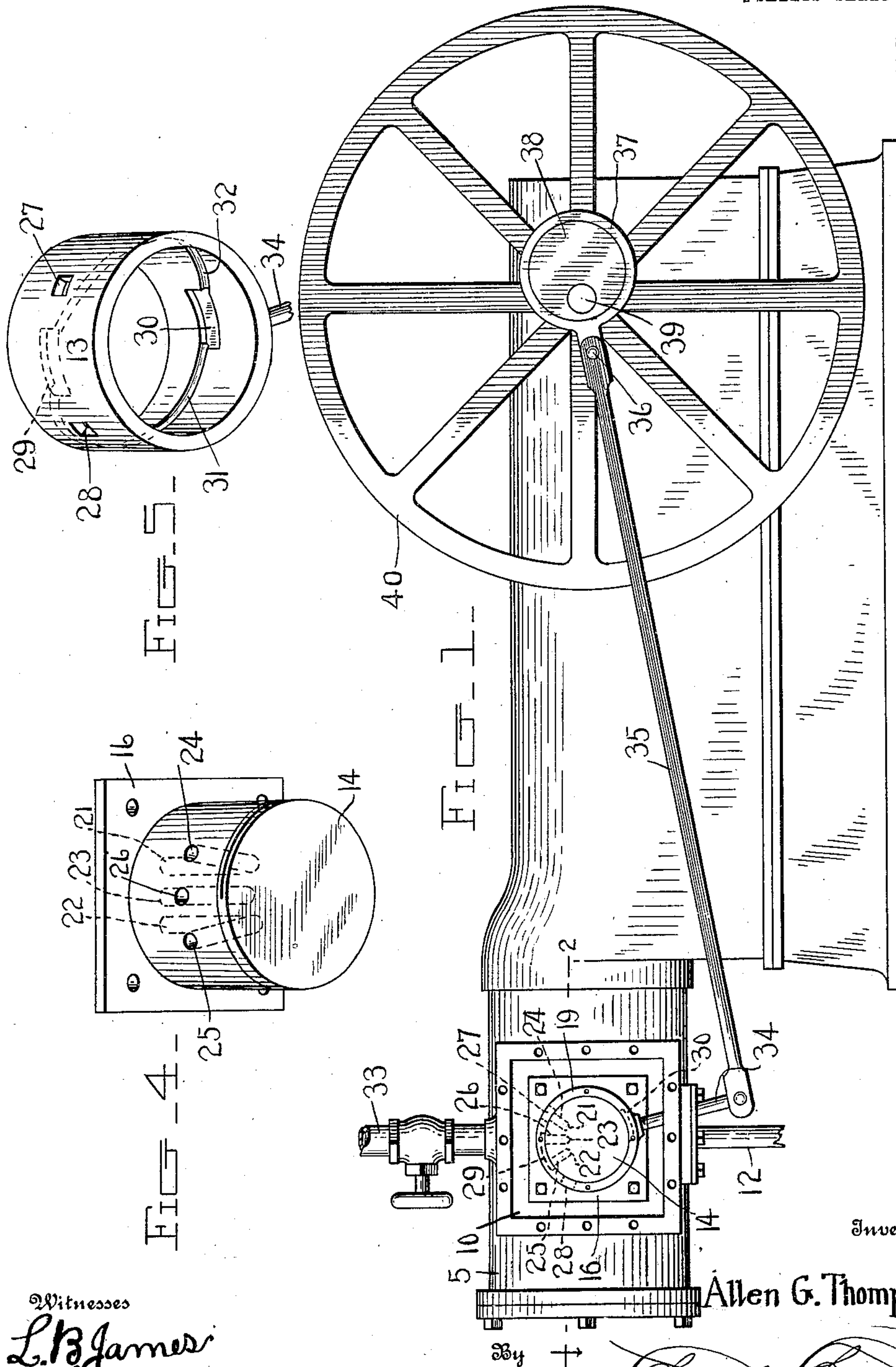


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STEAM ENGINE VALVE.
APPLICATION FILED MAR. 9, 1908.

917,505.

Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.



