

(No Model.)

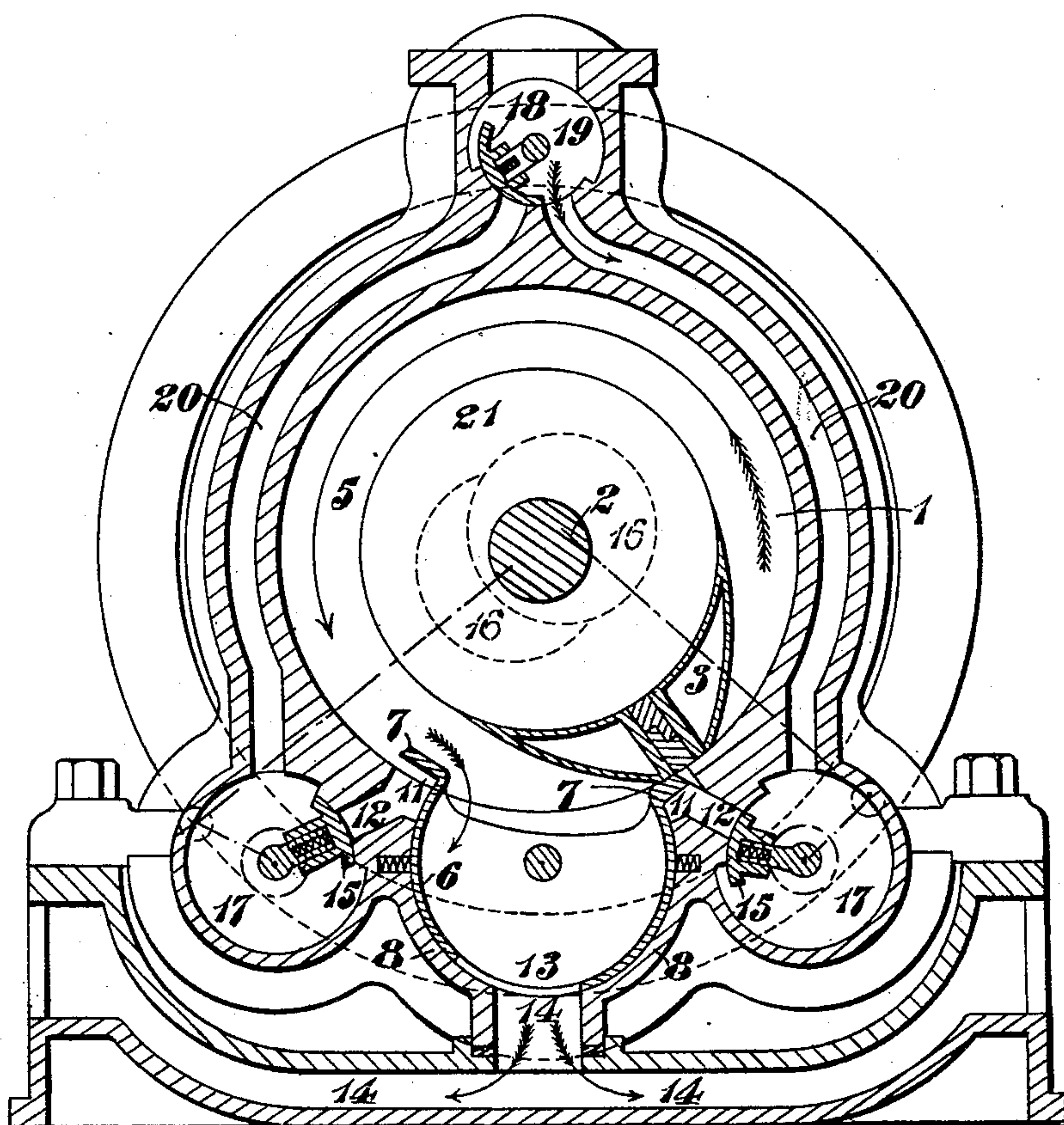
2 Sheets—Sheet 1.

E. TOWLSON.
ROTARY FLUID PRESSURE ENGINE.

No. 481,441.

Patented Aug. 23, 1892.

Fig. 1.



