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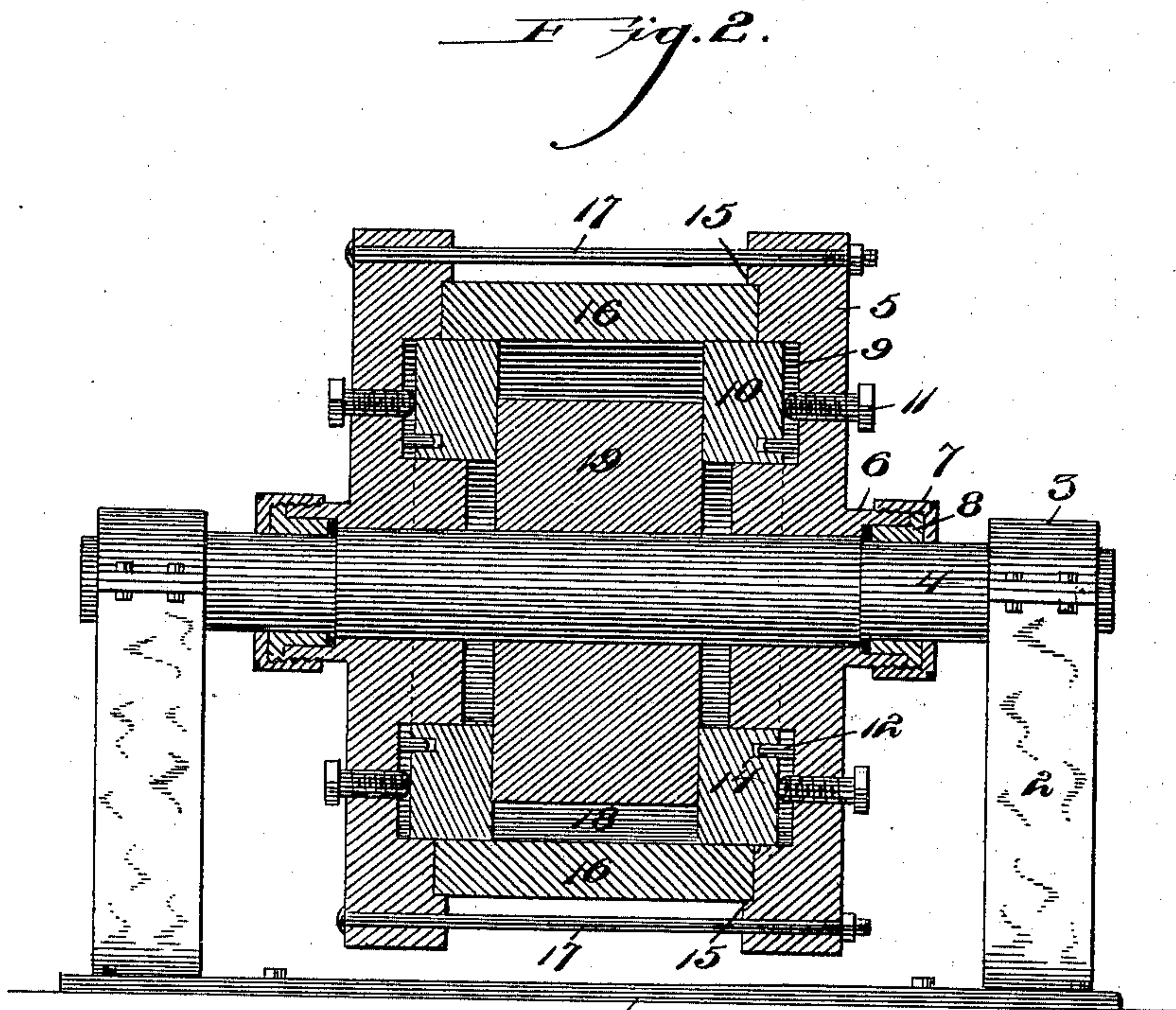
