

No. 779,661.

PATENTED JAN. 10, 1905.

J. F. MoCANNA.
GRAVITY VALVE.
APPLICATION FILED NOV. 5, 1901.

Fig. 1.

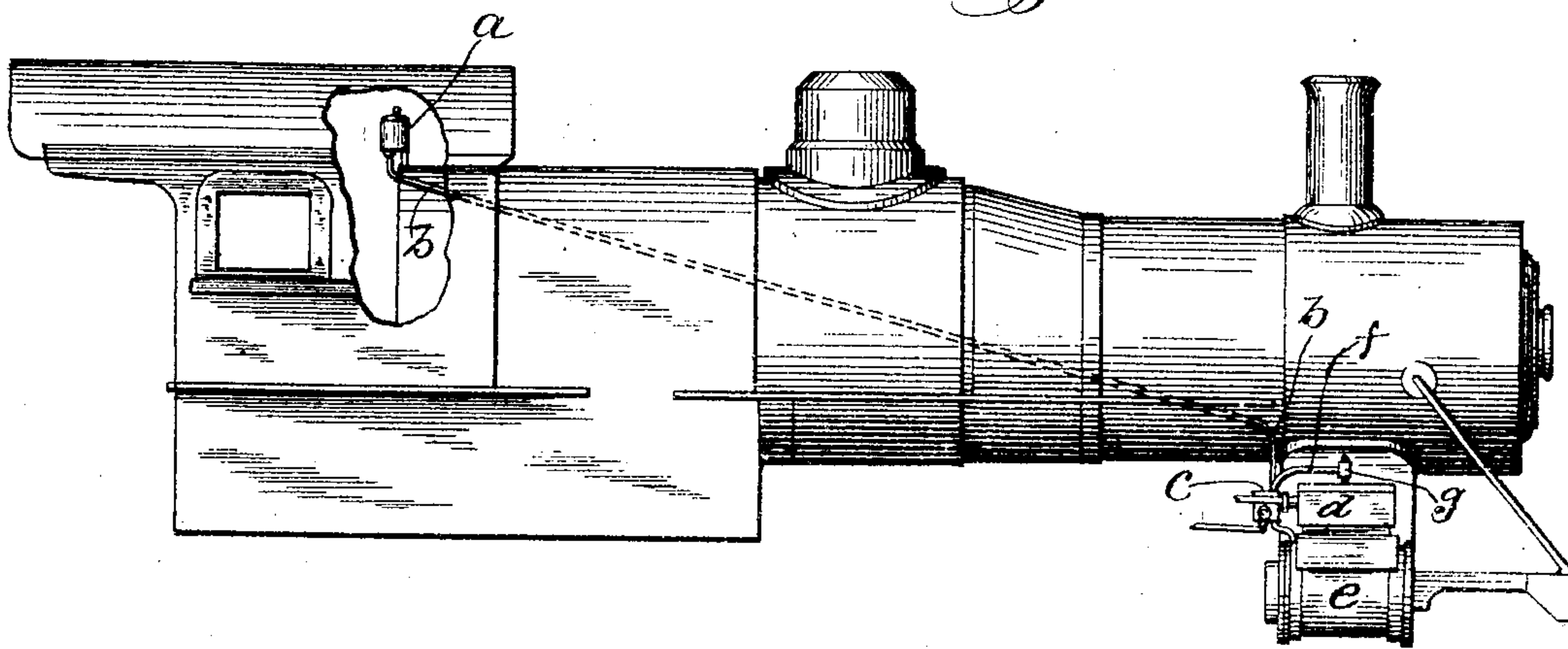


Fig. 2

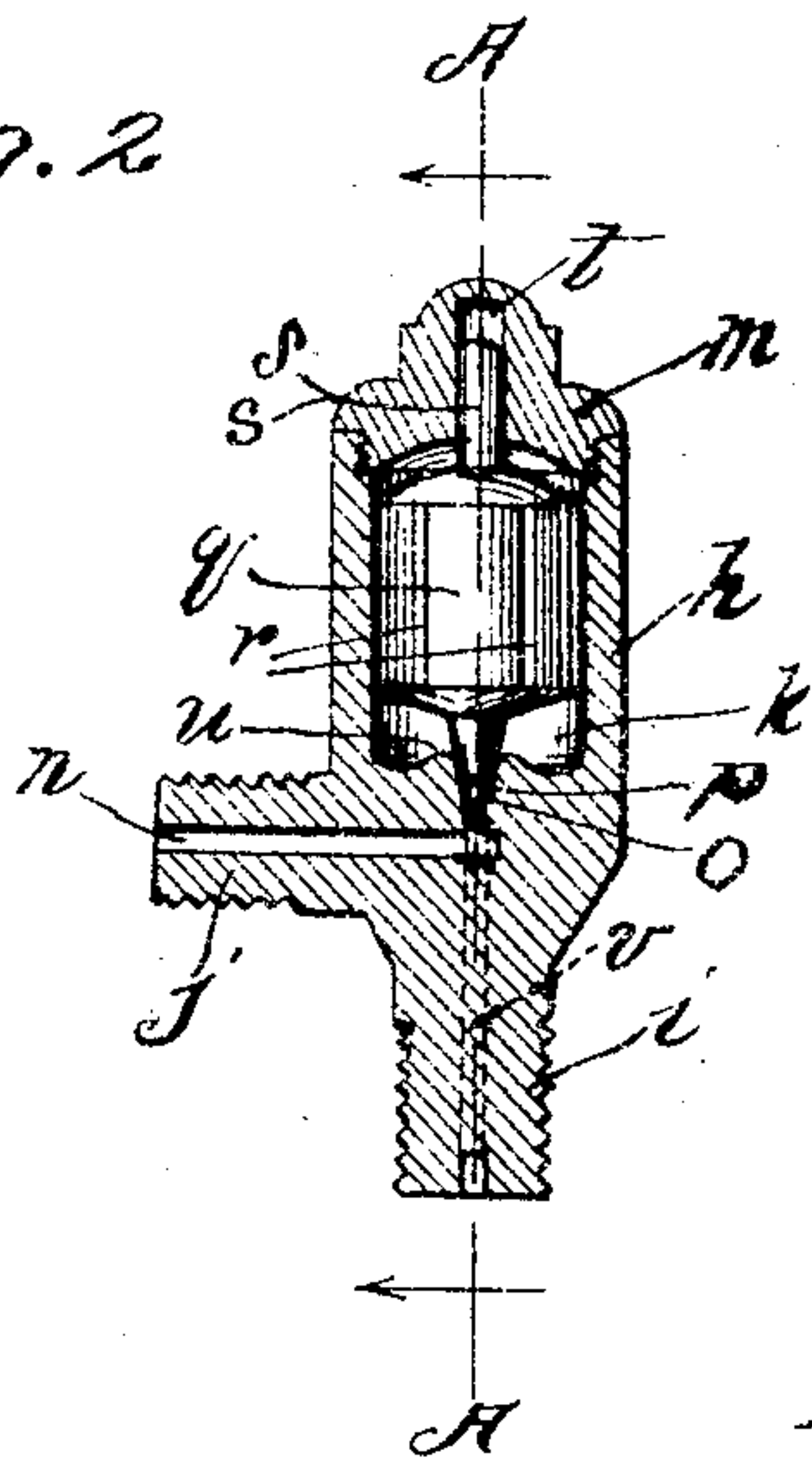


Fig. 3.

