

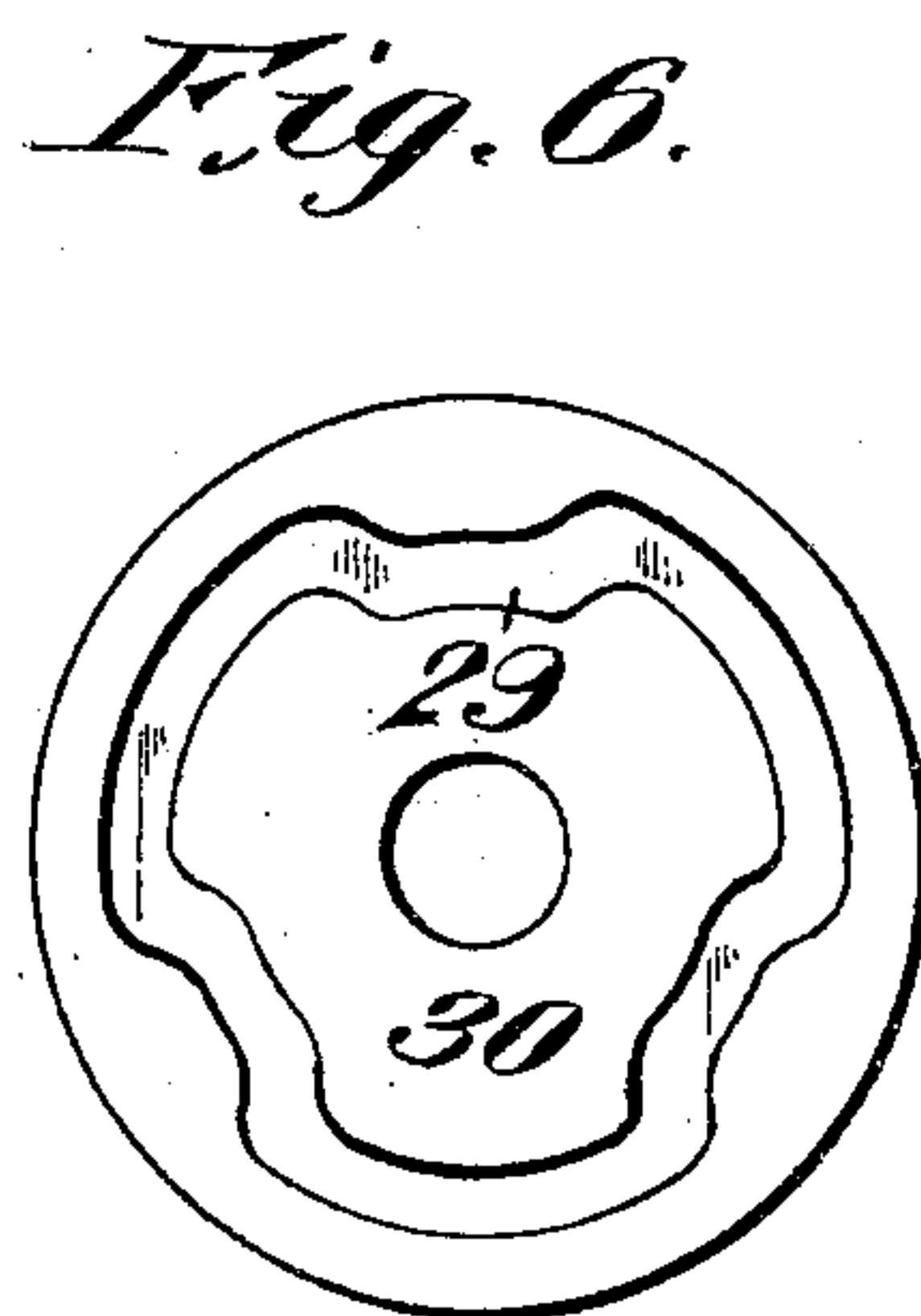
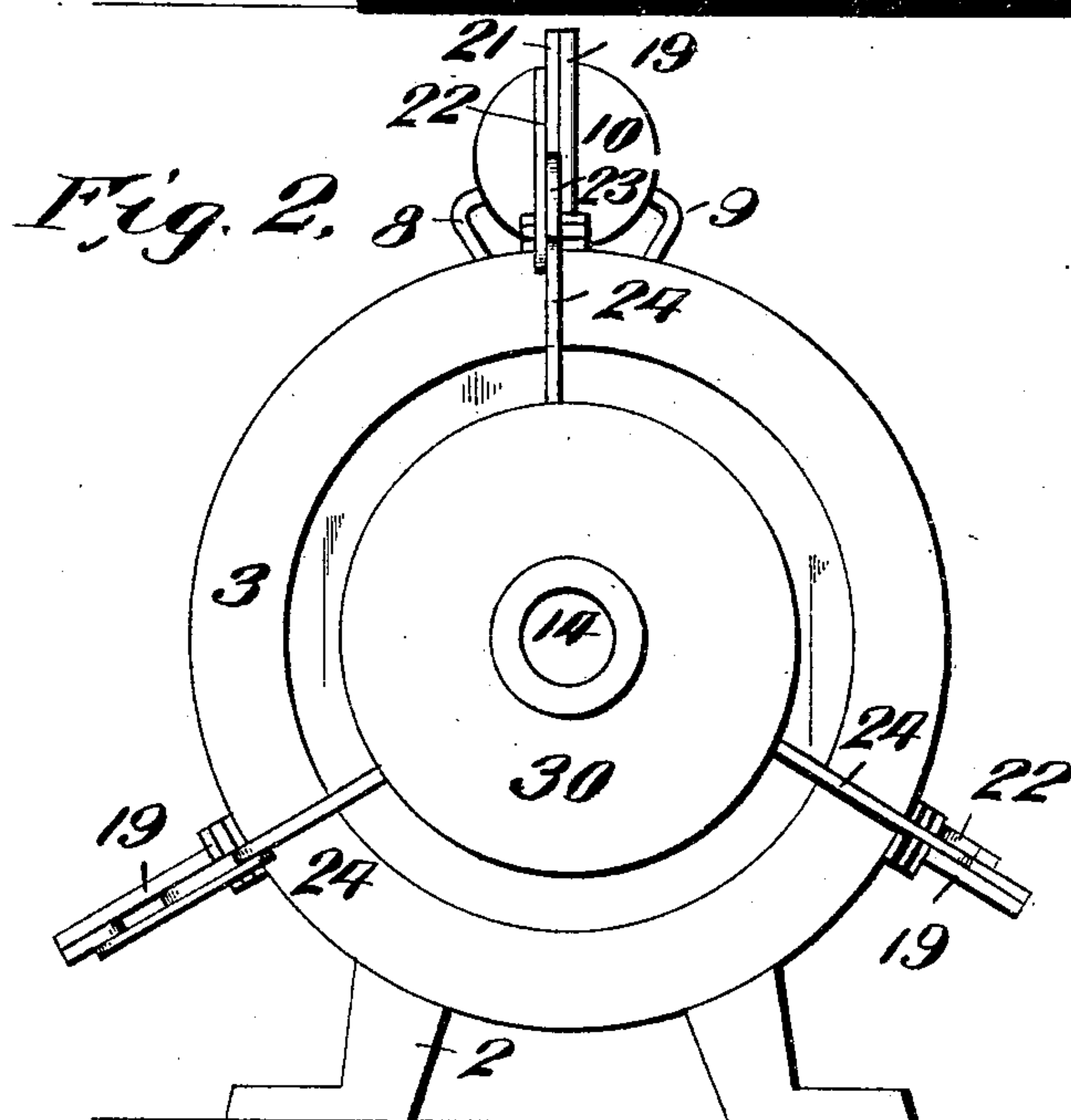
