

No. 754,183.

PATENTED MAR. 8, 1904.

A. C. ACKERMAN.

ROTARY ENGINE.

APPLICATION FILED JAN. 12, 1904.

NO MODEL.

Fig. 1.

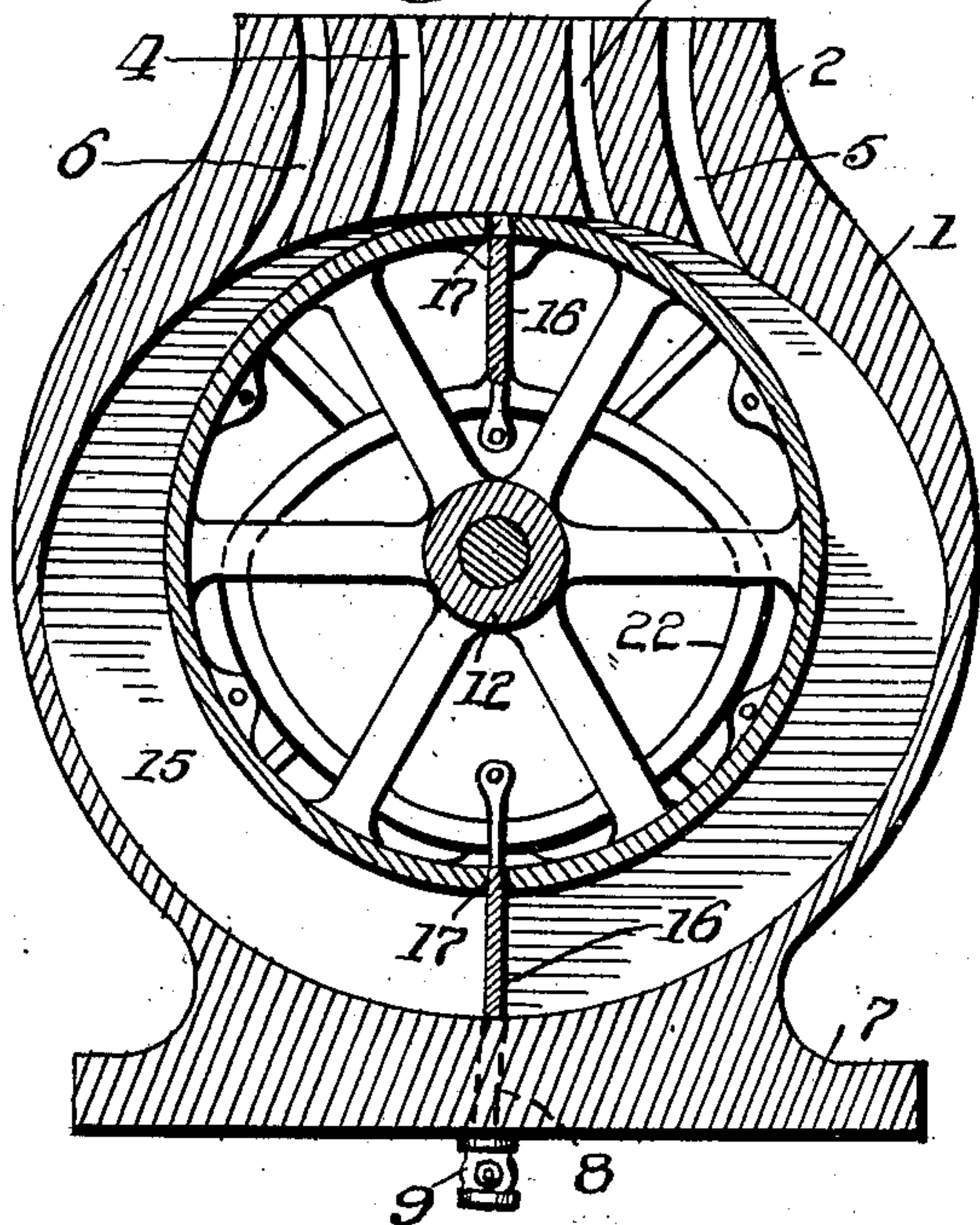


Fig. 2.

