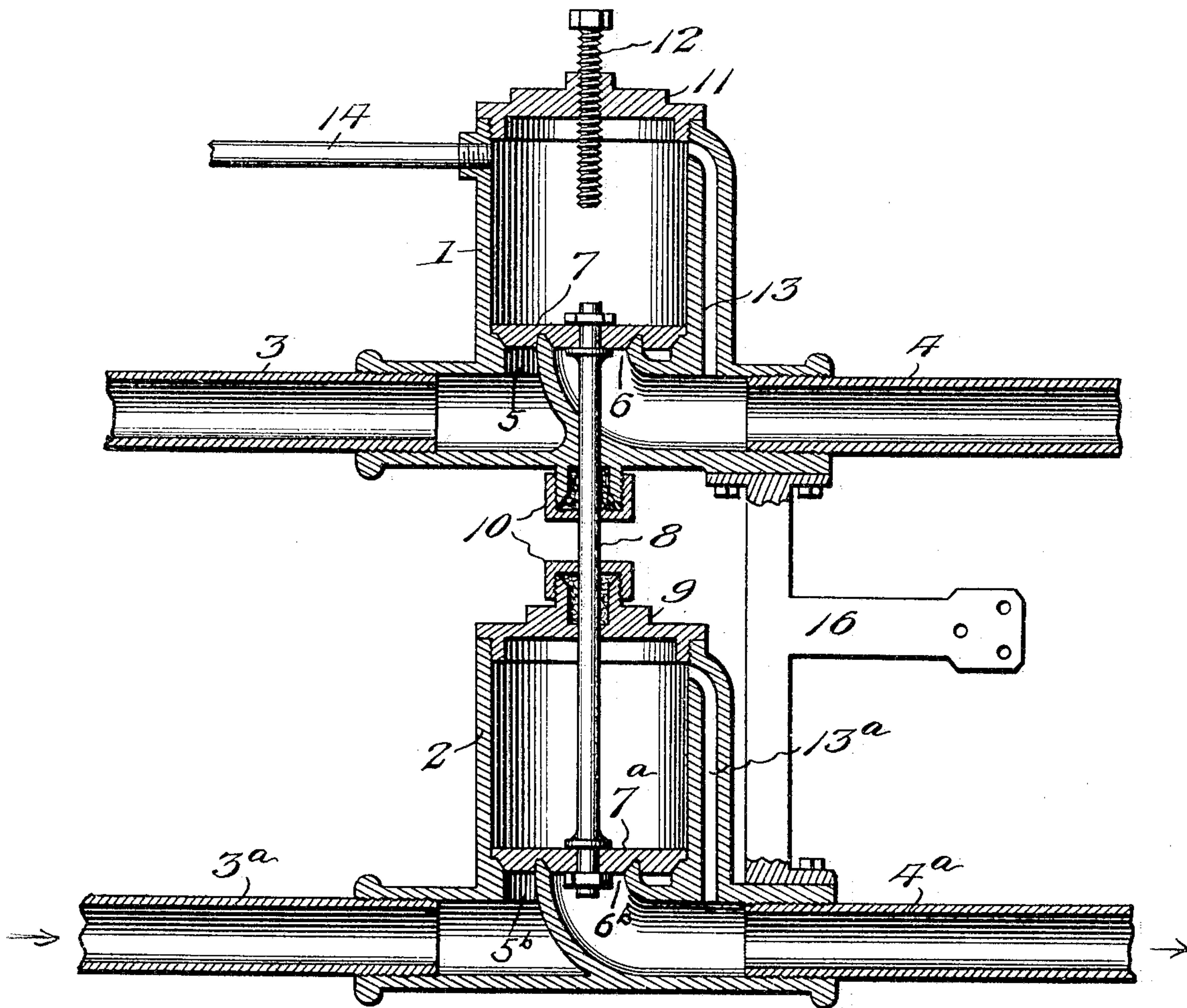


No. 782,162.

PATENTED FEB. 7, 1905.

J. C. McCARL.
CHECK VALVE.

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WITNESSES:

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JOSEPH C. McCARL, OF WESTON, WEST VIRGINIA.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 782,162, dated February 7, 1905.

Application filed March 14, 1903. Serial No. 147,829.

To all whom it may concern:

Be it known that I, JOSEPH C. McCARL, a citizen of the United States, residing at Weston, in the county of Lewis and State of West Virginia, have invented new and useful Improvements in Check-Valves, of which the following is a specification.

My invention relates to new and useful improvements in automatic check-valves especially adapted for equalizing the flow of gas and water where the former is used for heating the latter, also for equalizing other fluids and gases when desired.

The object of the invention is to provide an automatic check-valve of simple construction which does not require the use of springs, levers, weights, or stem-screws for opening the same, this result being accomplished by the pressure of gas, water, and other fluids.

Another object is to provide a valve which operates smoothly and with the minimum amount of friction.

The invention consists in the novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawing, which is a section through my improved valve.