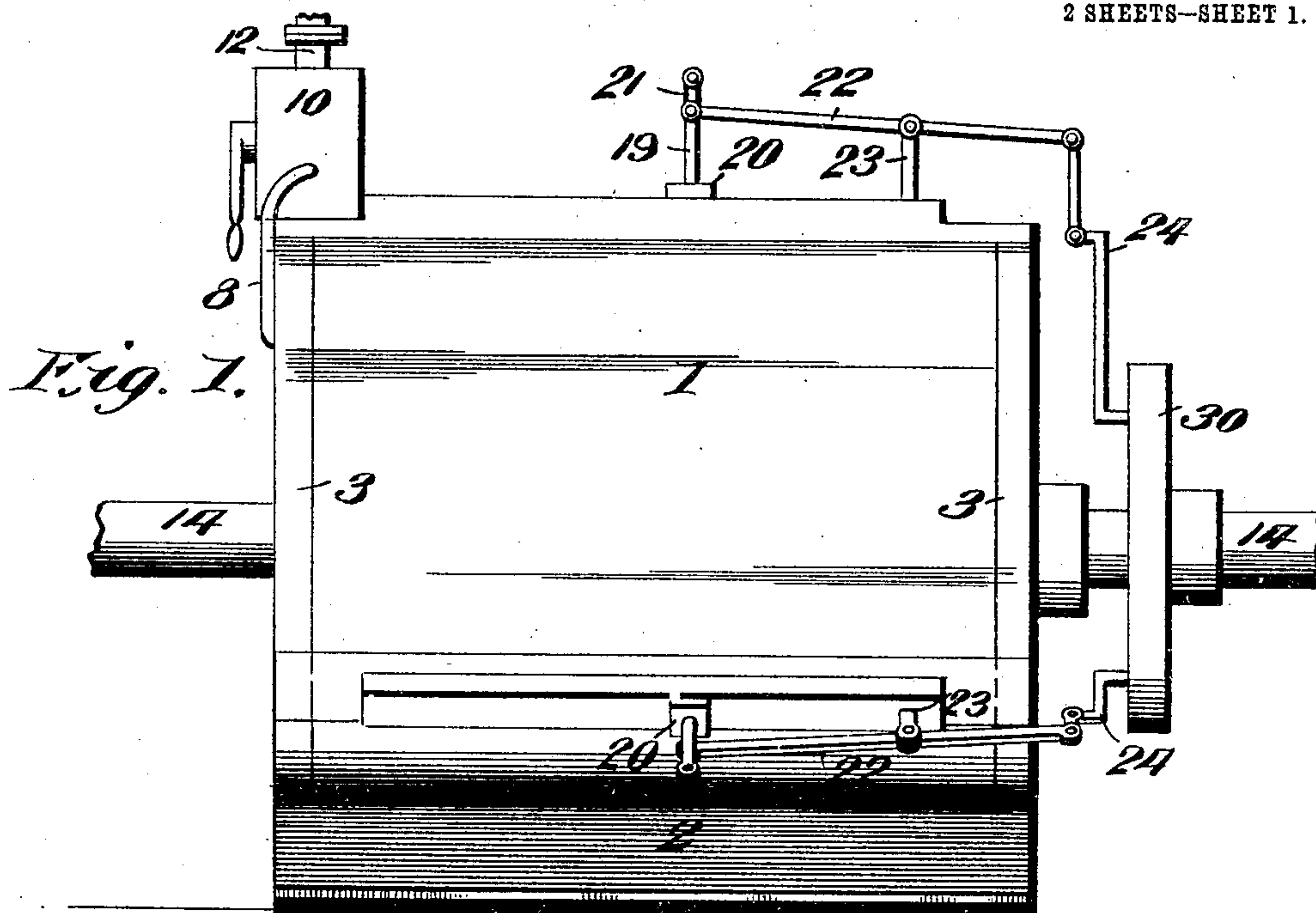
No. 814,126.