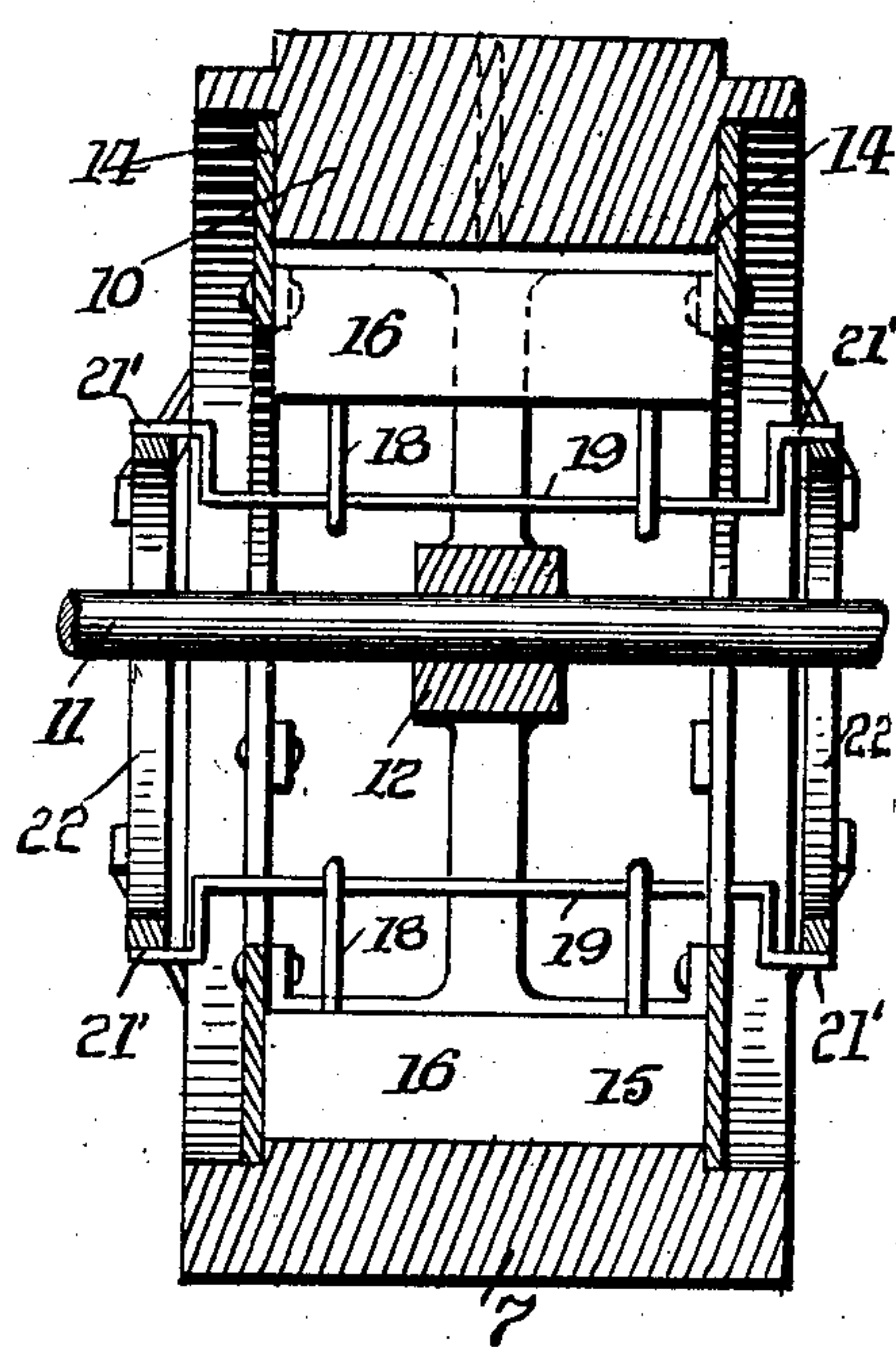


Fig. 3.

