

No. 736,865.

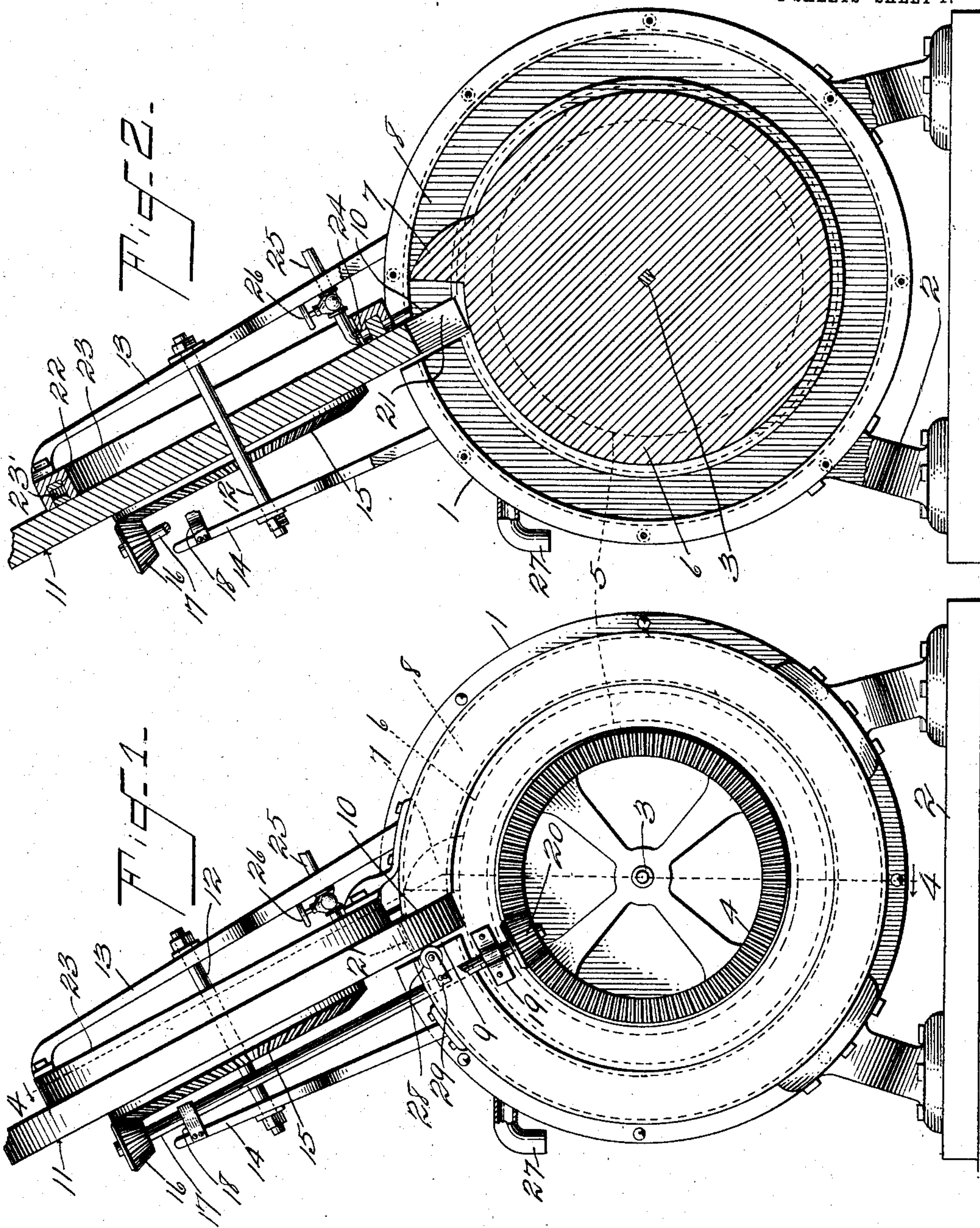
PATENTED AUG. 18, 1903.