PATENTED MAR. 6, 1906.

J. FOWLER.
ROTARY ENGINE.

APPLICATION FILED JUNE 26, 1905.

2 SHEETS—SHEET 1.



Witnesses

Thos. W. Riley.
L. H. Giesbauer.

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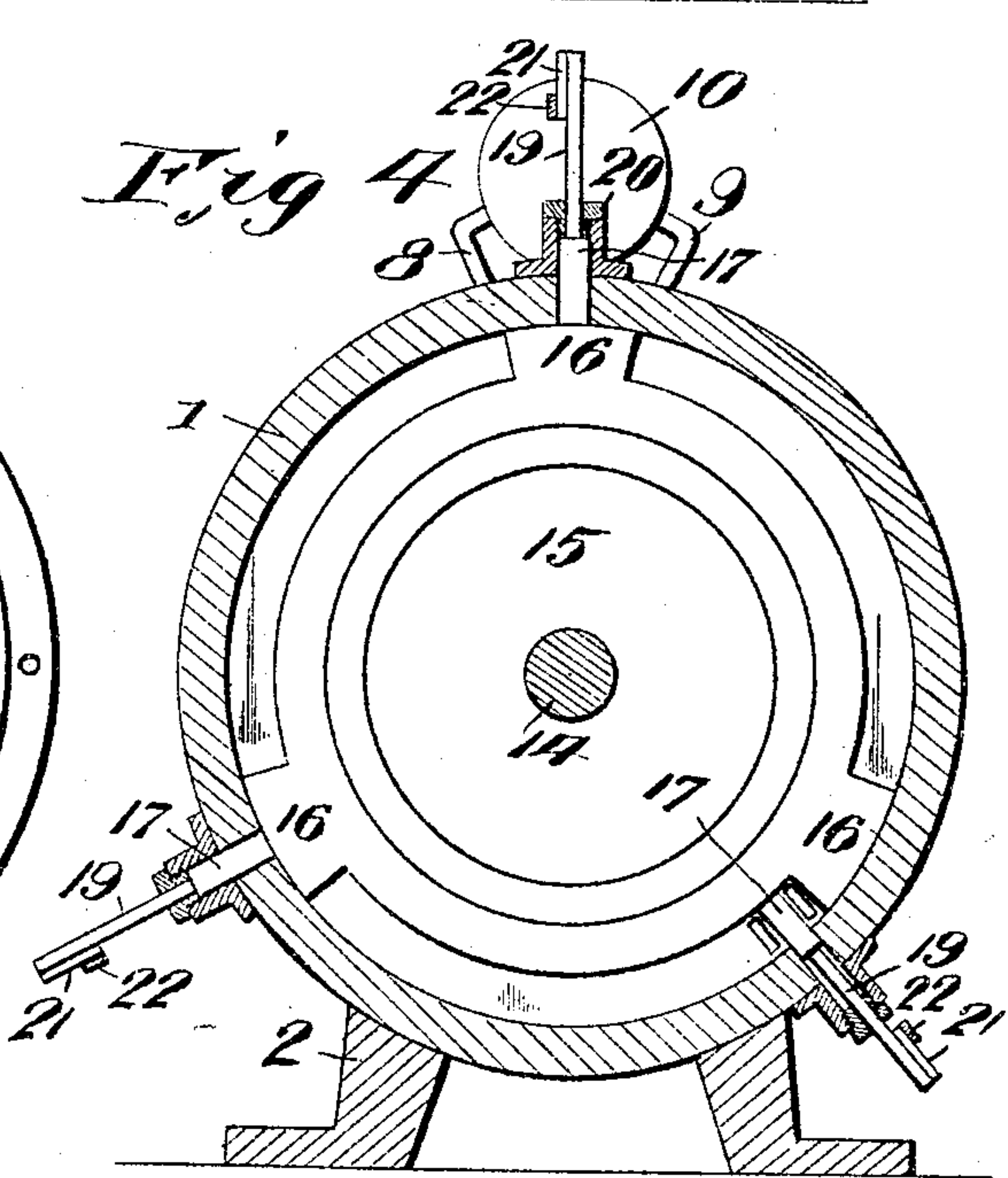
