

No. 726,228.

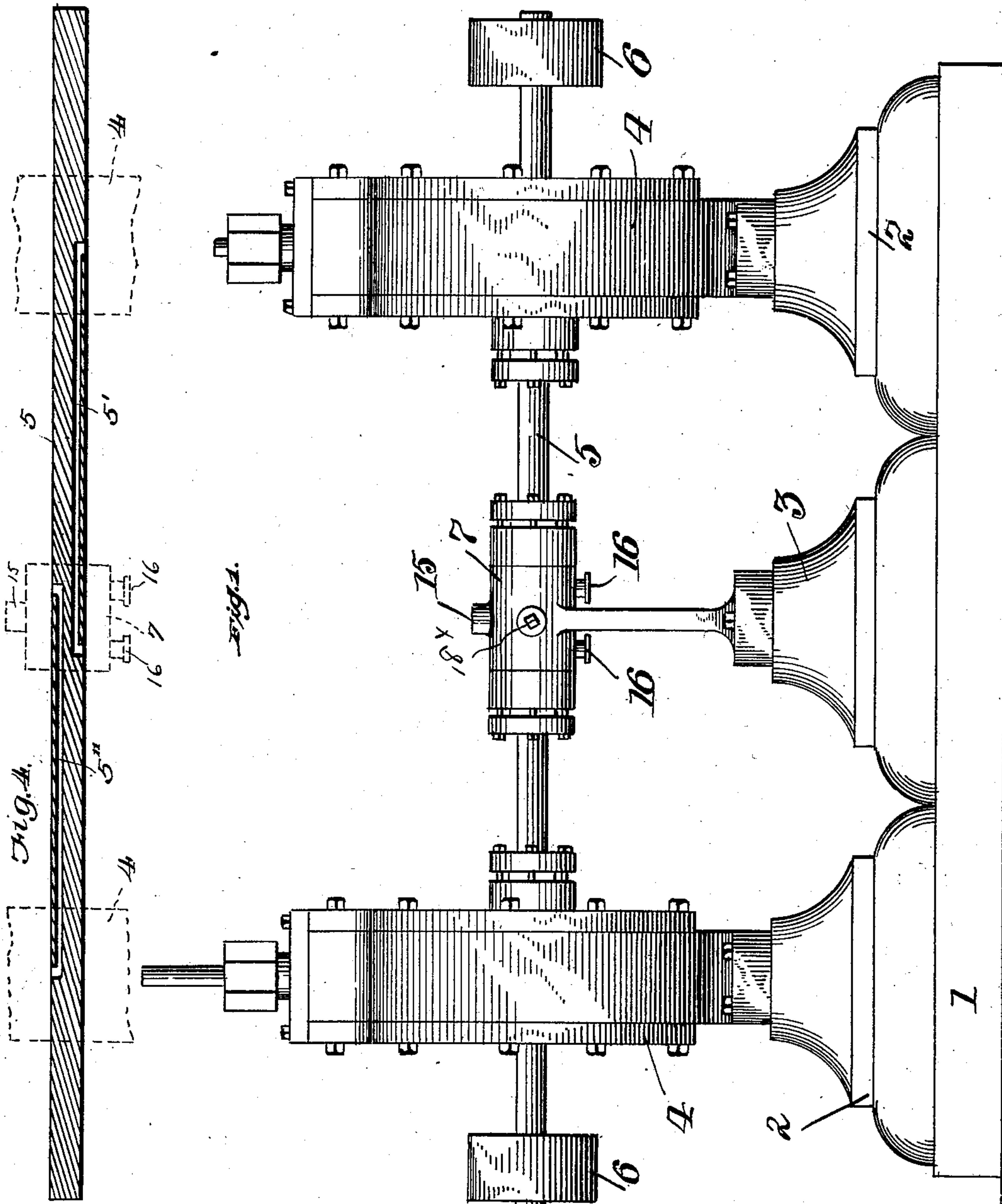
PATENTED APR. 21, 1903.

