No. 888,033. PATENTED MAY 19, 1908.

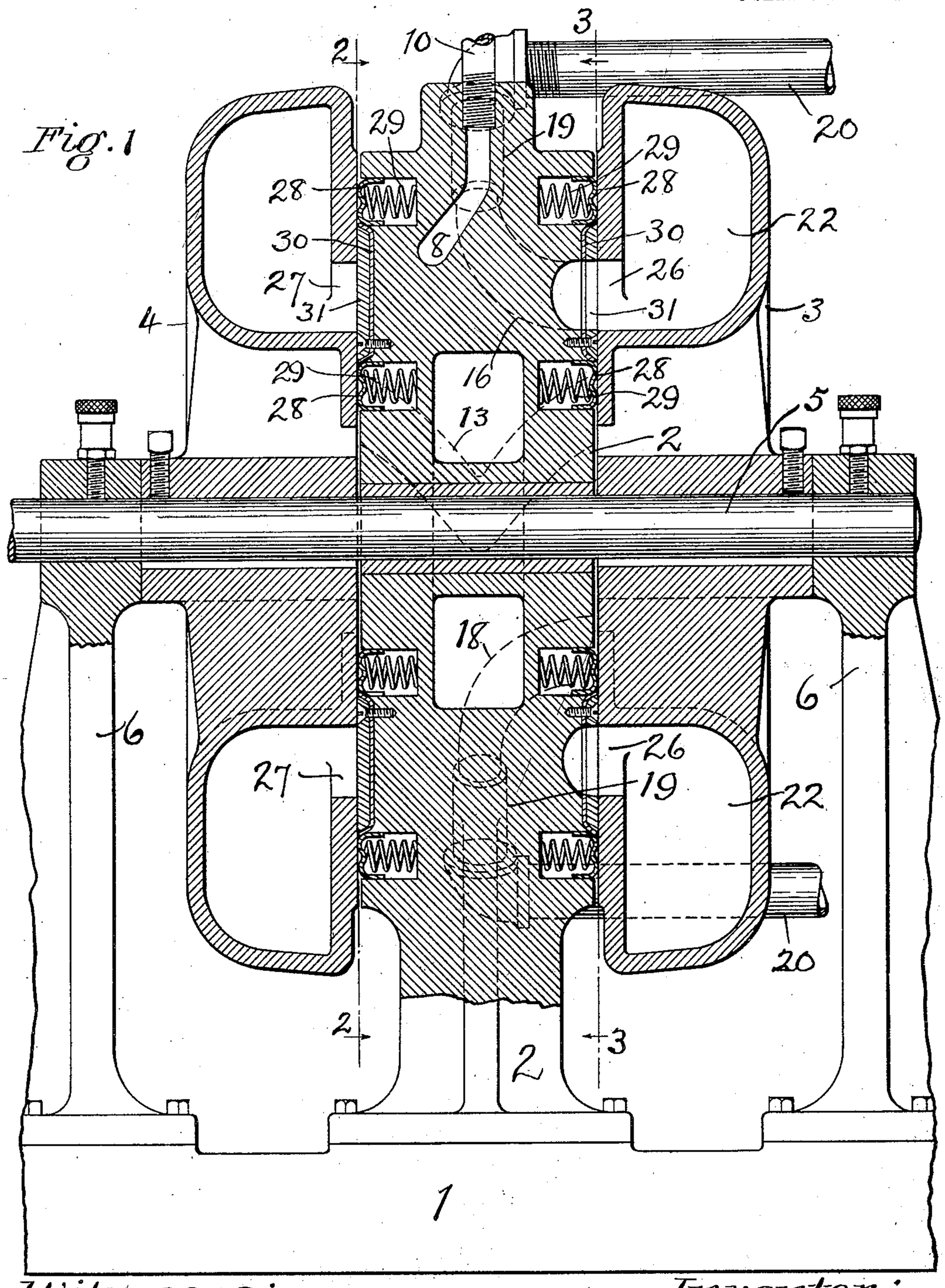
T. J. QUIRK.

ROTARY ENGINE.

APPLICATION FILED SEPT. 18, 1907.

3 SHEETS—SHEET 1.

Fig. 1



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Edward Maxwell.

