

(No Model.)

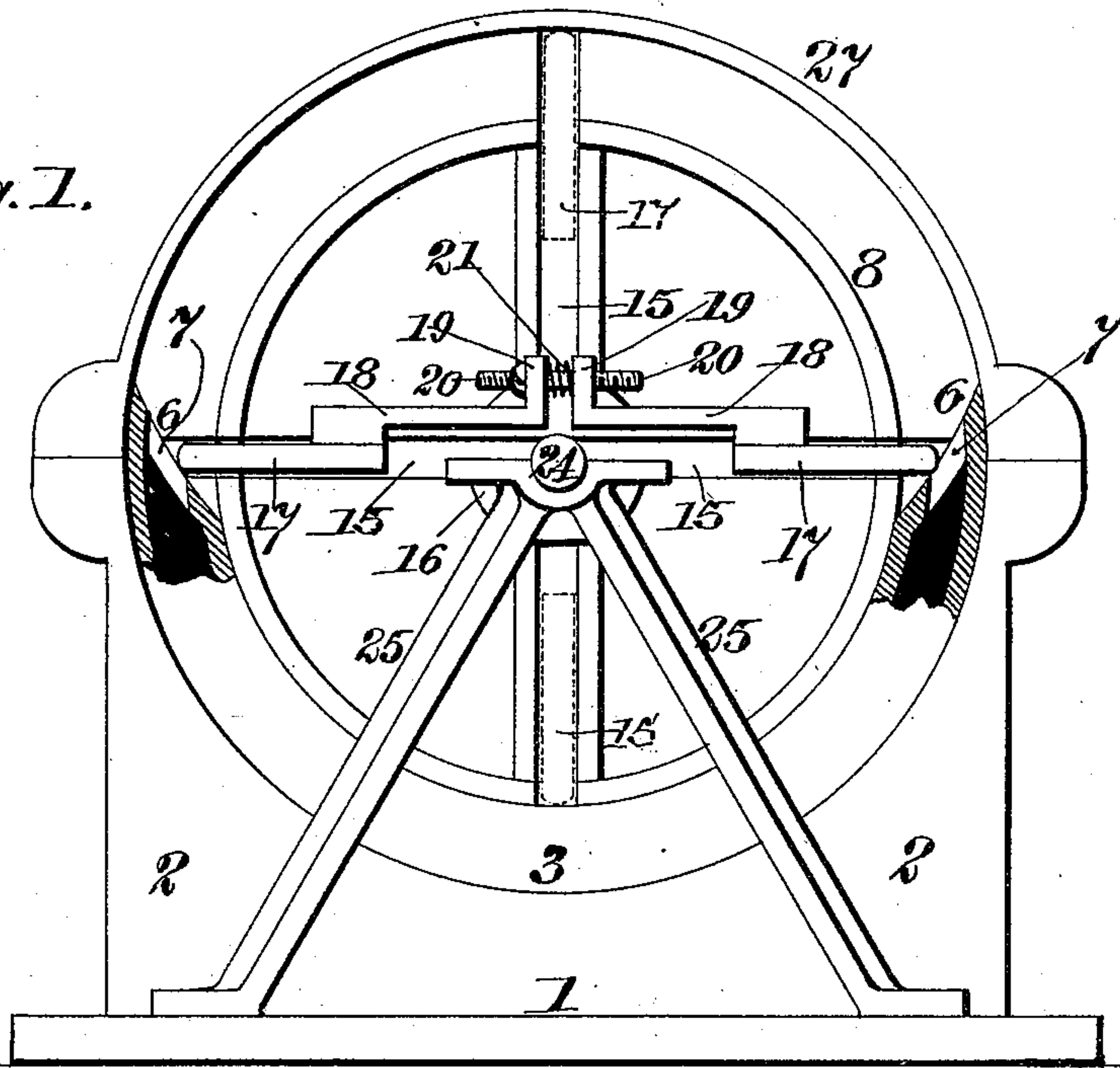
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C. P. MOORE & F. B. MCGREW.  
ROTARY ENGINE.

