

T. J. & D. M. WINANS.

ROTARY ENGINE.

APPLICATION FILED AUG. 11, 1909.

992,929.

Patented May 23, 1911.

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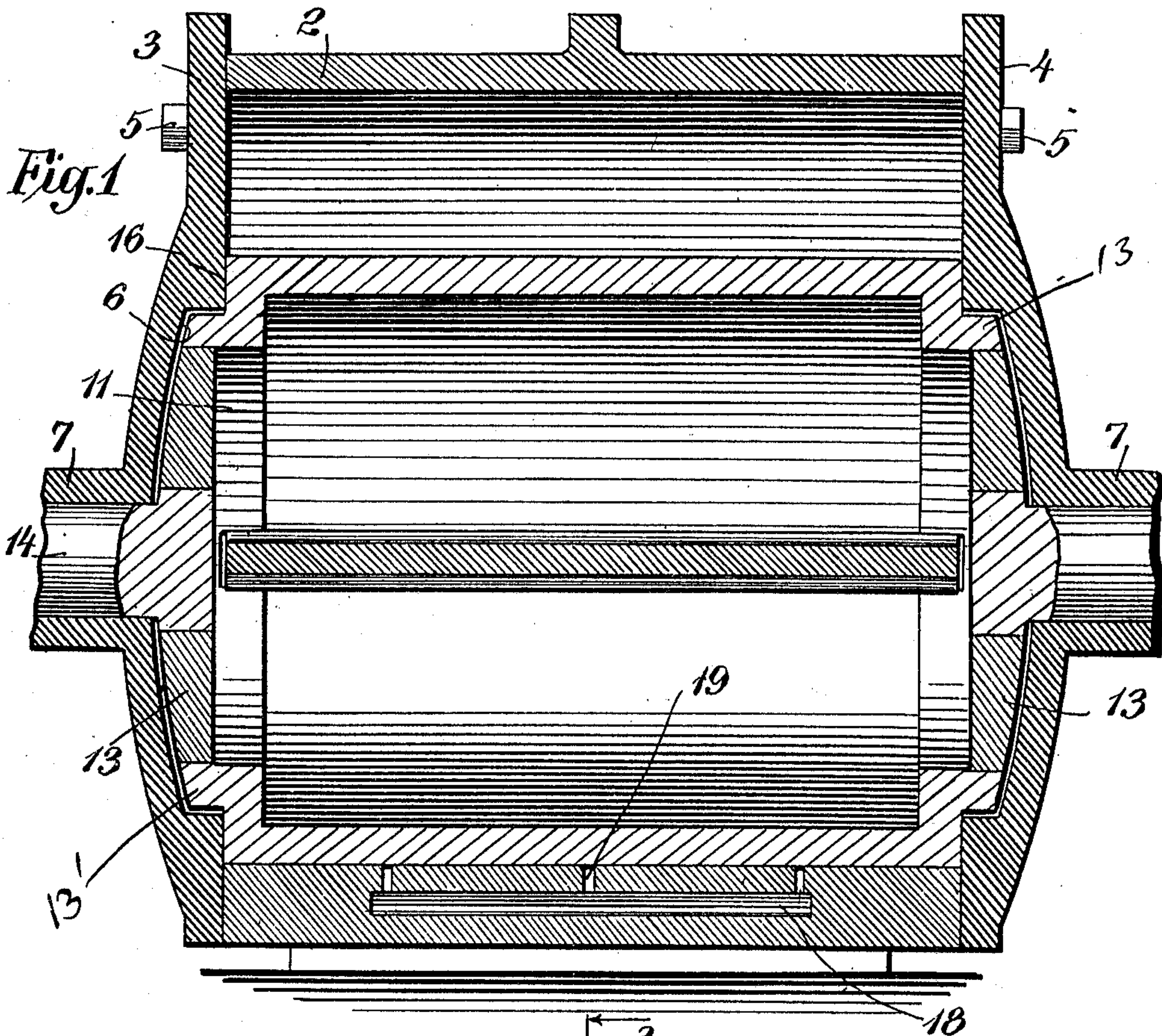
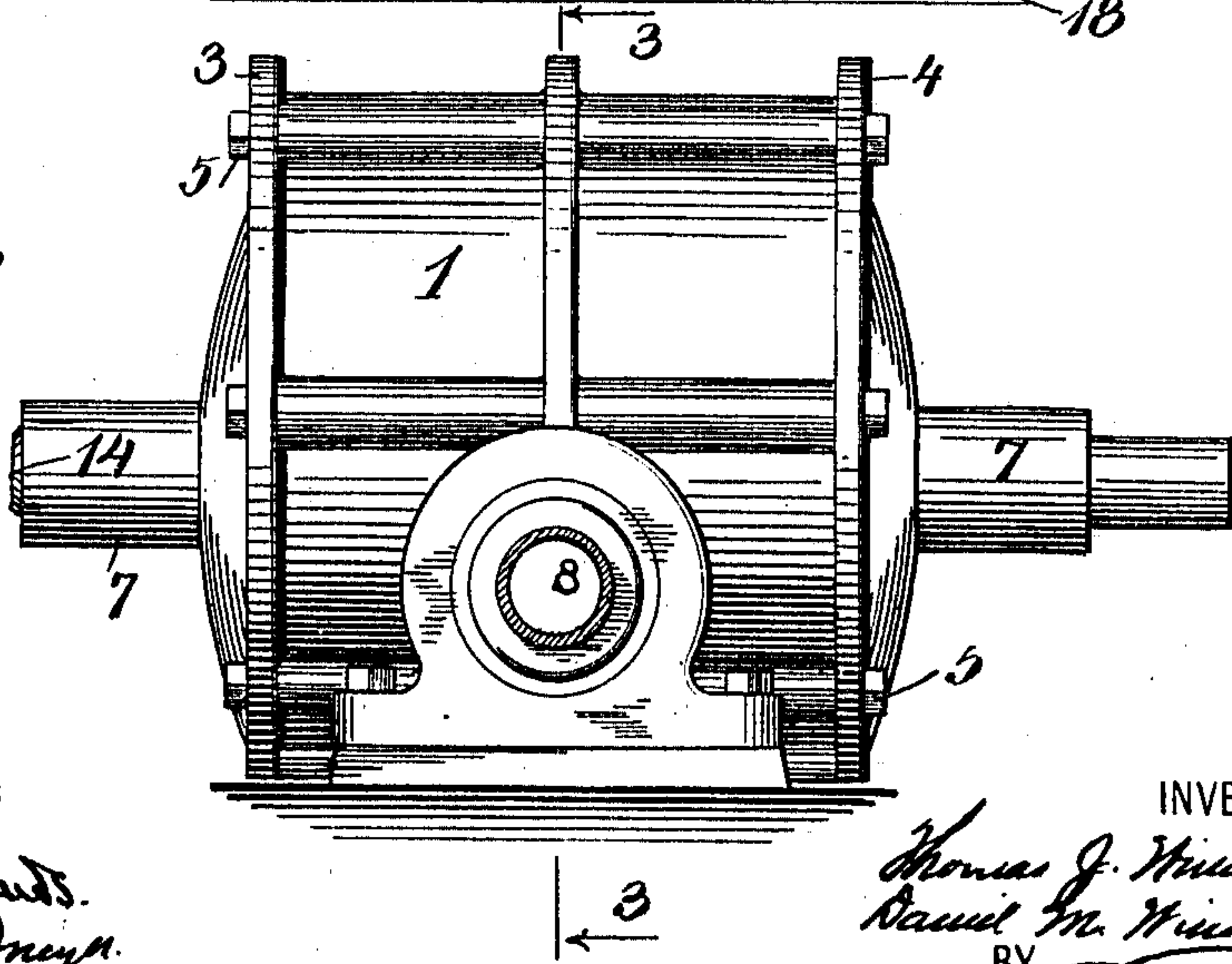