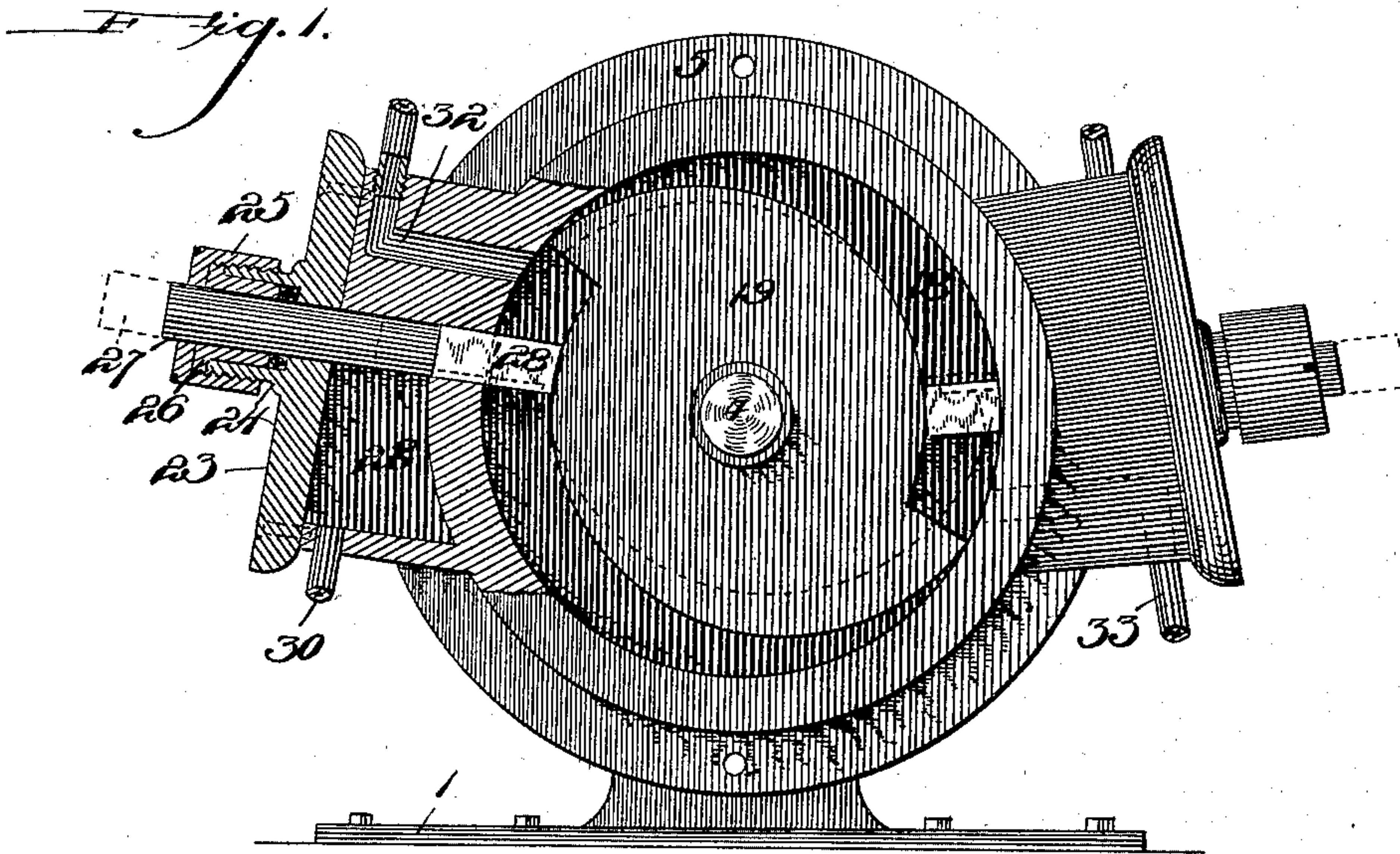
Patented Aug. 16, 1898.