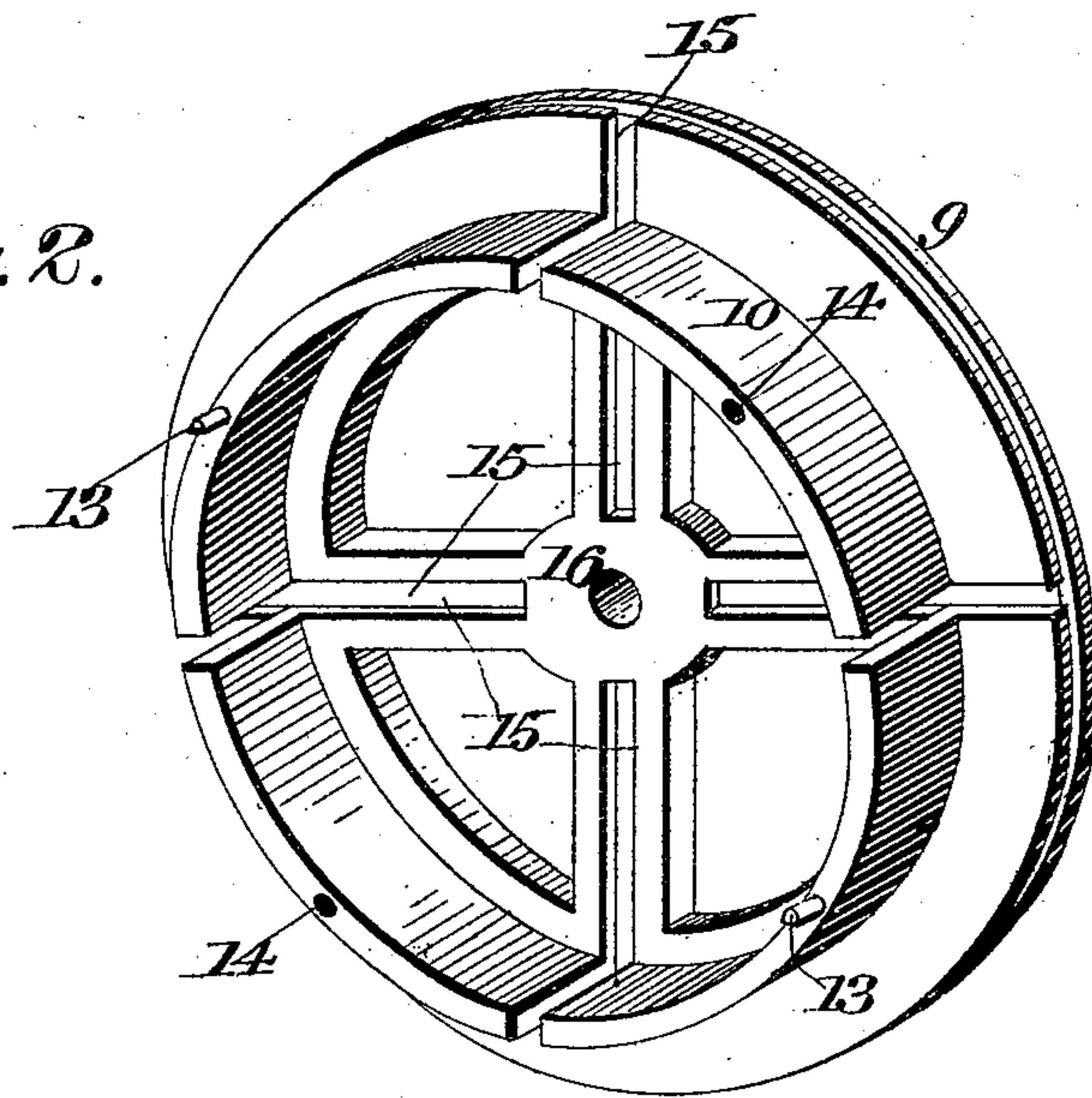
No. 515,350.

Patented Feb. 27, 1894.

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*Thos. J. Rout, Jr.*

*Jas. T. O'Neale.*

*Inventors:*

*Clarence P. Moore*  
*Finley B. McGraw*

*By their Atty's,*

*A. H. Evans & Co.*

(No Model.)

