

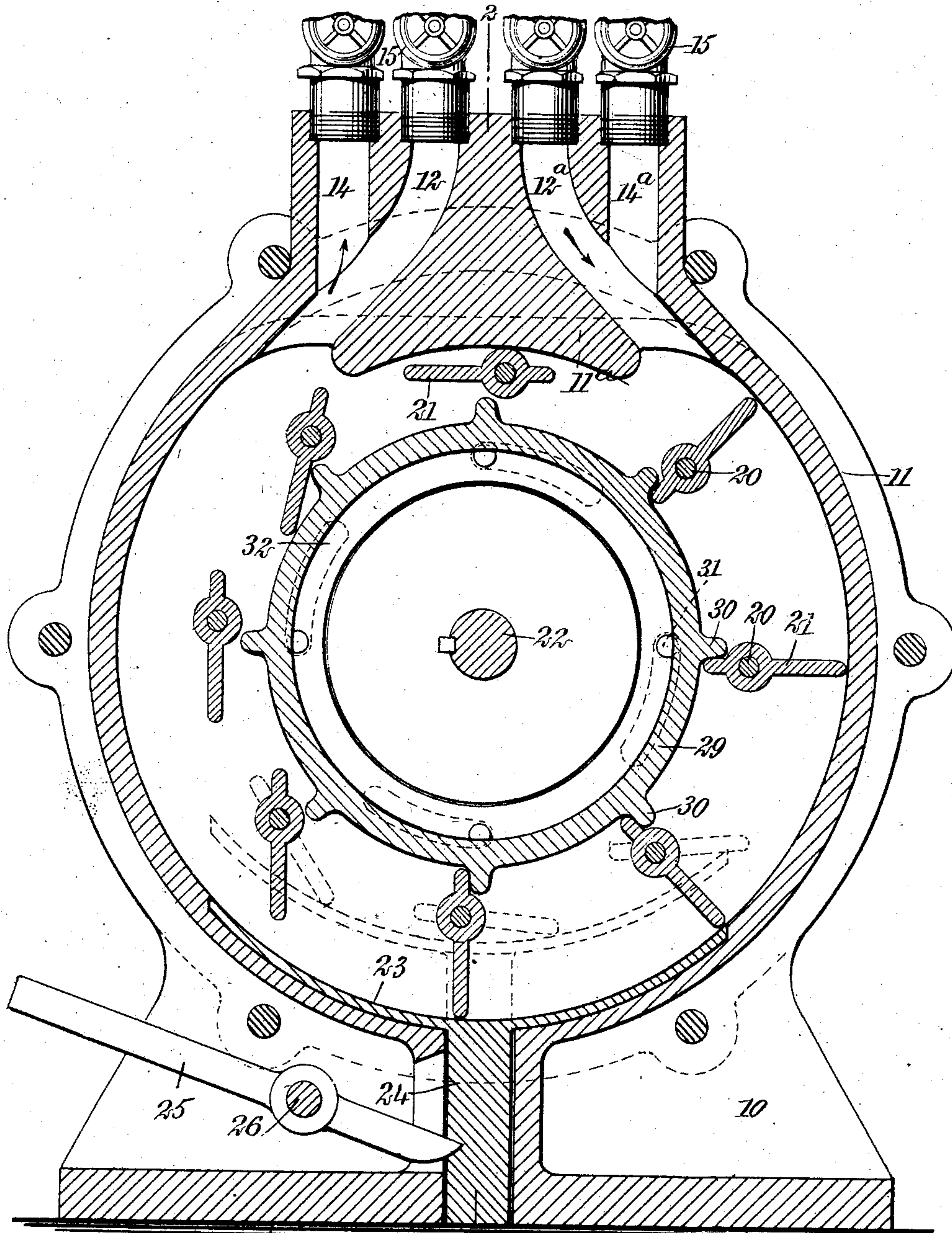
No. 854,141.

PATENTED MAY 21, 1907.

