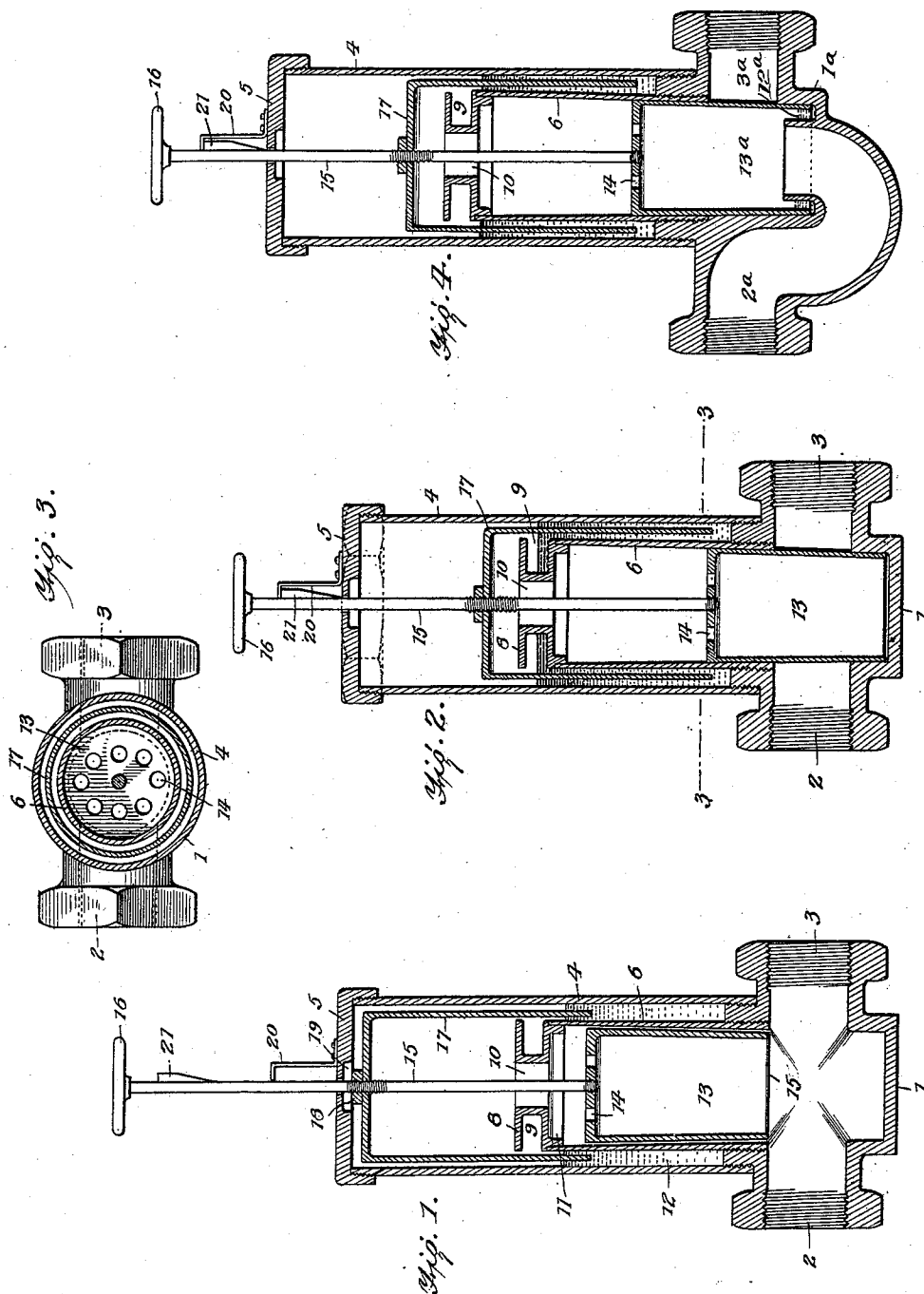


C. E. LAHMERS.
 AUTOMATIC OUT-OFF FOR GAS MAINS.
 APPLICATION FILED FEB. 10, 1910.

975,259.

Patented Nov. 8, 1910.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES EDUARD LAHMERS, OF NEW PHILADELPHIA, OHIO.

AUTOMATIC CUT-OFF FOR GAS-MAINS.

975,259.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed February 10, 1910. Serial No. 543,174.

To all whom it may concern:

Be it known that I, CHARLES E. LAHMERS, a citizen of the United States, and a resident of New Philadelphia, in the county of Tuscarawas and State of Ohio, have made certain new and useful Improvements in Automatic Cut-Offs for Gas-Mains, of which the following is a specification.

My invention relates to devices for preventing explosions or accidents caused by changes in the pressure in gas mains, and it consists in the constructions, combinations and arrangements herein described and claimed.

The invention is similar to one disclosed in my prior Patent No. 946,515, of January 11, 1910. The present invention is an improvement, however, over the form shown in the above mentioned patent.

It often happens that the pressure on the mains of a city gas system becomes so low that at times the flow of gas from the jets communicating therewith is stopped altogether. This is especially true of the burners of gas stoves and the like, which, when left burning, will frequently go out at certain periods of the day when the pressure is low. If the cocks are not turned off, the gas begins to flow when the pressure comes on again and there is danger of an explosion when the gas is again lighted or the freely flowing gas itself is liable to fill the house or apartment with its poisonous fumes.