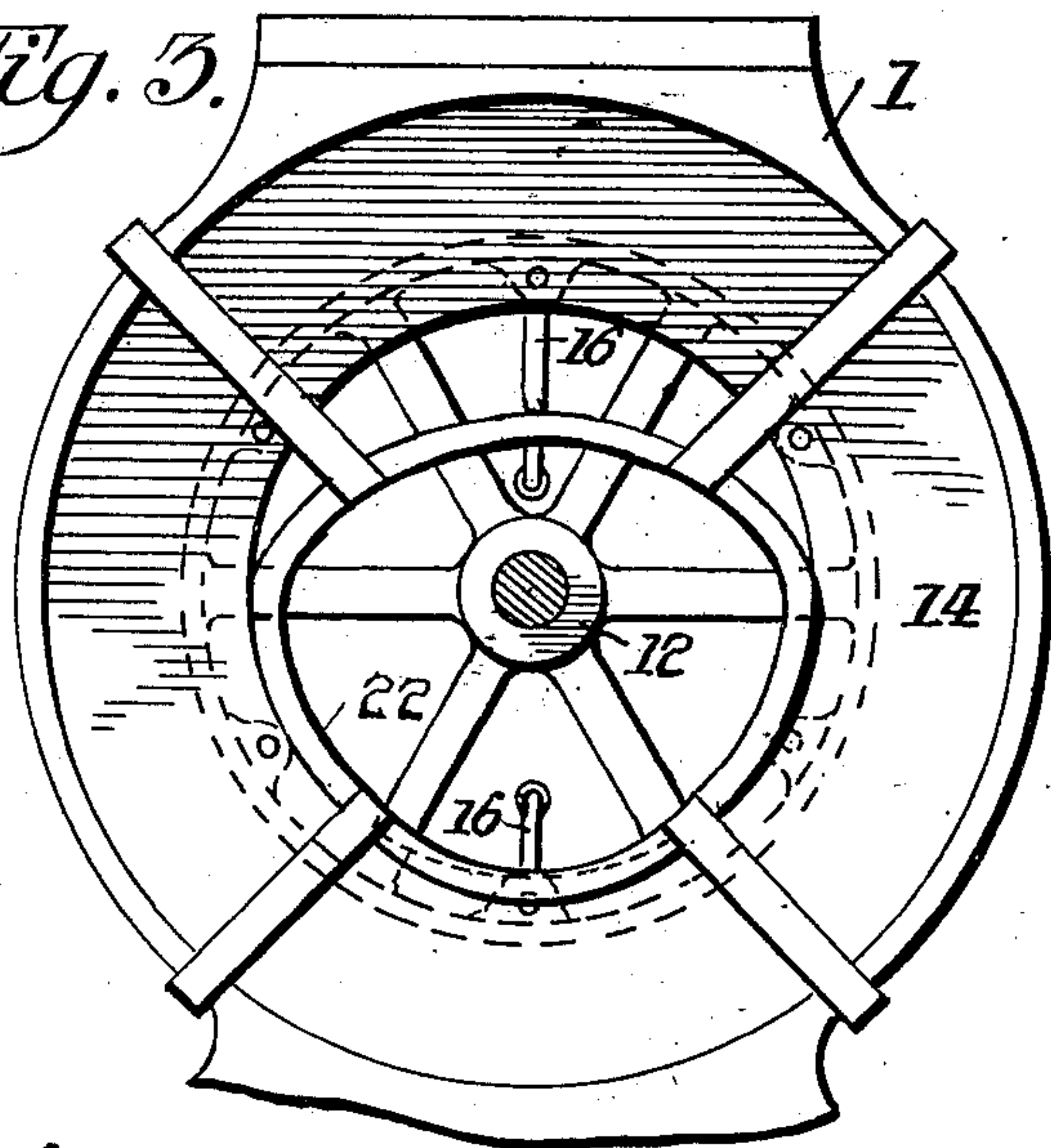
