F. F. EMORY.

ENGINE VALVE.

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1,172,121.

Patented Feb. 15, 1916.

Fig. 1.

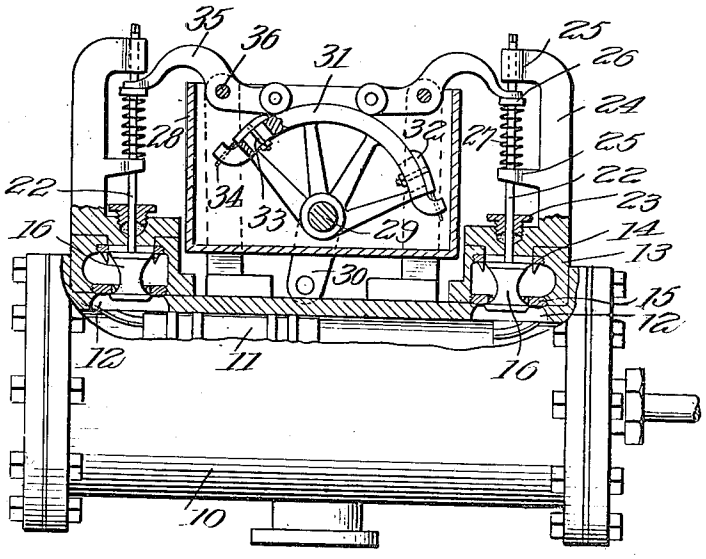


Fig. 2.

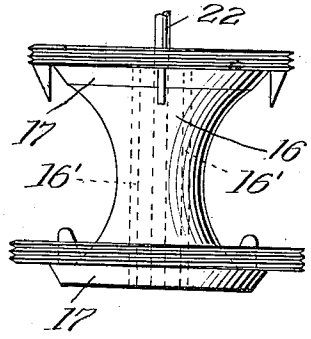


Fig. 3.

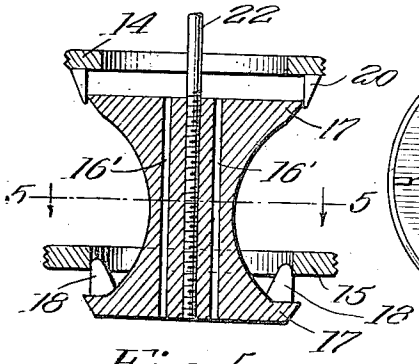


Fig. 4.

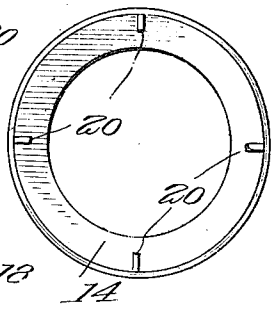
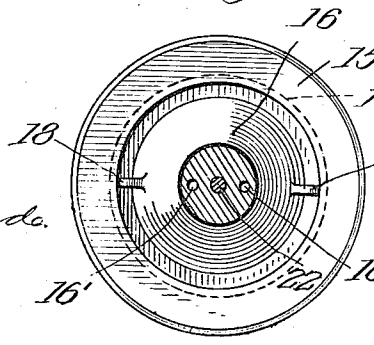


Fig. 5.



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ENGINE-VALVE.

1,172,121. Specification of Letters Patent. Patented Feb. 15, 1916.

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To all whom it may concern:

Be it known that I, FRANCIS F. EMORY, a citizen of the United States, and a resident of Fitchburg, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Engine-Valves, of which the following is a specification.

This invention relates to steam engine valves and the means for operating the same, and more particularly to that type of engine valves commonly known as puppet valves having double seats.

One of the objects of the present invention is the provision of a valve of simple construction, the same having suitable guides whereby it is effectively guided to its seat.

Another object is the provision of suitable means in the form of adjustable cams carried by an oscillating member for operating the valves to alternately open and close the inlet ports of the engine cylinder.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which, for the purpose of illustrating the invention, is shown in the accompanying drawing, in which—

Figure 1 is a side elevation, partly broken away and in section, of a steam engine cylinder showing the invention applied thereto; Fig. 2 is a detail or side elevation of the valve and seats therefor used in connection with the invention. Fig. 3 is a vertical longitudinal sectional view thereof. Fig. 4 is a plan view of the upper seat for the valve, and Fig. 5 is a transverse section on the line 5—5 of Fig. 3.

Referring more particularly to the accompanying drawing, in which like reference characters indicate similar parts, the numeral 10 indicates the cylinder of a steam engine having the usual piston 11 slidable therein. The cylinder is provided with the inlet ports 12 communicating with the steam chest 13, which may be of any preferred construction.

The steam chest 13 is provided contiguous to the ports 12 with upper and lower valve seats, 14 and 15, respectively, the same being in the form of externally screw threaded rings adapted for threaded engagement with the walls of the chest, the ring 15 being of larger diameter than the ring 14. A valve 16 is provided for each of the ports 12 and comprises a body portion having longitudinal passages 16′ extending therethrough to permit of the balancing of the valve, the latter being provided with the flanges 17 at each end for engagement with the valve seats 14 and 15. For the purpose of guiding the valve to its seat the same is provided at its bottom, with a plurality of upwardly extending lugs 18 adapted for engagement with suitable openings 19 formed in the lower valve seat 15. For further aid in guiding said valves the upper seat 14 is provided with a plurality of depending lugs 20 adapted for engagement with the periphery of the upper flange 17. The upper end of the valve 16 has secured thereto one end of a valve stem 22 extending upwardly through a stuffing box 23 carried by the top of the valve chest 13.

The steam chest has mounted thereon adjacent each end of the cylinder 10 a standard 24 having a plurality of laterally extending arms 25 with suitable openings therein for the reception of the valve stem 22. Said stem is provided with a collar 26 adjacent the upper end thereof, and between said collar and the lower arm 25, a coiled spring 27 is mounted for returning the valve 16 to its seat after the same has been operated.

Mounted upon the top of the cylinder 10 is a suitable oil reservoir 28 adapted to contain a lubricant for the parts which are mounted therein. A shaft 29 passes through the reservoir 28 and is connected to a crank 30 oscillated from a source (not shown). The shaft 29 also has secured thereto a member 31 in the form of a segment having at each end thereof a cam 32 secured by fastenings 33 and made adjustable by means of the screw threaded bolt 34 projecting beyond the end of the segment, said cams being made adjustable for the purpose of regulating the operation of the valve 16. Each cam 32 is adapted to engage one end of a lever 35 pivoted at 36, the other end of said lever engaging the top of the collar 26 carried by the valve stem 22, said lever being rocked upon engagement with the cam and operating to depress the valve stem in order to lower the valve and open the port. It is obvious from an inspection of

Fig. 1 that the cams operate the levers 35 alternately so that the intake to the cylinder 10 is properly regulated.

I claim:—

1. In an engine, the combination of a cylinder, inlet ports therefor, upper and lower valve seats for said ports, a valve for each of said ports, said valve being provided at each end thereof with a circumferential flange adapted for engagement with the corresponding valve seat, upwardly extending lugs carried by said valve and adapted for engagement with said lower seat, said upper seat being provided with a plurality of depending guide lugs adapted for engagement with the flange formed upon the adjacent end of said valve, and a valve stem secured to said valve.

2. In an engine, the combination of a cylinder, intake ports therefor, valve seats in said ports, a valve for each port and adapted to engage the seats therein, and means carried by said valve and one of said seats and coöperating with the other seat and said valve, respectively, for guiding the latter.

FRANCIS F. EMORY.