

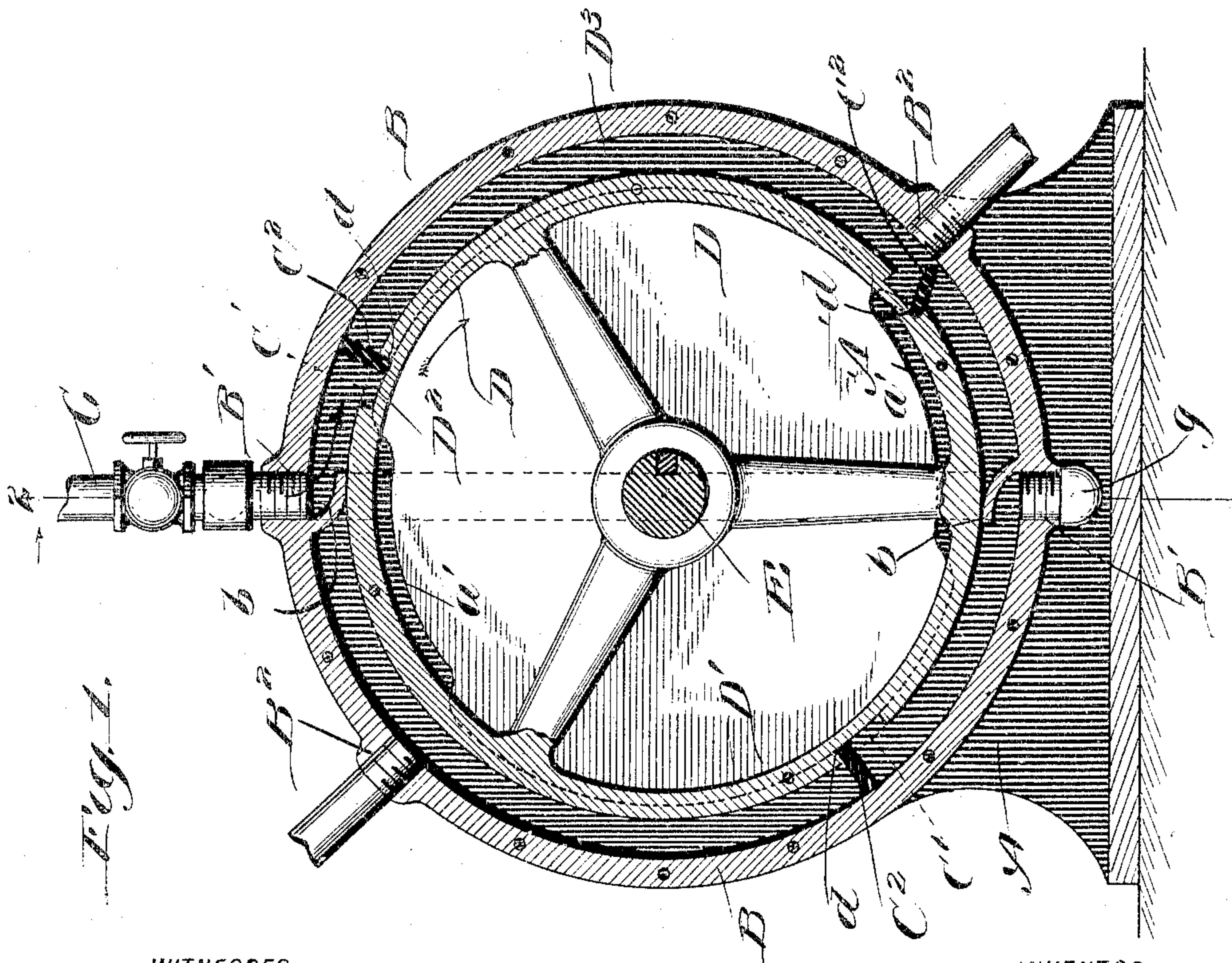
