

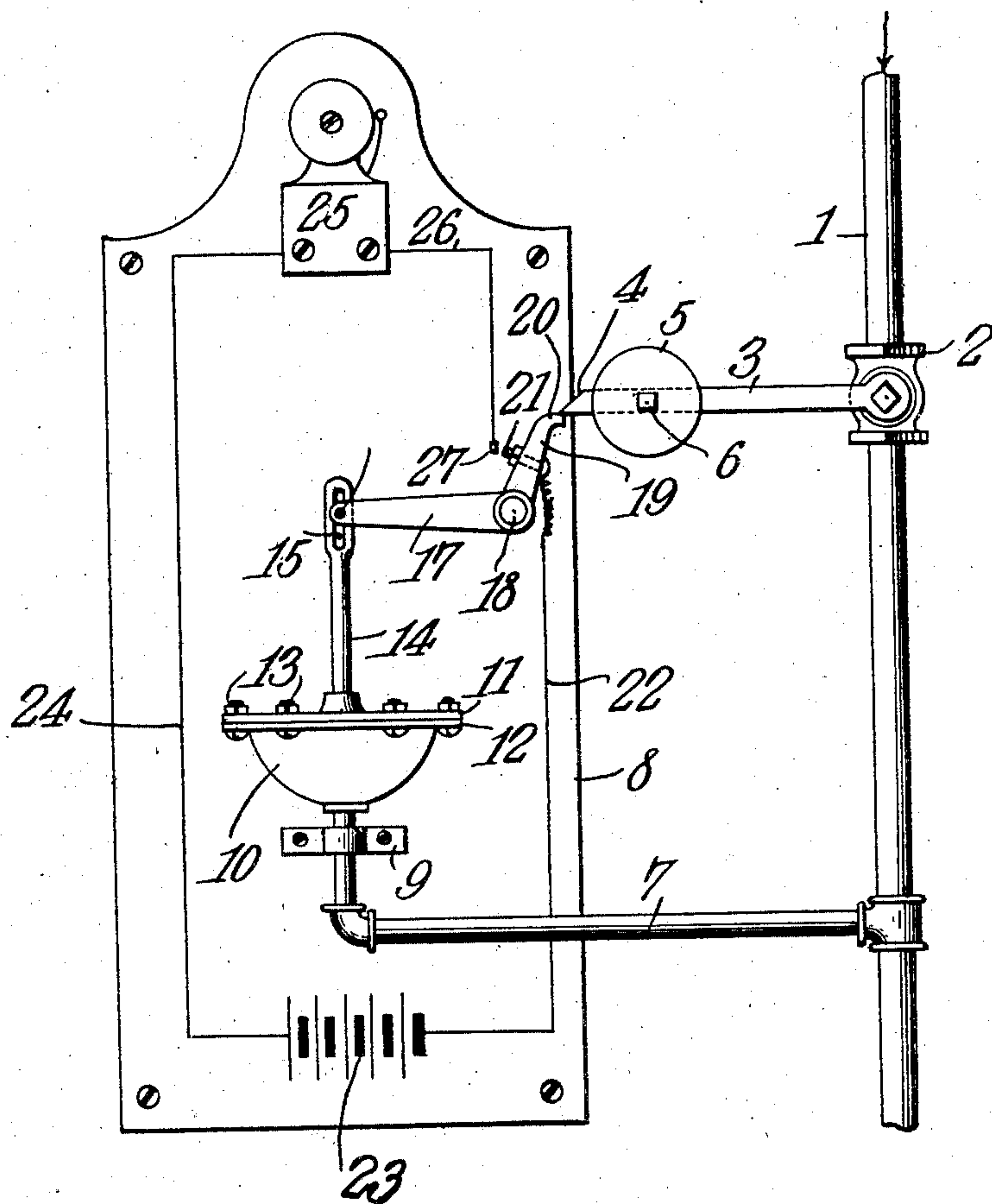
No. 864,236.

PATENTED AUG. 27, 1907.

J. G. FAIRBANKS & W. O. RICE.

AUTOMATIC GAS CUT-OFF.

