

No. 778,784.

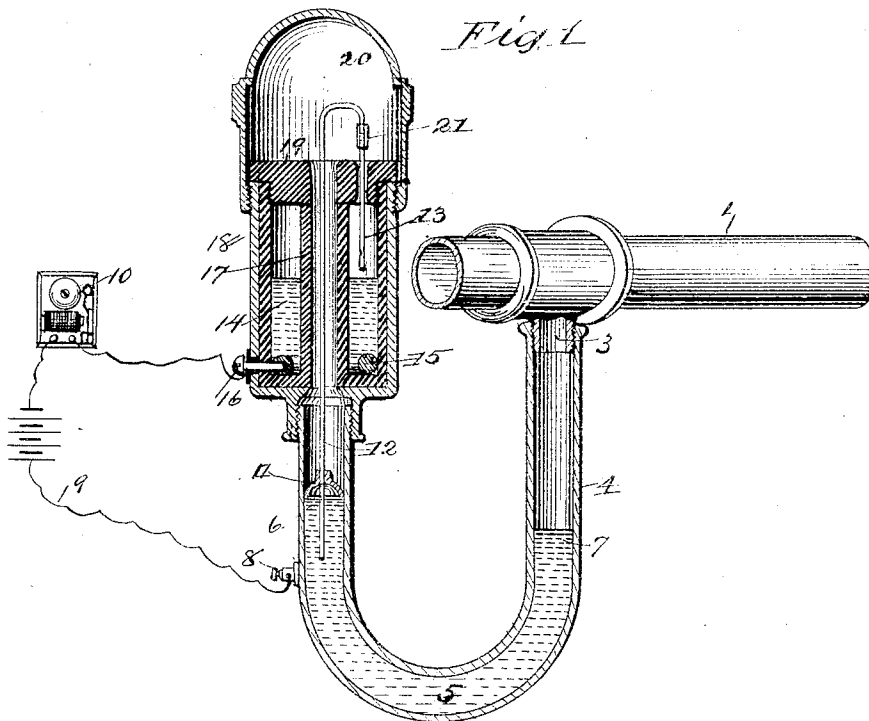
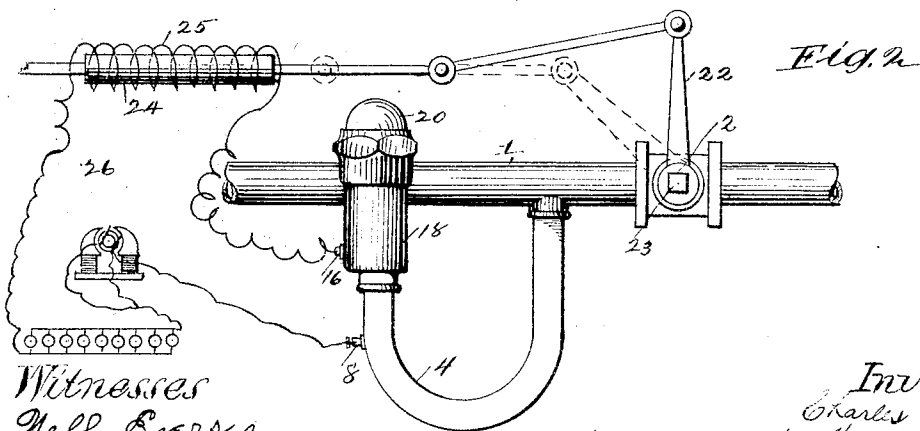
PATENTED DEC. 27, 1904.

C. HOLMOK.

SAFETY DEVICE FOR GAS PRESSURE.

APPLICATION FILED DEC. 26, 1908.