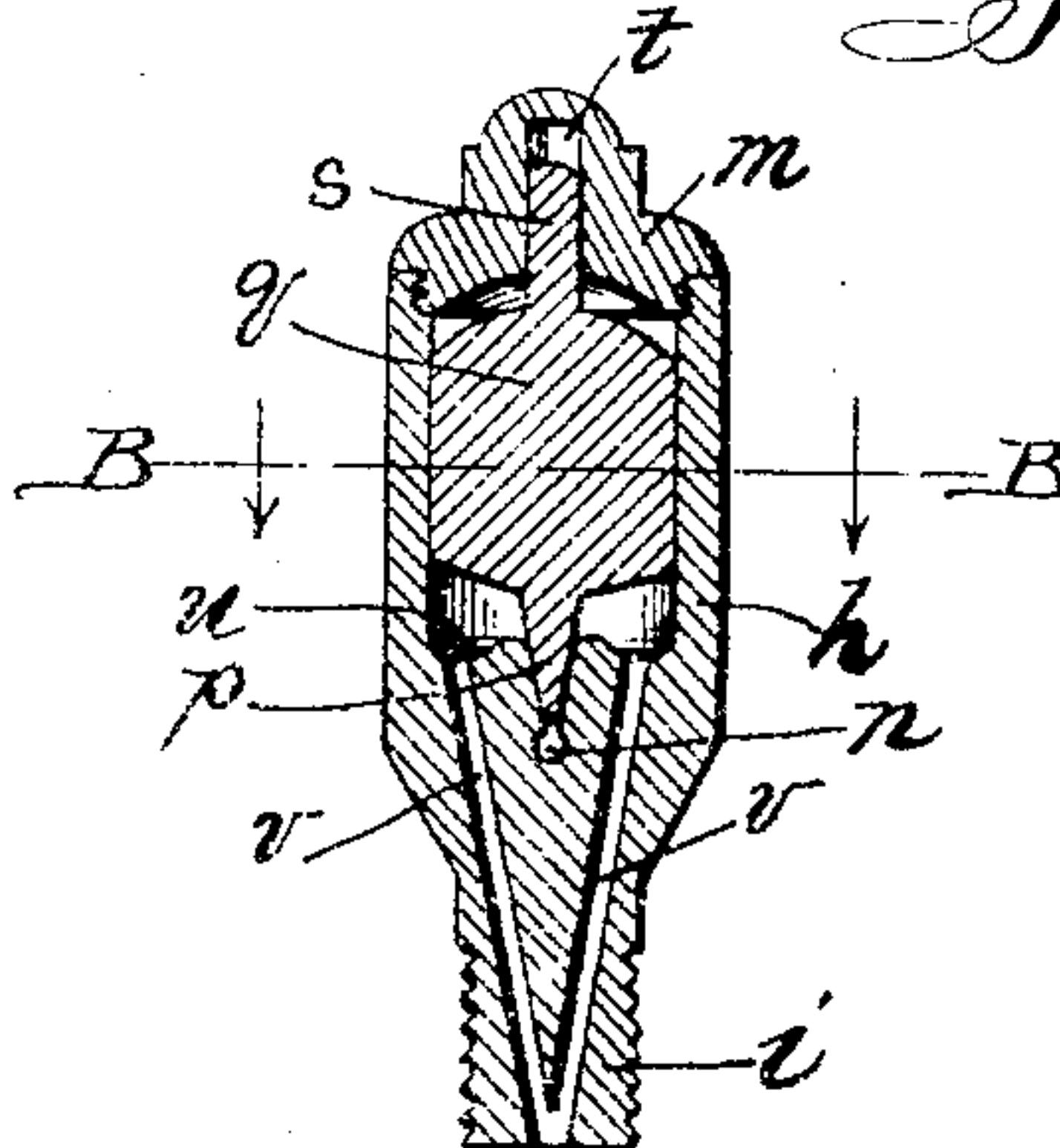
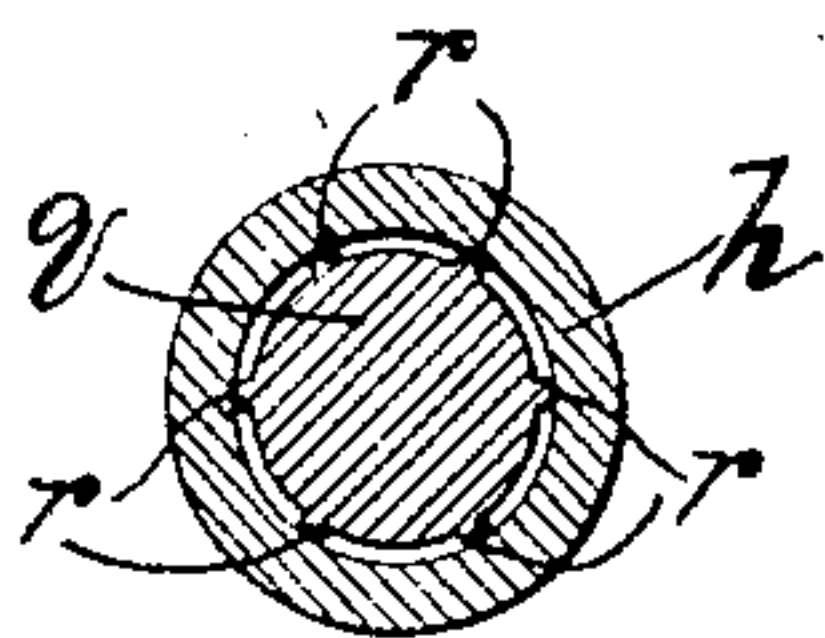


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN F. McCANNA, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE JOHN F. McCANNA COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

GRAVITY-VALVE.

SPECIFICATION forming part of Letters Patent No. 779,661, dated January 10, 1905.

Application filed November 5, 1901. Serial No. 81,242.

To all whom it may concern:

Be it known that I, JOHN F. McCANNA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gravity-Valves, of which the following is a specification.

My invention is concerned with a novel valve which I employ primarily as a vacuum-valve in connection with the feeding of oil to an engine-cylinder, but which might also be employed in other places where the same capabilities of operation are required.

