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AUTOMATIC GAS SHUT-OFF

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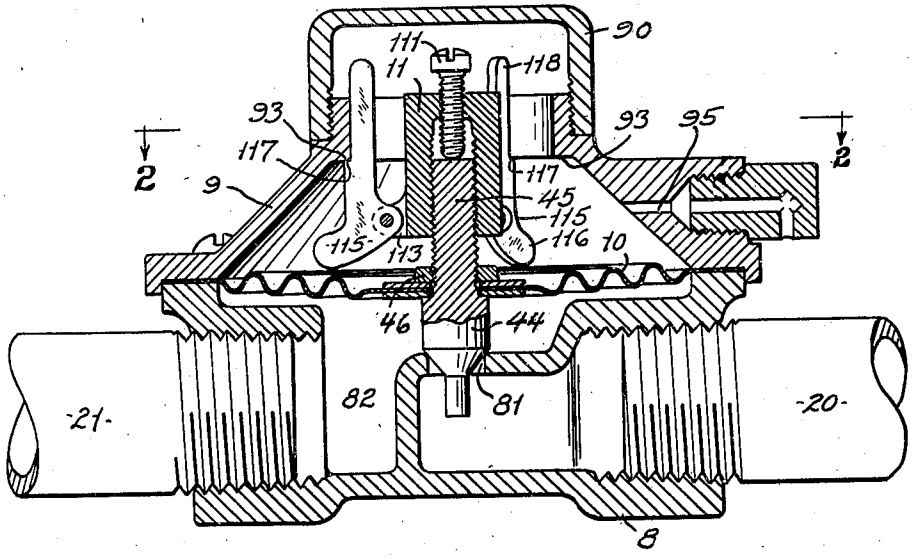


FIG. 1

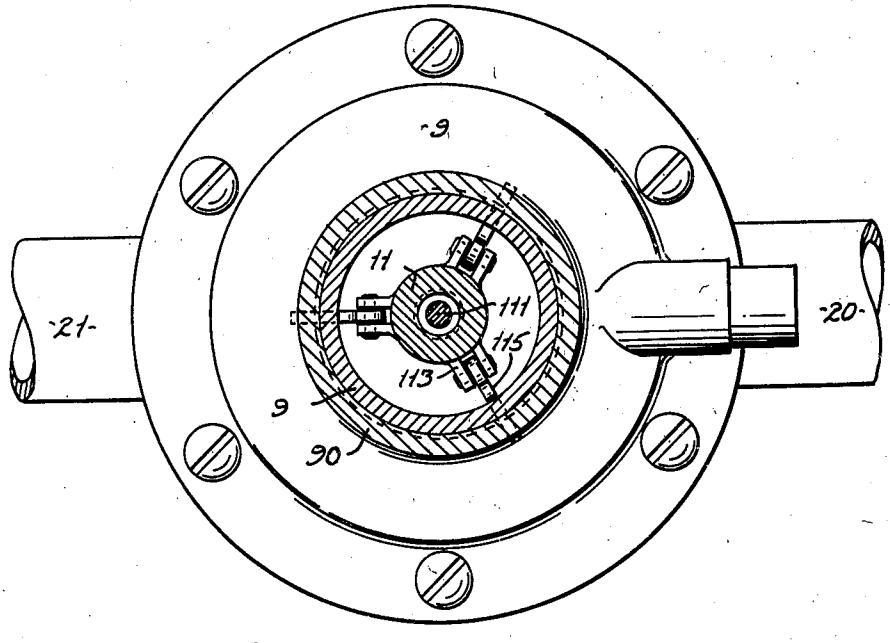


FIG. 2

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AUTOMATIC GAS SHUTOFF

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3 Claims. (Cl. 137—153)

This invention relates to an automatic device for shutting off the supply to a gas flame whenever the gas pressure falls so low as likely to cause the flame to die out, so that a return of the gas pressure will not cause unconsumed gas to discharge into the room. The device is, therefore, a safety device suitable for gas stoves, gas radiators, water heaters, etc.

The primary object of the invention is to provide such a device in a simple form which shall be very reliable in service, and in which there shall be no danger of the valve failing to seat effectively whenever the pressure drops to a dangerous minimum. Another object is to provide a simple arrangement whereby the valve may be readily restored manually to active position, whenever a return gas pressure has made such restoration desirable.

An embodiment of my invention is illustrated in the drawing hereof, and is hereinafter described in detail, and the essential novel characteristics are summarized in the claims.

In the drawing, Fig. 1 is a vertical central section through one embodiment of my automatic shut-off device; Fig. 2 is a horizontal section of the same in a plane through the manually releasable latch which may hold the valve closed, the plane being indicated by the line 2—2.