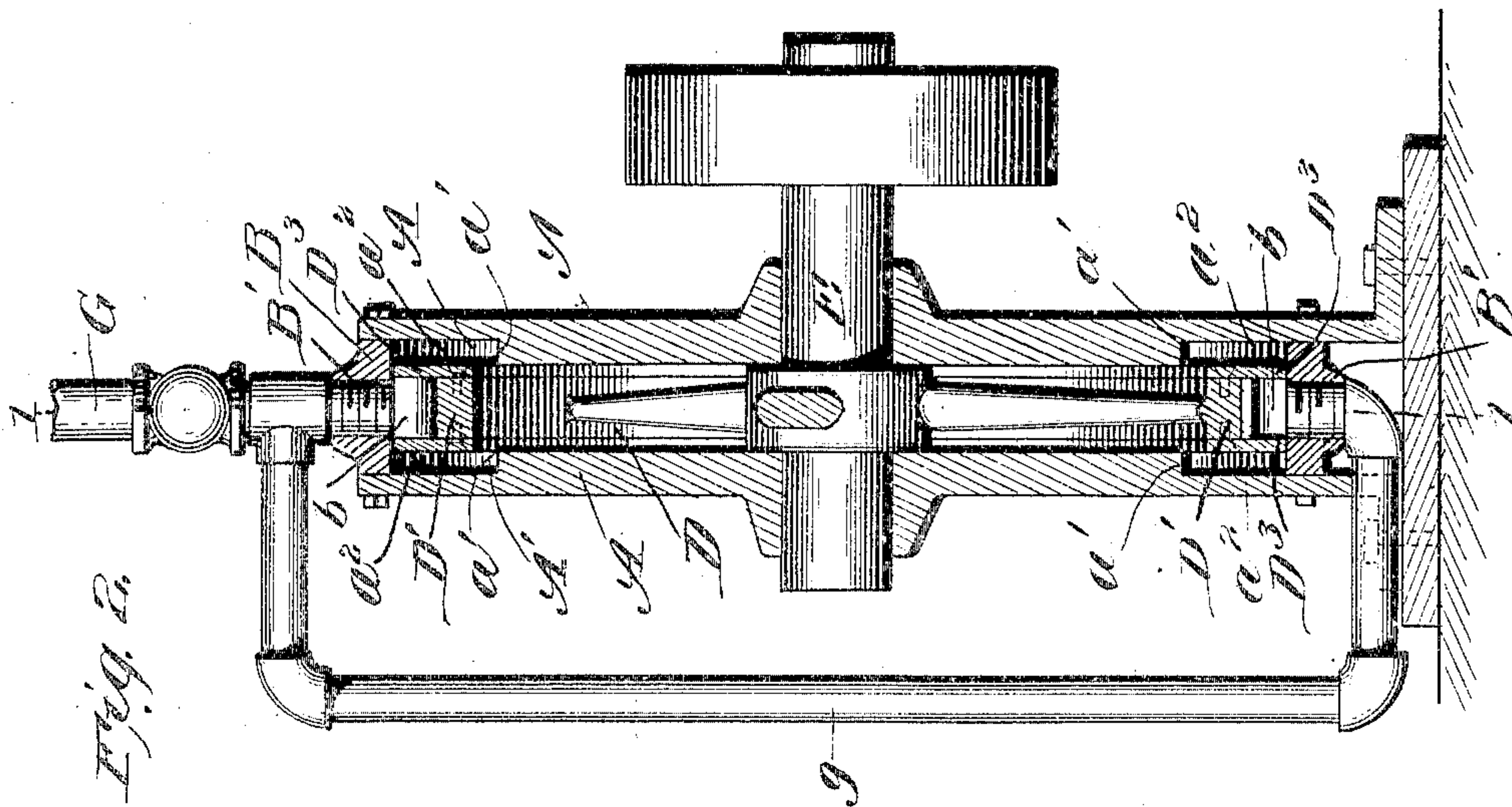
No. 789,630.