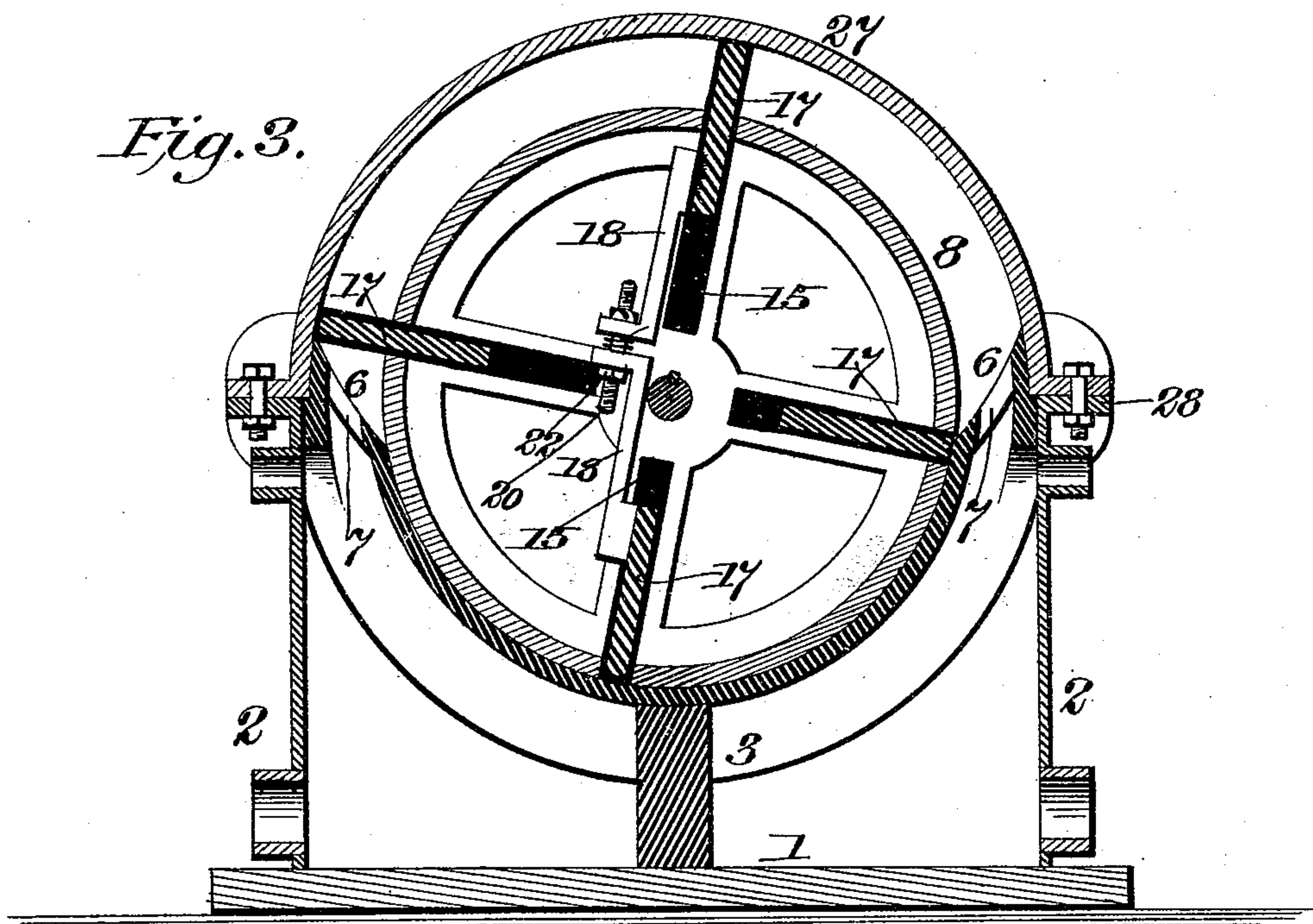
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C. P. MOORE & F. B. MCGREW.  
ROTARY ENGINE.