Fig. 2,



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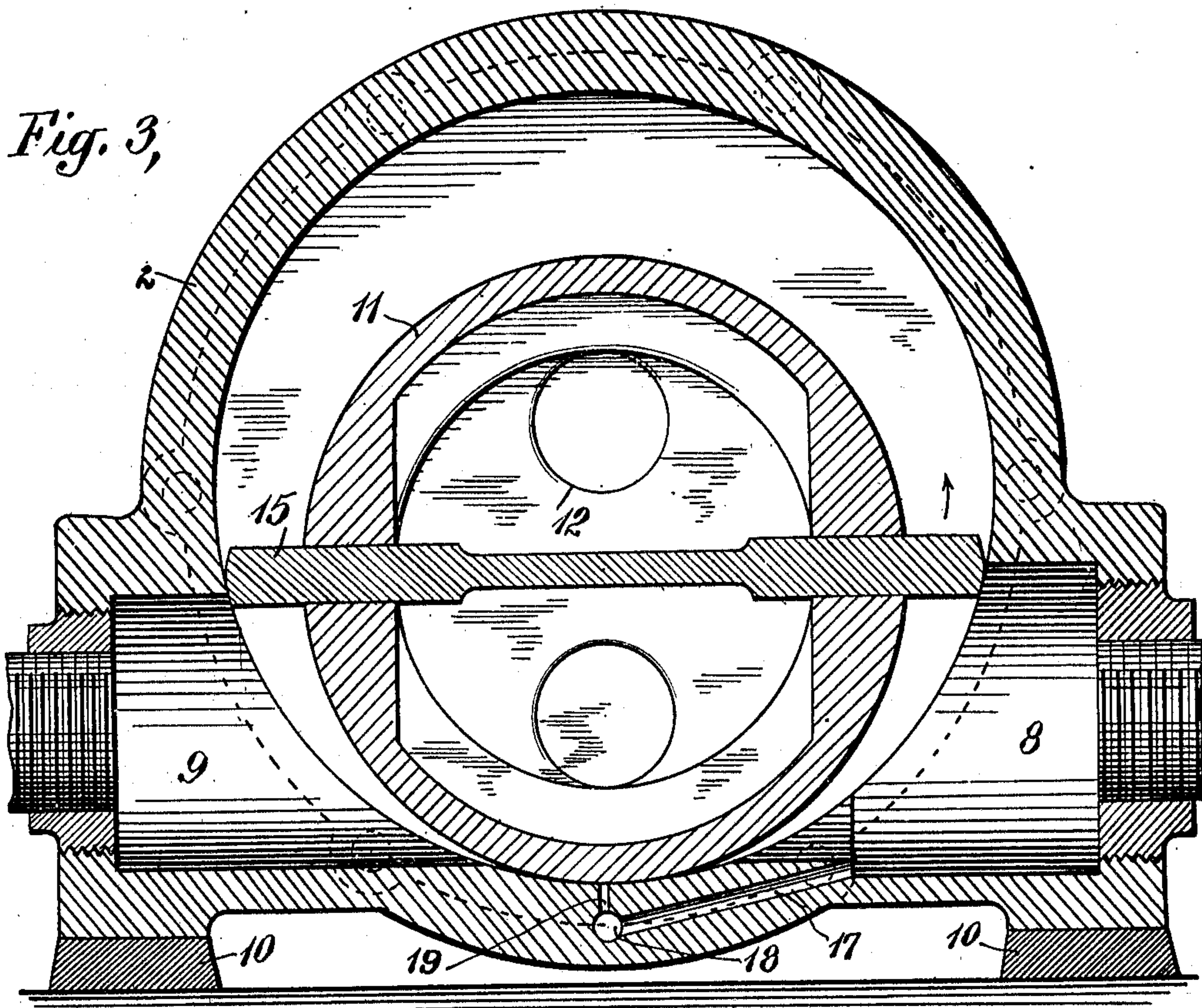
ATTORNEY

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UNITED STATES PATENT OFFICE.

THOMAS J. WINANS AND DANIEL M. WINANS, OF BINGHAMTON, NEW YORK, ASSIGN-
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ROTARY ENGINE.

992,929.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed August 11, 1909. Serial No. 512,308.