PATENTED MAY 9, 1905.

S. S. SADORUS.  
ROTARY ENGINE.

APPLICATION FILED SEPT. 13, 1904.

3 SHEETS—SHEET 1.



WITNESSES:

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*Perry B. B. B.*

INVENTOR

*Samuel S. Sadorus.*

BY

*Munn & Co.*  
ATTORNEYS



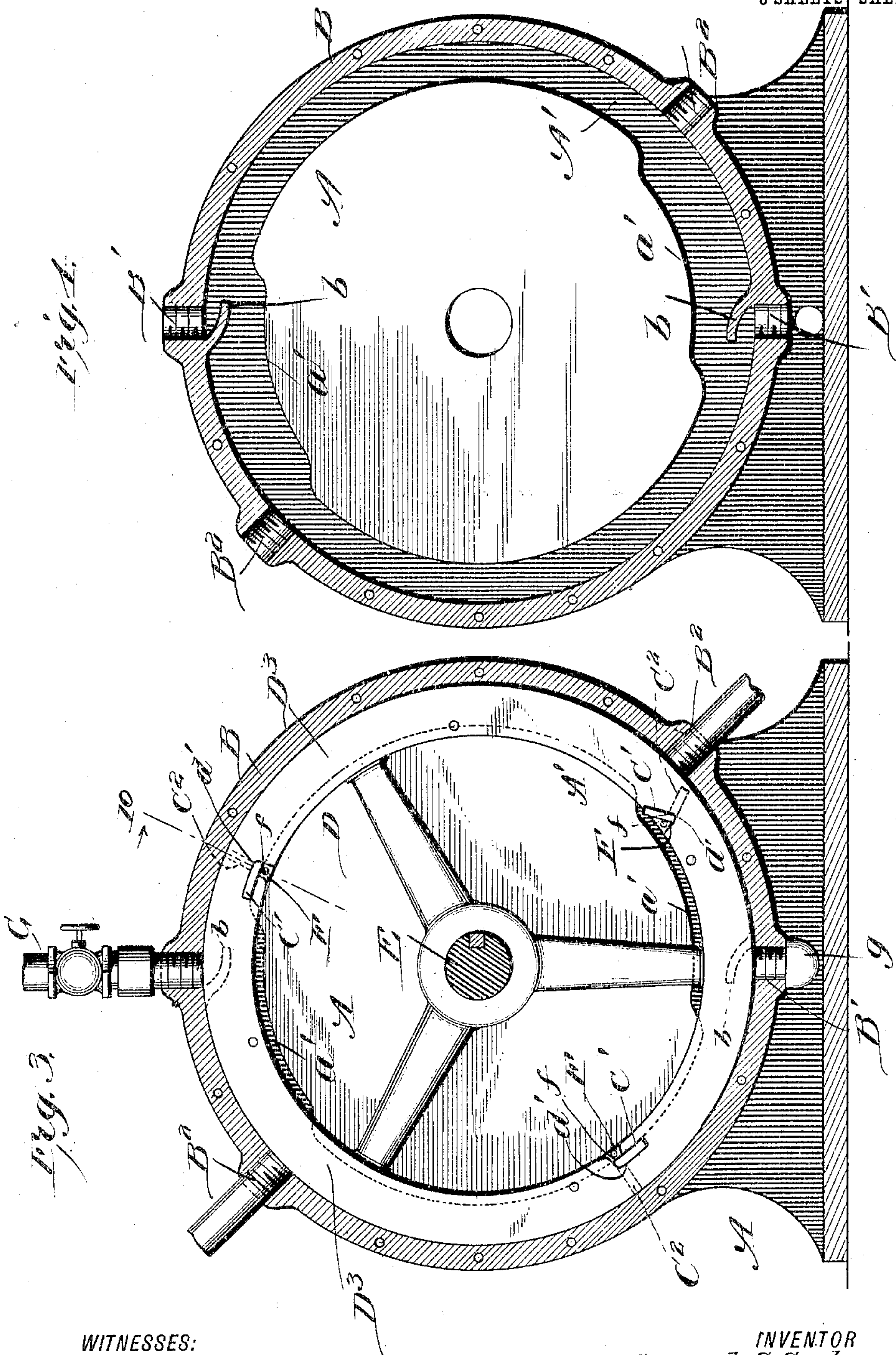
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3 SHEETS-SHEET 2.



