(No Model.)

2 Sheets—Sheet 1.

W. G. ADAMS.

ROTARY ENGINE.

No. 530,982. Patented Dec. 18, 1894.

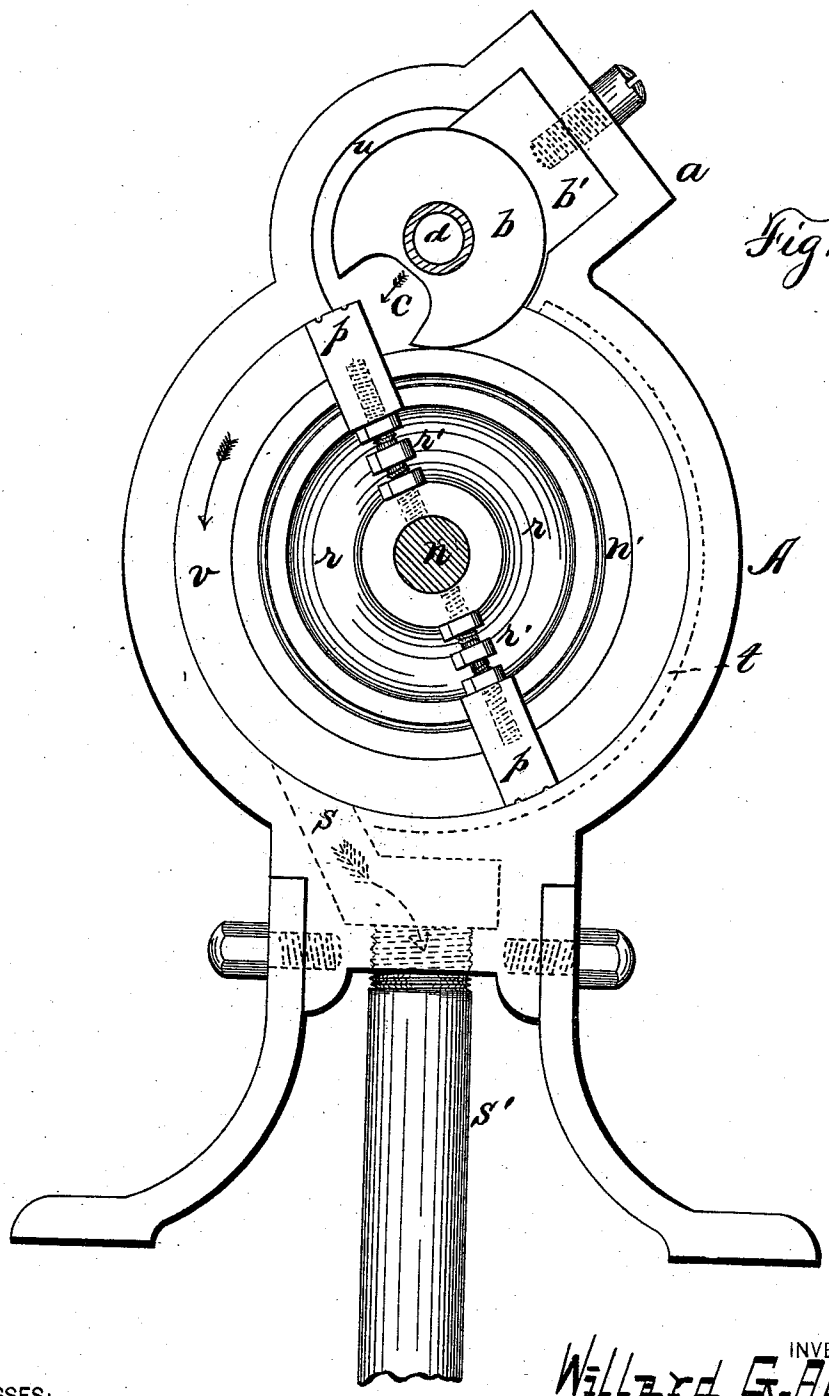

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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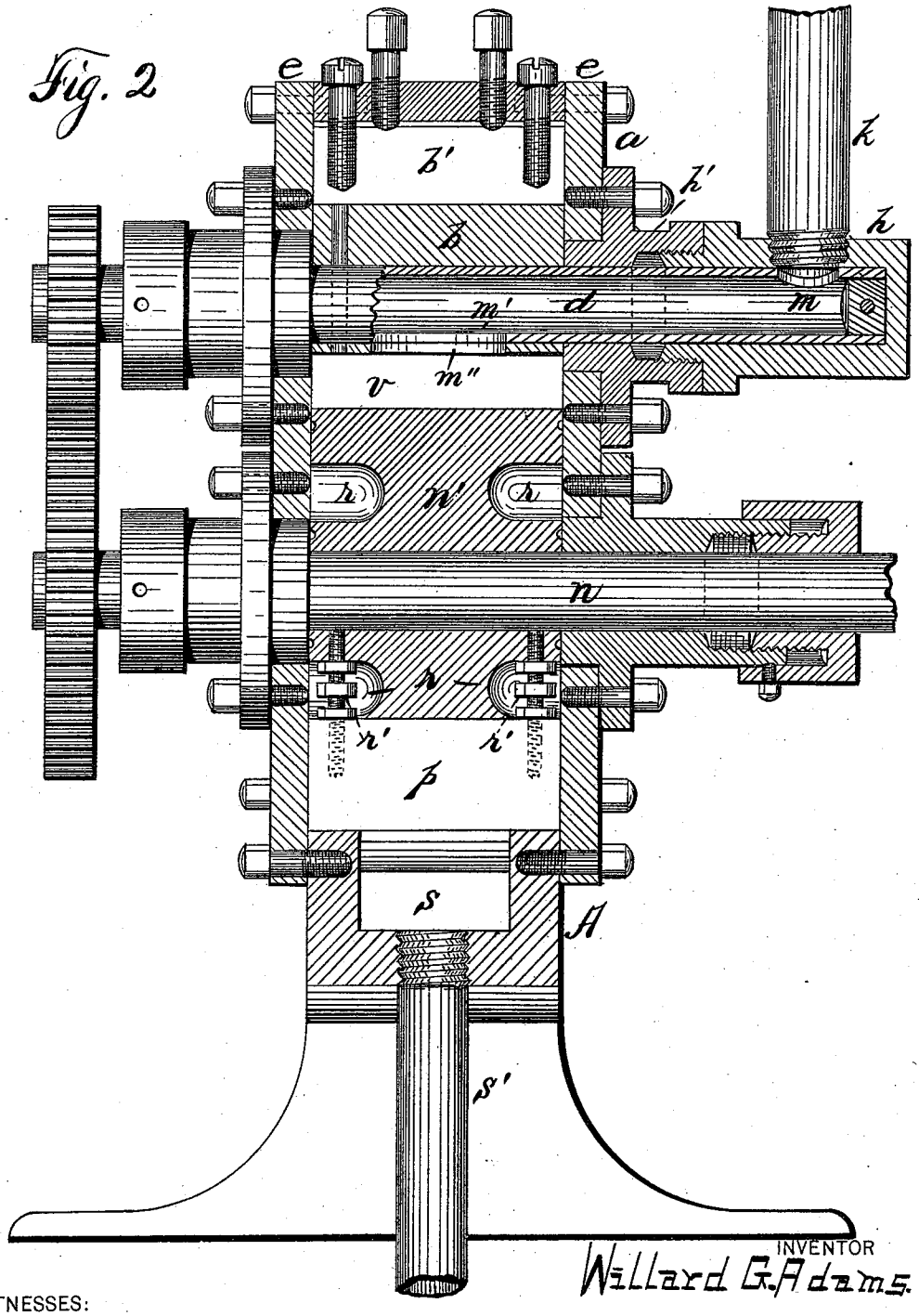
Fig. 2



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UNITED STATES PATENT OFFICE.

WILLARD G. ADAMS, OF WEEDSPORT, NEW YORK.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 530,982, dated December 18, 1894.

