Feb. 13, 1945. E. W. KLAS 2,369,147

ROTARY VALVE

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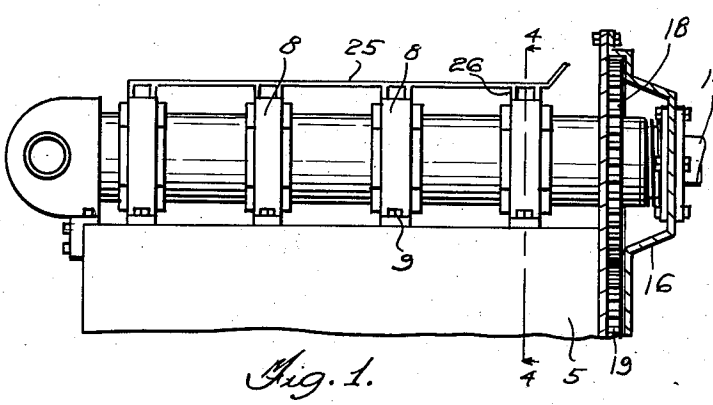


Fig. 1.

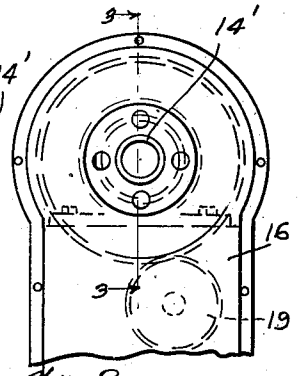


Fig. 2.

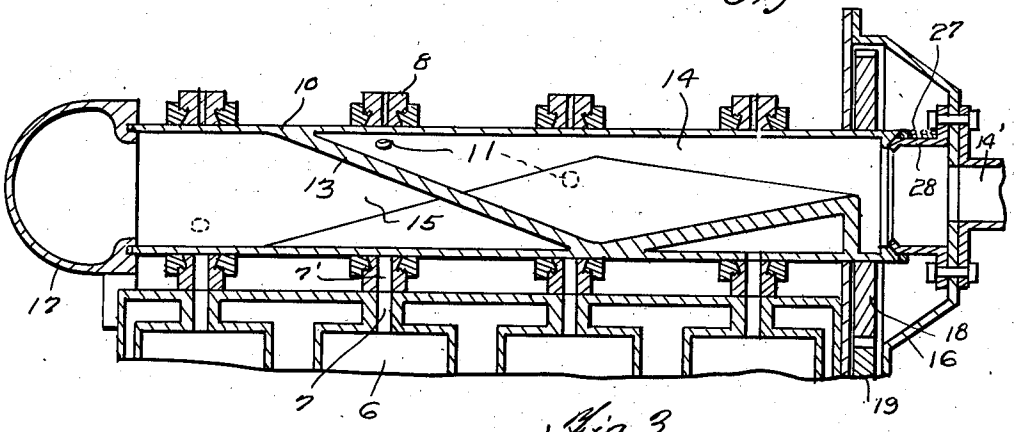


Fig. 3.

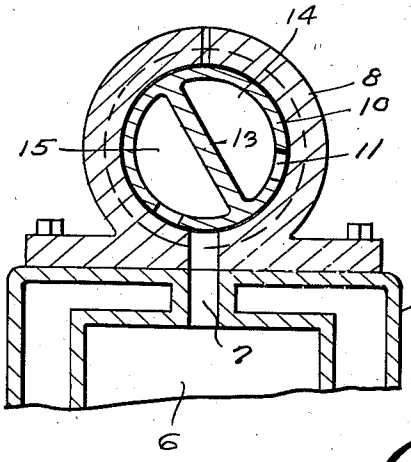


Fig. 4.

