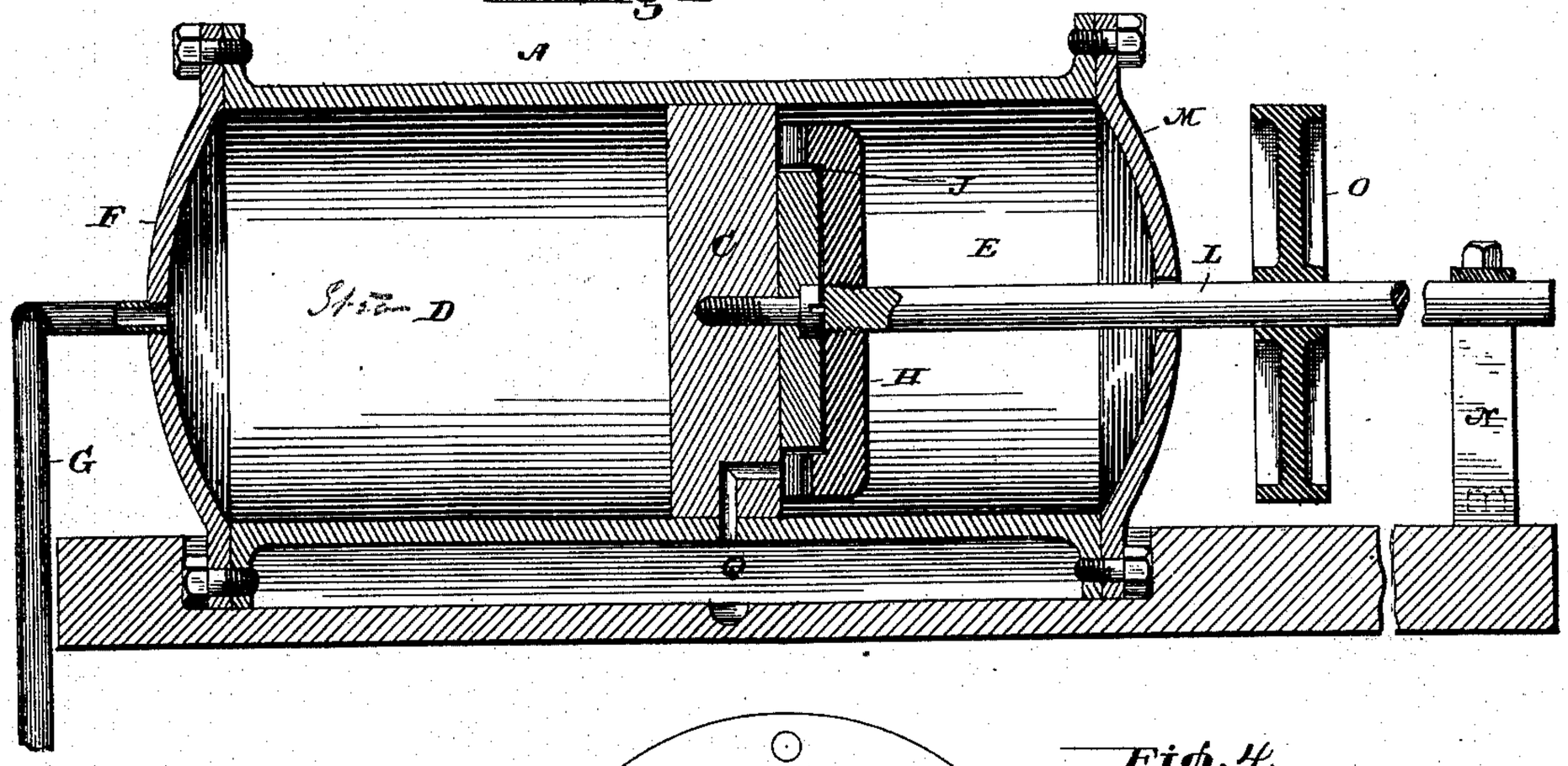


Fig. 2.