An object of my invention is to provide a device which will automatically shut off the flow of gas from the mains when the pressure therein becomes too low, thereby preventing the accidents which might otherwise occur.

A further object of my invention is to simplify the apparatus set forth in my patent mentioned above.

Other objects and advantages will appear in the following specification and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a central vertical section through the device showing it in the opened position, Fig. 2 is a similar view showing the device in a closed position, Fig. 3 is a section along the line 3—3 of Fig. 2, and Fig. 4 is a section showing a modified form of the device.

In carrying out my invention I provide

a main casing consisting of a lower portion 1 having the inlet 2 and the outlet 3. Secured to the upper part of the bottom portion is a cylinder 4. The upper end of the cylinder is threaded to receive a cap 5.

Secured to the bottom member 1 is a hollow member 6. This member is of cylindrical shape on its exterior, but tapers slightly from the bottom toward the top as shown in the figures. The top of the member 6 is surmounted by a cap 8 having an annular groove 9 on the side thereof, and being provided with a central opening 10. The cap is also provided with a flange 11 arranged to fit tightly on the inside of the member 6. The space between the cylinders 4 and 6 is filled with mercury 12.

The valve proper consists of a hollow member 13 which is provided with a series of perforations 14 at its upper end, but is open at its bottom 15. The valve 13 is tapered slightly as shown in the figures and is provided with a valve stem 15 having a hand wheel 16 at its upper end. Secured to the valve stem at a point about midway the upper and lower ends is a third cylinder 17. This cylinder is closed at its top and its lower ends extend down into the mercury 12 in the well between the cylinders 4 and 6. The cylinder 17 is held in position by means of a lock nut 18. The cap 5 is recessed at 19 so as not to interfere with the nut. The cap bears a spring 20 which is secured to its upper side. This spring is adapted to engage a stop member 21 on the valve rod so as to hold it in position when the valve descends.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. The cut-off may be located at any convenient place, but is preferably placed in a building between the meter and the distributing pipes. The device is normally arranged as shown in Fig. 1. Before the device is assembled the mercury is poured into the annular space 12. The amount of mercury will vary with different size cut-offs. The buoyant force of the mercury together with the gas pressure will keep the cylinder 17 in the upper position shown in Fig. 1. It will be observed that the gas enters the hollow valve 13 passes up through the perforation 14 through the opening 10 into the interior of the cylinder 17. Now when the pressure becomes low the weight of the cylinder 17

and the valve 13 causes these two members to descend and to assume the position shown in Fig. 2. The mercury forced upwardly by the descending cylinder 17 overflows into the annular space 9, but cannot drop into the bottom of the device since the annular space is sufficient to prevent any undue accumulation of the mercury. With the valve in this position, it will be seen that the spring 20 has engaged the stop member 21 so as to lock the valve in position, while the valve itself closes the openings 2 and 3 thereby effectually stopping the flow of gas. Now when it is desired to start the flow again after the pressure comes on, the spring 20 is released and the valve is pulled upwardly, where it is maintained by the pressure of the gas and the buoyant force of the mercury.

In Fig. 4 I have shown a modified form in which the inlet is shown at 3^a and the outlet at 2^a. The inner cylinder 13^a is arranged to seat in an annular well of mercury 12^a between the end of the outlet pipe 2^a and the wall of the casing. This provides an effectual seal so as to prevent the gas leaking around the end of the cylindrical valve. The operation of the device is precisely the same as in the other form, for, when the pressure is relieved the valve 13^a descends and shuts off communication between the inlet 3^a and the outlet 2^a.

I am aware that other forms of the device based upon the same general idea might be made, but I consider as my own all such modifications as fairly fall within the spirit and scope of the invention.

I claim:

1. An automatic cut-off comprising a casing having an inlet and an outlet, an inner cylinder secured at its lower end to said casing, the space between said inner cylinder and said casing constituting a mercury

well, a cap for said inner cylinder having an annular overflow groove, a hollow valve arranged to close said inlet and said outlet openings, a valve stem therefor, arranged to extend through the upper part of said casing, a hollow float carried by said valve and exposed to the gas pressure, and automatic means for locking said valve in its lowered position.

2. An automatic cut-off comprising a casing having an inlet and an outlet, an inner cylinder secured at its lower end to said casing, the space between said inner cylinder and said casing constituting a mercury well, a cap for said inner cylinder having an annular overflow groove and a central opening, a hollow valve arranged to close said inlet and said outlet openings, said hollow valve being perforated at one end, a valve stem secured to said hollow valve arranged to pass through the opening in said overflow cap, and through the end of said casing, a hollow cylindrical float secured to said valve stem and having its lower end immersed in said mercury well and a spring locking member secured to said casing for locking the valve in its closed position.

3. An automatic cut-off comprising a casing having an inlet and outlet, an inner cylinder secured to said casing, the main body of the cylinder being spaced from said casing and constituting a mercury well, a cap for said inner cylinder having an annular overflow groove, a valve arranged to close said inlet and outlet openings, a valve stem therefor arranged to extend through the upper part of said casing, and a hollow float carried by said valve and exposed to the gas pressure.

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Witnesses:

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