H. L. LEWIS.  
ROTARY ENGINE.

APPLICATION FILED JUNE 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

J. P. Appleman,  
M. Hunter

Inventor  
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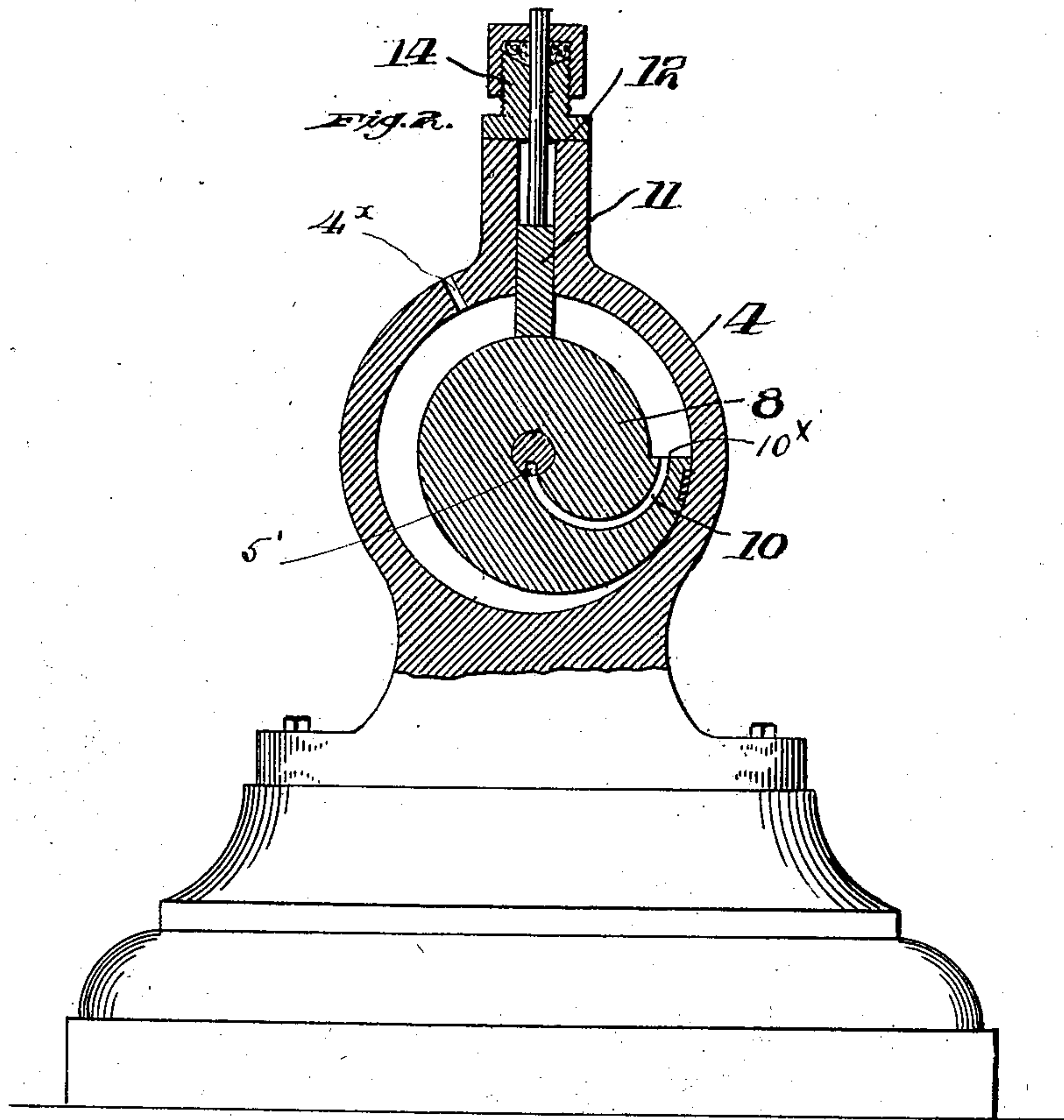
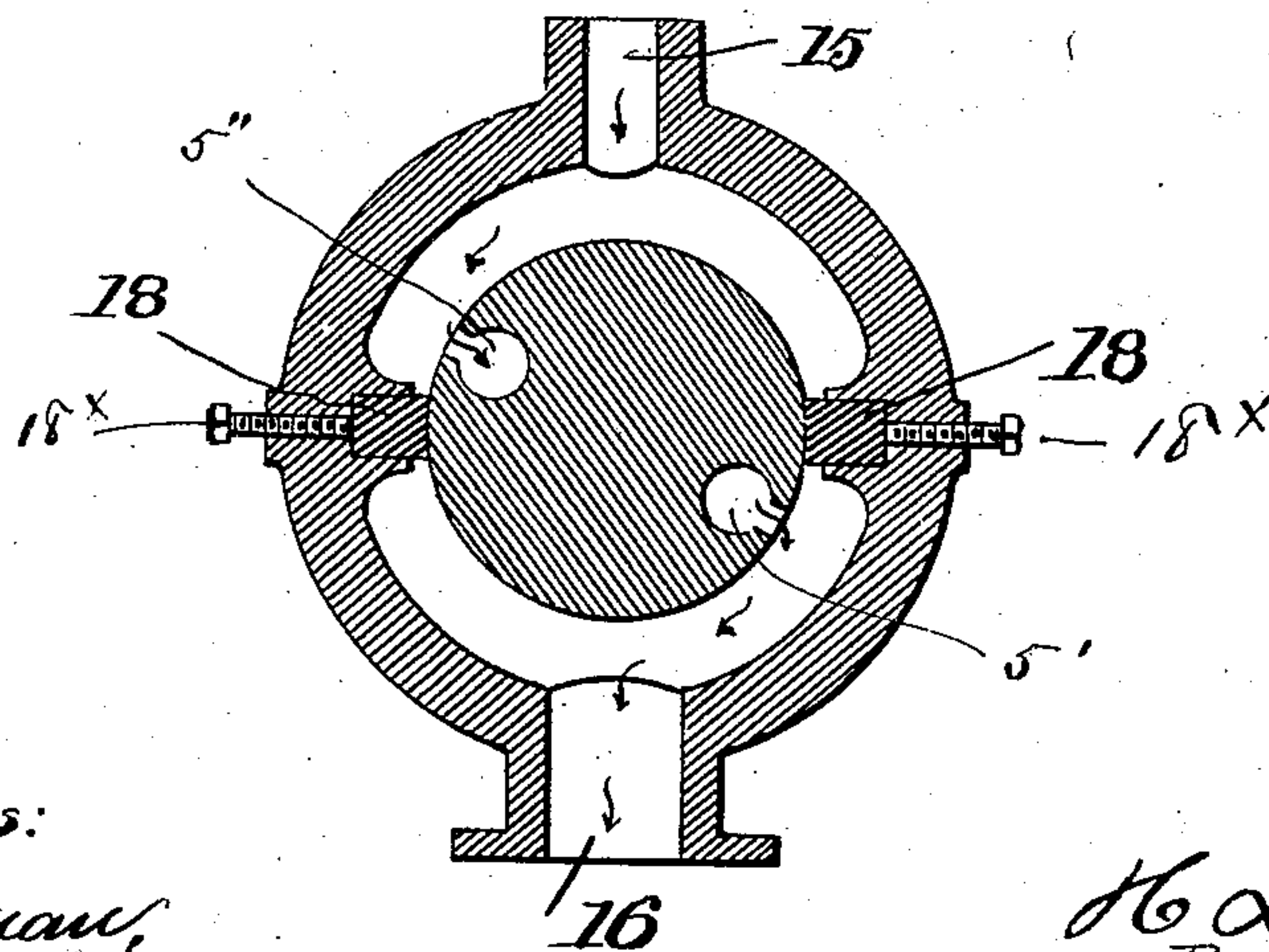