J. H. VANDEGRIFT.  
ROTARY ENGINE.

(Application filed Mar. 1, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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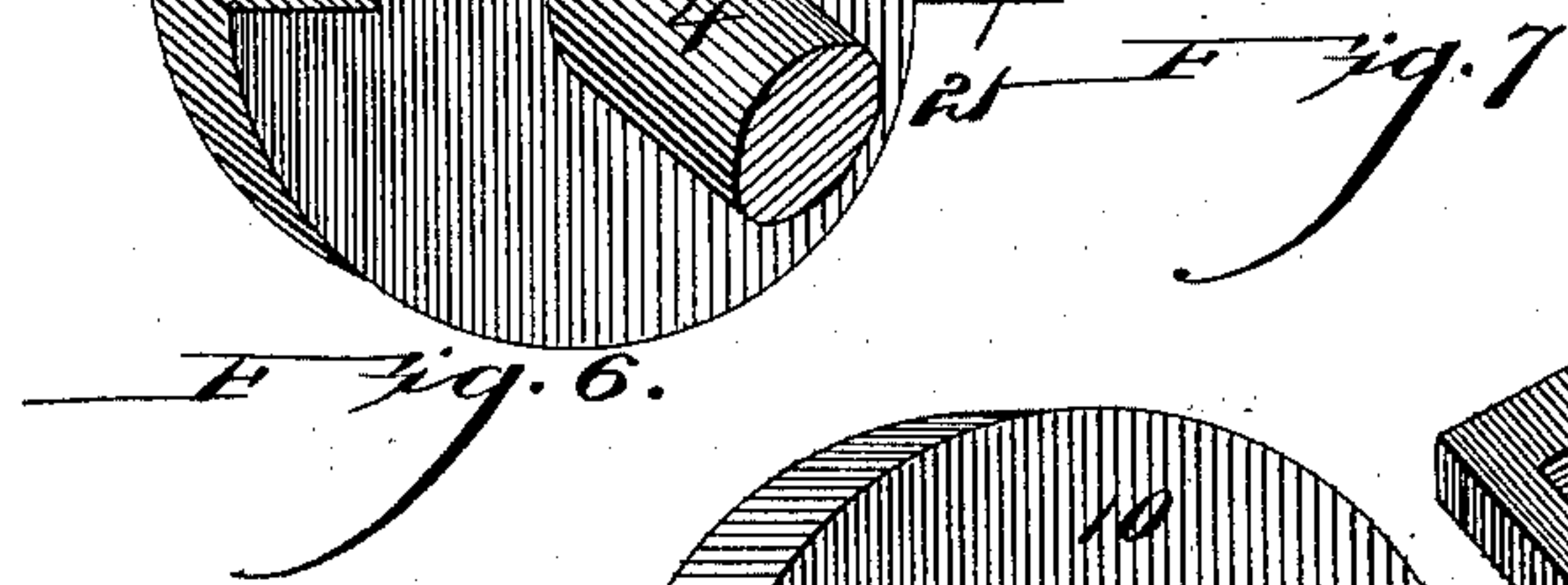
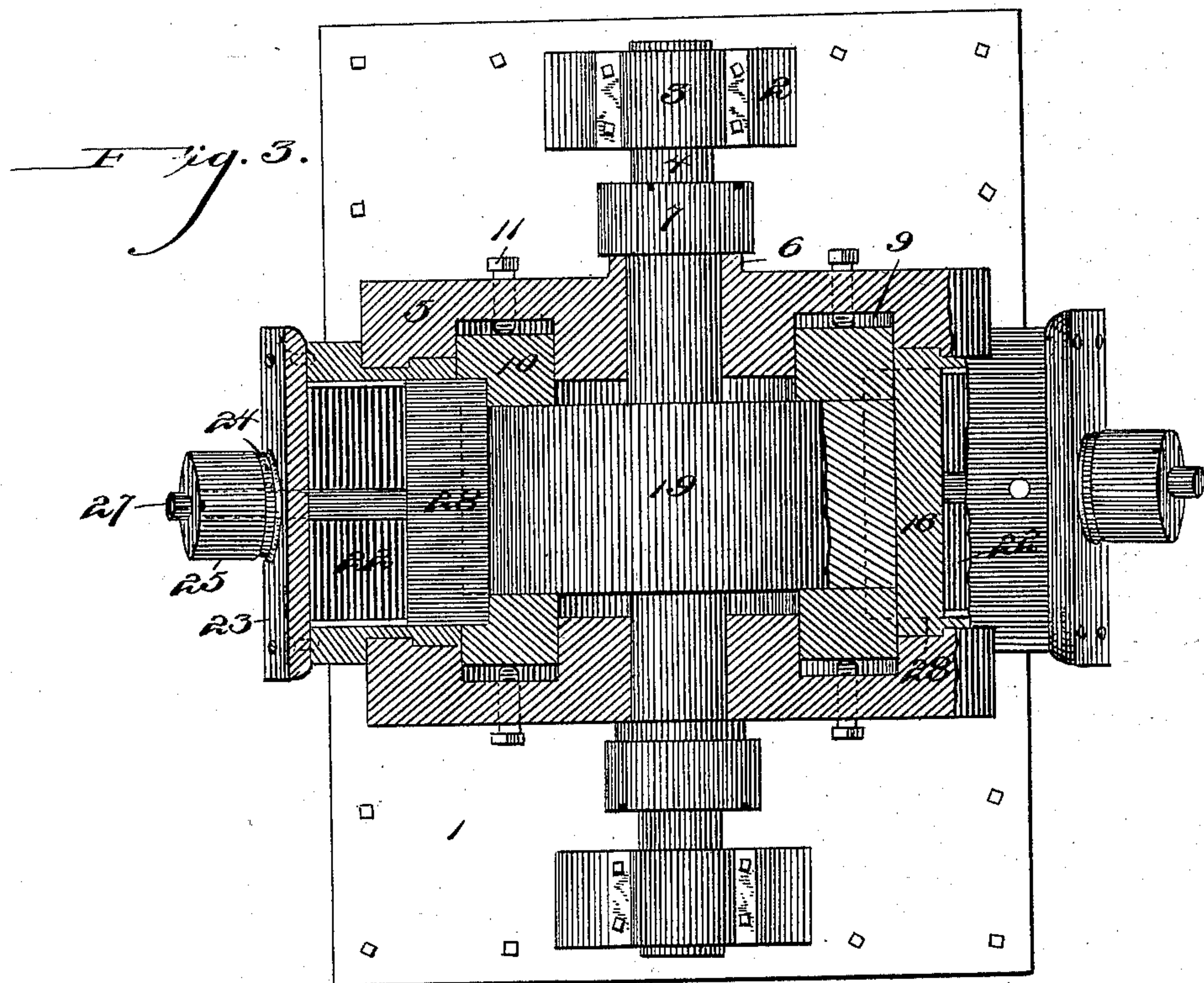
