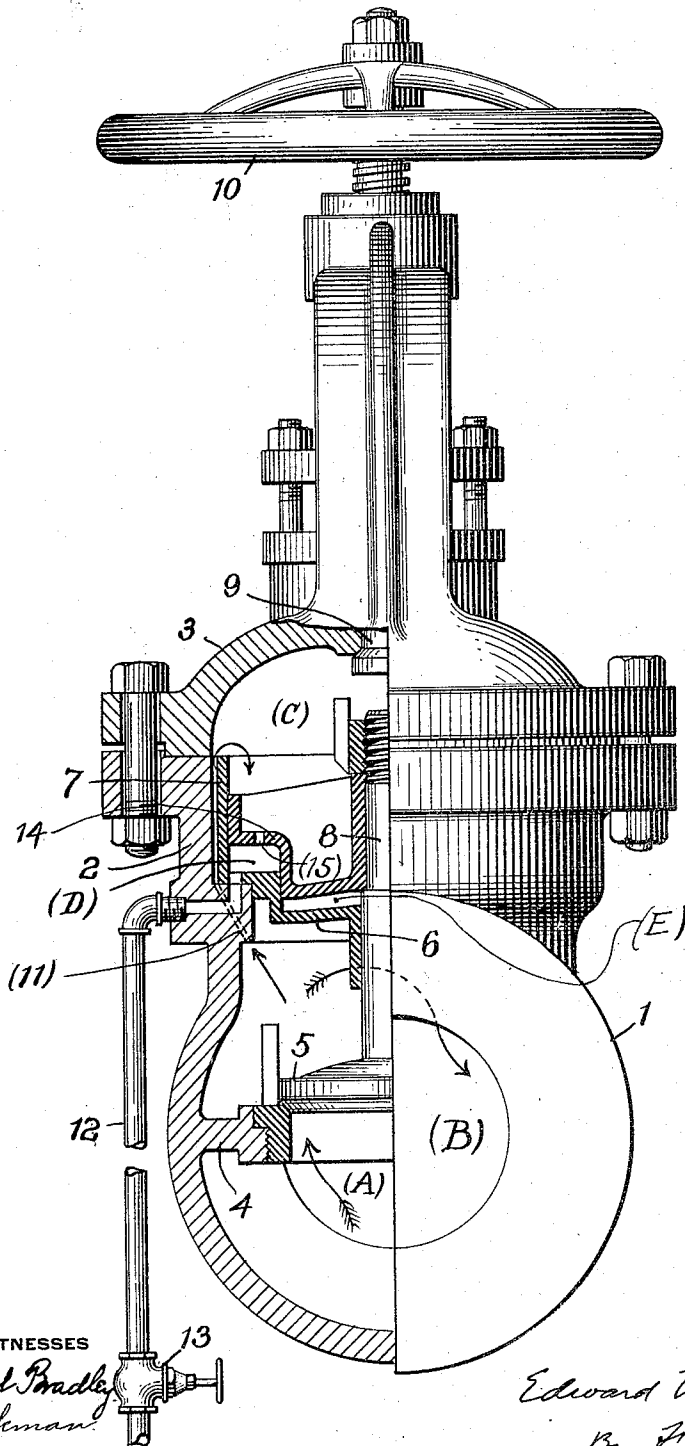


E. V. ANDERSON.
CHECK VALVE.
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1,201,425.

Patented Oct 17, 1916.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD V. ANDERSON, OF MONESSON, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
CHARLES E. GOLDEN, OF CRAFTON, PENNSYLVANIA.

CHECK-VALVE.

1,201,425.

Specification of Letters Patent.

Patented Oct. 17, 1916.

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To all whom it may concern:

Be it known that I, EDWARD V. ANDERSON, a citizen of the United States, residing at Monesson, in the State of Pennsylvania, have invented certain new and useful Improvements in Check-Valves, of which the following is a specification.

My invention relates particularly to large valves for service with steam boilers, etc., and its primary object is to provide a construction of non-return valve efficiently cushioned in both movements and certain in operation, and provided with means for testing it in actual service without the usual manual operation.

The drawing shows a partial elevation and partial vertical central section of a valve and a testing device.

It is customary to employ non-return valves on top of the boilers of steam plants and it is highly desirable that they should be automatic, perfectly cushioned and under complete control. As heretofore made non-return valves have been provided with a hand screw for closing them, and the attendant could never know whether they were in operating order except by this hand manipulation. The cushioning of such valves has been a great difficulty and owing to the possibility of detritus collecting in the cushioning chambers it has been difficult to know with certainty when the apparatus is in good working order and when not. Such valves have usually been operated by the live or boiler pressure, and not by the pressure from the delivery side, with the result that when the valve closes there is a leakage back from the header to the boiler.

In my construction I provide the valve casing 1 with an inlet opening (A) and outlet opening (B) and in the central partition 4, I place a valve 5 on a stem 8 which rides in the center of the diaphragm 6 formed as part of a cylinder 7 located in the hood 2 and covered by a cap 3. Fixed on the valve stem 8 I provide a piston 14 having a small port (15). Above the valve stem 8 is the usual screw shaft 9 and handwheel 10 for closing the valve. Communicating with the space (D), and by a port larger than the port (15), I attach a test pipe 12, which may be run to any distant or convenient point and is provided with a valve 13.

The live pressure in the space (A) lifts

the valve 5 and it is cushioned in such movement both by compression in the chamber (C), and by suction in the small chamber (E) formed in the bottom of the cylinder head 6. This cushioning effect is thus increased just as the valve 5 either leaves or approaches the seat. The chamber (C) is supplied from the delivery side through the duct 11 and the communication from chamber (C) to chamber (D) will of course eventually balance the piston 14 and the valve will remain open unless there is back pressure. It will be seen however, that by suddenly releasing the pressure in the chamber (D) the header pressure in the chamber (C) will operate to close the valve which is cushioned both by compression in chamber (D) and at the limit of motion, by compression in chamber (E). The valve when closed prevents any leakage back toward the inlet side (A). The pipe 12 and valve 13 therefore afford means for testing the main valve in service at any time and with certainty, and by use of the pressure on the delivery side. The advantages of this construction will readily occur to those familiar with the art.

Having thus described and illustrated the use of my invention, what I claim is the following:

1. A non-return valve comprising the combination of a casing, an imperforate valve, a valve stem and a piston thereon, a cylinder containing said piston, ports to supply pressure to both sides of said piston direct from the delivery side of the valve, and a valved port to exhaust pressure on one side of the piston to thereby close the valve.

2. The combination with a double cushioned imperforate non-return valve, having a cylinder and piston dashpot cushioning means and means to normally balance the pressure by fluid direct from the delivery side on the two sides of the said piston, of a valve escapement port adapted to unbalance the pressure on said piston and close the valve, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

EDWARD V. ANDERSON.

Witnesses:

FRED'K STAUB,
W. A. HECKMAN.