WITNESSES:

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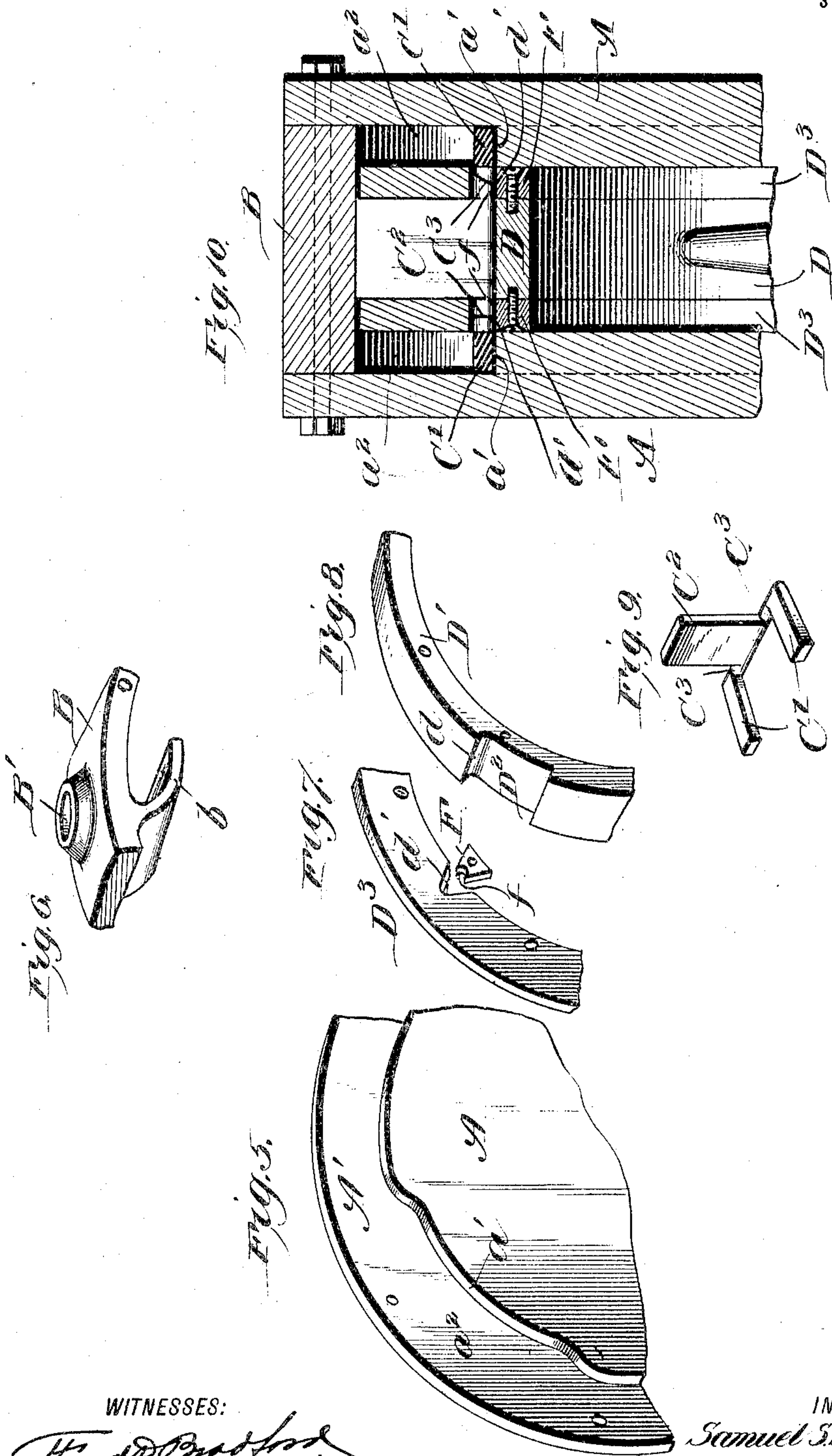
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3 SHEETS—SHEET 3.