Inventor:
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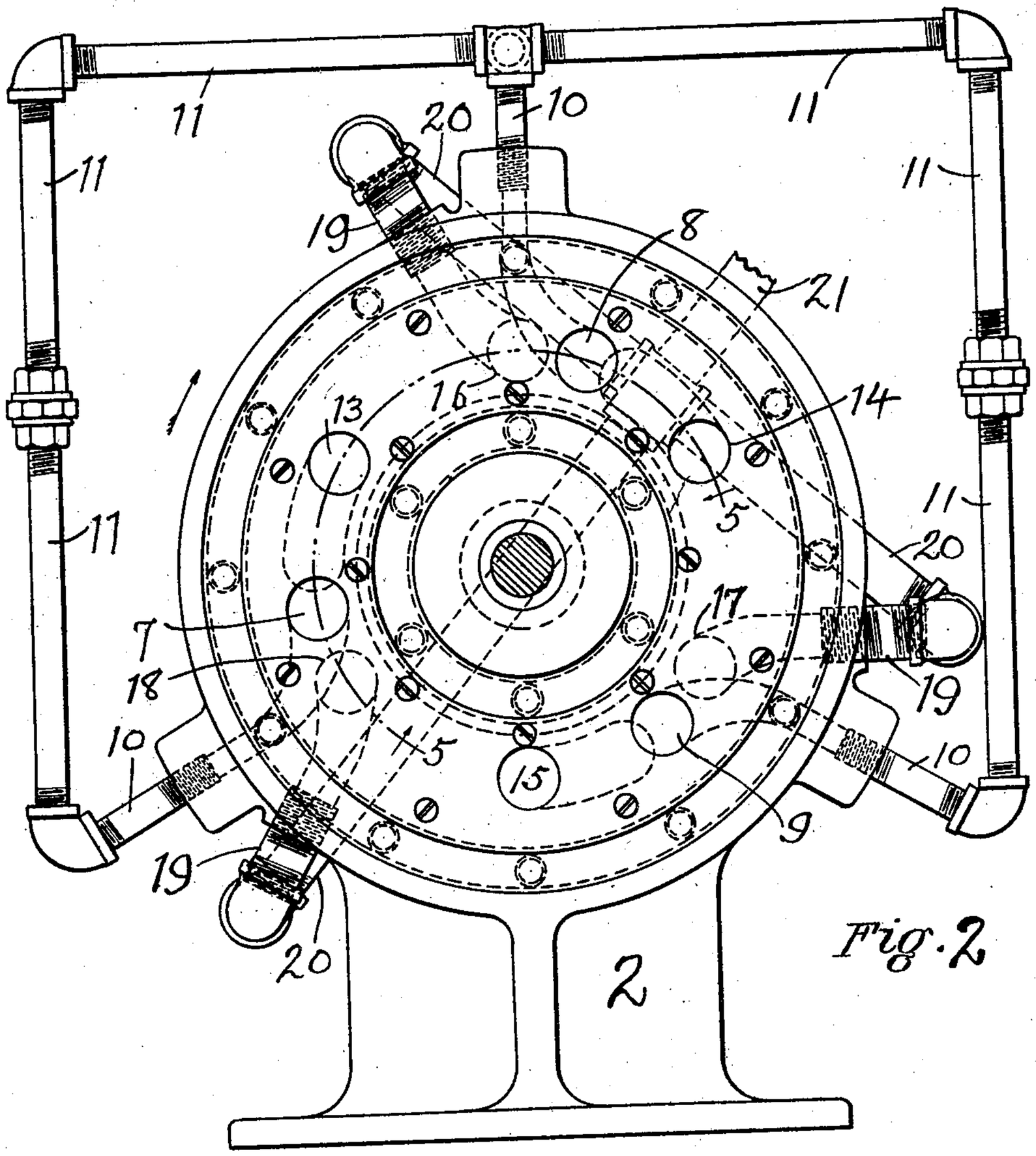