Witnesses
Geo. C. Frick,
Asst. A. Fitzgerald

Inventor
Edward Towlson
Paterson & Nesbitt attys

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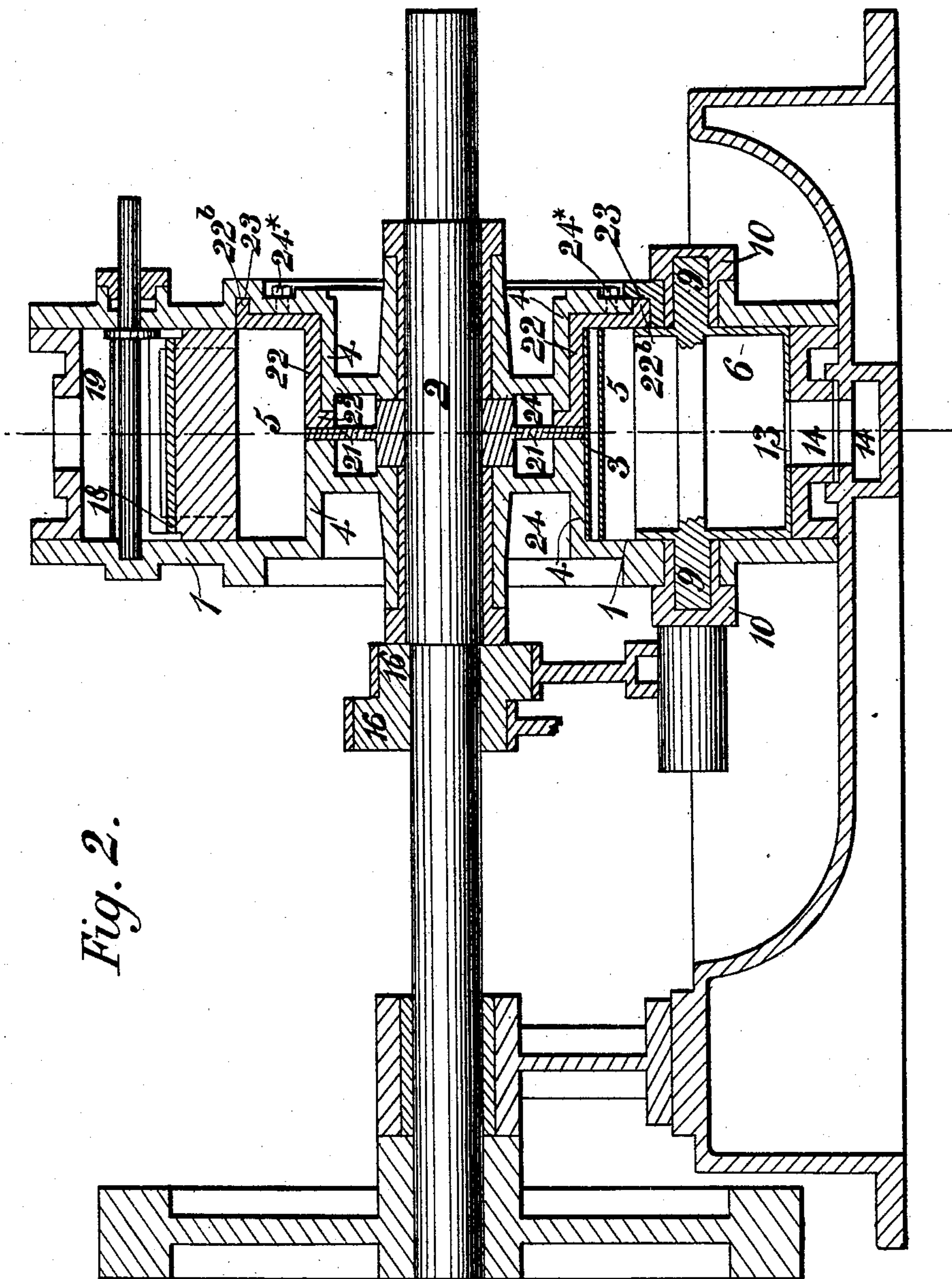


Fig. 2.

Witnesses
Geo. C. Truch
Robt. A. Fitzgerald

Inventor
Edward Towolson
Pattison Nesbit atty

UNITED STATES PATENT OFFICE.

EDWARD TOWLSON, OF NORWICH, ENGLAND, ASSIGNOR TO THE ROTARY
ENGINE SYNDICATE, LIMITED, OF SAME PLACE.

ROTARY FLUID-PRESSURE ENGINE.

SPECIFICATION forming part of Letters Patent No. 481,441, dated August 23, 1892.

Application filed April 16, 1892. Serial No. 429,476. (No model.) Patented in Belgium March 18, 1892, No. 98,897.

To all whom it may concern:

Be it known that I, EDWARD TOWLSON, a subject of the Queen of Great Britain and Ireland, residing at St. Michaels, at Coslany, in the city and county of Norwich, England, have invented Improvements in Rotary Fluid-Pressure Engines, Applicable also as Pumps, (for which Letters Patent of Belgium were granted March 18, 1892, No. 98,897, for the same invention to the Rotary Engine Syndicate, Limited,) of which the following is a specification.

This invention has reference to an improved construction of reversible rotary fluid-pressure engine applicable also as a pump.

In order that the nature of the said invention may be fully understood and that it may be readily carried into effect, I will proceed to describe the same with reference to the accompanying drawings, in which—

Figures 1 and 2 are vertical sections, taken in planes at right angles to each other, of an engine according thereto.