WITNESSES:

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## UNITED STATES PATENT OFFICE.

SAMUEL S. SADORUS, OF SARILDA, IDAHO.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 789,630, dated May 9, 1905.

Application filed September 13, 1904. Serial No 224,267.

*To all whom it may concern:*

Be it known that I, SAMUEL S. SADORUS, a citizen of the United States, and a resident of Sarilda, in the county of Fremont and State of Idaho, have made certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention is an improvement in rotary engines; and it consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a transverse section of the engine on about line 1 1 of Fig. 2. Fig. 2 is a cross-section on about line 2 2 of Fig. 1. Fig. 3 is a side view of the engine with one of the side plates of the casing removed. Fig. 4 is a detail side elevation of the inner face of one of the side plates of the casing. Fig. 5 is a detail perspective view of the inner side of a portion of one of the side plates of the casing. Fig. 6 is a detail perspective view of a portion of the rim-plate of the casing, showing one of the abutments. Fig. 7 is a detail perspective view of a portion of one of the side flanges of the piston. Fig. 8 is a detail perspective view of a portion of the rim of the piston. Fig. 9 is a detail perspective view of one of the piston-heads, and Fig. 10 is a detail cross-section, enlarged, on about line 10 10 of Fig. 3.

In carrying out my invention I employ a casing having side plates A A and a rim-plate B, the latter being provided at B' with steam-inlets and adjacent thereto with abutments b, exhaust-ports B<sup>2</sup> being suitably provided, as best shown in Fig. 1 of the drawings.

The side plates A are suitably secured to the rim B, and these plates A are provided on their inner sides with the outwardly-facing track A', which is depressed at a' adjacent to the steam inlets and exhausts to permit the operation of the piston-heads in passing between the exhausts B<sup>2</sup> and the abutments B' and in passing said abutments in the operation of the engine, as will be more fully described hereinafter. The formation of these tracks A' provide at the outer edges of the plates A, adjacent to the rim B, annular recesses a<sup>2</sup>, in which operate the crank-arms C' of the piston-heads C. These piston-

heads C consist each of a blade C<sup>2</sup>, the crank-arms C' at the opposite sides of said blade C<sup>2</sup>, and the trunnion or shaft portions C<sup>3</sup>, which connect the inner ends of the blade C<sup>2</sup> with the crank-arms C' at the inner end of the latter, as best shown in Fig. 9 of the drawings. These piston-heads are formed with the blades, crank-arms, and shafts and trunnions integral, and this is preferred, because thereby I avoid any loosening of the parts because of defects or wear in the joints and retain the parts C' and C<sup>2</sup> permanently in the desired relation.

The piston D may be suitably secured to the shaft E and has its rim D' provided in its outer face with the recesses D<sup>2</sup>, which are of such size and shape as to receive the blades C<sup>2</sup> of the piston-heads C when the latter are folded down to position to pass the abutments b of the casing in the operation of the engine. At one end the recesses D<sup>2</sup> are slightly rounded at d to form seats or bearings, in which the piston-heads rock from open to closed position, both such positions being shown in Fig. 3 of the drawings. The piston is also provided at the opposite sides of its rim with flanges D<sup>3</sup>, which are secured to the opposite sides of the rim D' and are provided opposite the seats d of the rim D' with bearings d' for the trunnions C<sup>3</sup> of the piston-heads C. It will be noticed that these bearings d' are formed by slots extending from the inner edges of the rim-plates D<sup>3</sup>. This is important, as it facilitates assembling the parts D', D<sup>3</sup>, and C by permitting the application of the side flanges D<sup>3</sup> to the rim D' after the heads C have been applied to such rim, the crank-arms C' of the piston-heads passing through the slots d' in the flange-plates D<sup>3</sup>. By preference I provide filling-blocks F for closing the outer ends of the slots d' after the flange-plates have been secured to the rim, such filling-blocks F having curved seats f at their ends to fit the trunnions C<sup>3</sup>, and thus forming boxes for the said trunnions, the plates F being secured to the rim D', as will be understood from Figs. 7 and 10 of the drawings.