APPLICATION FILED MAR. 7, 1907.



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AUTOMATIC GAS CUT-OFF.

No. 864,236.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed March 7, 1907. Serial No. 361,190.

To all whom it may concern:

Be it known that we, JAMES G. FAIRBANKS and WILLIAM O. RICE, citizens of the United States, residing at Marion, in the county of Marion and State of Ohio, have invented a new and useful Automatic Gas Cut-Off, of which the following is a specification.

This invention has reference to improvements in automatic gas cut-offs, and its object is to provide a means whereby a marked reduction in gas pressure, such, 10 for instance as would occur were the gas in a main cut off from the source of supply, will cause the closing of a valve in the gas supply pipe so that no gas can flow therethrough when the gas is again turned on to the main supply pipe.

15 It often happens that the gas will be lighted at one or more burners and that for some reason the supply is cut off or the pressure reduced to such an extent that the gas flames will be extinguished and this without the valves at the burners being closed. When, as 20 again often happens, the reduction of pressure is but temporary, the renewed flow of the gas causes the escape of unburned gas through the open burners to an extent before being discovered that will often form explosive mixtures with the surrounding air and cause 25 disastrous explosions, or, if the gas should escape into a room where persons are sleeping, there is danger that these persons may become asphyxiated.

The present invention is designed to prevent such a disastrous contingency by providing the main gas 30 pipe with an automatically closing valve maintained open by the normal gas pressure, or even under such variations of pressure as are liable to occur in ordinary use, but should the pressure be markedly reduced a trip device is provided which, while normally holding the 35 valve in opened position, will release the same to move to the closed position, and at the same time means are provided whereby an alarm is sounded showing that the gas valve has been released and closed and must again be moved to and locked in the open position be- 40 fore the gas can again be used, even though the pressure has in the meantime been restored.

The invention will be fully understood from the following detailed description taken in connection with the accompanying drawings forming part of this 45 specification and in which is shown a side elevation of the trip mechanism for the gas valve with certain electric connections shown diagrammatically.

Referring to the drawings, there is shown a main gas supply pipe 1 which may be typical of the main house 50 supply pipe coming from a large street main, or it may represent any pipe through which gas is passing under pressure and from which the gas is fed to burners, stoves, heaters, motors or any other device for using the gas. In this pipe 1 is included a valve 2 of suitable 55 type which on a movement through an arc of ninety degrees will either turn the gas full on or full off, al-

though, of course, provision may be made for such turning on and off of the gas through a greater or less angle.

Upon the stem of the valve is secured an arm 3 having 60 its outer end 4 beveled, as shown, and carrying a weight 5 which may be adjustably secured at any point on the arm by means of a set-screw 6. Beyond the valve 2 there is a pipe 7 branched off from the main supply pipe 1, and this pipe is secured to a suitable baseboard 65 8 by means of a bracket 9. The pipe 7 leads into an elastic or collapsible bag 10 fast at its upper end between two plates 11—12 by means of bolts 13, the construction being such that the bag 10 forms a gas-tight receptacle into which the branch pipe 7 leads. To the 70 top plate 11 is secured a rod 14 terminating at its upper end in an elongated eye or slot 15 receiving a pin 16 on the long arm 17 of a bell crank lever pivoted to the baseboard 8 at 18 and having its other shorter arm 19 normally in the path of the end 4 of the lever 3. The 75 arm 19 has its outer or free end curved, as shown at 20, to form a support for said lever 3 and this construction is such that but a short movement of the arm 19 will carry its end 20 from beneath the end 4 of the lever 3 and the latter will then be free to gravitate to a pend- 80 ent position which will cause the closure of the valve 2. The arm 19 carries a contact stud 21 connected by a conductor 22 to one terminal of a battery 23, the other terminal of which is connected by a conductor 24 to one side of an alarm bell 25, the other side of which 85 is connected by a conductor 26 to a fixed stud 27 in the path but normally out of contact with the stud 21 upon the arm 19.

