No. 617,724. Patented Jan. 17, 1899.

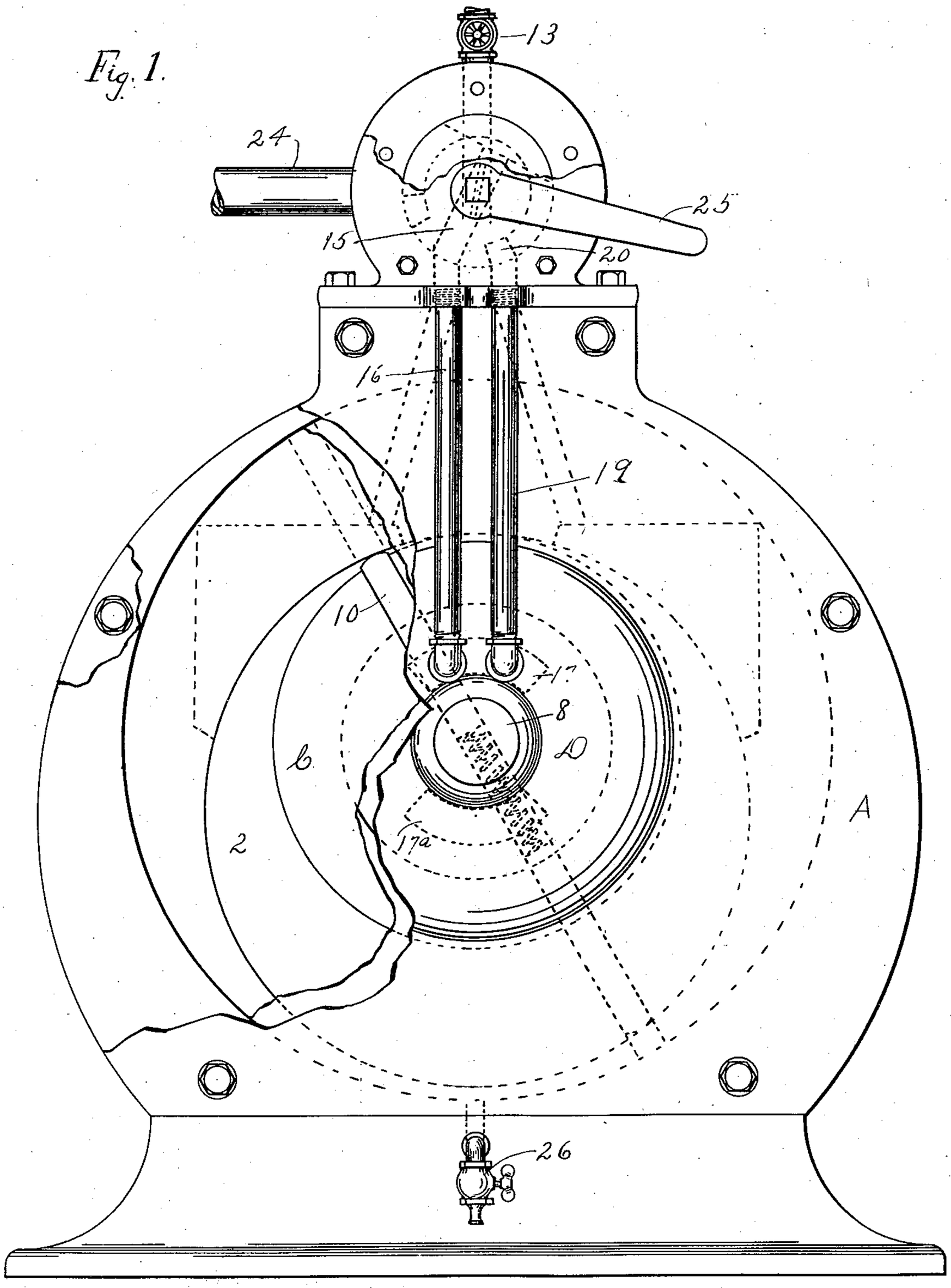
M. P. ELGEN.

ROTARY ENGINE.

(Application filed Sept. 17, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



Witnesses:
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Elgie H. Crane.

Inventor:
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(No Model.) 3 Sheets—Sheet 2.