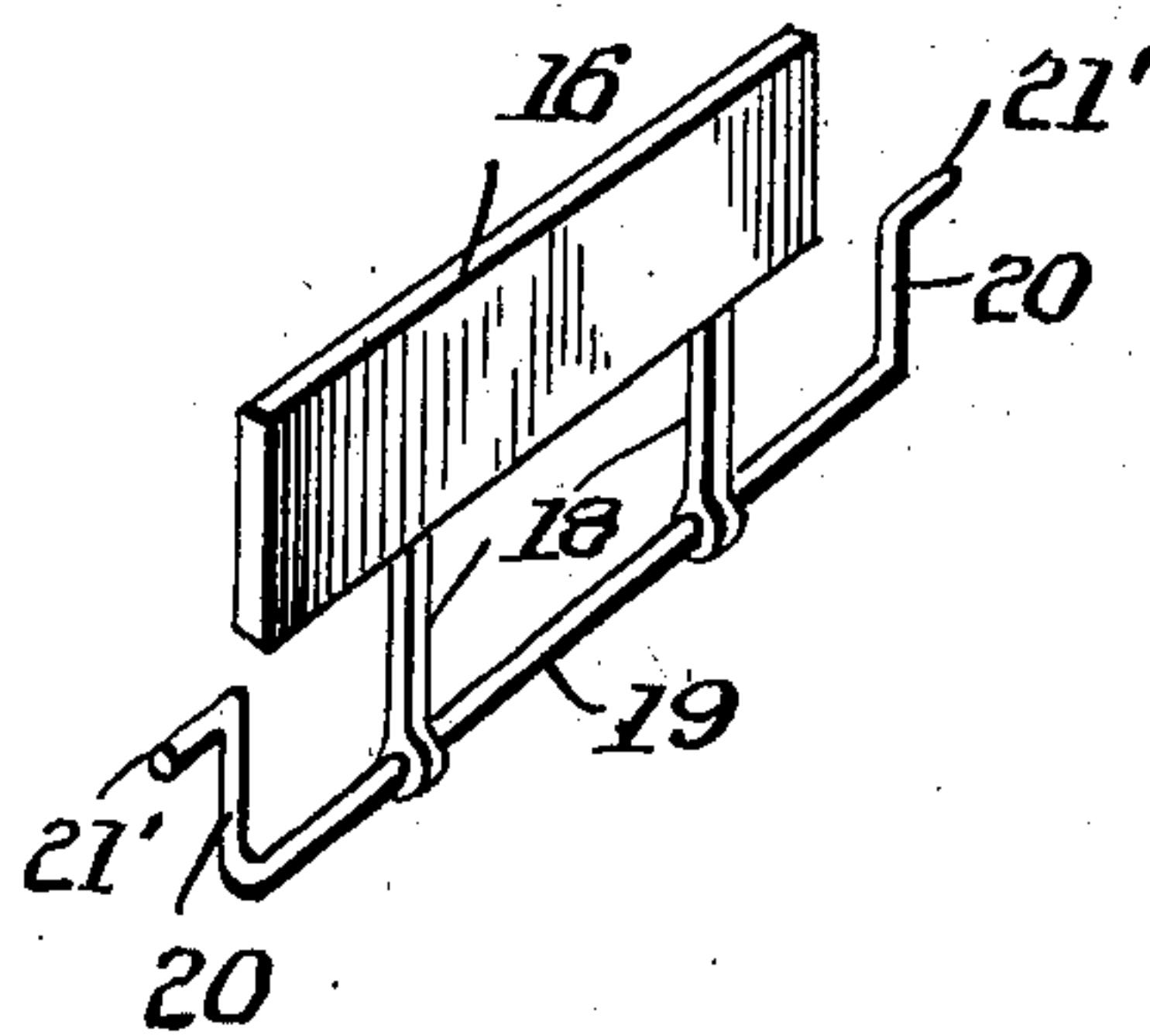