Fig. 2

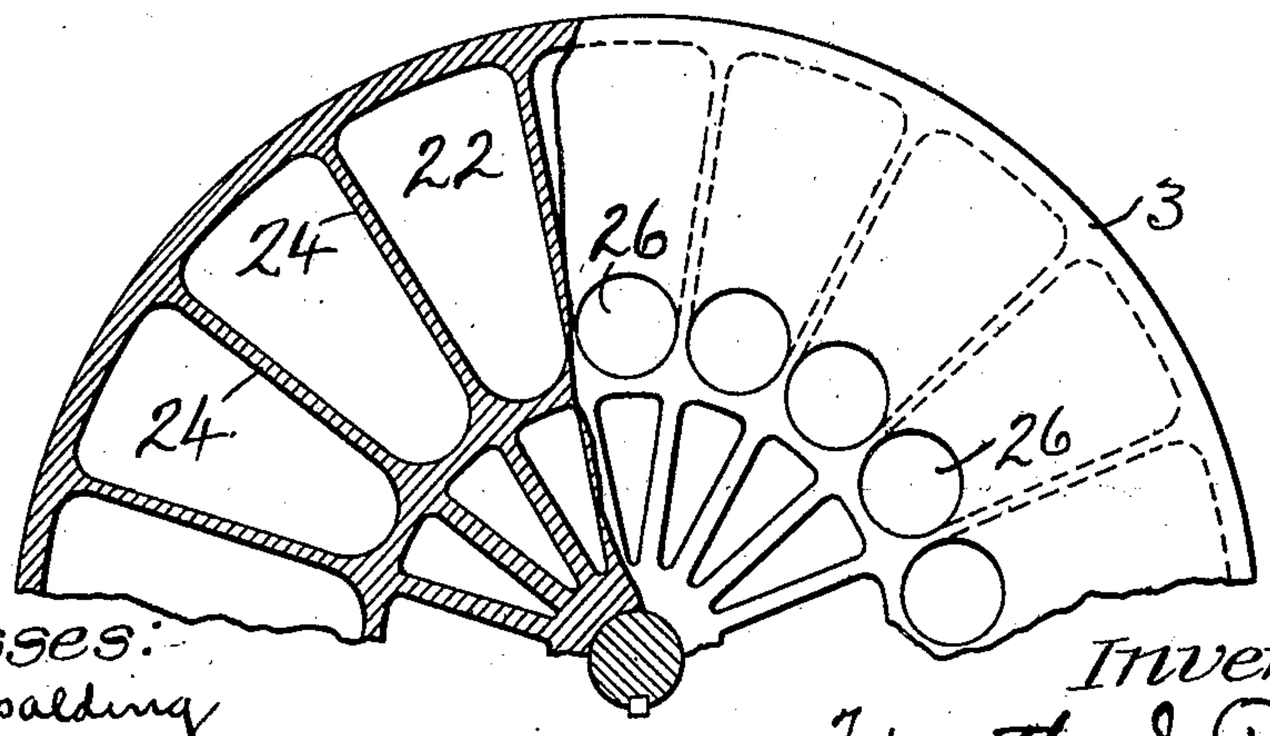

Fig. 4

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3 SHEETS—SHEET 3.