To all whom it may concern:

Be it known that we, THOMAS J. WINANS and DANIEL M. WINANS, citizens of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to rotary engines adapted for various uses including the utilization of steam or other expansible gas to develop power and in pumping air, water or other liquid.

The invention is directed to the provision of a rotary engine which is reliable and efficient in operation and which is of marked simplicity of construction, as a result of which it may be manufactured at low cost.

While our invention may be employed in an engine proper for converting the power in steam or other expansible gas into rotary motion, we have found in practice that it is of special utility in a pump for pumping air or other fluid into a receptacle or exhausting a fluid from a receptacle.

The invention contemplates the employment of two members one located eccentrically within the other and one adapted to rotate either to deliver power or to receive from an outside source power which is to be employed in pumping or performing other work. In the preferred embodiment of the invention the inner member is the rotor and the outer one which incloses the rotor is stationary.

We have illustrated an embodiment of our invention in a pump in the accompanying drawings in which—

Figure 1 is a central section of the pump, Fig. 2 is an elevation of the same, and Fig. 3 is a section on line 3—3 of Fig. 2 on a plane at right angles to the plane of the section shown in Fig. 1.

Referring to these drawings, 1 indicates the stator consisting of a cylindrical shell 2 and heads 3 and 4 which are secured to the shell 2 in any suitable manner, as by means of bolts 5. In each of the heads 3 and 4 is an eccentric circular depression 6 and, concentric with this depression, a tubular extension 7. The shell 2 is extended at opposite sides to form outlet and inlet openings 8 and 9 respectively, formed to facili-

tate the connection of lengths of pipes or hose thereto. Legs 10 are also formed on the casing 2 by means of which the pump may be secured to a suitable support.

The rotor is indicated at 11; it is a casting of circular cross-section made hollow so as to reduce its weight, openings 12 being provided to facilitate the casting of the device in the hollow form and these openings being afterward closed by plugs 13. The ends of the rotor 11 are reduced somewhat so as to provide projecting portions 13' which lie within the depressions 6, in the heads 3 and 4, and at the ends of the rotor are integral trunnions 14 which are received in the tubular extensions 7 of the heads 3 and 4 to rotatably support the rotor within the chamber in the stator. The eccentricity of the rotor within the stator is such that on one side the outer surface of the rotor is in contact with the wall of the chamber in the stator. The rotor 11 has an opening of rectangular cross-section passing through the center thereof; this being formed by milling slots in the wall of the hollow rotor at opposite sides thereof extending parallel to the axis of the rotor; this opening receives a vane 15 which fits snugly within the opening but is adapted to slide freely therein in the plane in which it lies. The vane 15 is reduced in cross-section over the area which is at all times within the opening in the hollow rotor 11 so as to reduce the weight of the rotating element and also to reduce the area of the vane which must be machined in order that the vane will fit snugly and move freely within the opening provided therefor in the rotor 11. The rotor is of such size with respect to the chamber in the stator that a clearance is provided about the projecting portions 13' of the rotor but the surfaces of the rotor just beyond the projections 13', as indicated at 16, lie close to the adjacent walls of the heads 3 and 4 so as to preclude the escape of the fluid agent at this point, and the vane 15 is of such width that it completely fills the space between the heads 3 and 4 so that its ends also make a tight working fit with the walls of the heads 3 and 4 beyond the periphery of the rotor. The slots in the rotor in which the vane lies may be of greater length than the vane since the openings provided by these slots

at the ends of the vane would lie in the depressions 6. Both ends of the vane 15 are at all times in contact with the inner wall of the chamber in the stator.

5 Lubricating oil is supplied to the rotor to make its operation more smooth and to assist in preventing the escape of the fluid about the ends of the vane 15. In the drawings we have shown a duct 17 (Fig. 3) leading from the outlet opening 8 down to a transverse duct 18 in the cylinder 2 and openings 19 extending from the duct 18 upwardly to the interior of the cylinder. The ducts 17 and 18 may be filled with oil and this oil will pass through the openings 19 to the interior of the chamber where it will be taken up by the ends of the vane 15. As the vane passes the opening 8 a portion of this oil will be taken from the vane by the wall of the opening 8 and this oil will pass down into the duct 17 again. It will be seen that the duct 17 opens into the chamber at the outlet side so that the increased pressure at the outlet tends to force the oil through duct 17 and openings 19 to the rotor. As the openings 19 enter the chamber at points adjacent to the line of contact of the rotor and stator, the oil is prevented from passing through the openings 19 too rapidly.