T. S. BARWIS.
ROTARY ENGINE.

APPLICATION FILED AUG. 2, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

John A. Bampton

Isaac B. Owens

Fig. 1

INVENTOR

Thomas S. Barwis

BY *Mum & Co*

ATTORNEYS

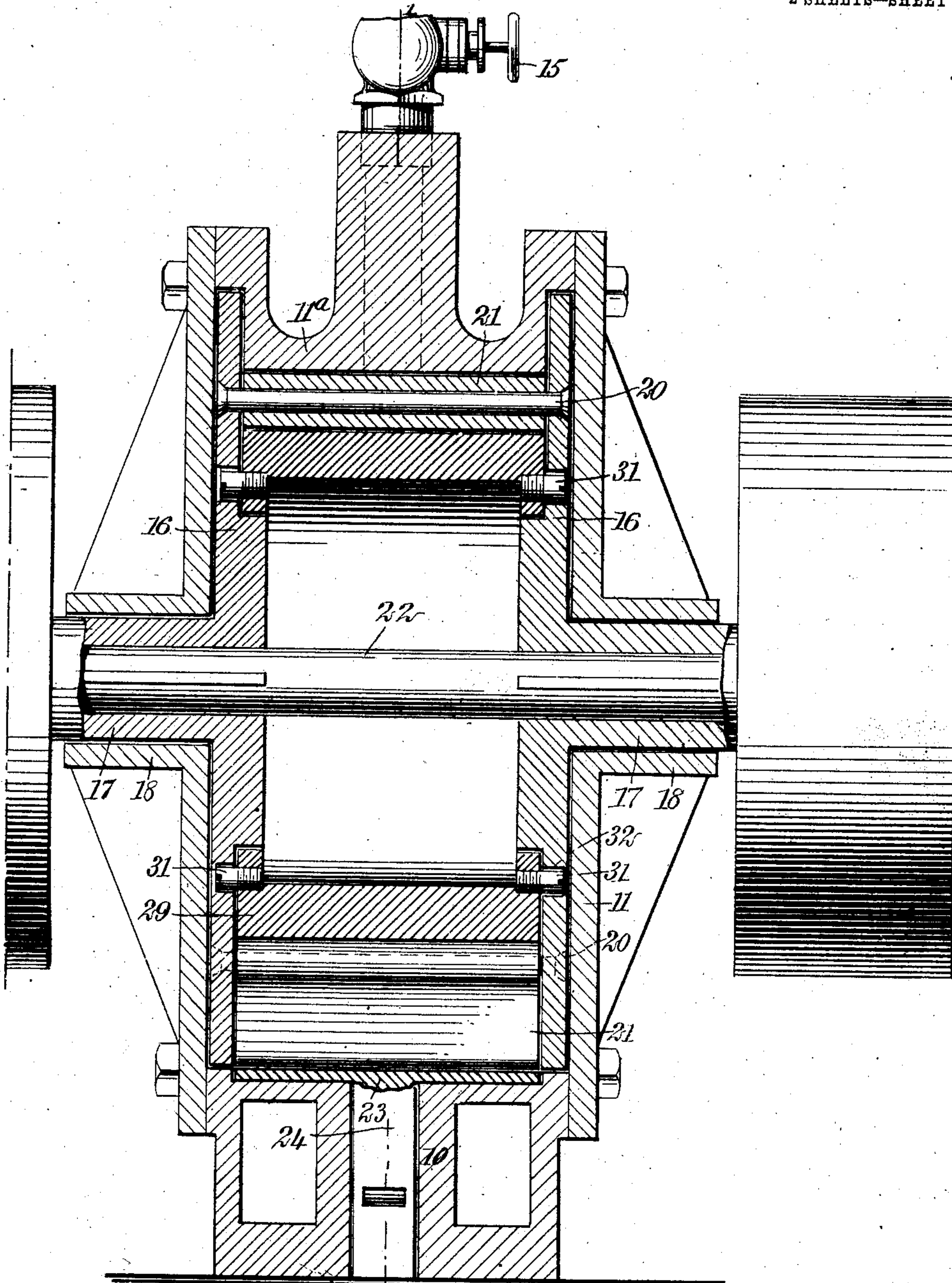
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WITNESSES:

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Fig. 2

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UNITED STATES PATENT OFFICE.

THOMAS S. BARWIS, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

ROTARY ENGINE.

No. 854,141.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed August 2, 1906. Serial No. 328,836.

To all whom it may concern:

Be it known that I, THOMAS S. BARWIS, a subject of the King of Great Britain, and a resident of Vancouver, in the Province of British Columbia and Dominion of Canada, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

This invention is an improved rotary engine or turbine, having for an object to simply improve this class of engines generally, and provide for the quick reversal of the same when desired.

With this in view the invention consists of a cylindrical casing in which is journaled a revoluble drum, carrying blades subject to the pressure of the working fluid and having a shiftable member or part automatically operable to change the direction of rotation.

This invention resides in certain special features of construction, which will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings which illustrate as an example the preferred embodiment of my invention, in which drawings

Figure 1 is a vertical section of the invention on the line 1—1 of Fig. 2; and Fig. 2 is a section on the line 2—2 of Fig. 1.

10 indicates the base of the engine or turbine, on which the cylindrical casing 11 is mounted. The casing is provided with two admission ports 12 and 12^a, and two exhaust ports 14 and 14^a controlled by independent valves 15, which may be of any desired form. The admission ports 12 and 12^a pass tangentially into the cylinder toward opposite sides thereof, and the exhaust ports communicate with the admission ports at points adjacent to the opening of said ports into the interior of the casing. The revoluble member or drum comprises circular side members 16, which have tubular trunnions 17, revolvably mounted in bearings 18 on the casing, and a cylinder 29 having teeth 30. As shown, the side members 16 are reduced in diameter for a portion of their width on their opposed faces, for receiving the cylinder 29, and are provided with a series of concentric slots 32, equally spaced apart and equal in number to the teeth 30.