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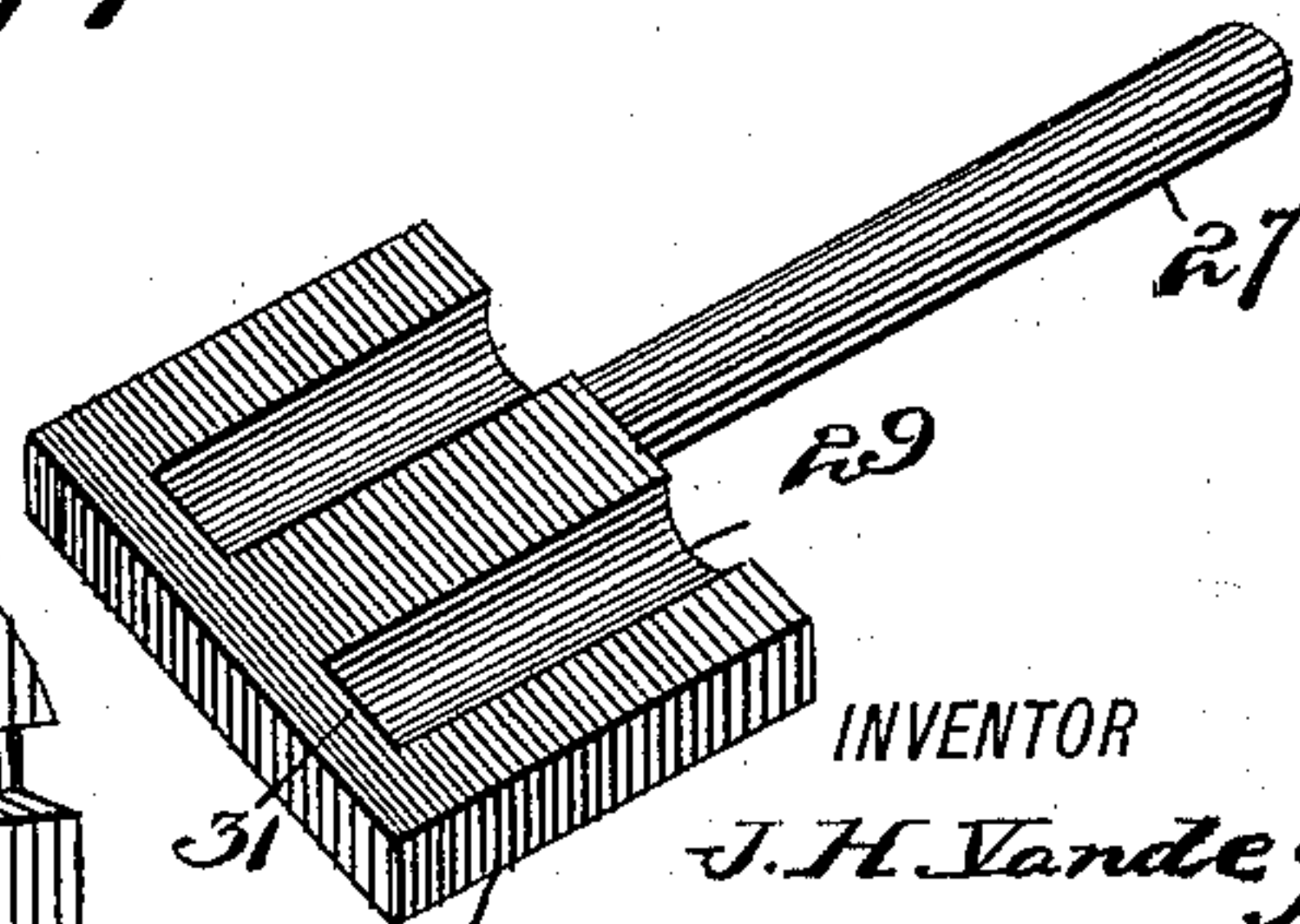
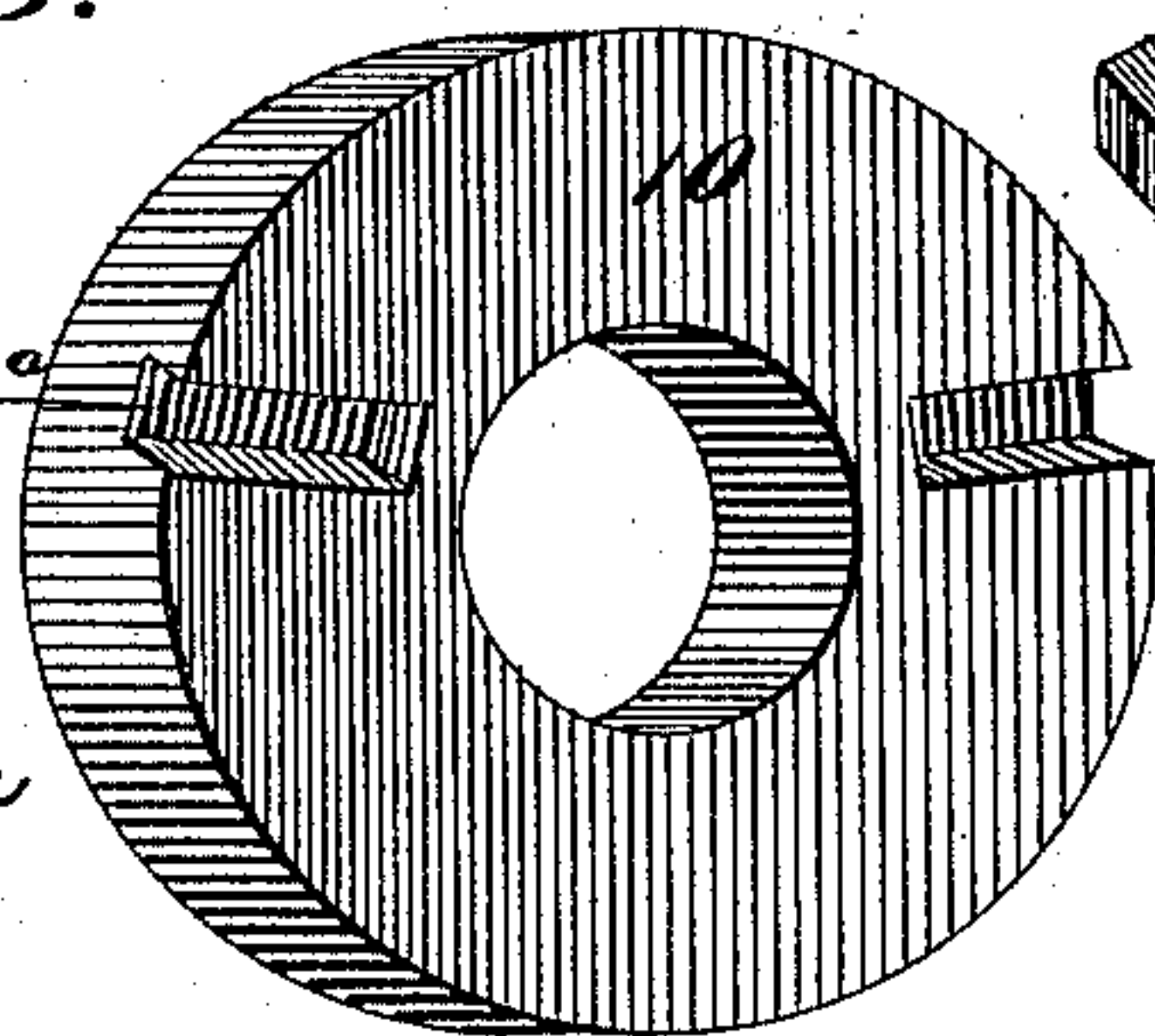
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES: 10  
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# UNITED STATES PATENT OFFICE.