By preference I provide the two steam-inlets B' and corresponding exhausts B<sup>2</sup> and



provide in connection with the steam-feed pipe G a branch pipe *g*, which conducts the feed-steam to the lower inlet-port B', as best shown in Fig. 2 of the drawings.

- 5 In the operation of the engine the steam delivered at the feed-ports will operate between the adjacent abutments *b* and the piston-blades in advance thereof and drive the piston in the direction indicated by the arrow in Fig. 1, the track *a'* operating upon the crank-arms C' of the pistons to hold the same across the steam-space in the position shown at the upper portion of Fig. 1 until the piston reaches the exhaust-port, as shown at the right in the lower portion of Fig. 1, when the cut-away portion *a* of the track will permit the piston-head to tilt, so steam or the like will not be compressed between the same and the abutment which it approaches, and the blade may also be seated in its recess *d*<sup>2</sup> as it passes such abutment and will again be brought to position to receive the impact of the steam admitted at the lower feed-port, and the operation will proceed as before.
- 25 The construction is simple and economical, easily constructed and assembled, and will be found to operate advantageously in the manner described.

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

1. The improvement in rotary engines herein described comprising a casing having its side plates provided on their inner sides near their outer edges with outwardly-facing tracks having depressed portions, and the piston having a rim provided in its outer side with recesses for the blades of the piston-heads and rounded at one end of said recesses to form seats for the said heads, the flange-plates secured to the rim of the piston and provided opposite the rounded seats of the rim-recesses with slots extending from their inner edges and formed at their inner ends with seats for the trunnions of the piston-heads, the piston-heads having the blades, outwardly-projecting trunnions at the inner ends of the blades and the crank-arms projecting from the outer ends of said trunnions and

operating outside of the flange-plates and in position to engage the outwardly-facing tracks on the side plates of the casing, and the filling-plates secured within the slots of the flange-plates and forming boxes for the trunnions of the piston-heads substantially as set forth.

2. In a rotary engine a piston having a rim provided with recesses for the blades of the piston-heads, the piston-heads having the integral blades, crank-arms at the opposite sides thereof and trunnions connecting said crank-arms with the inner ends of the blades, and the flange-plates secured to the opposite sides of the piston-rim and provided with slots extending outwardly from their inner edges and adapted to pass over the crank-arms of the piston-heads and form seats for the connecting-trunnions of such heads substantially as set forth.

3. The combination in a rotary engine of the casing having side plates provided at their inner faces with the outwardly-facing tracks for the crank-arms of the piston-heads, the piston operating in the casing and having its rim provided with recesses for the blades of the piston-heads, the piston-heads having the integral blades, trunnions or shafts and crank-arms, the flange-plates secured to the opposite sides of the rim of the piston and provided with slots extending from their inner edges and forming passages for the crank-arms of the piston-heads, substantially as set forth.

4. The combination in a rotary engine with the piston-rim provided in its outer face with recesses forming seats for the blades of the piston-heads, of the piston-heads having the integral blades, shafts and trunnions and the flange-plates secured to the opposite sides of the piston-rim and having slotted openings for the passage of the crank-arms in assembling the rim-flange plates and piston-heads substantially as set forth.

SAMUEL S. SADORUS.

Witnesses:

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A. L. BROMER.