Fig 2.

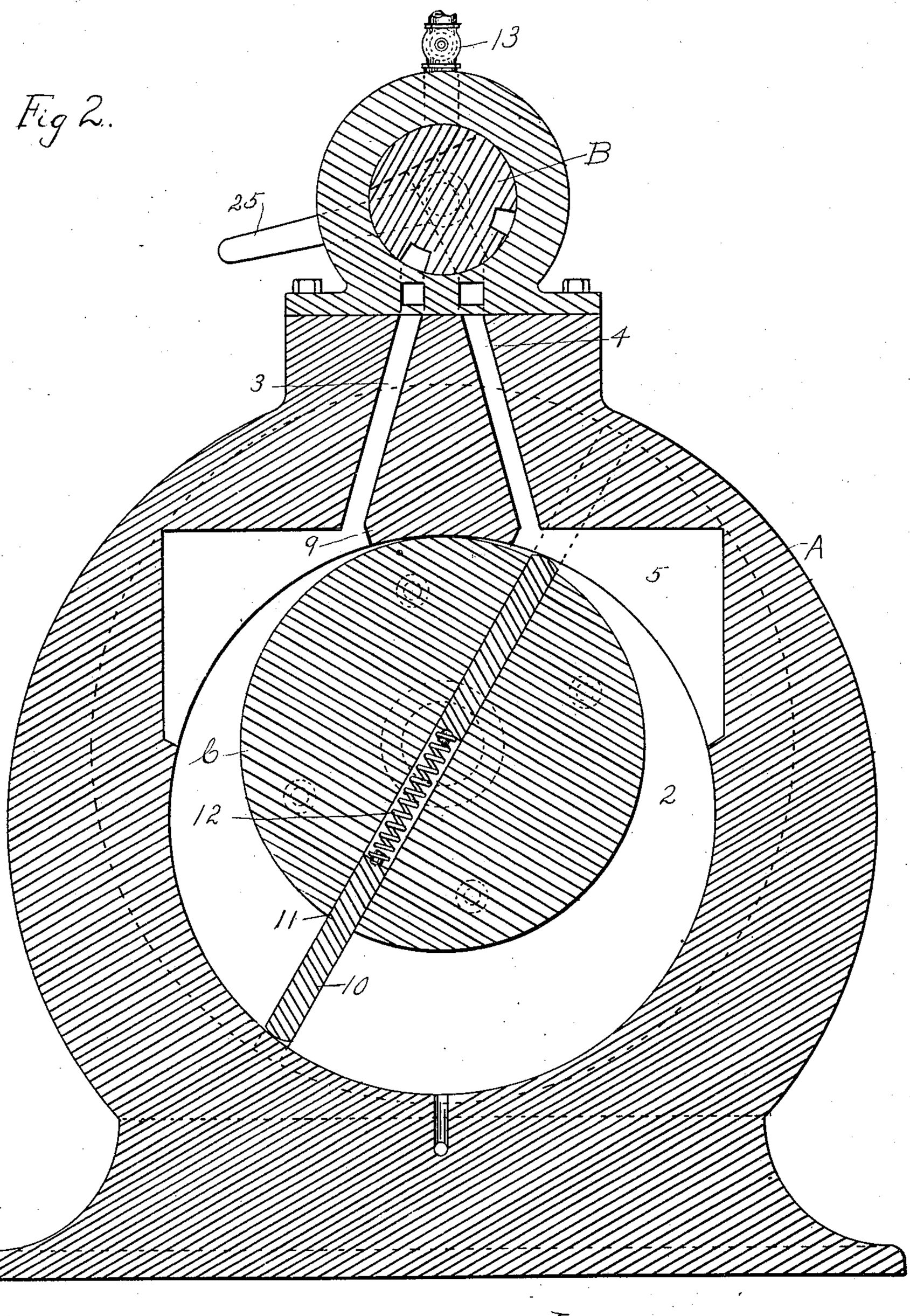

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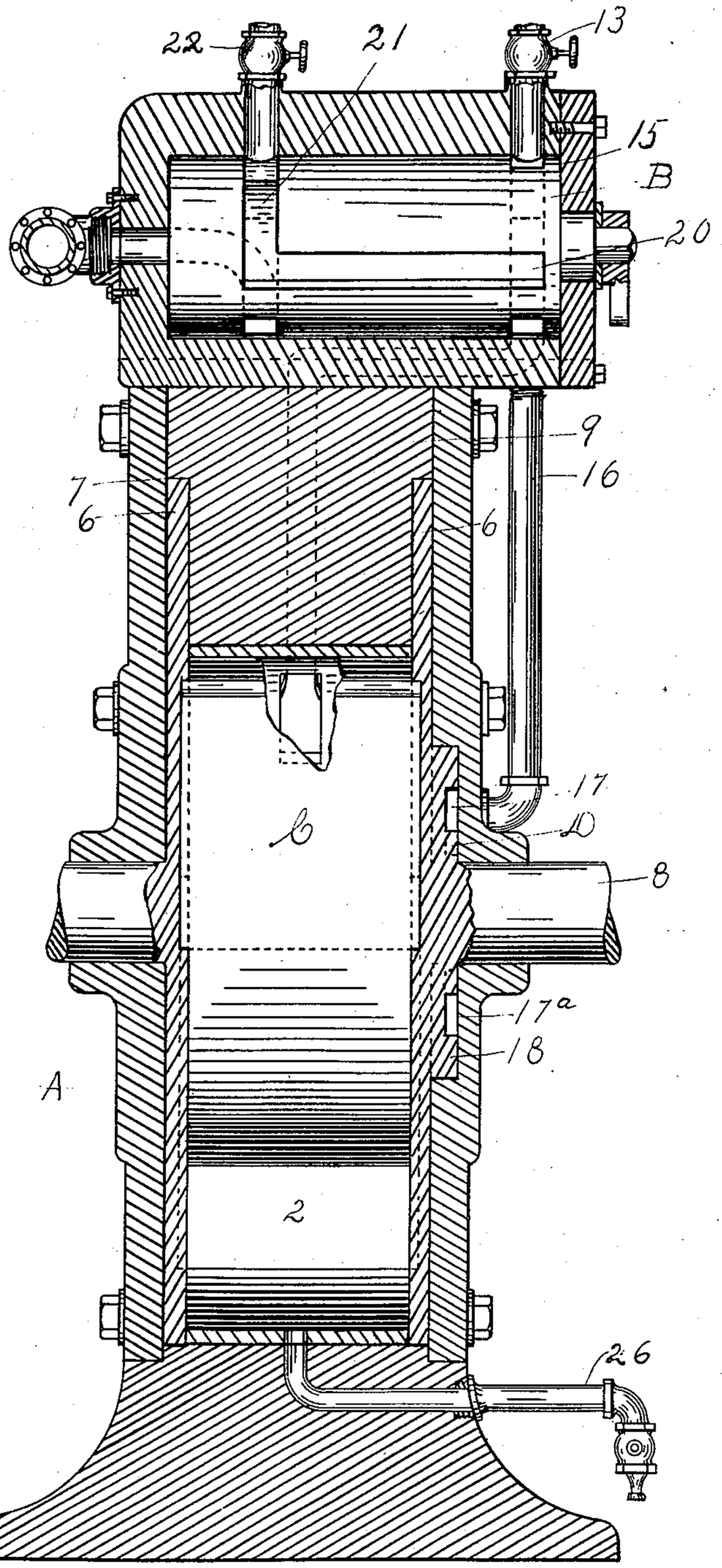
Fig 3.



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UNITED STATES PATENT OFFICE.

MAGNUS P. ELGEN, OF ST. PAUL, MINNESOTA, ASSIGNOR OF PART TO JOHN J. MOE, CHARLES REHNSTRAND, AND CHRIST BERG, OF WEST SUPERIOR, WISCONSIN, AND MARTIN SMITH AND ANDREW JOHNSON.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 617,724, dated January 17, 1899.

Application filed September 17, 1898. Serial No. 691,163. (No model.)

To all whom it may concern:

Be it known that I, MAGNUS P. ELGEN, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Rotary Engines, of which the following is a specification.