A number of pins 31 are threaded into or otherwise secured at each side of the cylinder, and pass into the slots 32, thereby permitting said cylinder to have a limited sliding

movement on the side members. Extending between said side members 16 in the annular space at the outside of the cylinder, are rods 20 which serve as pivots for the wings 21 as well as tie rods. The wings 21 are mounted on the rods in such a way that the arms of the wings outward from the rods are longer than the arms inward of the rods, and said wings are free to move around the rods 20 as indicated in Fig. 1. The casing has in its upper portion an inward projection or depressed portion 11^a which extends in between the outer portion of the side members 16 of the revoluble member and which forces the wings 21 to assume the horizontal position shown in Fig. 1, as said wings pass under the inwardly projecting part of the casing.

A central shaft 22 passes through the tubular trunnions 17 and is keyed or otherwise secured to them as illustrated in the drawings. A shoe 23 at the bottom portion of the casing and directly opposite to the depressed portion 11^a, is seated in a recess as shown in Fig. 1, and is provided with a stem 24 depending through the base 10. For operating this stem and shoe a lever 25, pivoted at some suitable point as at 26, engages at its inner end with a notch in the stem, which admits of the elevation and depression to normal position of the shoe, when desired.

In the operation of the engine or turbine, assuming that the parts are in the position shown in Fig. 1 and that steam is admitted through the port 12^a, as indicated by the arrow, this steam will act on the wings 21, causing the drum to turn, by reason of the engagement of the short arms of the wings with the teeth 30 as each of said wings passes under the depressed portion 11^a. The central portion of the next adjacent wing to the left and its coöperating tooth 30, which is under said depressed portion, acts as an abutment and prevents the escape of the steam in this direction. As each compartment between the wings is filled with steam, it is revolved until it is opposite the exhaust 14 where it is discharged, the wings at this point being turned on their pivots by the depressed portion 11^a to a horizontal position, as indicated in Fig. 1. If it is wanted to suddenly reverse, the lever 25 is operated to elevate the shoe 23, and the steam port 12^a and the exhaust port 14 are cut off, and the ports 12 and 14^a are opened. The wings 21 then turn on their pivots, most of them through the action of gravity, and those

which will not turn by gravity do so under the action of the shoe, and the momentum of the cylinder 29 carries it forward relative to the side members 16, until the pins 31 reach the opposite ends of the slots 32. The teeth 30 have then shifted their position, and are in place to be engaged at their opposite sides when the wings again swing to close the compartments between them. The shoe is preferably held in an elevated position until the steam is on in this reverse direction and the wings have made a complete revolution to insure their proper shifting, after which the shoe is dropped and the operation of the engine takes place in the reverse direction in like manner.

Although I have described the invention in detail, it is to be understood that the precise embodiment is not material, provided its essential characteristics are carried out as pointed out in the annexed claims.

Having thus described the preferred form of my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an engine, the combination of a casing having admission and exhaust ports, a drum operating therein, comprising side members connected to turn together, a cylinder extending between the side members and having movement relative thereto, wings pivotally mounted between the side members, teeth carried by the cylinder and adapted to be engaged by the wings, for the purpose specified, and means permitting the relative shifting of the cylinder.

2. In an engine, the combination of a casing having admission and exhaust ports, a drum operating therein, comprising side members connected to turn together, a cylinder extending between the side members and having movement relative thereto, wings pivotally mounted between the side members, teeth carried by the outer side of the cylinder and adapted to be engaged by the wings, for the purpose specified, and means permitting the relative shifting of the cylinder.

3. A rotary engine having a casing with admission and exhaust ports, a revoluble member operating in the casing, wings pivotally mounted on the revoluble member, and means coacting with the wings to prevent pivotal movement in one direction, said

means being adjustable to reverse the direction of pivotal movement of the wings, whereby to permit the reversal of the engine.

4. A rotary engine having a casing with admission and exhaust ports, a drum operating therein and formed of two relatively movable members, wings pivotally mounted on one of said members of the drum and engaging the other member, whereby to permit the wings pivotal movement in one direction only, said second member of the drum being adjustable to reverse the direction of pivotal movement of the wings for the purpose described.

5. A rotary engine having a casing with admission and exhaust ports, a drum operating therein and formed of two relatively movable members, wings pivotally mounted on one of said members and engaging the other member, whereby to permit the wings pivotal movement in one direction only, said second member of the drum being adjustable to reverse the direction of pivotal movement of the wings, and a shoe for assisting in said pivotal movement as described.

6. A rotary engine having a casing with admission and exhaust ports, a drum operating therein and comprising side members with a relatively movable cylinder extending between them, wings pivotally mounted between the side members and engaging said cylinder, and means for shifting the cylinder relatively to the wings, for the purpose specified.

7. A rotary engine having a casing with admission and exhaust ports, a drum operating therein, and comprising side members, and a relatively shiftable cylinder extending between the side members, wings pivotally mounted between said side members, the pivots of the wings being adjacent to the inner edges thereof, and the cylinder having teeth adapted to engage the inner portions of the wings, and means for moving the cylinder relatively to the side members.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS S. BARWIS.

Witnesses:

L. EDWIN DUDLEY,
N. C. SAWERS.