JOHN H. VANDEGRIFT, OF ALLENPORT, PENNSYLVANIA.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 609,310, dated August 16, 1898.

Application filed March 1, 1898. Serial No. 672,191. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. VANDEGRIFT, a citizen of the United States of America, residing at Allenport, in the county of Washington 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 rotary engines; and it has for its object mainly to simplify the construction of this class of engines and to provide an effective power-producing engine, as will be hereinafter set forth.

Referring to the drawings, Figure 1 is a side elevation with one of the side plates removed and a portion of the engine in section. Fig. 2 is a transverse vertical sectional view. Fig. 3 is a horizontal sectional view. Fig. 4 is a perspective view of the power wheel or disk. Fig. 5 is a similar view of one of the side plates. Fig. 6 is a detail perspective view of one of the packing-rings, and Fig. 7 is a detail perspective view of one of the slide-valves.

25 The object of my invention is to provide an engine of this type in which the steam or other motive agency will be admitted simultaneously to the two opposite sides of the power wheel or disk, so as to obtain a greater speed of the same.

One of the novel features of my invention consists in the two slide-valves or plungers, which are arranged at opposite sides of the engine in close proximity to the two inlet-ports. These two slide-valves or plungers are retracted through the engagement of the power wheel or disk therewith until such time as the said wheel or disk is revolved so that the same is in position to receive the active steam. During such revolution of the wheel or disk the exhaust is made through grooves provided therefor on the slide-valves or plungers into steam-chests within which the said slide-valves or plungers are arranged, and by the action of this steam upon the valves or plungers the same are automatically returned into engagement with the power-disk, so as to close the space between the active and inactive steam.

Referring now to the drawings by reference-figures, 1 denotes a bed-plate for supporting the engine and upon which are secured the standards 2, provided at their upper ends with suitable bearings 3, in which is journaled the drive-shaft 4. The two sides 5 5, which are mounted upon said drive-shaft, are or may be provided with outwardly-extending hubs 6, their exterior surface being screw-threaded to receive a cap 7, which retains the packing 8 in position. On their inner face these two side plates 5 are provided with circumferential recesses or grooves 9, which are adapted to receive the adjustable packing-rings 10, which fit neatly within the said grooves or recesses and are adjusted by means of screws 11, engaging through the plates 5. These packing-rings are or may be held within the grooves and prevented from turning by means of pins 12, arranged on the inner face of the said plates 5, within the grooves or recesses 9, and which engage apertures 14, provided therefor in the corresponding face of the packing-rings 10. The side plates 5 are also provided with a flange or shoulder 15, which impinges upon the rim 16, so as to hold the same securely in its position, the said side plates being secured firmly together by means of heavy bolts 17, passing through the same at a point outside of the rim. These side plates and the rim therefore form the cylinder 18. Centrally mounted upon the drive-shaft 4, within the cylinder, is a piston or power-wheel 19, which is substantially elliptical in its form and is provided with the two shoulders 20 21. These shoulders form the steam-receiving face of the piston, and they are consequently arranged with their faces in opposite directions. Formed on the rim 16, at the two opposite sides thereof, are steam-chests 22, closed by a plate or cap 23, having a hub 24 to receive a cap 25 to retain the packing 26. This packing 26 is provided around the stem 27 of the slide-valves or plungers 28, which operate in the steam-chests 22 and are provided with the two grooves 29, which serve as exhaust-ports to permit the steam to escape from the cylinder into the steam-chests 22, where it is exhausted through the outlet 30. The grooves 29, which



are provided in the slide-valves or plungers, do not extend the entire length of the said valves or plungers, and consequently form a blank inner end 31 to the said valve, so that when the same is retracted by the action of the piston or power-wheel the exhaust-port will be closed. The packing-rings 10 are provided with recesses 10<sup>a</sup> to receive the two edges of these slide-valves or plungers, as fully illustrated in Fig. 6. Inlet-ports 32 33 are provided for the cylinder 18, the port 32 being arranged above the slide-valve or plunger at the correspondingside to the inlet-port 33, being arranged below the valve or plunger on its corresponding side.