Under normal operation the pressure of gas in the pipe 1 when the lever 3 is in the horizontal position, 90 in which position the valve 2 is open, will cause the distention of the bag 10 and thus hold the plates 11 and 12 and the arm 14 carried thereby in the uppermost position. The bell crank lever 17—19 is then free to have the end 20 engaged under the end 4 of the 95 lever 3, thus holding the latter in the horizontal position and the valve 2 open. Suppose that there is a fluctuation of the pressure in the pipe 1 such as often occurs in the normal gas service. The bag 10 may collapse a little or may even be distended more than 100 usual but so long as this collapse or distention is not marked the rod 4 may be moved up and down through a limited distance, depending on the length of the eye or slot 15, without engaging the pin 16 of the arm 17. Suppose, however, that the pressure in the pipe 1 105 should be reduced, either temporarily or otherwise, to an extent such as would cause lights to be extinguished. The bag 10 will collapse to a corresponding extent which will be sufficient to bring the upper end of the slot 15 into engagement with the pin 16 and turn 110 the bell crank lever on its pivot 18 until the end 20 of the arm 19 escapes from under the end 4 of the lever

3. The said lever will at once gravitate to the pend-
 ent position and the gas will be cut off. The collapse
 of the bag 10 will also cause the contact stud 21 to come
 in contact with the terminal 27 thus closing the elec-
 5 tric circuit and the bell 25; which may be of the trem-
 bler type, will begin to ring and will continue to ring
 until the contact between 21 and 27 is broken. So
 long as the gas is shut off by this device the bell will
 continue to ring, thus notifying the user that the gas
 10 cannot be used until the valve is again turned on and
 the detent device is set to hold the valve open. It
 will be observed, however, that the valve cannot be
 put in an open position and there held by the detent
 unless the gas pressure in the pipe 1 has been restored.

15 We claim:—

1. An automatic gas cut-off comprising a valve in the
 gas supply pipe, a weighted lever fast on the valve stem
 and movable by gravity to a position to close the valve,
 a pivoted detent directly engaging said lever, a collapsible
 20 gas receptacle connected to the gas pipe on the cut-off side
 of the gas valve, and a connection between the collapsible
 gas receptacle and the detent for moving the latter out of
 the path of the weighted lever.
2. An automatic gas cut-off comprising a valve in the
 25 gas supply pipe, a lever fast on the valve stem for operat-
 ing said valve, an adjustable weight on said lever, a
 pivoted detent directly engaging the free end of said
 weighted lever for holding the valve in the open position, a
 collapsible gas receptacle connected to the gas pipe on
 30 the cut-off side of the valve, and a connection between

said collapsible receptacle and the detent for moving the
 latter out of the path of the weighted lever, said connec-
 tion also having a limited extent of movement without
 engaging said detent.

3. An automatic gas cut-off comprising a valve in a 35
 gas supply pipe, a lever operating said valve and provided
 with an adjustable weight, a detent in the form of a bell
 crank lever having one arm directly engaging said valve
 lever, a collapsible gas receptacle, connections between the
 same and the gas pipe on the cut-off side of the valve, 40
 and a connection between the collapsible receptacle and
 the other arm of the bell crank lever provided with a
 slot whereby the said connection may have a limited ex-
 tent of movement without engaging said bell crank lever.

4. An automatic gas cut-off comprising a valve in a gas 45
 supply pipe, a lever for operating the same, an adjustable
 weight on said lever, a bell crank lever with one arm
 normally in the path of said valve lever, a collapsible gas
 receptacle in communication with the gas supply pipe on
 the cut-off side of the valve, a connection between the 50
 collapsible receptacle and the bell crank lever, a slot
 therein permitting a limited movement of this connection
 without engaging the bell crank lever, a charged electric
 circuit, a bell included therein, and circuit terminals for
 said circuit one of which is fixed and the other of which 55
 is carried by one arm of the bell crank lever.

In testimony that we claim the foregoing as our own,
 we have hereto affixed our signatures in the presence of
 two witnesses.

JAMES G. FAIRBANKS.
 WILLIAM O. RICE.

Witnesses:

WILLIAM O. TRAVIS,
 CLARENCE P. ROBINSON.