2 SHEETS—SHEET 1.



Witnesses
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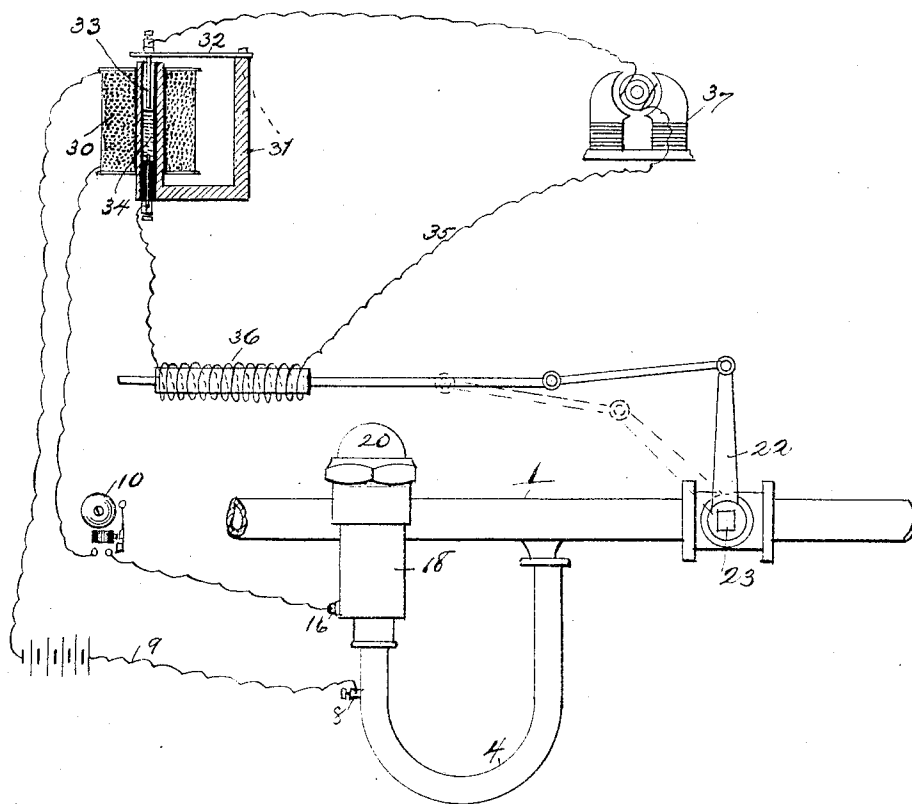
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Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES HOLMOK, OF CLEVELAND, OHIO, ASSIGNOR TO JOHN MATHEW O'CONNELL, OF CLEVELAND, OHIO.

SAFETY DEVICE FOR GAS-PRESSURE.

SPECIFICATION forming part of Letters Patent No. 778,784, dated December 27, 1904.

Application filed December 26, 1903. Serial No. 186,630.

To all whom it may concern:

Be it known that I, CHARLES HOLMOK, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Safety Devices for Gas-Pressure, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

The invention has for its objects to provide an alarm to call immediate attention to the cessation of the flow of gas in the pipe, which should supply a constant current to the heating and lighting burners of a house or factory, so that attention being called to the failure of gas they can be closed to prevent the stream of gas from filling the building when it recommences to flow, and thus avoid the suffocation of the inmates at night when they would be asleep and unconscious of danger.

The invention also has reference to means for closing the supply-pipe to the burners when the gas ceases to flow, so that when the gas is renewed therein it cannot flow again until the valve is again opened.

It is advisable to employ both devices simultaneously, since the inmates of the building should be immediately informed when the flow of gas is stopped.

The invention consists in the movable and pressure-operated electrode and in the arrangement therewith of a stationary electrode, insulated therefrom and so placed relatively to the movable electrode that contact is made between them when the pressure is removed from the movable electrode and the same is released and subject only to atmospheric pressure.

The movable electrode is well represented as a column or piston of gravity-influenced permeable material in a pipe, one end of which is in communication with the gas-supply pipe and in the opposite end of which is inserted a contact device resting upon and supported by the movable electrode.

For convenience mercury is employed as the movable electrode, and the pipe in which it is inclosed is bent to prevent its escape, and

the contact device before mentioned floats upon the surface of the mercury, and its opposite extremity is immersed in an insulated body of mercury, forming the stationary electrode, as soon as the pressure is removed from the movable electrode.

The invention further consists in the electric alarm-circuit and operating electric circuit for the valve-lever, which cuts off the flow of gas, and in the combination and arrangement of parts, as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the drawings, Figure 1 is a central vertical section through the device, showing a battery and bell-circuit in connection therewith. Fig. 2 is a side elevation of the device showing in place of a bell-circuit a circuit of more powerful potential and electrically-operated means for closing the valve in the supply-pipe. Fig. 3 shows a bell-circuit and an additional circuit to operate the valve.

In the views, 1 is the supply-pipe, through which the gas enters the building. 2 is the valve in this pipe.