Fig. 2



Witnesses:

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# UNITED STATES PATENT OFFICE.

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TO SAMUEL E. MOORE AND BERNARD F. CALL, OF PITTSBURG, PENN-  
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## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 726,228, dated April 21, 1903.

Application filed June 23, 1902. Serial No. 112,850. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY L. LEWIS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rotary Engines, of which improvement the following is a specification.

This invention relates to new and useful improvements in rotary engines, in which two steam-cylinders are provided, each having a rotary piston mounted therein and their communication being had through a grooved shaft from the steam-chest and the same channel or groove adapted to serve as a feed and exhaust passage-way acting alternately for each purpose in the rotary movement of the shaft.

The invention consists, further, in various details of construction and combinations of parts, as will be hereinafter fully described and then specifically defined in the appended claim.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved engine. Fig. 2 is a cross-sectional view vertically through one of the pistons and cylinders. Fig. 3 is a sectional view through the steam-chest; and Fig. 4 is a longitudinal section through the shaft on which the pistons are mounted, showing the relative positions of the channels or grooves therein which serve as steam exhaust and exit passage-ways.

Reference now being had to the details of the drawings by numerals, 1 designates the face of the engine, and 2 represents supports thereon, on which the cylinders 4 rest. Mounted in the ends of said cylinders is a shaft 5, which also passes through a steam-chest 7, mounted on the support 3. Leading into the steam-chest is a port 15 and exit or exhaust ports 16. Said shaft 5 has two channels 5' and 5'', formed longitudinally in the shaft at positions diametrically opposite, as shown clearly in the detail sectional view Fig. 4. These channels are clearly shown in Fig. 3 of the drawings and are provided one for the purpose of allowing steam to be taken to one piston while it is exhausting from the other. Blocks 18 are mounted in the steam-chest at positions diametrically opposite and adjusted by means

of screws 18<sup>x</sup>. The steam-inlet enters the portion of the steam-chest above the blocks 18, and exhaust-port 16 leads away from the exhaust-space below said blocks, the course of the steam entering the steam-chest and leaving the same being indicated by arrows in Fig. 3.

Mounted to rotate with the shaft is a piston 8, there being one in each of said steam-cylinders, and the circumference of each piston is cam-shaped and terminates abruptly in a shoulder 10<sup>x</sup>, Fig. 2, and a port 10 leads from one of the channels or grooves 5' in the shaft to and opens through the shoulder 10<sup>x</sup>, whereby steam is allowed to enter the steam-chest during a partial rotary movement of the shaft and through which duct and groove steam is allowed to exhaust during the balance of the rotary movement of the cylinder. An impact-slide 11 is mounted with a suitable stem in the head 14 of each steam-cylinder and rides about the cam circumference of the piston, said block 11 and the shoulder on the piston being the surfaces upon which the expanding steam operates to drive the piston and the shaft. In order to allow any dead steam or air in front of the piston to escape, I provide a port 4<sup>x</sup>, Fig. 2.

From the foregoing it will be observed that steam as it enters through the port 15 will pass into one or the other of the grooves 5' or 5'' accordingly as one or the other of said grooves is in communication with the upper portion of the steam-chest. The steam, taking the course followed by the arrows in Fig. 3, will pass through into one cylinder until the communication between the upper portion of the steam-chest and said groove is cut off, which will take place when the entrance to the groove receiving steam passes by one of the blocks 18, and after the entrance to said groove passes by the block the supply of steam is cut off and communication is afforded between the exhaust-port of the steam-chest and the steam-cylinder, thus allowing the steam which has been expanded within the cylinder to exhaust through the duct 10 and the same groove into the exhaust part of the steam-chest. It will be noted that the same groove in the shaft and the same duct in



the piston serve as a passage-way to conduct the live steam to the steam-chest and exhaust means from the cylinder. By having the two grooves arranged diametrically opposite it  
5 will be observed that the force of the steam is constantly acting upon the shaft through the medium of the two steam-pistons.

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

A rotary steam-engine comprising a plurality of steam-cylinders and a steam-chest, a shaft mounted in said cylinders and chest, a piston having a cam periphery positioned  
15 in each cylinder and mounted upon and rotating with said shaft, each piston adapted to wipe against the inner circumference of a cylinder, a movable resistance-block mounted to ride upon the circumference of each

piston, said shaft having steam-carrying  
20 channels on opposite sides of the shaft with the inner ends of said channels overlapping at the center and within said steam-chest, adjustable blocks mounted within the steam-chest at positions diametrically opposite,  
25 each channel adapted to communicate alternately between the steam-inlet pipe and a steam-cylinder and between the latter and exhaust-port of the steam-chest at each rotary movement of the shaft, as set forth. 30

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HARRY L. LEWIS.

In presence of—

LOUIS MOESER,  
M. HUNTER.