Witnesses
L. B. James
H. M. Carter

Inventor

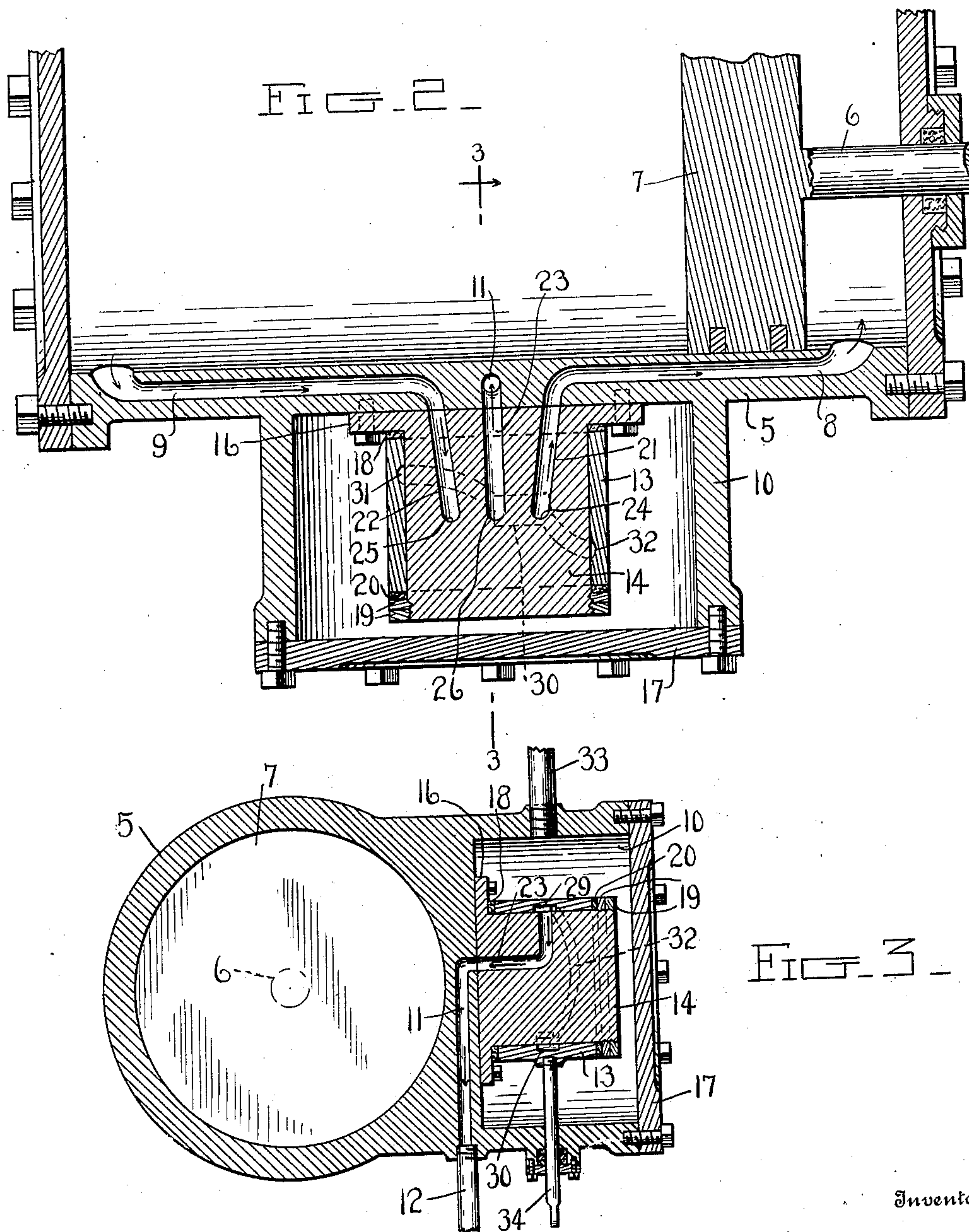
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Witnesses

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UNITED STATES PATENT OFFICE.

ALLEN G. THOMPSON, OF SEGUIN, KANSAS.

STEAM-ENGINE VALVE.

No. 917,505.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed March 9, 1908. Serial No. 420,026.

To all whom it may concern:

Be it known that I, ALLEN G. THOMPSON, a citizen of the United States, residing at Seguin, in the county of Sheridan, State of Kansas, have invented certain new and useful Improvements in Steam-Engine Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in steam engine valves and it has more particular reference to an oscillating valve for controlling the admission, cut-off and exhaust of steam with relation to the engine cylinder.

The invention aims as a primary object to provide a steam engine valve of the above general type, which shall be of novel construction toward the ends of simplicity and of securing a perfect balance.

The invention aims as a further object to provide a valve having a novel construction, combination and arrangement of parts.