3 is a nipple through which the gas enters the bent tube 4, the curved portion of which is filled with mercury 5, which rises at the outer end at 6 as fast as it is depressed at the inner end 7 by the pressure of the gas entering through the nipple. The tube 4 is metallic and permeable to an electric current and is provided with a binding-post 8 for one of the wires of the battery-circuit 9, in which is placed the bell 10.

The tube 4 may be made of glass or other impermeable material and the contacts inserted therethrough, if desired.

Floating upon the surface of the mercury is the cup 11, to which is secured the rod conductor 12, preferably of copper, which extends upward and is provided with the downwardly-turned contact-point 13. This point is suspended above the insulated cell of mercury 14, so that when the float resting upon the movable column below is lowered the point 13 is immersed in the mercury in the cell. A metal ring 15, lying in the bottom of this cell, is connected electrically with the

battery-circuit by means of the insulated screw or post 16.

The cell and tube 17, through which the contact-wire passes, are made of impermeable material, such as vulcanite, and they may be inclosed for protection in a metal case, as 18. A cap 19, also of vulcanite, may also be placed over the cell, and a metal cap 20 may inclose all the parts.

10 The rod 12 may be made adjustable in length by means of a sleeve 21 or other means, and so regulate the movement when the rod shall enter the mercury in the cell. This can be arranged to ring the alarm when the pressure fluctuates greatly or arranged to ring only when the pressure fails entirely. When lowered, it is desired also to close the valve in the supply-pipe. An arrangement somewhat like that shown in Fig. 2 may be employed. 20 Here 22 is a lever secured to the valve-stem 23. 24 is the core of a solenoid-coil 25, included in a circuit 26 of high voltage, which has its terminals in the binding-posts 8 and 16 and connected, respectively, with the stationary and movable electrodes. As this core is sharply withdrawn within the coil it pulls the lever to shut the valve.

In Fig. 3 is shown a combination of electric means for sounding an alarm with means for closing the valve. Here 30 is a solenoid-magnet included in the battery-circuit 9. The core of this solenoid is a magnet, upon the outer pole 31 of which is mounted a spring-armature 32. Upon the extremity of this armature is mounted the contact-point 33, which when drawn down by the magnet enters the insulated mercury-cell 34, which is one of the electrodes of the high-potential circuit 35, the contact-point 32 being the other pole. In this circuit is placed the solenoid 36, which actuates the valve-lever 22. 37 is the generator. It will therefore be seen that when the bell-circuit is closed the solenoid-magnet will attract the contact-point, which will engage the mercury in the cell and close the high-potential circuit.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

50 1. The combination with a gas-pipe normally

filled with gas under pressure, of a curved pipe in open communication therewith at one end, a fluid electrode therein normally adapted to rise at the outer end under the influence of gas-pressure but to fall by gravity when the pressure is removed, a conductor adapted to float in the outer end of said fluid electrode, a stationary insulated electrode, above the fluid electrode, normally out of contact with said stationary electrode but adapted to make contact therewith when the movable electrode and conductor falls from atmospheric pressure, an electric circuit having its terminals in said fluid and stationary electrodes, and a second electric circuit under the control of the first-mentioned circuit.

2. The combination with a gas-pipe normally filled with gas under pressure, of a curved pipe in open communication therewith, a fluid electrode in said pipe, adapted to rise at its outer end by means of gas-pressure, and fall by atmospheric pressure, an insulated cell adjacent to the outer end of the curved pipe, a fluid electrode stationary therein, a conductor floating upon the outer end of the fluid electrode, and adapted to make contact with the stationary electrode when the pressure is removed from the movable electrode, and an electric circuit containing an electrically-operated alarm having its terminals in said movable and stationary electrodes.

3. The combination with a gas-pipe normally filled with gas under pressure, of a curved pipe in open communication therewith, a cell of insulating material mounted upon the outer end thereof, a fluid electrode within the pipe, a float thereon, a conductor secured to the float having a downwardly-turned extremity, a fluid electrode stationary in said cell, an insulating-tube through which the said conductor passes, means for adjusting the length of the said conductor, and an electric circuit having its terminals in the said electrodes.

In testimony whereof I have set my hand this 18th day of December, 1903.

CHARLES HOLMOK.

Witnesses:

WM. M. MONROE,
C. H. OLDS.