The frame of the device shown is a casing composed of a body 8 and a cap 9 secured thereto. The body has an intake passageway threaded to receive a supply pipe 20. This passageway terminates at a valve seat 81 carried by the body and discharging into a chamber 82 within the casing. A discharge passageway leads from this chamber to the pipe 21 adapted to communicate with the device burning the gas.

Between the body 8 and the cap 9 is an intermediate diaphragm 10, which in this case is shown as a usual corrugated metal diaphragm clamped between the two members of the casing. The valve seat 81 comprises the edge of an opening in a partition of the casing, and the valve is shown as a metal member 44 having a conical surface to coact with the valve seat. A threaded stem 45 of this valve passes through the diaphragm and is clamped to it by a nut 46.

The latch carrier is an internally threaded sleeve 11 adjustably mounted on the threaded stem 45 and locked in position by a set screw 111 carried by the sleeve and engaging the top of the stem. This latch-carrier is provided with three sets of outwardly extending ears 113 to which are pivoted the latches 115. These latches have outwardly extending counter-weights 116 and are provided with shoulders 117 to engage beneath shoulders 93 on the casing, and have upward extensions 118 for manual release.

The cap 9 has the usual atmospheric vent 95 above the diaphragm. At its upper end the cap is threaded to carry the supplemental cap 90 which is removable to allow access to the latch fingers.

The latches 115 are eccentrically pivoted, and have portions extending horizontally away from their pivots to counterweight them, so that they have a tendency to swing outwardly on the pivots. Accordingly, it results that when the gas pressure in the pipe 20 drops to dangerous minimum the weight of the parts on the diaphragm itself, will cause the valve to drop and engage the seat 81 and shut off the gas, and at the same time the latches will swing outwardly on their pivots engaging the underside of the casing shoulders 93 and locking the valve in its closed position. A return of the gas pressure will not release the valve and it will remain locked.

After the device has acted to shut off the gas, and it is desired to restore it to open the passageways, the cap 90 is simply removed and the operator by his thumb and two fingers presses inwardly the upper ends 118 of the three latches. This releases the diaphragm and valve and also provides the operator with a handle to pull up the diaphragm and open the passageway. If at such time there is not proper gas pressure the valve will remain in or return to the position shown in Fig. 1 and the latches will return to that position when released. If the proper gas pressure is present when the latches are withdrawn the parts will immediately return to active position.

It will be seen that the latch comprises multiple members equally spaced about the axis of the diaphragm, thus providing a balanced structure. The latches are readily adjusted so that they become active to hold the valve down whenever the valve reaches its seat but are idle when the valve is above its seat.

I claim:

1. The combination of a casing comprising a body and a cap thereon, a diaphragm clamped between them, a valve carried by the diaphragm on its under side, a latch carrier on the upper side of the diaphragm mounted for adjustment toward and from the diaphragm, a plurality of radial latches pivotally mounted on the carrier, the center of gravity of each of the latches being outside of the pivot whereby the latches tend to swing outwardly, there being an upwardly

facing shoulder on each of the latches adapted to coact with a downwardly facing shoulder on the cap member of the casing.

2. The combination of a casing, a diaphragm within the casing with chambers on opposite sides, intake end discharge passageways communicating with the chamber on one side, a valve connected with the diaphragm and adapted to close such communication, a threaded stem in the other chamber mounted on the diaphragm, a sleeve threaded on the stem, means for locking the sleeve in adjusted position, a plurality of latches spaced about said sleeve and pivotally mounted thereon and counter-weighted to swing outwardly, each latch having a shoulder to coact with a shoulder on the interior of the casing, said latches extending upwardly above their shoulders for manual engagement to release the latches.

3. In a valve device comprising a body member having intake and discharge passageways and a valve seat between them, a cap member having a top opening, a diaphragm clamped at its edge between the cap member and body, and a valve carried by the diaphragm coacting with the valve seat, the feature of the valve being on the lower end of a threaded stem extending through the diaphragm and clamped thereto, a sleeve threaded on the stem to be adjustable toward and from the diaphragm, a plurality of latches equidistantly spaced about the sleeve and pivoted thereto and each having an upwardly facing shoulder adapted to coact with a downwardly facing margin of the cap about the top opening thereof, said latches extending upwardly in the annular space about the sleeve and within the cap margin, a clamping screw threaded into a head portion on the sleeve and bearing downwardly on the upper end of the stem, and a cap removably secured to said cap member and normally shielding the upper ends of the latches and the head of the clamping screw.

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