The details of construction will appear in the course of the following description, in which reference is had to the accompanying drawings, forming a part of this specification, like characters of reference designating similar parts, throughout the several views, wherein:—

Figure 1 is a side elevation of an engine provided with a valve constructed in accordance with the present invention, the front plate of the steam-chest having been removed for clearness of illustration. Fig. 2 is an enlarged horizontal section on the line 2—2 of Fig. 1. Fig. 3 is a vertical section taken on the line 3—3 of Fig. 2. Fig. 4 is a detail perspective view of a valve casting embodied in the invention. Fig. 5 is a similar view of the valve *per se*.

In the embodiment of the invention shown in said drawings, 5 designates the engine cylinder, 6 the piston rod, and 7 the piston-head. The cylinder 5 is constructed at one side thereof with longitudinal channels 8 and 9 which open at their outer ends into the cylinder, adjacent the ends of the latter, and at their inner ends into the steam chest 10. Between said inner ends is formed an exhaust channel 11 which leads downwardly through the wall of the cylinder and has an exhaust pipe 12 threaded into its open lower

end, the upper end of said channel opening into the steam chest.

The valve, designated generally by the numeral 13, is in the form of a cylindrical sleeve which surrounds the cylindrical part 14 of a casting, said casting including a plate 16 bolted to the flat face of the engine cylinder. The casing of the steam chest 10 is rectangular in shape and its outer end to which the head plate 17 is bolted, is slightly thickened, as shown. A packing gasket 18 is interposed between the plate 16 and the inner end of the valve 13, which latter is held against displacement from the part 14 of the casting by means of rings 19 threaded upon said part, said rings locking by friction and bearing against a washer 20 interposed between the same and the outer end of the valve.

The part 14 has formed therein a pair of passages 21 and 22 which register at their outer ends with the inner ends of the channels 8 and 9, and a centrally located passage 23 which registers with the upper end of the channel 11. These passages extend inwardly of the part 14 and are each formed with a lateral branch which opens through the side wall thereof, the outer ends of said branches being designated by the numerals 24, 25 and 26, and hereinafter termed ports. Through the valve 13 is formed a pair of ports 27 and 28 which are designed to register alternately with the ports 24 and 25, the inner surface of the valve having formed therein a pair of diametrically-opposite cavities 29 and 30 connected with each other by channels 31 and 32 curved so as not to interfere with the ports 27 and 28. Steam is introduced into the steam chest through a supply pipe 33.

The valve is rocked by means of a depending stem 34 secured at one end thereto and at the other end to a pitman 35 whose rear end is pivoted to a pin 36 carried by the stem portion of the strap 37 which surrounds the eccentric 38 secured to the shaft 39 upon which the fly-wheel 40 is mounted.

In use, the steam supplied to the steam chest through the inlet pipe passes through the port 27 at the right hand side of the valve thence into the branch of the passage 21, and finally through said passage and the channel 8, into the engine cylinder, forcing the piston to move toward the left, the steam contained in the cylinder in advance of the piston head exhausting through the channel 9, the pas-

sage 22 and its branch, and through the port 25 to the cavity 29, whence it passes through the port 26 and the passage 23 to the channel 11, passing finally through the pipe 12. On the reverse movement of the valve, steam enters the passage 22 of the valve through the port 28, passing through the channel 9 into the cylinder and forcing the piston to travel in the opposite direction, the exhaust steam passing through the channel 8 into the passage 21, thence through the port 24 to the cavity 29, and finally through the port 26, the passage 23 and the channel 11, to the exhaust pipe as in the first instance.

It will be seen from the foregoing, that the cavity 29 registers at all times with the port 26 and with one or the other of the ports 24 and 25, said cavity having a length sufficient for this purpose. The channels 31 and 32 and the cavity 30 release the pressure upon the valve of the exhaust steam issuing through the ports 24 and 25, as will be apparent, and thus effect a more even distribution of steam pressure with a resultant perfect balancing of the valve.

What is claimed is:

The combination with an engine cylinder provided at one side thereof with channels each opening at its outer end into the inte-

rior of the cylinder, and at its inner end through the outer face thereof, and with a centrally located exhaust channel opening through said outer face, of a casting including a plate fastened to said cylinder, and a cylindrical part projecting laterally from said plate, said cylindrical part being formed with three separate interiorly-located passages registering with the inner ends of the respective channels; a cylindrical valve surrounding said cylindrical part and formed with a pair of spaced ports designed to alternately register with the respective extreme passages in said cylindrical part, said valve being provided on its inner face with a cavity adapted to afford communication alternately between said extreme passages and said exhaust passage; a steam chest provided upon the cylinder and surrounding said valve; means for holding said valve against displacement axially of said cylindrical part; and a steam supply pipe leading into said steam chest.

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

ALLEN G. THOMPSON.

Witnesses:

JOHN SCHMIDT,
WM. REINERT.