Feb. 17, 1925. 1,526,512

F. TETEN

AUTOMATIC GAS CUT-OFF MECHANISM

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Fig. 1

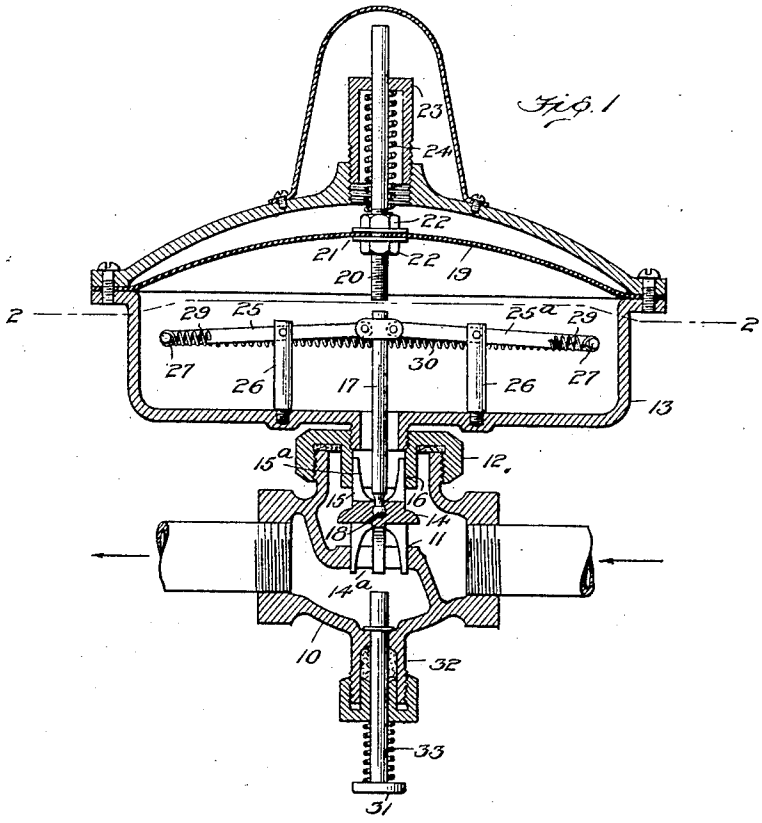
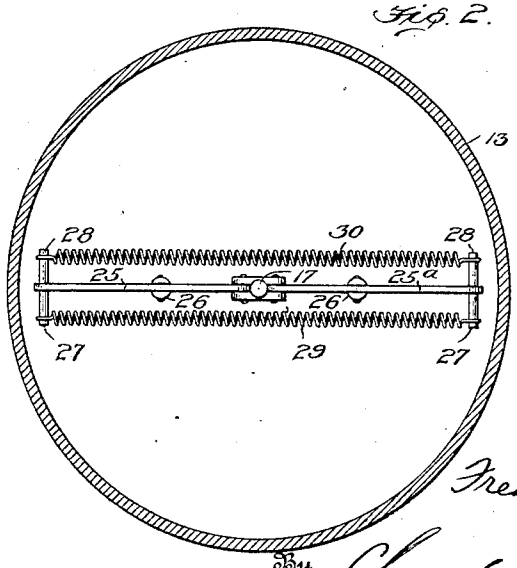


Fig. 2.



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AUTOMATIC GAS CUT-OFF MECHANISM.

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To all whom it may concern:

Be it known that I, FRED TETEN, a citizen of the United States, residing at Shattuck, in the county of Ellis and State of Oklahoma, have invented certain new and useful Improvements in Automatic Gas Cut-Off Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to automatic extinguishers for gas burners and the like, and relates particularly to an apparatus for automatically cutting off the supply of gas to the burner or other point of consumption.

Generally stated, the invention comprises a valve mechanism having means for automatically closing the valve in the gas supply pipe or other fitting, said valve closing mechanism including pressure responsive means for initiating the closing movement of the valve and spring controlled means for augmenting or completing said closing movement as well as assisting in the opening of the valve, this latter movement being initiated manually:

Aside from the object of providing a valve operating mechanism that will insure an effective opening and closing of the valve, the present invention also contemplates an arrangement of said valve operating mechanism that permits of a casing construction which is not apt to be broken or fractured due to the fact that the casing of the present invention may be formed without any sharp angles or off-set portions.

With these and other objects in view the invention consists in certains details of construction and arrangements and combinations of parts all as will be hereinafter more fully described and the novel features thereof pointed out in the appended claims.

In the accompanying drawings—

Figure 1 is a central, vertical section of an automatic cut-off mechanism embodying the present invention.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

While any desired type of gas supply connection may be used, a standard check 10 having a valve opening and seat 11 therein between the inlet and outlet openings is illustrated in the present instance. Mounted upon said check by a suitable threaded connection 12 is the lower half portion of a casing 13 which forms a gas chamber as well as a housing for the valve operating mechanism.

The valve 14 which, of course, is movable towards and away from its seat 11, has an extension 15 thereon which is guided in an annular recess or passage 16 in the connection 12 and the valve stem 17 is attached to said valve by a universal connection 18, the stem extending through the connection 12 into the casing 13. Suitable passages 14^a are formed in the valve 14 and similar passages 15^a are formed in the extension 15 to allow gas to pass into the casing 13.

