

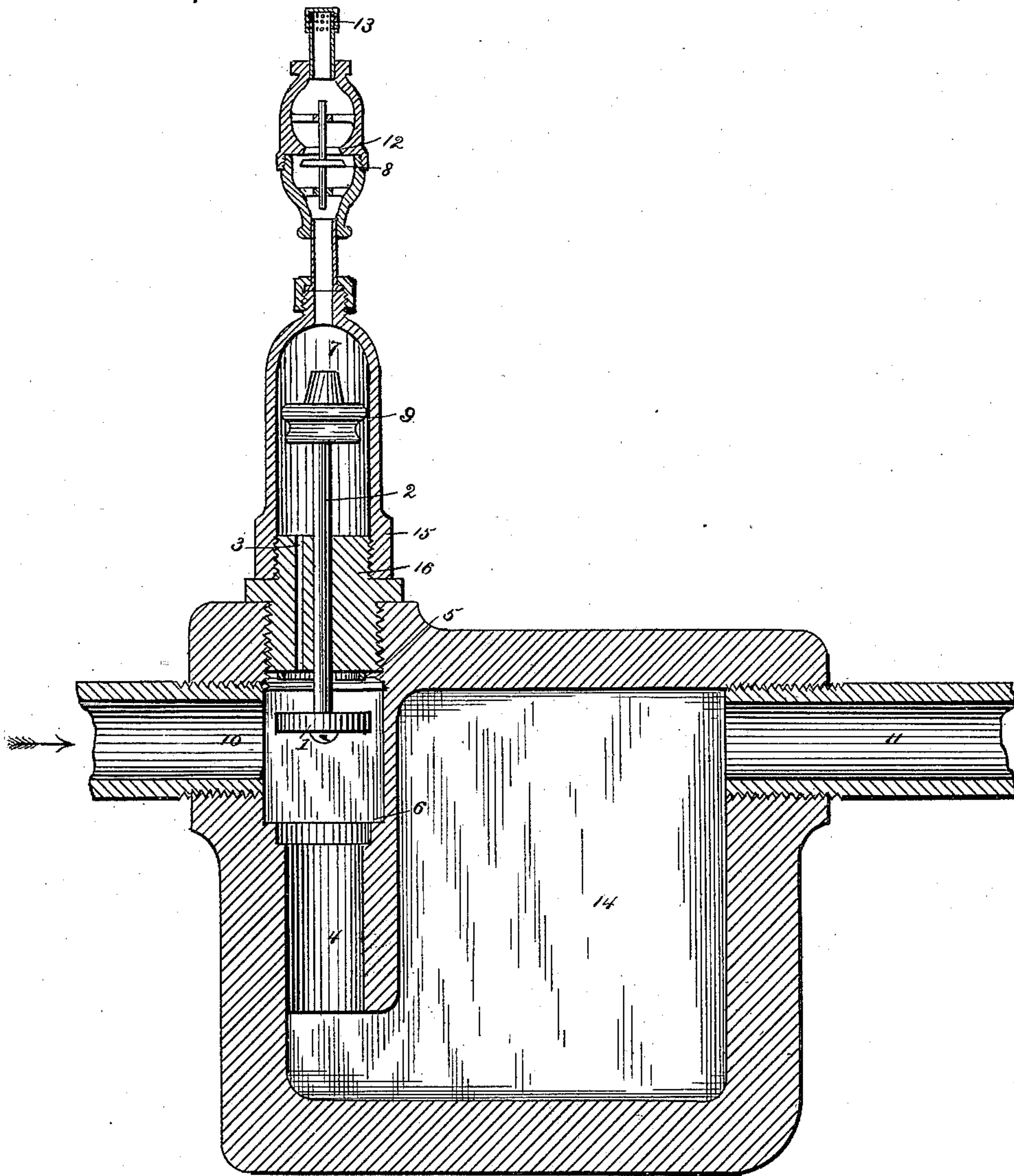
(No Model.)

E. C. MERRILL.

STOP VALVE FOR GAS SUPPLY SYSTEMS.

No. 334,882.

Patented Jan. 26, 1886.



Witnesses:

Wm. Rheem.

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his attorney.



# UNITED STATES PATENT OFFICE.

EDWIN C. MERRILL, OF PITTSBURG, PENNSYLVANIA.

## STOP-VALVE FOR GAS-SUPPLY SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 334,882, dated January 26, 1886.

Application filed September 24, 1885. Serial No. 178,011. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN C. MERRILL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cut-Off or Stop Valves for Gas-Supply Systems, which improvement is fully set forth in the following specification.

The present invention has reference to valve mechanism of the class known as "cut-off" or "stop" valves for use in gas-supply systems; and its object is to provide a simple and effective cut-off valve which will automatically shut off the entire supply of gas from the burners, should the pressure in the pipe become dangerously low, and remain closed, even after the pressure rises, until opened by an attendant.