R. B. MORDEN.
ROTARY ENGINE.

APPLICATION FILED FEB. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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L. Hilton

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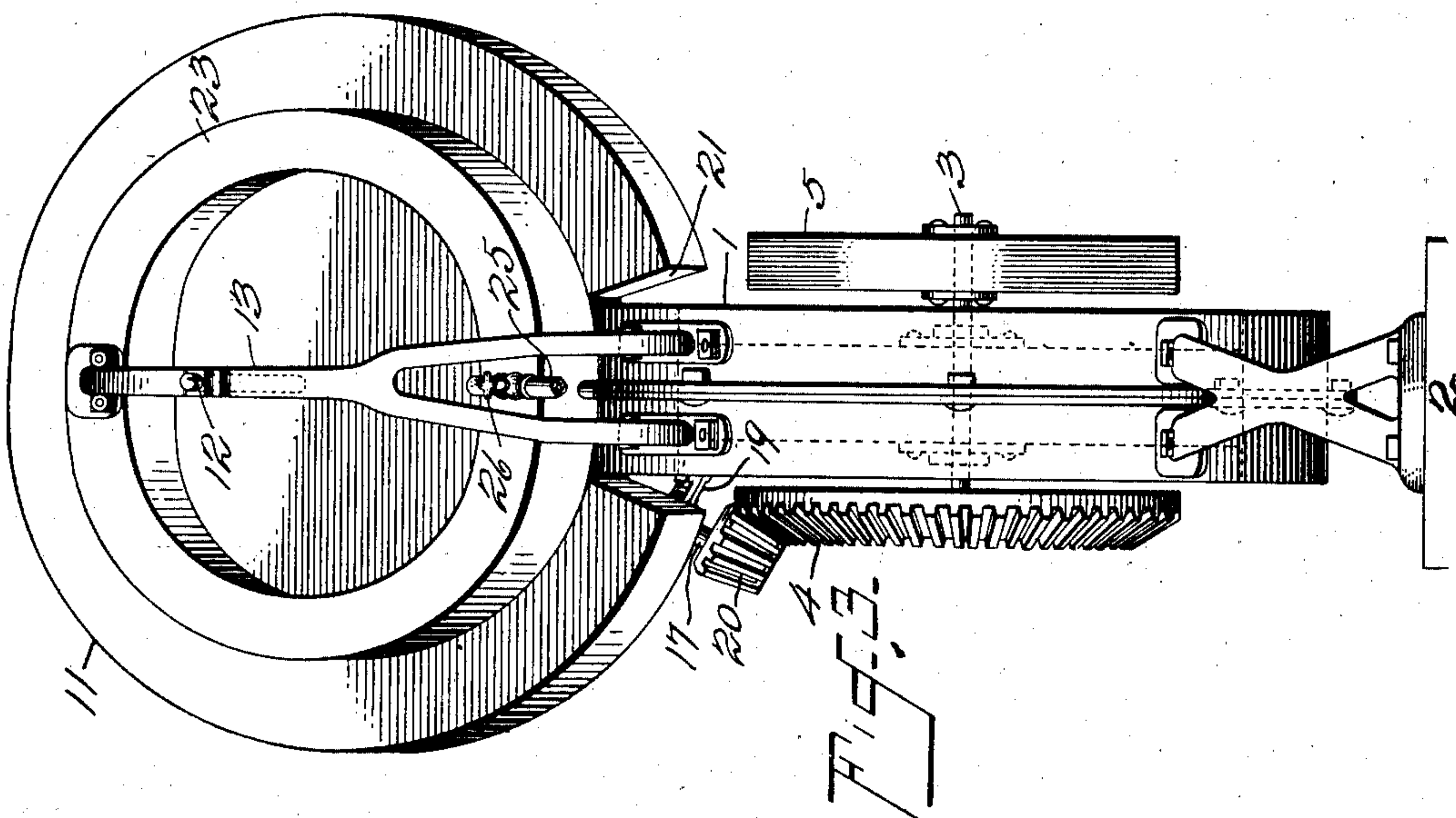
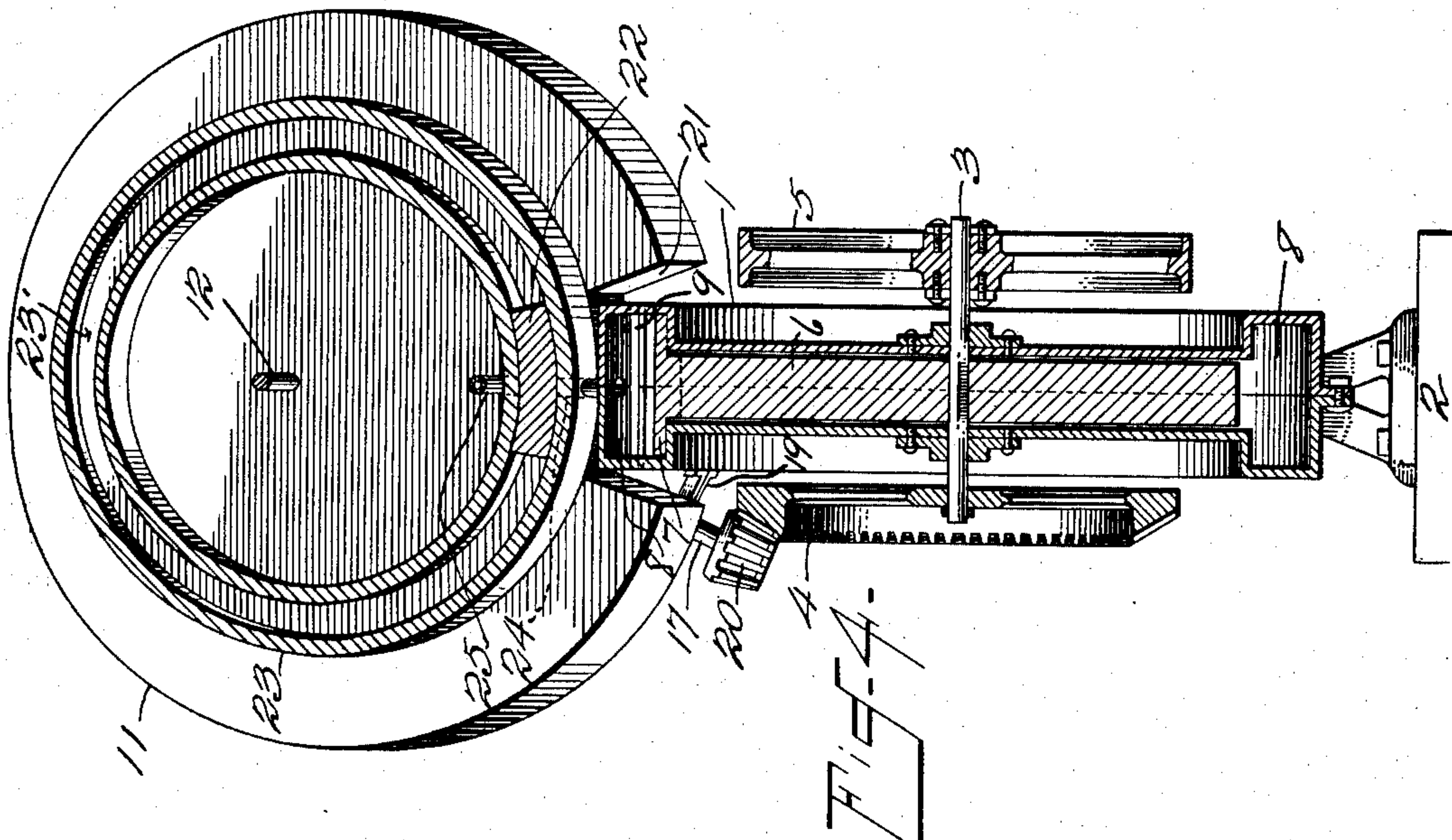
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UNITED STATES PATENT OFFICE.