In a force-feed lubricating system where the supply of the lubricant is above the place it is to be delivered by the pump such a vacuum-valve is employed to prevent the hydrostatic pressure of the oil from causing it to flow through the pump when not in operation, and thereby be wasted. Where the part to be lubricated is a steam-engine cylinder, the vacuum-valve is also necessary to prevent the oil from being sucked into the cylinder when the steam is shut off. As these devices have been hitherto constructed the pressure on the valve-seat has been caused by a spring; but I have found by experience that this form of a valve is not satisfactory, for the reason that the spring eventually loses its temper and fails to work properly, and for the still more serious objection that if any particle of solid matter should happen to get between the valve and the valve-seat the pressure of the spring tends to hold the particle in this obstructing position and to prevent its being dislodged by the flow of the oil through the valve, which flow is in this class of devices very slight. To overcome both of these difficulties, I employ a valve-seat in a passage of very small diameter, and in connection therewith I employ a small valve with a large weighted stem suitably held in position, so that the weight thereof produces the necessary pressure of the valve upon its seat. With such a construction if a particle of some solid foreign matter should get between the valve and its seat the pressure of the valve is not increased by this displacement, as is the

case when the spring is employed, and the flow of the oil or other fluid through the valve will be sufficient to displace the particle.

To illustrate the preferred embodiment of my invention, I annex hereto a sheet of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which—

Figure 1 is a diagrammatic view of a locomotive-engine with an oil-reservoir located in the cab, a force-feed pump adjacent the steam-chest, and the vacuum-valve between the pump and the steam-chest, through which the oil is delivered to the driving-cylinder. Fig. 2 is a longitudinal section through the valve-casing with the valve and its stem shown in elevation. Fig. 3 is a longitudinal section through the valve and its casing on the line A A of Fig. 2, and Fig. 4 is a horizontal section on the line B B of Fig. 3.

In showing one use to which my invention may be applied in Fig. 1 the oil-reservoir *a* is shown as located in the cab of the engine and connected by a pipe *b* with the force-feed pump *c*, which is secured to the end of the steam-chest *d* of the driving-cylinder *e* and actuated by any suitable mechanism moving with the cylinder-piston, such as the slide-valve rocker-arm. A pipe *f* leads from the discharge end of the pump to the top of the steam-chest, into which it opens, and the vacuum-valve *g* is interposed in this pipe.

The details of the gravity-valve with which my invention is concerned are shown in Figs. 2 to 4, where it will be seen to consist of the body portion *h*, having the screw-threaded lower end *i*, which is adapted to be screwed into the top of the steam-chest or other part to which the valve is applied. A horizontal branch *j* is provided, which is also screw-threaded to cooperate with the pipe connections. Formed in the body of the valve-casing is the preferably cylindrical recess *k*, the upper end of which is closed by the cap *m*, screwed therein. The branch *j* is provided with a channel *n*, which leads to the center of the valve and is turned upwardly to form the

minute valve-seat o , upon which rests the conical end p of the valve proper, q , which will be seen to consist of a heavy cylinder provided with the flanges r , which take against the sides of the recess k and prevent any lateral play of the valve in the recess. I preferably provide the upper end of the valve with the stem s , which projects into the correspondingly-shaped recess t in the cap m , so that when the cap is removed the valve can be readily lifted out by taking hold of the stem s . The bottom of the recess k is preferably formed with the annular channel u , from which one or more channels v lead to the bottom of the casing, so that the oil pumped past the valve may descend into the steam-chest or other part to which it is applied.

While I have shown my invention as applied to a vacuum-valve for a force-feed lubricating system, it will be understood that it might be employed elsewhere and also that some changes in the details of the construction might be made, and consequently I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a valve for lubricating apparatus, in combination, a valve-casing having a minute central induction-port and an eduction-port at the side of the former port and both of which ports pass through the bottom of the casing, and a gravity-valve filling the casing and hav-

ing a relatively small conical point for seating in and closing the induction-port.

2. In a valve for lubricating apparatus, in combination, a valve-casing having a minute central induction-port and an eduction-port at the side of the former port and both of which ports communicate with the casing through the bottom of the latter, a cap closing the top of the casing and having a central cavity in its under face, a gravity-valve in the casing and having a relatively small conical point for seating in and closing the induction-port and a stem fitting in the cavity of the cap, and vertical ribs on the valve fitting the wall of the casing to prevent lateral movement of the valve.

3. In combination with a lubricating apparatus consisting of a pump adjacent the part to be lubricated, a reservoir located above the pump, a connection between the reservoir and the pump, of a valve-casing having a minute central induction-port and an eduction-port at the side of the induction-port and both of which ports communicate with the chamber of the casing through the bottom of the latter, a connection between the pump and the induction-port, and a valve filling the casing and having a relatively small conical projection adapted to the central induction-port.

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

JOHN F. McCANNA.

Witnesses:

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