It is a common occurrence, especially in systems for supplying natural gas, that the pressure falls to such an extent as not to support combustion at the burners, and the escape of gas therefrom after the pressure rises is a source of danger. By the use, however, of a cut-off, such as herein described, the supply-pipe is closed at or before the moment when the reduction of pressure would extinguish the flame at the burner, giving an opportunity of turning off the gas at the key before opening the cut-off valve, and thus guarding against accident.

In order that the invention may be fully understood by those skilled in the art to which it relates, I will describe the same in detail in connection with the accompanying drawing, which represents in vertical section a cut-off device constructed in accordance with the invention.

The main gas-chamber 14 is provided with an inlet-pipe, 10, leading from the gas-main, and an outlet, 11, for conveying the gas to the burners. Alongside of the inlet 10 is a vertically-movable valve, 1, secured to a stem, 2, and it is adapted to seal the main supply-port 4, leading to chamber 14, when resting upon the seat 6. A weight, 9, on the valve-stem tends to force the valve against seat 6. Above the valve 1, and in line with the main supply-port 4, is a passage, 3, leading to the auxiliary pressure-chamber 7, formed by a hollow casing or shell, 15, screwed onto the

part 16. The position of this passage 3 is such that it is closed by valve 1 so long as the latter remains upon its seat 5. Thus the valve 1 can seal either the main supply-port 4 or the passage 3, that puts the supply-pipe 10 into communication with chamber 7. The outlet from the auxiliary pressure-chamber 7 leads through port 12 and perforated cap 13 to the air. This outlet is controlled by a valve, 8, which is normally in the position shown in the drawing, leaving port 12 open. When, however, the pressure in chamber 7 rises above that of the atmosphere, valve 8 is forced against its seat and the outlet is closed.

The operation of the device is as follows: Supposing valve 1 to be raised, closing passage 3, the auxiliary pressure-chamber 7 will be cut off from communication with pipe 10, and valve 8 will be open. The pressure in chamber 7 is therefore that of the atmosphere, and the parts will remain in this position so long as the pressure of the gas in the supply-pipe 10 continues sufficiently high to sustain valve 1—that is to say, so long as the pressure is sufficient to support combustion at the burners. Should the pressure become insufficient for this purpose, it would be equally insufficient to sustain valve 1, which would then fall by its own weight, closing port 4, cutting off the supply of gas from the burners, and at the same time opening the passage 3. Should the pressure in pipe 10 subsequently increase above atmospheric pressure, such increase would close valve 8, thus preventing escape of gas at 13. The increase of pressure, however, would have no effect upon valve 1 other than to press it more tightly against its seat 6. In this position the parts must remain until the attendant, having turned off the supply of gas at the burners, unscrews casing 16 and raises valve 1 by hand.

The invention is not of course limited to the precise details of construction herein shown and described, as these may be modified without departing from the spirit of the invention.

I claim—

1. The combination, with the gas-chamber having inlet and outlet pipes and a main supply-port, of an auxiliary pressure-chamber normally in communication with the atmosphere, a passage connecting said inlet-pipe



with said auxiliary chamber, and a weighted valve adapted in one position to seal said passage, and in the other to seal said main supply-port, substantially as described.

5 2. The combination, with the gas-chamber, and the valve adapted to cut off the supply of gas thereto when the pressure becomes insufficient to sustain said valve, of the auxiliary pressure-chamber having an inlet communicating with the supply-pipe and an outlet communicating with the atmosphere, and a second valve for closing said outlet, substantially as described.

10 3. In a gas cut-off, the combination of a gas-chamber having inlet and outlet pipes, and a main supply-port alongside of said inlet-pipe, and a weighted valve normally held above said inlet-pipe by the pressure therein, but adapted, when such pressure falls below the safety limit, to drop and seal said main supply-port, whereby the gas is cut off from the burners, substantially as described.

15 4. The combination, with the gas-chamber and the auxiliary pressure-chamber, the former having an inlet-pipe, an outlet-pipe, and a main supply-port, and the latter having a passage connecting it with the supply-pipe, of the weighted valve normally sustained by the

pressure of the gas in position to seal the passage into said auxiliary chamber, but adapted to fall and seal the said supply-port when the pressure in the supply-pipe falls to or below that in the auxiliary pressure-chamber, substantially as described. 30

5. The combination of the supply-pipe, the main supply-port, the auxiliary pressure-chamber communicating by a passage with the supply-pipe, the weighted valve sustained in position to seal said passage by the pressure in said supply-pipe, but adapted to fall and seal said supply-port when such pressure is reduced below the amount necessary to support combustion at the burners, the outlet from said auxiliary chamber to the atmosphere, and the valve for closing said outlet when the pressure in said auxiliary chamber rises above that of the atmosphere, substantially as described. 40 45

In testimony whereof I have signed this specification in presence of two subscribing witnesses. 50

EDWIN C. MERRILL.

Witnesses:

C. G. ELWOOD,  
C. E. LAMBING.