1 is a cylinder, within which there is mounted on a shaft 2 a piston 3, adapted to travel around hollow inwardly-projecting bosses 4 in an annular space 5 between the said bosses and the walls of the cylinder, as in the construction of engine forming the subject of another application for patent filed by me, dated September 18, 1891, Serial No. 406,133. 6 is an oscillating abutment having the form of a portion of a hollow cylinder with lips or projections 7. It is mounted to oscillate in an appropriately-formed seat 8 and is provided with trunnions 9, carried by bearings 10. This abutment opens into the annular space 5 and its lips or projections 7 are adapted to enter as it oscillates recesses 11 in connection with the steam-inlet ports 12. In the abutment there is an opening 13, that communicates with the exhaust 14 at all times. Each inlet-port 12 is controlled by a suitable oscillating or rocking valve 15, worked by an eccentric 16, steam being admitted to the chamber 17 of one or other of these valves, according to the direction in which the engine is to run, by a hand-operated valve 18, preferably of the oscillating type, as shown. This latter valve acts as a starting, reversing, or stop valve, as may be from time to time required, and be-

tween its chambers 19 and those 17 of the other valves there are passages 20 in the wall of the cylinder, which is thus to a certain extent steam-jacketed.

The piston is made inclined on each side, as shown, and is carried by a disk or collar 21, mounted on the engine-shaft 2. Around the hollow bosses 4 may advantageously be arranged, as shown at the right-hand side of the center line in Fig. 2, cylindrical packing rings or sleeves 22, which are flanged at their ends. The inner flanges 22^a bear against the disk or collar 21, and the outer flange is let in flush with the side wall of the cylinder and is itself formed with a flange 22^b at its outer edge, this latter flange taking into a corresponding recess 23 in the cylinder-wall.

The packing rings or sleeves are provided with suitable means—such as set-screws 24^x—for tightening them up against the disk 21 and piston side.

At each side of the disk 21 is a chamber 24, formed by the walls of the cylinder. This chamber is practically steam-tight. The steam entering the cylinder past one or other of the inlet-valves 15 acts on the corresponding lip or projection 7 of the abutment 6 and forces it inward into close contact first with the piston and then with the hollow bosses 4 or the packing rings or sleeves 22 thereon when these are used. With the valve 18 in the position shown, then on admitting steam and opening the valve 15 the piston will rotate in the direction of the arrow. If the position of the valve 18 be reversed, so as to admit steam to the left-hand passage 20, and the left-hand valve 15 be opened, the piston will rotate in the opposite direction.

What I claim is—

1. In a rotary engine, the combination of a cylinder, bosses fixed centrally therein, a driving-shaft provided with a collar, extending between said bosses, a piston arranged to partly surround said bosses and carried by said collar, a hollow oscillating abutment formed with an exhaust-opening, cut-off valves located in chambers, one at each side of said abutment, a hand-operated valve serving as a starting, stopping, and reversing valve, and fluid-supply passages for connecting the steam-chamber containing said starting, stop-

ping, and reversing valve with each of the chambers containing said cut-off valves, substantially as described.

2. In a rotary engine, the combination of a
5 cylinder, bosses fixed centrally therein, a driving-shaft provided with a collar, extending between said bosses, a piston arranged to partly surround said bosses and carried by said collar, a hollow oscillating cylindrical
10 abutment formed with an exhaust-opening and with lips or projections, supply-passages having their inner ends each formed to receive one of said lips or projections, oscillating cut-off valves arranged one at each side of said
15 abutment and adapted to control one of said supply-passages, eccentrics on said driving-shaft for actuating said cut-off valves, a hand-operated oscillating valve, and steam-supply passages formed in the wall of said cylinder
20 and connecting the chamber containing the hand-operated valve with each of the chambers containing said cut-off valves, substantially as described.

3. In a rotary motor, the combination of a
25 cylinder, bosses fixed centrally therein, a pis-

ton 3, carried by a collar 21, arranged between said bosses and fixed to a driving-shaft extending through said bosses, a hollow cylindrical abutment 6, mounted to rock in a bearing 8, provided with lips or projections 7 and
30 having an exhaust-opening 13, inlet-passages 12, oscillating cut-off valves 15, each mounted within a chamber 17 and arranged one at each side of said abutment, eccentrics fixed to said driving-shaft for operating said cut-
35 off valves, an oscillating valve 18, mounted in a chamber 19, passages 20, connecting said chamber 19 with each of said chambers 17, and an exhaust-passage in communication with the interior of said abutment, substan-
40 tially as herein described.

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

EDWARD TOWLSON.

Witnesses:

SYDNEY ROGERS HARDY,
Solicitor, Norwich.

W. T. STURGESS,
St. Michaels, Coslany, Norwich.