It will be observed that as the steam or other motive power is admitted through the inlet-ports 32 and 33 it comes into engagement with the faces 20 and 21 of the piston or power-wheel, and thereby causes the same to revolve, which during its revolution retracts the slide-valves or plungers 28 until the inner end of the same is flush with the inner wall of the cylinder. When in this position, the exhaust-ports will be closed until the power-wheel or piston has moved so as to be again in position to receive the steam from the inlet-ports. During such revolution of the piston the spent steam is being exhausted through the ports 29 into the steam-chest 22, and as the piston again moves into position to receive the active steam the weight of the steam contained within the steam-chests will be sufficient to return the slide-valves or plungers 28 again into engagement with the piston or power-wheel and in position for the inactive steam to be exhausted during the time that the active steam is being admitted into the cylinder.

It will be noted that various changes 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 Patent, is—

1. A rotary engine comprising a cylinder formed of two side plates engaging a rim, said side plates being provided on their inner face with circumferential recesses or grooves, adjustable packing-rings engaging in said recesses or grooves, said side plates carrying pins arranged within the recesses or grooves and engaging the adjustable packing-rings to prevent the same revolving, a power-shaft journaled in said plates, a piston mounted on said shaft within the cylinder, said piston being substantially elliptical in form and being cut away at opposite sides of its periphery to provide two oppositely-disposed steam-receiving faces, steam-chests arranged at opposite sides of the cylinder, inlet-ports arranged above the said steam-chests and communicating with the cylinder, said steam-chests being provided with suitable exhaust-

ports, plungers or slide-valves operating in said steam-chests and protruding into the cylinder to be engaged by the piston, said plungers or valves being provided with grooves on their one face which when the port is open register with the steam-chests and permit the inactive or dead steam to be exhausted into said chest, substantially as shown and described.

2. In a rotary engine, the combination of the cylinder formed of the side plates 5, and rim 16, suitable inlet-ports for said cylinder, said side plates 5 being provided on their inner face with circumferential grooves or recesses, said grooves or recesses being adapted to receive adjustable packing-rings which are provided on their one side with recesses 10<sup>a</sup>, said side plates 5 carrying pins located within the circumferential recesses or grooves to engage in the apertures provided therefor in the corresponding face of the packing-rings, screws engaging through the side plates and engaging the packing-rings for adjusting the same, a power-shaft journaled in the side plates, a substantially elliptical-shaped piston mounted on said shaft within the cylinder, steam-chests arranged at opposite sides of the cylinder and having suitable outlet-ports, said steam-chests being closed at their outer end by a plate provided with a central aperture to receive the stem of the slide-valve or plunger operating in said steam-chest, said slide-valves or plungers having grooves extending partially of their length, the grooves in one slide-valve or plunger being on the opposite face to those of the opposite slide-valve or plunger so that the inactive or dead steam will be simultaneously exhausted from the compartments of the cylinder while the live steam is being admitted, substantially as shown and described.

3. In a rotary engine, the combination of the cylinder formed of the side plates 5, and rim 16, a power-shaft journaled in said side plates, a piston mounted on said power-shaft, said piston being substantially elliptical in form and dividing the cylinder into two compartments, said side plates being provided on their inner face with circumferential grooves or recesses, adjustable packing-rings engaging in said grooves or recesses, said plates carrying hubs on their outer face to receive packing for the power-shaft, caps engaging said hubs to hold the packing in position, said piston being provided at two opposite points on its periphery with cut-away portions which form steam-receiving faces, steam-chests arranged at opposite sides of the cylinder, inlet-ports for said cylinder, said ports being so arranged as to admit the steam simultaneously into the two compartments of the cylinder, slide-valves or plungers operating in said steam-chests, said slide-valves or plungers having grooves extending partially of their length and forming outlets for



the inactive or dead steam which is exhausted  
into the steam-chest simultaneously from  
both compartments and also simultaneously  
with the admission of the live steam into con-  
5 tact with the steam-receiving faces of the  
piston, the stems of said slide-valves or plun-  
gers protruding through the outer plate of  
the steam-chests and provided with a suit-

able packing, substantially as shown and de-  
scribed.

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

JOHN H. VANDEGRIFT.

Witnesses:

JOHN NOLAND,  
A. M. WILSON.