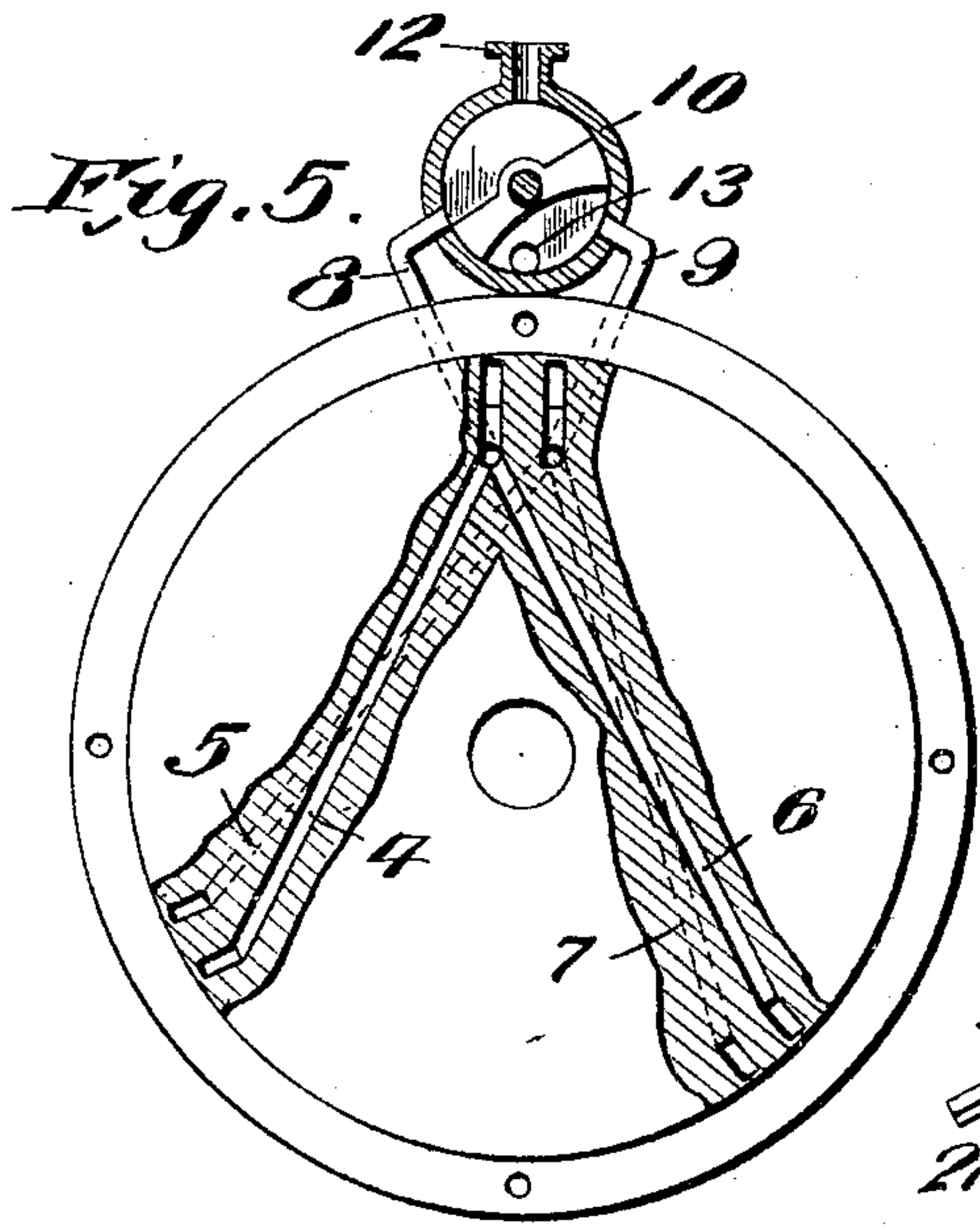
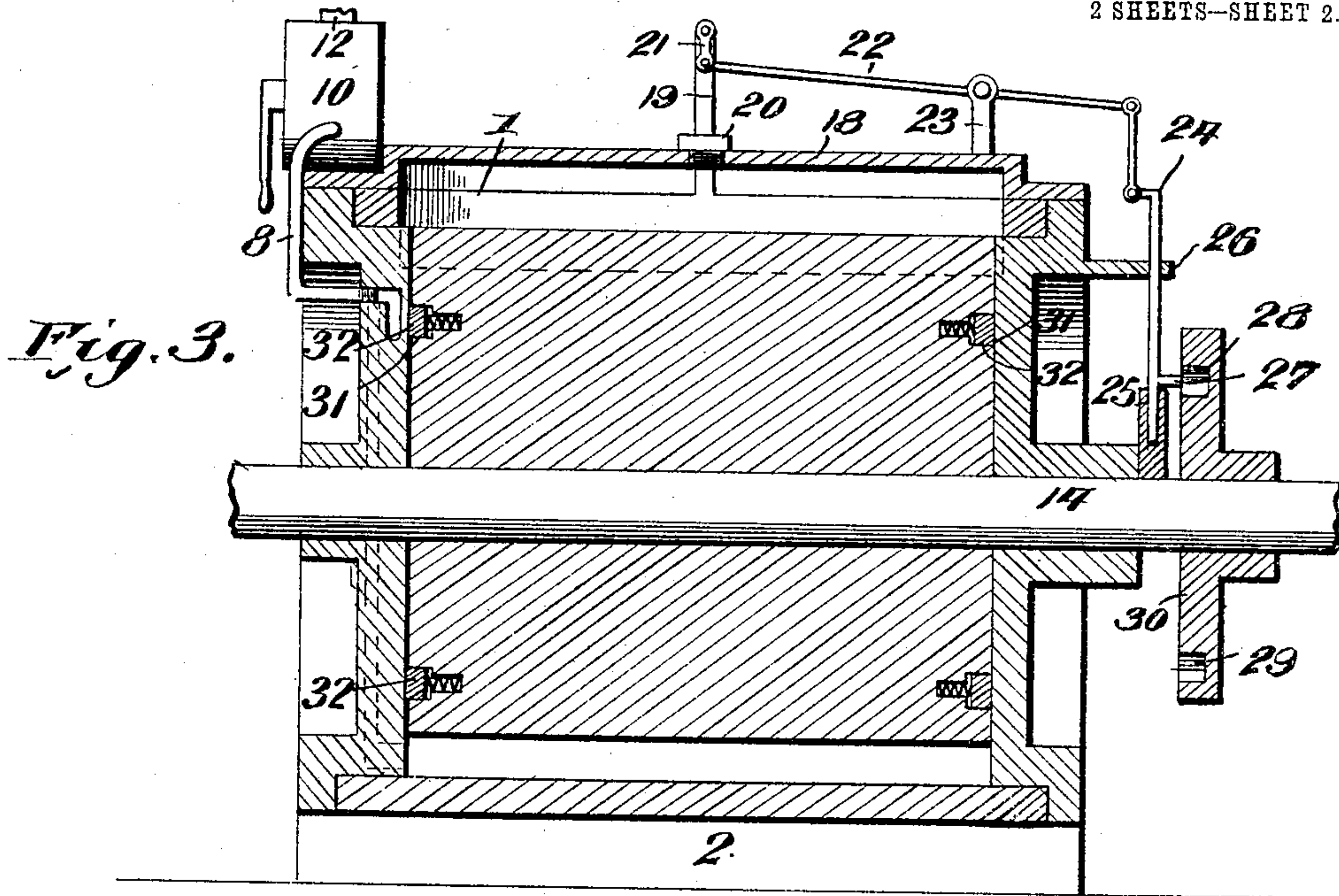
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Witnesses