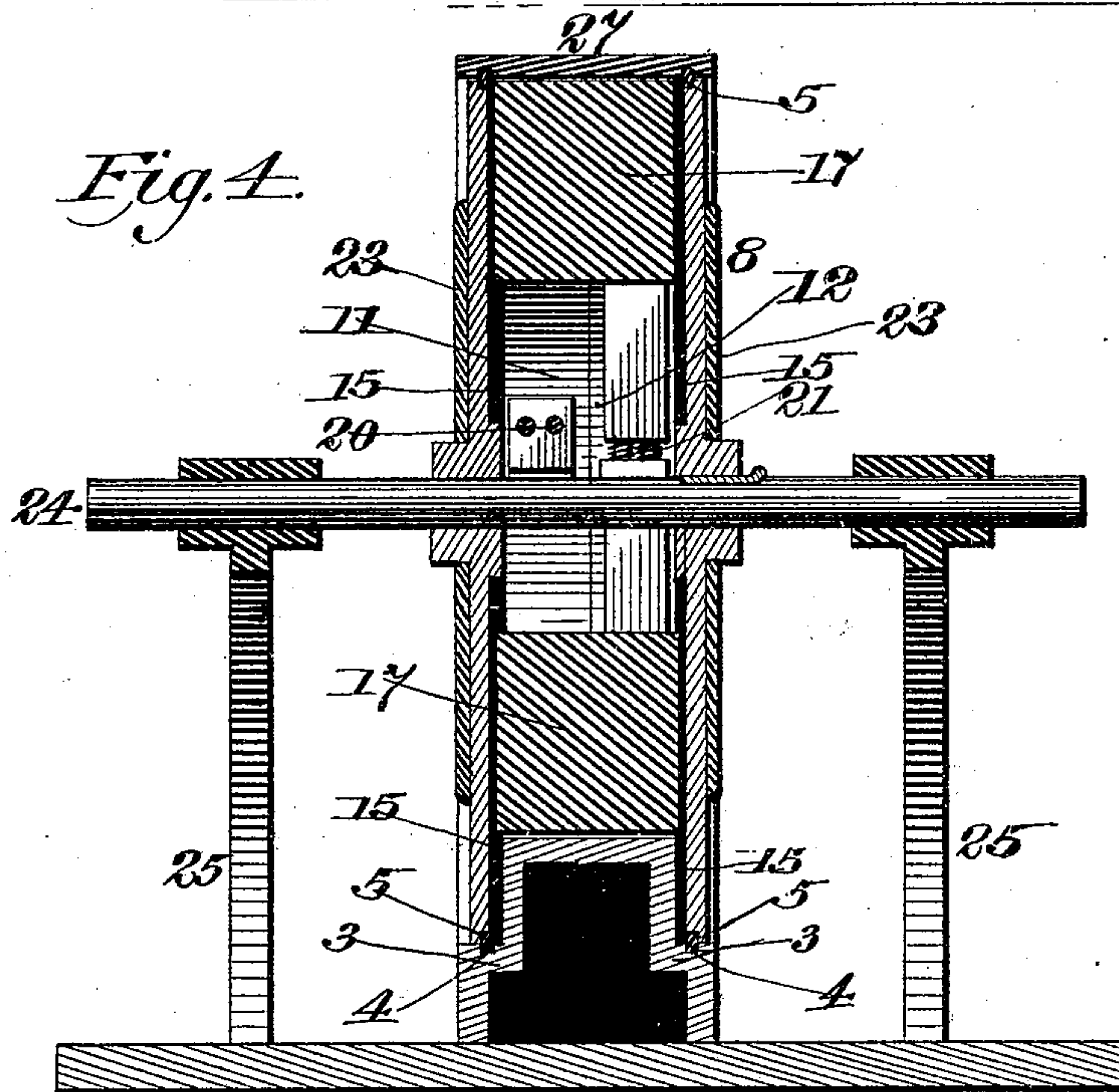
No. 515,350.

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*Fig. 3.*



*Fig. 4.*



Witnesses:

Thos. J. Root, Jr.,  
Jas. T. O'Neale.

Inventors:

Clarence P. Moore  
Finley B. McGrew

By their Atty's, A. H. Evans & Co



# UNITED STATES PATENT OFFICE.

CLARENCE P. MOORE AND FINLEY B. MCGREW, OF MCKEESPORT,  
PENNSYLVANIA.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 515,350, dated February 27, 1894.

Application filed June 7, 1893. Serial No. 476,822. (No model.)

*To all whom it may concern:*

Be it known that we, CLARENCE P. MOORE and FINLEY B. MCGREW, both citizens of the United States, residing at McKeesport, 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 full, clear, and exact description, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification, in which—

Figure 1, is a side elevation with one of the heads of the piston drums removed, showing the pistons engaged in position in the opposite head. Fig. 2, is a perspective view of one of the heads with the pistons removed. Fig. 3, is a longitudinal sectional view through the engine, and Fig. 4, is a cross sectional view.

Our invention relates to a rotary engine.

It has for its object to provide an engine of this character which shall be simple of construction, durable in use, and which will attain a high degree of speed and power with a minimum amount of steam, gas, water, &c.