My invention relates to improvements in rotary engines, and particularly in the construction of the valve and cut-off.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of my improved engine, partly broken away. Fig. 2 is a vertical cross-section taken through the inner piston-cylinder and inlet-valve, and Fig. 3 is a vertical section taken longitudinally of the valve and cylinder.

In the drawings, A represents the engine, provided with the central piston-chamber 2. Said piston-chamber is connected with a rotary valve B by means of the ducts 3 and 4, expansion-chambers 5 being formed in the wall of the piston-chamber adjacent said ducts.

C represents the inner cylinder, which is formed with disks 6, fitting in the slots 7 in the opposite side of the engine-casing, said disks being provided with suitable driving-shaft 8. As will be seen, the inner cylinder C is positioned in the upper portion of the piston-chamber against the wall 9, which divides the ducts 3 and 4. Sliding pistons or abutments 10 are arranged in the slot 11 of the inner cylinder C and are separated and held in contact with the wall of the piston-chamber by the coil-spring 12.

13 is the steam-inlet pipe, which connects with the enlarged upper end of the passage 15, extending through the valve. As shown in Fig. 3, the lower end of the passage 15 communicates with the pipe 16, leading to the rotary cut-off valve D. This cut-off valve consists of the ports 17 and 17ª, formed in the projecting face 18 of the disks 7. As shown in Fig. 1, the pipe 16 connects the passage 15 with one side of the port 17, and the pipe 19 connects the opposite side of the port 17 with one of the longitudinal passages 20, formed in the side of the valve B. These passages 20, which are formed in each side of the valve, connect with the ducts 3 and 4, leading to the piston-chamber. The passages are also connected by a transverse passage 21, which communicates with a valve-controlled port 22. The steam as it passes through the passage 3 to the piston-chamber will expand in the expansion-chambers 5, then acting upon the piston to operate the engine, then passing out through the passage 4 and through the port 23 to the exhaust-pipe 24. By referring to Fig. 1 it will be seen that the steam will be shut off as soon as the slot 17 is carried past the pipe 16, the same operation taking place when the slot 17ª comes in communication with the pipes. There are thus two inlets of steam to each revolution of the cylinder. The valve B is provided with a handle 25, by which it may be turned to bring the passage 15 into communication with the pipe 19 when the operation of the engine is reversed. The piston-chamber is provided with a suitable drainage-pipe 26.

The valve-controlled port 22 normally remains closed and is adapted to be opened to allow an inlet of steam to start the engine when the pipes 16 and 19 stand between the ports 17 and 17ª and also when desired to serve as an additional inlet of steam.

I claim—

1. In a rotary engine, the combination with the cylinder having suitable inlet-ports, of the rotary valve arranged between said inlet-ports and the source of steam-supply, the piston-cylinder provided with sliding abutments, the rotary cut-off valve D operated by said piston-cylinder, said rotary cut-off valve communicating with the main rotary valve and to control the cut-off steam.

2. In a rotary engine, the combination with the cylinder, having suitable passages leading to the piston-chamber, of the inlet-valve the piston-cylinder having sliding abutments, the rotary cut-off valve D with the inlet steam-port and with ports leading to the piston-chamber.

3. In a rotary engine, the combination with the cylinder provided with a piston-chamber and steam-passages leading thereto, the rotary valve arranged between said passages and the

source of steam-supply, the piston-cylinder, the rotary cut-off valve D carried thereby, the main rotary valve being provided with a diametric passage which connects the inlet steam-port with a conduit leading to the cut-off valve and being also provided with a conduit which connects the cut-off valve with the piston-chamber.

4. In a rotary engine of the class described, the combination of the cylinder having a piston-chamber, and expansion-chambers formed in the walls of said piston-chamber, the piston-cylinder arranged in said piston-chamber, the rotary cut-off valve D carried by said piston-cylinder and being provided with a pair of ports, the main rotary valve having a diametric passage normally connecting the inlet steam-pipe with a pipe leading to one of the ports of the cut-off valve and having passages connecting a second pipe leading to the port of the cut-off valve with the piston-chamber, whereby the inlet of steam is cut off by said cut-off valve as the piston-cylinder rotates.

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

MAGNUS P. ELGEN.

Witnesses:
H. S. JOHNSON,
ELGIE H. EVANS.