Referring to the figure by numerals of reference, 1 and 2 are cylinders arranged one below the other, and the upper cylinder has a supply-pipe 3 and a discharge-pipe 4, while the lower cylinder 2 has a supply-pipe 3^a and a discharge-pipe 4^a. The inlets and outlets 5 and 6 of the upper cylinder are normally closed by a piston 7, and the inlets and outlets 5^b and 6^b of cylinder 2 are normally closed by a piston 7^a. The two pistons are connected by a rod 8, which extends through the cap 9 of the lower cylinder and the bottom of cylinder 1, suitable glands 10 being provided for preventing leakage at such points. Within the cap 11 of the upper cylinder is arranged a screw 12, which is directly above the center of the upper piston 7, and by adjusting said screw from or toward the piston the movement of said piston will be regulated. A by-pass 13 13^a is arranged within each of the cylinders 1 and 2, respectively, and extends from the upper end thereof down to the discharge-pipe 4 or 4^a. The cylinder 1 also has

an inlet-pipe 14 near the top thereof for conducting gas through the same, thence through by-pass 13 and discharge-pipe 4 to a pilot-light. When water to be supplied to a heater enters through the pipe 3^a to the cylinder 2, it will force piston 7^a upward and will then pass over the partition 15 between the inlet and outlet and into discharge-pipe 4^a. The upward movement of the piston in cylinder 2 will cause a corresponding movement of the piston in the cylinder 1, and the gas contained within pipe 3 will promptly pass over the partition 15 in said cylinder 1 and into pipe 4 to a burner. It is obvious that with this construction of valve the quantity of gas consumed by a burner is regulated by the quantity of water admitted to a heater, and should the water within a heater become exhausted or the supply thereto shut off the pistons will promptly fall into position over the inlets and outlets, and the supply of gas from the supply-pipe 3 will be shut off. Gas is supplied to a pilot-light by inlet-pipe 14, cylinder 1, by-pass 13, and discharge-pipe 4. When the supply of water is cut off to the pipe 3^a of cylinder 2, the piston 7^a in said cylinder will drop into closing position and the water thereunder within said cylinder will be forced up through the by-pass 13^a and in position above the piston.

If desired, a bracket 16 may be interposed between the cylinders 1 and 2, so as to permit the same to be readily attached to a heater.

The pilot-light is adapted to be connected to the discharge-pipe 4 at a point between the casing 1 and the burner of the heater, and therefore gas admitted to said pipe from the by-pass 13 will first be supplied to the pilot-light and the same will burn whether or not a sufficient quantity of gas is admitted to the pipe 4 to be ignited at the burners of the heater.

In using a valve of the construction above described in connection with a heater it is necessary to locate the heater on the lower floor or basement of a building. The outlet-opening from the heater should be connected to the lower end of the line of pipes used to supply the different apartments of the building with hot water. Discharge-pipe 4^a of the valve 2 is connected to the inlet end of the

heater, and the supply-pipe 3^a of said valve is connected to the water-main. It will be seen that should a faucet be opened in any one or more of the apartments in the building the pressure from the water-main and through-pipe 3^a will raise the piston 7^a and pass under it to the heater. The moment the faucet or faucets are closed the water will flow under the piston 7^a and will enter the by-pass 13^a and flow into cylinder 2. As the area of piston 7^a exposed to the action of the water entering valve 2 through by-pass 13^a is greater than the area exposed to the action of the water entering through inlet 5^a, it will be understood that piston 7^a will promptly be seated upon said inlet, and the further admission of water to the heating system is thus prevented until one or more of the faucets or outlets of the hot-water pipes are opened.

By referring to the drawing it will be seen that the inlets 5 and 5^b inclose the outlets 6 and 6^b and are concentric therewith, the valve-seats formed in said inlets and outlets being beveled.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

When the combination is unlocked, it causes an upward movement of rod 8, holding it stationary, so as to act as a guide for sleeve on

valve 7. While in this position valve 7 can be opened and shut by the various pressures of gas, water, and other fluids until combination is locked, causing a downward movement of rod 8 into sleeve 7^a, holding valve 7 securely shut until unlocked.

Having thus fully described the invention, what is claimed as new is—

In a device of the character described, the combination with a bracket; of cylinders secured upon the bracket and having outlets, inlets inclosing the outlets, supply-pipes opening into the inlets, discharge-pipes extending from the outlets, pistons within the cylinders and normally seated upon and adapted to close the inlets and outlets in each cylinder simultaneously, a rod connecting the pistons whereby the same are adapted to move in unison, adjustable means within one of the cylinders for limiting the movement of the pistons in one direction, an inlet-pipe opening into the upper end of one of the cylinders and above the piston in said cylinder, and by-passes extending from the upper ends of the cylinders and their respective outlets, whereby gas entering the last-mentioned inlet-pipe is free to flow continuously through its cylinder to the outlet-pipe.

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

JOSEPH C. McCARL.

Witnesses:

W. E. PORTER,
JOHN N. RYAN.