With these objects in view, the invention consists in certain features of construction and combination of parts of the same which will be hereinafter described and claimed.

In the drawings, 1, denotes the engine bed. To this bed is secured the partitioned cylinder 2 the upper surface of which is semi-circular and is reduced in breadth to form shoulders 3 which are provided with grooves 4 in which is inserted suitable packing 5. The end portions of the semi-circular cylinder extend outwardly on a larger curve than the main portion, as clearly shown at 6, for a purpose hereinafter described, and are provided with a series of ports 7 communicating with the cylinder.

8 denotes the piston drum. It consists of heads 9 and sides 10 of less diameter than the heads, and is preferably formed in one piece. We have herein shown it as being made of two parts 11 and 12, one part being secured to the other to turn therewith by means of studs 13, projecting into sockets 14. Any other means may be provided, however, for removably securing the parts together. The heads are open and are provided with grooved tracks or ways 15 which radiate from hubs 16

through the sides of the drum to the periphery thereof. In these ways reciprocate pistons 17, connected as follows, to form two sets: The pistons are of rectangular form and secured to their inner ends are the piston rods 18 having angular ends 19. These ends are connected together by bolts 20 carrying springs 21 the tension of which is exerted to force the pistons outward, the tension being controlled by the nuts 22. The piston rods of one connected set are arched over that of the other set so as to avoid any unnecessary friction.

The openings of the drum heads are closed by covers 23 which may be readily removed for the purpose of adjusting the bolts connecting the pistons, to compensate for wear or for repairing or cleaning the parts. The drum is seated in the curved face of the cylinder and its shaft 24 is supported in standards 25 secured to the bed-plate. 27 denotes a curved cover bolted to lugs 28 carried by the cylinder and embracing a portion of the periphery of the heads and forming a steam tight union between the two.

The operation of the invention is as follows: Steam is admitted through the ports at one side of the engine, and passes upward striking a piston and carries the same around until it reaches the port on the opposite side through which it escapes and is condensed or led off through a pipe at the bottom of the cylinder. At the moment the piston strikes the curved portion 6, at the exhaust end, its companion piston that is the one with which it is secured, has approached the opposite portion 6 and is forced outward toward the periphery of the drum within the path of the steam by reason of the first mentioned piston being forced inward. The other pair of pistons work in the same manner. All dead centers are thus avoided.

When it is desired to inspect the interior of the drum, this may be readily done by removing one of the covers without disturbing the other part of the engine.

From the foregoing description taken in connection with the accompanying drawings the operation and advantages of our invention will be apparent.

It will be observed that the heads of the drum also form the heads of the cylinder and



thus greatly reduce the cost in manufacture as well as the friction which would be made, should the heads of the drum rotate in contact with separate heads of a cylinder.

5 When it is desired to change the direction of rotation, this may be readily done simply by introducing the steam into the opposite port and allowing it to exhaust through the other port. The means for accomplishing such re-  
10 versal of the engine being well known we do not deem it necessary to illustrate them.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

15 1. In a rotary engine the combination of a steam chest having inlet and outlet ports and a portion thereof forming a seat for a drum, a drum mounted upon a shaft and adapted to rotate in said seat, a cover of larger diameter  
20 than the drum forming a portion of the steam chamber, ports from the steam chest to said steam chamber and pistons adapted to reciprocate in said drum, substantially as herein described.

25 2. In a rotary engine the combination of a steam chest having inlet and outlet ports and a portion thereof forming a seat for a drum, a drum mounted upon a shaft and adapted to rotate in said seat, a cover of larger diameter

than the drum, curved portions between the  
30 drum seat and the interior of the cover, ports in said curved portions and pistons adapted to reciprocate in said drum, substantially as herein described.

3. In a rotary engine, the combination with  
35 a partitioned cylinder consisting of a shell the upper surface of which is concave, and the ends of which are curved on a greater line than the concavity, and are provided with  
40 inlet and outlet ports, said shell forming one side of the steam chest of a drum consisting of heads and sides, the heads of which are provided with radiating ways or tracks ex-  
45 tending beyond the sides of the drum to the periphery of the heads, two sets of pistons adapted to reciprocate in said ways, the dia-  
50 metrically opposite pistons being connected one to the other by adjustable means, and a curved cover conforming to the curvature of the drum, said cover and cylinder having a steam packing between them and the drum, substantially as herein described.

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Witnesses:

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