ROBERT B. MORDEN, OF JEFFERSON, IOWA, ASSIGNOR OF ONE-HALF TO
ARTHUR W. FRANKLIN, OF JEFFERSON, IOWA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 736,865, dated August 18, 1903.

Application filed February 12, 1903. Serial No. 143,105. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. MORDEN, a citizen of the United States, residing at Jefferson, in the county of Greene and State of Iowa, have invented certain new and useful Improvements in Rotary Engines; and I do 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.

The invention relates to improvements in rotary engines of the concentric-piston type.

The object of the invention is to produce an engine of this character which is simple in construction, durable in use, efficient and powerful in operation, and comparatively inexpensive of production.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of the improved engine. Fig. 2 is a central vertical longitudinal sectional view through the same. Fig. 3 is an end elevation. Fig. 4 is a sectional view taken on the plane indicated by the line 4 4 of Fig. 1.

Referring to the drawings, the numeral 1 denotes the cylinder casing or shell, preferably formed of two half-sections bolted together and secured upon a suitable base 2. In the walls of said casing is journaled the shaft 3, upon one end of which, without the casing, a beveled gear 4 is secured, and upon the opposite end the fly-wheel or band-wheel 5 is fastened. Upon the square portion of said shaft, within the casing 1, is secured the rotary piston 6, which is formed with a projecting wing or blade 7. Said blade is of greater width than the piston and travels in a circular chamber 8, formed in an enlargement of the casing. As shown at 9, a portion of this enlargement is cut away, and the chamber 8 at this point is adapted to be closed by the rim 10 of a rotary circular disk 11. This disk or wheel 11, which extends crosswise the casing and acts as a valve to close the chamber 8, is secured upon a shaft 12, journaled in brackets 13 and 14, mounted upon the top of

the casing 1. Upon one side of said disk is formed a beveled gear 15, which is equal in size to the gear 4. A beveled pinion 16, meshing with said gear 15, is secured upon the upper end of a shaft 17, journaled in bearings 18, formed upon the bracket 13, and in bearings formed in a bracket 19, secured to one side of the casing. Upon the lower end of the shaft 17 is secured a beveled pinion 20, which is equal in size to the pinion 16 and which meshes with the beveled gear 4 upon the shaft 3. It will thus be observed that by means of this gearing the disk 11 will be driven at the same speed as the piston 6.

A portion of the rim 10 of the disk 11 is cut away, as shown at 21, and the movements of the piston and disk are so timed that the cut-away portion 21 of the disk will open the chamber 8 to permit the wing or blade 7 upon the piston to pass the cut-away portion 9 of the chambered enlargement of the casing.

Upon the side or face of the disk 11 opposite to that upon which the beveled gear 15 is secured an annular rib 22 is formed which coacts with a channeled or grooved ring 23, supported by the bracket 14. This rib 22 is formed with a slot 23', which extends almost entirely around said rib and affords communication between the inlet-passage 24 in the ring 23 and casing 1 and the supply-pipe 25. The portion of said annular rib 22 opposite the cut-away portion 21 of the disk 11 is solid, as indicated at 22', to prevent the inlet of steam or other motive agent used from the supply-pipe 25 through the inlet-passage 24 into the chamber 8 while said chamber is opened by the cut-away portion of the disk.

The supply-pipe 25 is provided with a throttle-valve 26, by means of which the speed of the engine may be regulated. The exhaust for the engine is shown at 27. It will be understood that suitable packing may be provided to effect steam-tight connections between all the moving parts. In order to insure a perfect contact between the opening in the chamber 8 and the rim 10 of disk 11 and to relieve the pressure, friction-rollers 28 are provided upon each side of the casing to bear upon the disk 11. These rollers are journaled in adjustable brackets 29, secured upon the sides of the casing.

In the operation of the engine when the throttle-valve 36 is opened steam or any other motive agent used is admitted through the slot 23' and inlet-passage 24 into the chamber 8 between the rim 10 of the disk 11 and the wing or blade 7 of the piston 6. The pressure of the steam and the expansion of the same will cause said piston to rotate. Steam will be admitted continuously until the solid portion of the rib 22 closes communication between the supply-pipe and inlet-passage 24, and at this point the wing or blade 7 will pass the exhaust-port 27 to permit the steam in the chamber 8 to exhaust. As previously described, owing to the gearing between the rotary valve-disk 11 and the piston 6 the cut-away portion of the disk will permit the blade or wing of the piston to pass through the same, and an instant later steam will again be admitted into the chamber 8, and the operation previously described will be repeated.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. A rotary engine comprising a cylinder formed with a chamber having an inlet and exhaust, a rotary piston provided with a wing or blade adapted to coact with said chamber, a rotary disk geared to said piston and adapted to open and close said chamber between the exhaust and inlet, and a slotted rib upon said disk adapted to control the inlet of steam to said chamber, substantially as described.

2. A rotary engine comprising a cylinder formed with a circular chamber having an inlet and exhaust and an open portion between said inlet and exhaust, a rotary piston provided with a wing or blade adapted to travel in said chamber, a rotary disk formed with a cut-away portion and adapted to enter said open portion of the chamber to open and close the same, gearing between said disk and piston, and a slotted rib upon said disk adapted to open and close the inlet to the chamber, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBERT B. MORDEN.

Witnesses:

T. A. MUGAN,
CHAS. HALEY.