The upper half of casing 13 is secured in place by ordinary fastening elements extending through flanges on the two half sections of the casing and secured between said flanges by the fastening elements is a flexible diaphragm 19 having a central aperture therein through which a plunger or diaphragm stem 20 extends. The plunger 20 is attached to the diaphragm by a washer 21 and nuts 22 all of which go to make a gas tight joint, and the upper end of said plunger is guided in a nipple 23 secured in the casing 13. Interposed between the inner face of nipple 23 and the top face of the diaphragm is a coiled spring 24 surrounding the plunger 20 and to permit the pressure exerted by said spring on the diaphragm to be regulated the nipple 23 is screw threaded in the top of the casing.

So long as the gas is being supplied to the point of consumption at the proper pressure and so long as this pressure is maintained in the chamber in casing 13, the diaphragm will be maintained in its uppermost position as shown, with valve 14 open but should the pressure in said chamber be reduced in any way below a predetermined point the diaphragm will be free to move downward under the pressure exerted thereon by the spring 24 with the result that plunger 20 will engage the upper end of valve stem 17 and move the valve 14 towards its seat 11.

To augment and insure a complete and effective closing of the valve, however, a pair of oppositely disposed levers 25, 25^a are pivoted at opposite sides of the valve stem on suitable supports 26 in casing 13

and their inner or adjacent ends are pivotally attached to the stem. At their outer or remote ends, each of said levers is formed with an upwardly extending arm or projection and a downwardly extending arm as indicated at 27 and 28 and the pair of upwardly extending arms 27 are connected by a spring 29 while the downwardly extending ones are connected by a similar spring 30.

When the valve stem is depressed by plunger 20, as before described, the pivotal connection between the valve stem 17 and levers 25, 25ª will be moved below the pivotal centers of said levers and as soon as this occurs the spring 29 will tend to pull the outer ends of the levers upward and towards each other. This will, as is apparent, move the inner ends of the levers and the attached valve stem downward and close valve 14.

For opening the valve, a resetting stem or plunger 31 is slidably secured in a stuffing box 32 in the bottom of the check 10. Normally, a spring 33 on the stem 31 holds said stem or plunger down in a position where the valve can be closed as before described but by manually pushing said stem 31 up, the valve will be raised off of its seat. This upward movement of the valve and the valve stem is continued until the pivotal connections between said stem and the levers 25, 25ª pass the pivotal centers of said levers, after which the spring 30 connecting the downwardly extending arms on said levers will move the inner ends of the levers and the valve stem up to open the valve fully. This arrangement for initiating the resetting movement of the valve can, of course, be modified without affecting the means for completing such movement.

This form of valve opening and closing mechanism insures the valve being closed tight to prevent the flow or escape of gas when the gas should be cut off and insures the valve being opened fully so as not to interfere with the flow of gas when it is desired to have the gas supplied to the point of consumption. Moreover, this form of opening and closing mechanism wherein the several parts are arranged one above the other permits the use of a casing or housing that has no off-set portion that can be easily broken off and that has no sharp angles in its formation which would tend to render it more easily broken or fractured.

What is claimed is:—

1. In an apparatus of the class described, the combination of a check having a passage therethrough, of means for automatically closing said passage comprising a valve stem, a valve mounted on the stem, and a plunger operable upon reduction of pressure in said passage to engage said stem for closing the valve, and means for resetting said plunger and opening the valve, said valve, valve stem, plunger and resetting means being alined with one another.

2. In an apparatus such as described, the combination with a gas supply connection having a passage and valve stem, a valve mounted on said stem seat therein, of a valve, means operable upon a reduction of pressure in said passage for initiating a movement of the valve towards the seat, said means comprising a plunger adapted to directly engage the valve stem, and separate resilient means for augmenting such movement of the valve.

3. In an apparatus such as described, the combination with a gas supply connection having a passage and valve seat therein, of a valve and connected valve stem movable towards and away from said seat, means comprising a plunger disconnected from but engageable with said stem for initiating a movement of the valve towards the seat, and means connected with the stem for augmenting said movement of the valve.

4. In an apparatus such as described, the combination with the valve seat, valve and valve stem, of means for initiating a movement of the valve towards said seat, said means comprising a plunger adapted to directly engage the valve stem, and means for completing such closing movement of the valve comprising levers pivoted on opposite sides of the valve stem and pivotally connected to said stem and means for moving the stem and attached lever ends towards said seat after said parts have been moved towards the seat and past the pivotal centers of the levers.

5. In an apparatus such as described, the combination with the valve seat, valve and valve stem, of means for initiating a movement of the valve towards said seat and means for completing such closing movement of the valve comprising levers fixedly pivoted intermediate their ends at opposite sides of the valve stem and pivotally connected to said stem and means for moving the stem and attached lever ends towards said seat after said parts have been moved towards the seat and past the pivotal centers of the levers, and means for opening said valve comprising means for initiating a movement of the valve away from the seat and means for moving said stem and attached lever ends away from the seat after said parts have been moved away from the seat and past the pivotal centers of the levers.

6. In an apparatus such as described, the combination with the valve seat, valve, valve stem and casing for said parts, of a plunger located above said stem and movable into contact therewith to move the valve towards the valve seat when the pressure in the casing drops below a predetermined point, a plunger below the valve for opening the lat-

ter, oppositely extending levers fixedly pivoted intermediate their ends at opposite sides of the valve stem and having their adjacent ends pivotally attached to said stem, extensions at the remote ends of said levers, and springs connecting the extensions at opposite ends of said levers whereby closing and opening movements of the valve will be augmented by the springs after the connections between the levers and stem have passed above or below the pivotal centers of the levers.

FRED TETEN.