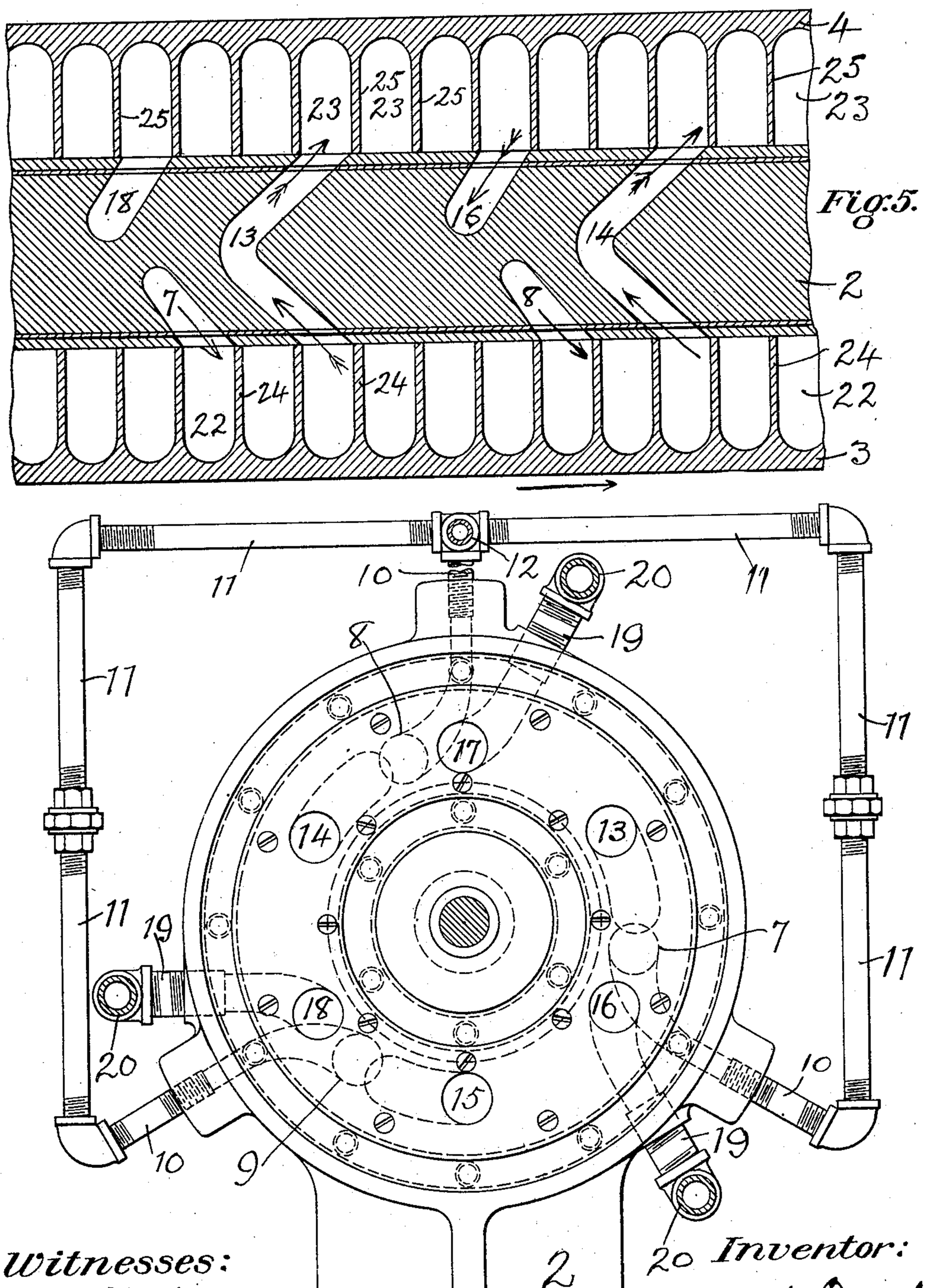

Fig. 5.

Fig. 3

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UNITED STATES PATENT OFFICE.

TIMOTHY J. QUIRK, OF BOSTON, MASSACHUSETTS.

ROTARY ENGINE.

No. 888,033. Specification of Letters Patent. Patented May 19, 1908.

Application filed September 18, 1907. Serial No. 393,463.

To all whom it may concern:

Be it known that I, TIMOTHY J. QUIRK, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Rotary Engines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a rotary engine, based somewhat upon the turbine principle, and comprises, in its simplest form, a central stationary part which contains the various ports, and opposite rotary members for receiving the steam from said ports, one of said members being the high-pressure member receiving the steam directly from the steam inlet ports, and the other of said members receiving the partially exhausted steam from the first mentioned member, said two members being preferably, as herein shown, made fast on the same shaft to rotate in the same direction.

The constructional details of my invention will be pointed out more at length in the course of the following description, taken in connection with the accompanying drawings, in which I have shown a preferred embodiment of the invention.

In the drawings, Figure 1 is a central vertical longitudinal sectional view; Figs. 2 and 3 are cross-sectional views taken respectively on the dotted lines 2—2, 3—3, Fig. 1, looking in the direction of the arrows respectively; Fig. 4 is a fragmentary detail of one of the rotary members, looking at the inside face thereof, parts being broken away for clearness of representation; and Fig. 5 is a sectional projection, taken on the line 5—5, Fig. 2, showing the relative arrangement of the various parts, chambers, and ports.

For clearness of understanding, I have shown my invention in its simplest form, in which the steam has but one expansion and exhaust, but it will be understood that I do not limit myself thereto, as the mechanical arrangement may be readily varied to adapt the principle of operation to a compound engine, and to running as many rotary members as may be desired.

Mounted on a suitable base 1, I provide a central stationary member 2, adjacent whose opposite plane vertical sides rotate members 3, 4 fast on a power transmission shaft 5 journaled coaxially in said stationary member to and in stands or uprights 6. The stationary part 2 is provided with passage-ways or ports 7, 8, 9, communicating with steam inlet pipes 10, herein shown as connected by pipes 11 to a common steam supply pipe 12. Also, the stationary part 2 has a corresponding series of transmission passages 13, 14, 15, reversely curved, as clearly shown in Figs. 1 and 5, and indicated by dotted lines in the remaining figures, and has likewise a corresponding series of exhaust passages or ports 16, 17, and 18, connecting with steam outlet pipes 19, herein shown as connected by pipes 20 to a common steam discharge pipe 21. The rotary members 3 and 4 are provided respectively with similar chambers 22, 23, said chambers being separated by radial vanes 24, 25, and provided with openings 26, 27 for coöperating with the ports of the stationary member in succession as the members 3 and 4 are rotated with the shaft.