Fig. 4.



Witnesses:
A. H. Butler,
E. E. Potter

Inventor,
A. C. Ackerman,
By A. C. Everett & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ALBERT C. ACKERMAN, OF PITTSBURG, PENNSYLVANIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 754,183, dated March 8, 1904.

Application filed January 12, 1904. Serial No. 188,748. (No model.)

To all whom it may concern:

Be it known that I, ALBERT C. ACKERMAN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in engines, and relates more particularly to that class of engines known as "rotary" engines.

15 The object of this invention is to provide a rotary engine which may be readily constructed, whereby the losses due to friction and leakage are reduced to a minimum, and at the same time to accomplish this result with as few parts and as simple construction as is possible.

A further object of this invention is to construct an engine of this type which will be reversible and each part may be readily renewed when the same has become worn, the engine being so constructed as to reduce the cost of manufacture considerably, at the same time so constructed as to be strong and durable and a greater amount of power realized than heretofore from engines of this type.

30 The invention consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this application, and wherein like numerals of reference indicate like parts throughout the several views, in which—

40 Figure 1 is a vertical sectional view of my improved engine. Fig. 2 is a vertical cross-sectional view of the same. Fig. 3 is a side elevation of my improved engine. Fig. 4 is a detail perspective view of one of the plungers or piston-blades and its operating-rod.

45 In carrying out my invention I provide a cylinder-casting 1, the top of which, as indicated at 2, is enlarged, and through this enlarged portion pass the inlet-ports 3 and 4 and the exhaust-ports 5 and 6. This casting 50 has a suitable base 7, through which passes an

aperture 8, to which is connected the valve 9, whereby the water may be readily removed from the interior of the casting. In the upper part of the casting I form the enlarged portion 10, the working face of which is 55 formed on an arc less than the circumference of the interior of the cylinder-casting, thus making the working cylinder 15 substantially elliptical in form, and passing through the cylinder-casting is a shaft 11, upon which is 60 mounted a piston or wheel 12, this wheel carrying annular rings 14, forming side plates, which are secured to the piston or wheel 12, engage the sides of the enlarged portion 10, and act in conjunction with the casting to 65 form the working cylinder 15. In the piston or wheel I mount the plungers or piston-blades 16, which are adapted to pass through slots 17, formed in the wheel, said plungers or piston-blades being adapted to be the same 70 shape as the cross-section of the working cylinder 15 and snugly fit the side rings 14 and the working face of the cylinder-casting. The plungers or piston-blades are connected by the links 18, which in turn are pivotally 75 mounted upon the operating-rods 19, the ends of these rods being bent at right angles, as indicated at 20, and then bent outwardly, as indicated at 21', forming crank ends, and to 80 govern and guide these plungers or piston-blades in their movement I provide a cam 22, which is mounted and firmly secured upon each side of the cylinder-casting, as clearly shown in Figs. 2 and 3 of the drawings. 85 These cams are of the same contour as the interior of the cylinder-casting—that is, the lower portion of the cam is described from the same center as the interior of the cylinder-casting, while the top of said cam is described from the same center as the arc of the enlarged portion 10 is formed. In other words, 90 the distance between the periphery of the cams and the interior of the cylinder-casting is equidistant around.

The operation of my improved rotary engine 95 is as follows: When the steam passes through the inlet-port 3 into the working cylinder 15, the steam will strike one of the plungers 16 and force the same around until the contour of the enlarged portion 10 of the cylinder-casting 100

1 will force this plunger inwardly and allow the steam to exhaust through the port 6, at the same time another supply of steam through port 3 engaging the other plunger and causing the shaft 11, carrying the wheel 12, to continually revolve as long as steam is so admitted. The side rings 21, upon each side of the cylinder-casting 1, will guide the plungers 16 in and out through the slots 17, formed in the wheel as the same revolves, and when the engine is to be reversed steam is admitted to the working cylinder 15 through the port 4 and exhausts through the port 5, the same operation as that heretofore described.

15 In the construction of my improved engine I may employ any suitable packing, such as steel bands and the like, where it is found necessary, especially in the slots of the wheel through which the plungers pass and upon 20 the sides of the cylindrical casting where the flange-wheel engages, and it is obvious that any preferred form of valves may be used to control the admission of steam to the engine.

It will be noted that various slight changes 25 may be made in the details of construction without departing from the general spirit of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters 30 Patent, is—

1. In a rotary engine, an elliptical-shaped working cylinder, inlet and outlet ports for

said cylinder, a circular piston or wheel contacting on its periphery at one point only with the wall of the working cylinder, rings forming sides for the working cylinder secured to the circular piston, plungers reciprocating through the periphery of the piston, operating-rods to which the plungers are pivotally connected, crank ends on said rods, and cams engaged by said crank ends of the rods to reciprocate the plungers, substantially as described.

2. In a rotary engine, a cylinder-casting having an elliptical-shaped working cylinder therein, and having an enlargement at its upper end, inlet and outlet ports through said enlargement, a circular piston or wheel, side rings carried by the piston or wheel and engaging the sides of the enlargement, plungers reciprocating through said piston, operating-rods extending through the piston, and to which the plungers are pivotally attached, crank ends on said rods, and cams supported from the cylinder-casting and engaged by said crank ends to reciprocate the plungers, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ALBERT C. ACKERMAN.

Witnesses:

E. E. POTTER,
K. H. BUTLER.