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UNITED STATES PATENT OFFICE.

JOHN FOWLER, OF JACKSONVILLE, FLORIDA.

ROTARY ENGINE.

No. 814,126.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed June 26, 1905. Serial No. 267,088.

To all whom it may concern:

Be it known that I, JOHN FOWLER, a citizen of the United States, residing at Jacksonville, in the county of Duval and State of Florida, 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.

This invention relates to improvements in rotary engines.

The object of the invention is to provide an engine of this character which will be simple, strong, and durable in construction, consisting of comparatively few parts, which are adapted to operate in such a manner that a continuous motion and a maximum amount of power will be obtained from the engine, means being provided whereby the movement of the engine may be quickly and easily reversed.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of an engine constructed in accordance with the invention. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical longitudinal sectional view. Fig. 4 is a vertical transverse sectional view. Fig. 5 is an inside view, partly in section, of one of the cylinder-heads, showing the arrangement of the steam inlet and exhaust passages and ports therein and the rotary controlling-valve; and Fig. 6 is an inner side view of the cam-disk for operating the abutment-gates.

Referring more particularly to the drawings, 1 denotes the cylinder of an engine, which is mounted upon a suitable base 2. The cylinder 1 is provided with heads 3, in one of which is arranged steam inlet and exhaust passages 4 and 5, which communicate with inlet and exhaust ports 6 and 7, also formed in said head adjacent to the inner wall of the cylinder. The inlet-ports 6 and 7 are preferably arranged adjacent to each other at the ends of the inlet and exhaust passages and adjacent to the inner wall of the cylinder, as hereinbefore described. With the passages 4 and 5 are connected steam supply and exhaust pipes 8 and 9, the opposite ends of which are connected to a rotary

controlling-valve 10, arranged upon said head of the cylinder. The controlling-valve 10 is also provided with a main steam-supply pipe 12 and an exhaust-pipe 13. By turning the valve 10 in one direction or the other live steam may be let into either of the pipes 8 or 9, thus permitting the engine to be driven in one direction or the other, as will be understood.