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ROTARY VALVE

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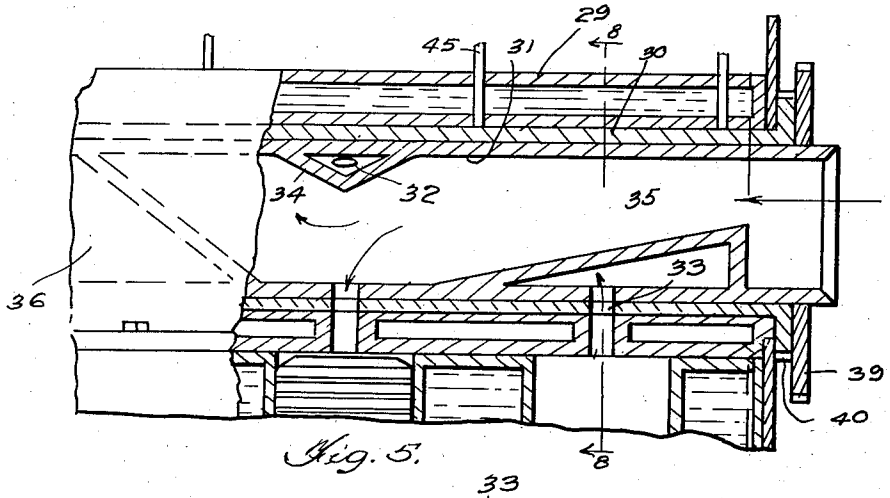


Fig. 5.

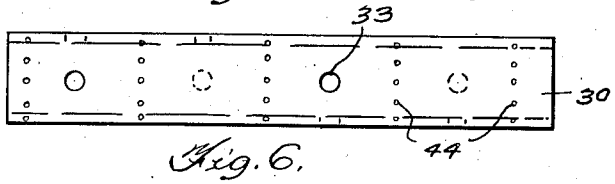


Fig. 6.

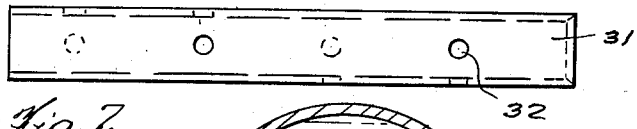


Fig. 7.

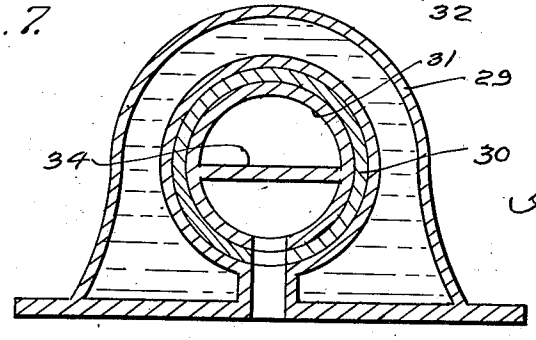


Fig. 8.

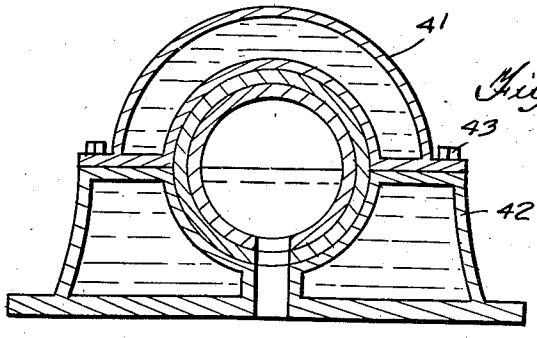


Fig. 9.

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Patented Feb. 13, 1945 2,369,147

UNITED STATES PATENT OFFICE

2,369,147

ROTARY VALVE

Earl W. Klas, Flint, Mich.

Application December 9, 1942, Serial No. 468,397

1 Claim. (Cl. 123—59)

The present invention relates to new and useful improvements in rotary valves and has for its primary object to provide a single valve for controlling both the intake and exhaust of an engine, pump, compressor or the like.