Having now described our invention, what we claim as new therein and desire to secure by Letters Patent is as follows:

1. The combination of a stator having a chamber therein and inlet and outlet openings leading thereto, a rotor mounted eccentrically within said chamber and contacting with the wall of the chamber on one side thereof, a vane movable in the rotor, an opening for a lubricant formed in the stator and leading to the chamber therein at a point adjacent to the line of contact of the rotor and stator, and a duct formed in the stator and leading to said opening from the outlet side of said chamber, substantially as set forth.

2. The combination of a member consisting of a substantially cylindrical shell and heads closing the ends thereof to form a chamber, said heads having eccentrically-located, circular depressions in the adjacent sides thereof in axial alinement, a second member within said chamber having an opening therethrough and circular projections at its ends entering said depressions, one of said members being rotatable, and a vane in said opening adapted to slide therein and to contact at its ends with the wall of said chamber, said parts being so formed that a clearance is provided between said projections and depressions, and the walls at the ends of said second member adjacent to the projections thereon having a tight working fit with the adjacent walls of said heads, substantially as set forth.

3. The combination of a stator consisting of a substantially cylindrical shell and heads closing the ends thereof to form a chamber, said heads having eccentrically-located, circular depressions in the adjacent sides thereof in axial alinement, a rotor within said chamber having a lengthwise opening therethrough, circular projections at its ends entering said depressions and trunnions concentric with said projections, and a vane slidable in said opening and contacting at its ends with the wall of said chamber, said parts being so formed that a clearance is provided between said projections and depressions, and the walls at the ends of the rotor adjacent to the projections thereon having a tight working fit with the adjacent walls of said heads, substantially as set forth.

4. The combination of a member consisting of a substantially cylindrical shell and heads closing the ends thereof to form a chamber, said heads having eccentrically-located, circular depressions in the adjacent sides thereof in axial alinement, a second member within said chamber having circular projections at its ends entering said depressions and being provided with a lengthwise opening therethrough extending into said projections, and a vane slidable in said opening and contacting at its ends with the wall of said chamber, said vane being of such width that its lateral edges extending beyond the periphery of said second member make a tight working fit with the adjacent walls of said heads, substantially as set forth.

5. The combination of a member consisting of a substantially cylindrical shell and heads closing the ends thereof to form a chamber, said heads having eccentrically-located, circular depressions in the adjacent sides thereof in axial alinement, a second member within said chamber consisting of a hollow metallic shell having circular projections at its ends entering said depressions, said second member having slots therein on opposite sides extending lengthwise thereof into said projections, and a vane slidable in said slots and contacting at its ends with the wall of said chamber, said vane being of such width that its lateral edges extending beyond the periphery of said second member make a tight working fit with the adjacent walls of said heads, substantially as set forth.

6. The combination of a stator consisting of a substantially cylindrical shell and heads closing the ends thereof to form a chamber, said heads having eccentrically-disposed circular depressions in the adjacent sides thereof in axial alinement, a rotor within said chamber having circular projections at its ends entering said depressions, trunnions concentric with said projections and a

lengthwise opening extending into said pro-
jections, and a vane slidable in said opening
and contacting at its ends with the wall of
said chamber, said parts being so formed
5 that a clearance is provided between said
projections and depressions, the walls at the
ends of the rotor adjacent to the projections
therein make a tight working fit with the
adjacent walls of said heads, and the lateral
10 edges of said vane beyond the periphery

of the rotor make a tight working fit with
the adjacent walls of said heads.

This specification signed and witnessed
this 26 day of July, 1909.

THOMAS J. WINANS.
DANIEL M. WINANS.

Witnesses:

F. J. BAUMANN,
B. A. BAUMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