In the cylinder 1 is revolubly mounted a concentrically-disposed shaft 14, on which is secured a concentrically-arranged piston 15. On the piston 15 at equal distances apart are formed radially-disposed wings 16, of which there may be any suitable number, three of said wings being shown in the present instance as the preferred number employed in connection with the engine. The wings 16 are of such width that when opposite the inlet and exhaust ports in the head of the cylinder said ports will be covered and closed thereby. Slidably mounted in the cylinder at equal distances apart are radially-disposed abutment-gates 17, which are adapted to be reciprocated to project and retract the same into and out of the cylinder at the proper time to permit the passage of the wings 16 on the revolving piston. On the outer sides of the cylinder 1 are secured radially-disposed casings 18, adapted to receive the outer portions of the abutment-gates 17 when the same are in their retracted position. On the gates 17 are arranged concentrically-disposed outwardly-projecting rods 19, which pass through stuffing-boxes 20, arranged on the casings 18. To the outwardly-projecting rods 19 are pivotally connected short links 21, to the free ends of which are connected levers 22. The levers 22 are pivotally mounted in the outer ends of radially-projecting bracket-arms 23, and to the opposite ends of said levers 22 are pivotally connected the upper ends of operating-rods 24, the inner ends of which are slidably mounted in sockets 25, secured to the adjacent head of the cylinder, said rods also passing through side brackets 26, projecting laterally from said head. On the rods 24, adjacent to the inner ends of the same, are formed laterally-projecting right-angularly-disposed arms 27, on the outer ends of which are journaled antifriction-rollers 28, adapted to be engaged with a cam-groove 29, formed on the inner side of an operating-disk 30, which is secured to the drive-shaft 14, as shown, whereby said shaft revolves the oper-

ating-rods 24, and the levers 22 will be actuated at the proper time to project and retract the abutment-gates 17 to permit the passage of the piston-wings. The arrangement of the abutment-gates 17 is such that when the same are in their projected position they will extend between the inlet and exhaust ports of the cylinder-head, thereby separating said ports, so that the inlet-ports will be between one side of said gates and the piston-wing, and the exhaust-ports will be between the opposite sides of the abutment-gates and the approaching piston-wing, whereby live steam entering the inlet-ports will expand against said side of the abutment-gates and the adjacent piston-wing, thus driving said piston at the same time the steam between the opposite side of the abutment-gates and the approaching piston-wing will be forced through the exhaust-port on this side of the abutment-gates. In the opposite ends of the piston is formed a concentrically-disposed annular groove or channel 31, in which is arranged a spring-projecting packing-ring 32, which is adapted to be forced outwardly into engagement with the inner walls of the cylinder-heads to prevent the entrance of steam between said ends of the piston and the walls of said cylinder-heads.

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

1. In a rotary engine, the combination with the cylinder having inlet and exhaust pas-

sages and inlet and exhaust ports formed in one head of the cylinder, of a concentrically-disposed revolubly-mounted piston arranged in said cylinder, radially-disposed wings formed on said piston, radially-disposed, reciprocating abutment-gates arranged in said cylinder to slide between said inlet and exhaust ports, casings arranged on said cylinder to receive said gates when in their retracted position, and means to retract and project said gates, substantially as described.

2. In a rotary engine, the combination with the cylinder having inlet and exhaust passages and inlet and exhaust ports formed in one head of the cylinder, of a concentrically-disposed drive-shaft revolubly mounted in said cylinder, a concentrically-disposed piston fixedly mounted on said shaft, spring-projected packing-rings arranged in the ends of said piston, radially-projecting wings formed on said piston to engage the side walls of said cylinder, abutment-gates slidably mounted in the sides of said cylinder to project between said inlet and exhaust ports in the head of the cylinder, a disk fixedly mounted on said drive-shaft, said disk having formed in one side a cam-groove, pivoted levers connected to said abutment-gates, jointed operating-rods connected to said levers, guide-sockets to receive the inner ends of said rods, a right-angularly-projecting arm formed on each of said rods and means whereby said arms are adapted to have an antifrictional engagement with the cam-groove in said disk to actuate said rods and levers, and thereby reciprocate said abutment-gate at the proper time, substantially as described.

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

JOHN FOWLER.

Witnesses:

H. J. CASSIDEY,
E. R. HEDSTROM.