A further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in performance, relatively inexpensive to manufacture and install in operative position and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like reference numerals refer to like parts throughout, and in which—

Figure 1 is a fragmentary side elevational view of engine equipped with my improved rotary valve.

Figure 2 is an end elevational view thereof.

Figure 3 is a longitudinal sectional view through the valve taken on a line 3—3 of Figure 2.

Figure 4 is a transverse sectional view taken on a line 4—4 of Figure 3.

Figure 5 is a fragmentary longitudinal sectional view of a modified valve construction.

Figure 6 is a side elevational view of the valve sleeve of Figure 5.

Figure 7 is a view of the valve of Figure 5.

Figure 8 is a transverse sectional view taken on a line 8—8 of Figure 5, and

Figure 9 is a transverse sectional view of a modified construction of the casing.

Referring now to the drawings in detail and with particular reference to Figures 1 to 4, inclusive, the numeral 5 designates the engine block having the cylinders 6 therein, each having a port 7 in its top which serves as both intake and exhaust port.

A plurality of valve bearings 8 are secured in spaced relation to the top of the block by bolts 9. Rotatably mounted in the valve bearings is a sleeve type valve 10 having openings 11 adapted to register with ports 7', in the valve bearings, the ports 7 of the cylinder and the ports 7' being in communication. Packing nuts 12 are threaded to each side of the brackets to seal the ports.

Formed in the valve 10 is a spiral partition 13 forming an intake passage 14 communicating with certain of the ports and an exhaust passage 15 communicating with the remaining ports.

The intake passage is open at one end for connection with an intake pipe 14' with packing collar 28 extending through a gear cover or housing 16 secured to one end of the block 5 while the exhaust passage is open at the opposite end of the valve for connection with an exhaust manifold 17.

A gear 18 is secured on the intake end of the valve and is operatively connected to the engine crank shaft (not shown), through an idler gear 19.

An oil pipe 25 extends along the top of the valve, the pipe having branch pipes 26 leading therefrom through the valve bearings 8 to lubricate the valve.

The inner end of the intake pipe 14 with packing collar 28 is tapered to snugly fit in the end of the valve 10 and a coil spring 27 mounted on the intake pipe forces the packing collar 28 against the end of the valve to seal the latter.

In the form of the invention illustrated in Figures 5 to 9 a cylindrical water jacket 29 is secured to the top of the block and journaled for rotation in the jacket is a sleeve 30. Rotatably mounted in the sleeve is a valve 31, the sleeve and valve having ports 32 and 33 respectively adapted to register with the ports of the cylinders during a predetermined period of rotation of the sleeve and valve. The valve 31 likewise has the spiral partition 34 therein forming the intake and exhaust passages 35 and 36 respectively.

Gears 39 and 40 on the intake ends of the sleeve and valve respectively are driven from the engine crankshaft as heretofore explained through idler gears (not shown), the gears being arranged to oppositely rotate the sleeve and valve.

In Figure 9 the water jacket is shown constructed of upper and lower sections 41 and 42 secured by bolts 43.

The sleeve is formed with apertures 44 as shown in Figure 6 by means of which oil is fed to the outer surface of the valve by the oil pipe 45 for lubricating the valve and sleeve.

Having described the invention, what is claimed as new is:

A rotary valve for controlling intake and exhaust of an engine cylinder and comprising a cylindrical hollow member open at each end and having ports in its side walls, a spiral partition in the member separating the interior thereof into intake and exhaust passages, said intake passage being closed at one end and said exhaust passage being closed at a relative opposite end of the member, intake and exhaust pipes connected to the respective ends of the member for communication with the respective passages, spaced apart valve bearings secured to the engine and having ports communicating with the engine cylinders, packing nuts threaded to the sides of the valve bearings for sealing the latter, and means for rotating the member in the valve bearings, said ports of the cylindrical member registering with the ports of the valve bearings during a predetermined period of rotation of the member.

EARL W. KLAS.