Suitable packing means is employed, herein shown as consisting of opposite flexible strips 28 of packing material, held in the stationary member tightly forward by springs 29 against the adjacent faces of the rotary member, and flexible packing strips 30 clamped by rings 31 and projecting at their opposite edges against the adjacent strips 28. The rings 31 have openings corresponding to the various ports, as shown clearly in the drawings.

In operation, steam from the pipe 12 is let into the pipes 10, and forcibly discharges from the ports 7, 8, 9 against the vanes 24, thereby instantly driving the rotary member 3 and its shaft in the direction of the arrow, Figs. 2 and 5. As soon as the chamber 22 with its complement of steam from port 7 has reached the transmission passage 13, said steam instantly charges back through said passage in the direction of the arrow, Fig. 5, thereby adding a further forward impulse to the rotary member 3, and, as said steam passes forward from the opposite side of the passage 13, it impacts against the adjacent vane 25 of the rotary member 4, thereby adding a forward impulse to said member, and, as the latter rotates, so as to bring the partially exhausted steam held in the chamber 23 over the exhaust port 16, the steam rushes out of said exhaust port, and, by its reactive force, adds still another forward impulse to the rotary members 3 and 4, the steam being delivered from the

exhaust pipes 20, 21, either to another cylinder or set of vanes, or elsewhere, as desired.

I have herein shown three sets of ports for simultaneously acting with balanced effect upon the vanes in the manner described, although I do not intend to limit myself to any particular number, and also, as already stated, it will be understood that I do not limit my invention to any particular constructional details, as it is capable of a wide variety of embodiments without departing from the spirit and scope of the invention as defined in the following claims.

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

1. An engine of the kind described, comprising a stationary member and opposite rotary members arranged to move in the same direction on the opposite sides of said stationary member, said rotary members being each provided with a series of radial vanes, and the stationary member containing a steam discharge port opening against the vanes of one of said rotary members, a steam transmission passage connecting from said rotary member to the opposite rotary member, and an exhaust port leading from the latter, arranged in the sequence mentioned in the direction of rotation of the rotary members.

2. An engine of the kind described, comprising a stationary member and opposite rotary members arranged to move in the same direction on the opposite sides of said stationary member, said rotary members being each provided with a series of radial vanes, and the stationary member containing a steam discharge port opening against the vanes of one of said rotary members, a steam transmission passage connecting from said rotary member to the opposite rotary member, and an exhaust port leading from the latter, arranged in the sequence mentioned in the direction of rotation of the rotary members, said ports and passage being arranged angularly with relation to the vanes in the direction of said rotation.

3. An engine of the kind described, comprising a stationary member and opposite rotary members arranged to move in the same direction on the opposite sides of said stationary member, said rotary members being each provided with a series of radial vanes, and the stationary member containing a steam discharge port opening against the vanes of one of said rotary members, a steam transmission passage connecting from said rotary member to the opposite rotary member, and an exhaust port leading from the latter, arranged in the sequence mentioned in the direction of rotation of the rotary members, said ports extending obliquely in the stationary member in the direction of said rotation, and said passage being V-shaped, having its opposite ends extending approximately parallel to said ports.

4. An engine of the kind described, comprising a stationary member and opposite rotary members arranged to move in the same direction on the opposite sides of said stationary member, said rotary members being each provided with a series of radial vanes, and the stationary member containing a plurality of obliquely arranged steam ports spaced at equal intervals circumferentially of the stationary member arranged to deliver steam impacts against the vanes of one of said rotary members in its direction of rotation, a series of obliquely arranged exhaust ports opening in said direction of rotation in cooperation with the vanes of the other of said rotary members, said exhaust ports being similarly spaced apart in the stationary member in advance of the steam ports, and a series of transmission passages spaced apart respectively in the stationary member between successive steam ports and exhaust ports for transmitting steam from one rotary member to the opposite rotary member.

5. In an engine of the kind described, two members co-axially arranged for relative rotation having flat faces against each other, one of said members having a series of radial vanes and chambers opening against the contiguous face of the other member, being provided with concentrically arranged packing strips held yieldingly against the face of said vane-provided member on the outer and inner sides respectively of the openings of said chambers, a clamping ring located between said strips, a third flexible packing strip overlapping at its opposite edges on the other two packing strips and held intermediately clamped by said ring, and ports and passages in the adjacent member opening through said ring into communication with said chambers for the admission of steam to said chambers and the escape of steam from said chambers.

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

TIMOTHY J. QUIRK.

Witnesses:
EDWARD MAXWELL,
M. J. SPALDING.