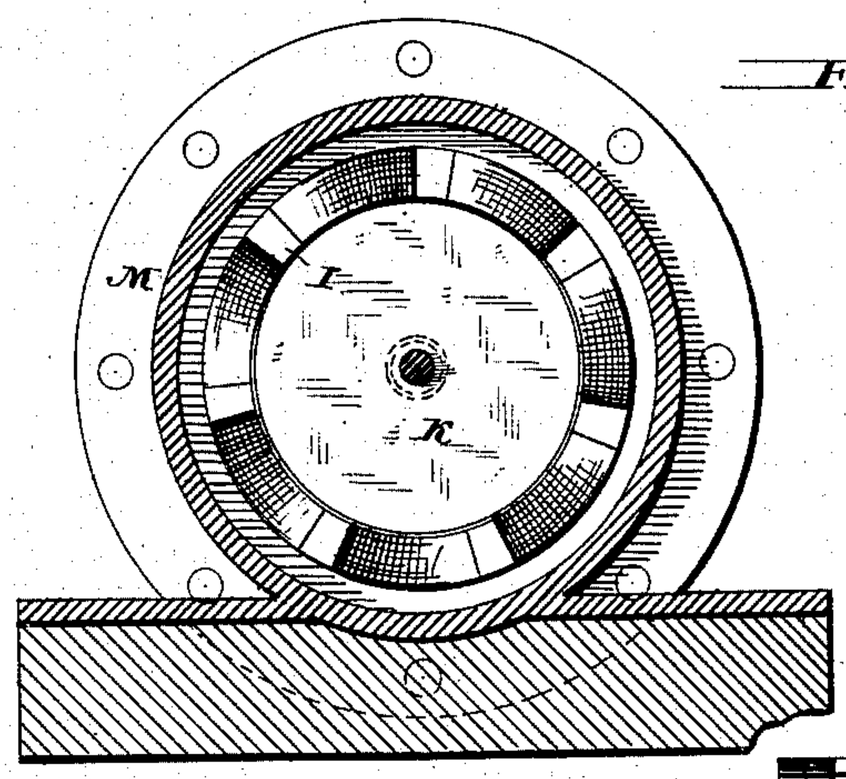


Fig. 4.

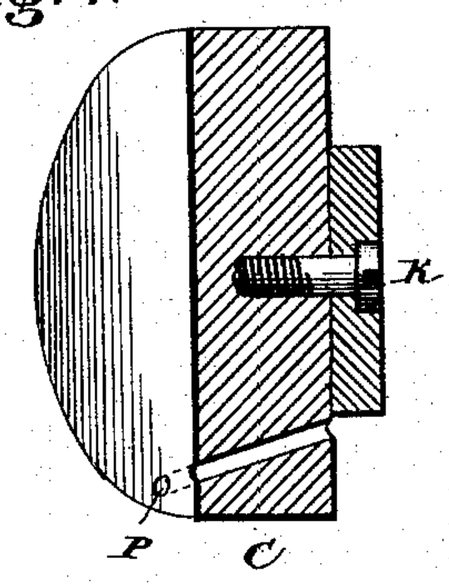
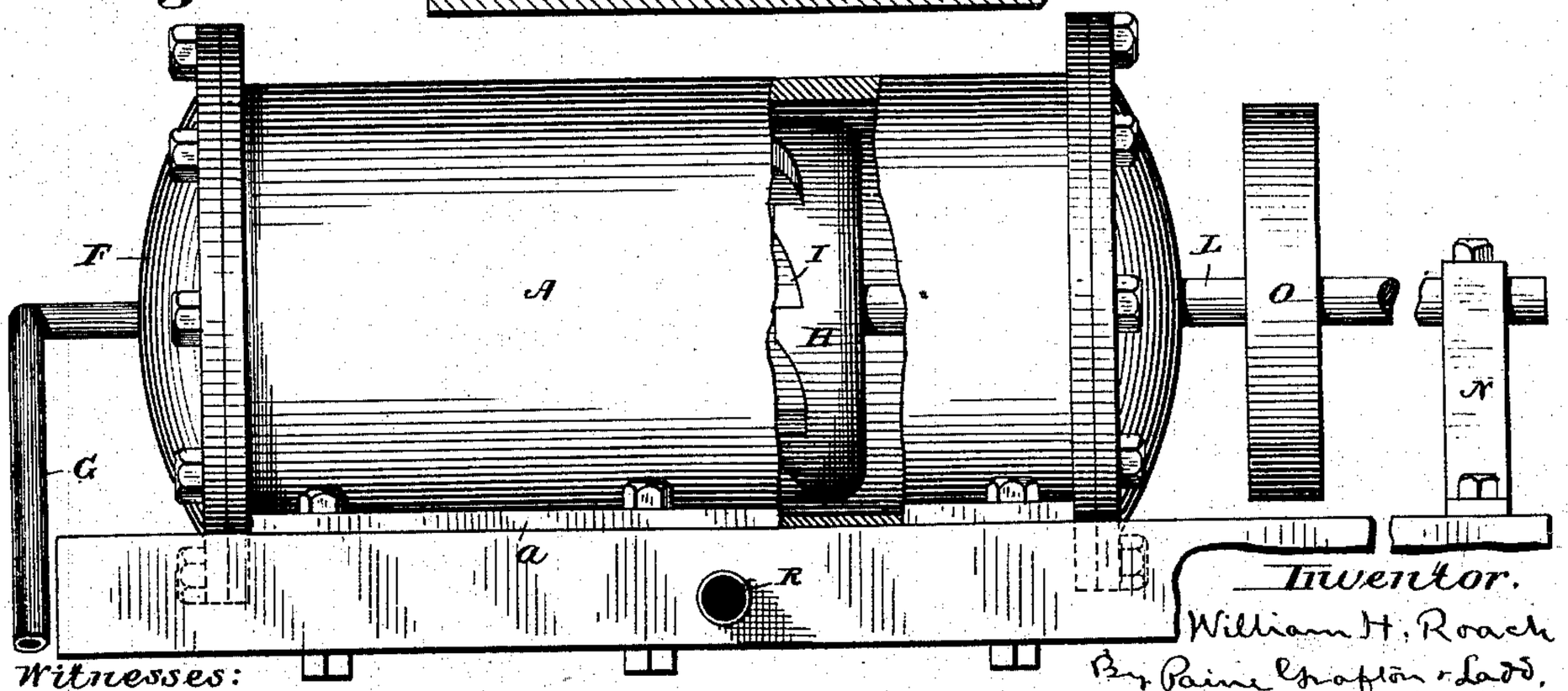