Application filed February 8, 1894. Serial No. 499,464. (No model.)

To all whom it may concern:

Be it known that I, WILLARD G. ADAMS, of Weedsport, in the county of Cayuga, in the State of New York, have invented new and useful Improvements in Rotary Engines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to rotary engines and to that class in which the head which carries the pistons is concentric with the case, and the pistons are not reciprocated during the rotation of the head.

My object is to produce an improved engine, in which the head is concentric with the case, thereby creating an annular chamber around the head; in which the pistons are mounted in mortises in the head, and are adjusted by means of a right and left hand screw connected to each piston and engaging with the head; in which the rotating cut-off is recessed to receive the projection of each piston; in which the steam is fed through a tubular rotating pipe adapted to cut-off at the inlet pipe substantially simultaneous with the cut-off of the supply of steam to the steam chamber; in which the case is recessed from the exhaust substantially to the main cut-off in order to prevent any air packing in front of a piston after it has passed the exhaust port; and in which a bearing block, bears adjustably upon the cut-off, to take up wear, and to prevent leakage.

My invention consists in the several novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is an elevation, partly in section of one end of the engine with the face-plate removed. Fig. 2, is a vertical transverse sectional elevation of the engine.

—A— is the case, bored out cylindrically, erected upon suitable standards or supports; provided with an offset, —*a*— also cylindrically bored in which the cut-off valve and abutment —*b*— is seated, and —*b'*— is a bearing block engaging with the valve and adjustable to take up wear and prevent leakage. Said valve is provided with a recess —*c*— across its face, and is mounted upon the tubular shaft —*d*— which is journaled in the face plates —*e*—, or in the members —*h*—*h'*— of the stuffing box; said shaft performing the functions of a shaft and a steam conduit from the inlet pipe —*k*— to the valve, and having a port —*m*— adapted to register with the inlet pipe, and also with a port —*m'*— opening outward through the port —*m''*— in the valve, into the steam chamber. Upon the shaft —*n*— the head —*n'*— is secured, said shaft being journaled in stuffing boxes substantially as shown.

Pistons —*p*— are mounted in radial mortises in the head, the head being provided in its ends with a groove —*r*— and —*r'*— are right and left hand screws engaging with the head and with the pistons, by which they are adjusted; the head being concentric with the bore of the casing.

The casing is provided with an exhaust port —*s*—, —*s'*— being the exhaust pipe; and further provided with a groove or recess —*t*— (dotted line in Fig. 1), extending from the exhaust port substantially to the cut-off valve chamber, which recess performs the function of a vent preventing any packing of air in front of the piston between the exhaust and the inlet valve. The valve chamber is also provided with a recess —*u*— which operates to elongate the inlet port of the valve, and to prevent too quick a cut off.

It will be seen that the rotation of the valve and its tubular shaft cuts off the supply from the inlet pipe, and the discharge into the steam chamber —*v*— substantially simultaneously, so that the inlet conduit is relieved from steam pressure while the engine is not taking steam. It will also be seen that the parts are here shown as constructed upon the ratio of two to one, in that the cut-off valve makes two revolutions while the head is making one; and that where more pistons are used the ratio should be higher.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A rotary engine comprising a case, a head therein concentric therewith, pistons radially mounted in the head and fixedly adjustable in their projection beyond it, a cut-off valve mounted in a chamber connected to the steam chamber between the pistons, a rotary

tubular shaft carrying said valve and provided with a port adapted to register with the steam inlet pipe, and a recess in the inner wall of the case beyond and extending from the exhaust port substantially to the steam inlet, in combination.

2. The combination with a steam-inlet pipe of a combined shaft and steam conduit having a port adapted to register with said pipe, and a port coinciding with the steam port in the cut-off valve, and a cut-off valve secured upon and rotated by said shaft, and a recess in the inner wall of the case beyond and extending from the exhaust port substantially to the steam inlet.

In witness whereof I have hereunto set my hand this 18th day of October, 1893.

WILLARD G. ADAMS.

In presence of—
C. W. SMITH,
HOWARD P. DENISON.