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM H. ROACH, OF TRINITY COLLEGE, ASSIGNOR OF ONE-HALF TO GEORGE A. THOMPSON, OF THOMASVILLE, NORTH CAROLINA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 249,402, dated November 8, 1881.

Application filed June 29, 1881. (No model.)

To all whom it may concern:

Be it known that I, W. H. ROACH, a citizen of the United States, residing at Trinity College, in the county of Randolph and State of North Carolina, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to that class of rotary steam-engines in which a circular piston provided with wings or projections is located in a cylinder having steam-inlet ports arranged to discharge steam upon the circular piston for the purpose of turning the same.

The object of the invention is to furnish an engine of a simplified construction which shall be more effective and less liable to get out of order than engines of an analogous construction heretofore devised.

To this end the invention consists in the construction and combination of parts, which will hereinafter be more fully described, and then set forth in the claim.

Figure 1 is a longitudinal sectional view of a steam-engine embodying my improvements. Fig. 2 is a transverse section of the same; and Fig. 3 is a side elevation, partly in section, showing the manner of mounting the various parts. Fig. 4 is a detail view of the partition-head of the cylinder, partly in perspective and partly in section.

The letter A designates a horizontal cylinder or casing, which is provided with flanges *a*, for securing it to a suitable bed-plate, B. The cylindrical casing is divided into two compartments by means of a partition-plate or intermediate head, C, which fills the entire bore of said cylinder. The partition-plate is so arranged in the cylinder as to form a steam-inlet or supply-chamber, D, and a smaller piston or working chamber, E. An end head, F, of the steam-supply chamber is apertured for the passage of a steam-inlet pipe, G, or said pipe may be connected with a permanent hollow neck or sheet tube projecting from said end head, F. The chamber E contains a circular piston, H, which has wings or projections I on the side adjoining the partition-plate or intermediate head C. These wings or projections are arranged at the periphery or edge of the piston, so as to form a circular recess or seat, J, in the center of the piston. This recess receives a reduced central portion or cylindrical bearing, K, projecting from the partition-plate or intermediate head, C, as is fully shown in Fig. 1. The projections or wings on the side of the piston may be cast together or otherwise formed so as to constitute a zone or ring, which is secured to the piston, or else each projection may be made separate and attached to the piston by suitable means. The piston and its wings may, however, also be made in one piece. The shape of the wings or projections is very much like that of a ratchet-wheel or section of a clutch; or, in other words, said projections have oblique faces running parallel with the periphery of the piston and square shoulders or abutments extending at right angles from the piston. The latter is made somewhat smaller in diameter than the bore of the cylinder, for the object hereinafter stated.

A horizontal shaft, L, carrying the piston or winged wheel, extends through an end head, M, of the cylinder or outer head of the working-chamber and is journaled in a suitable bearing or box, N, rising from the bed-plate of the engine. A band-wheel, O, on said shaft L serves as a medium for communicating motion to machinery, &c. An opening or port, P, extending obliquely through the partition-plate or intermediate head of the cylinder, serves to convey steam from the supply-chamber to the piston-wheel, and a port or opening, Q, extending through the periphery of said partition-plate or head and the side thereof leading into the piston-chamber, serves to discharge the exhaust steam into a pipe, R, passing through the bed-plate of the engine.

The operation of an engine constructed as above described is as follows, viz: The steam, passing through the oblique port or opening in the partition-plate or head, impinges against the wings or projections of the piston and causes the rotation of the latter. In this man-

ner the various projections are successively brought in position to receive the steam issuing through the oblique port. The steam continues to exert its force upon all the projections of the piston until it reaches the exhaust-port, and also acts upon the periphery and back of the piston so as to hold the same in a properly-balanced state. The exhaust takes place at the bottom of the cylinder, and immediately thereafter the live steam acts upon the wing or projection which has last exhausted.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a rotary engine, the combination of the cylinder A, having partition C, provided with a circular projection or bearing, K, oblique steam-inlet port P, and right angular exhaust-port Q, leading through the cylinder, with a revolving piston, H, having a zone of wings or projections, J, extending over the periphery of the bearing K, as and for the purpose herein set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HENRY ROACH.

Witnesses:
R. G. COOK,
H. C. BONMAN.