

No. 698,199.

Patented Apr. 22, 1902.

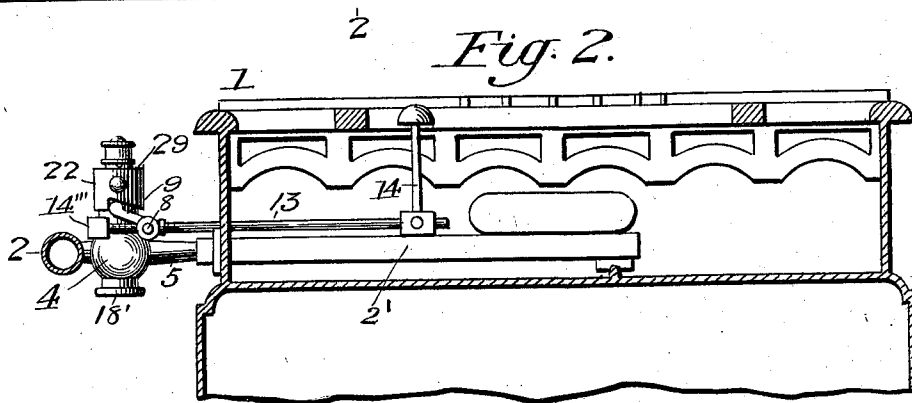
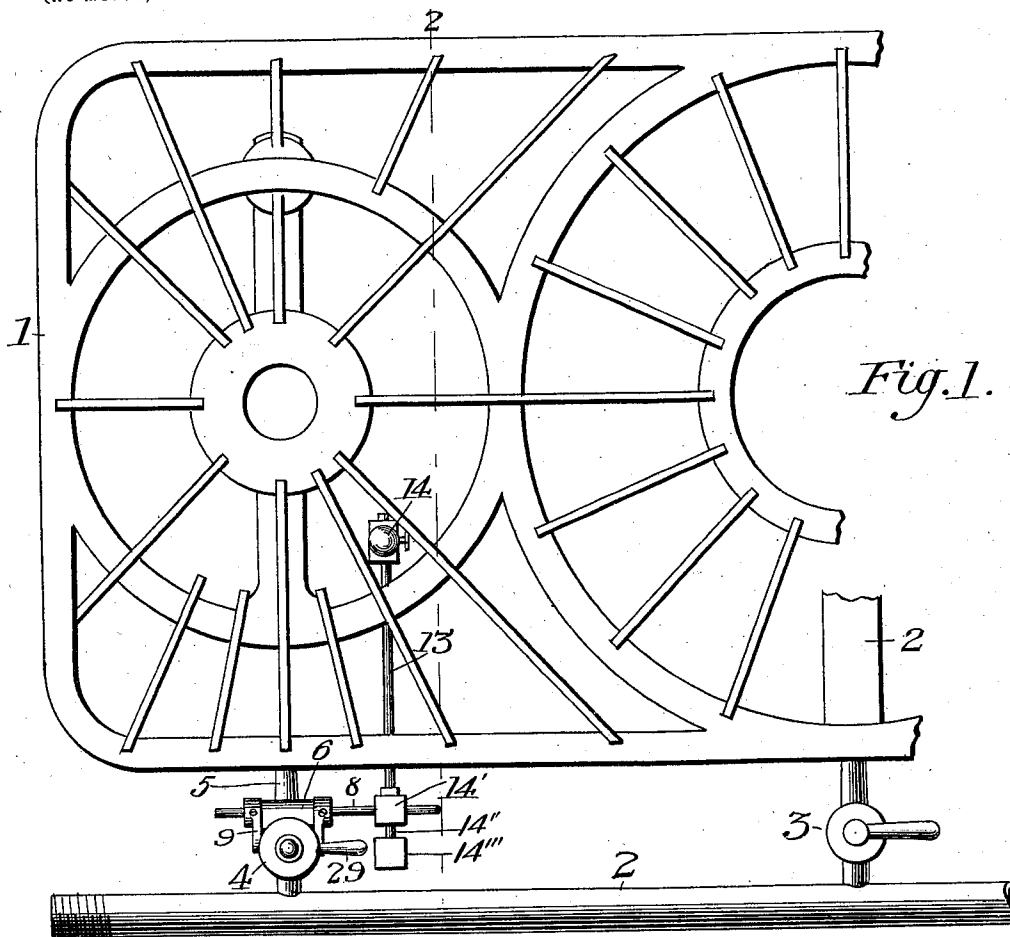
E. C. HILLYER.

AUTOMATIC CUT-OFF FOR GAS STOVES.

(Application filed Oct. 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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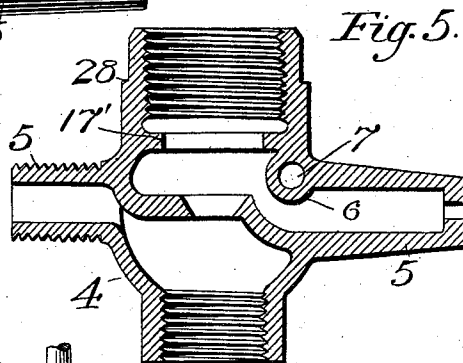
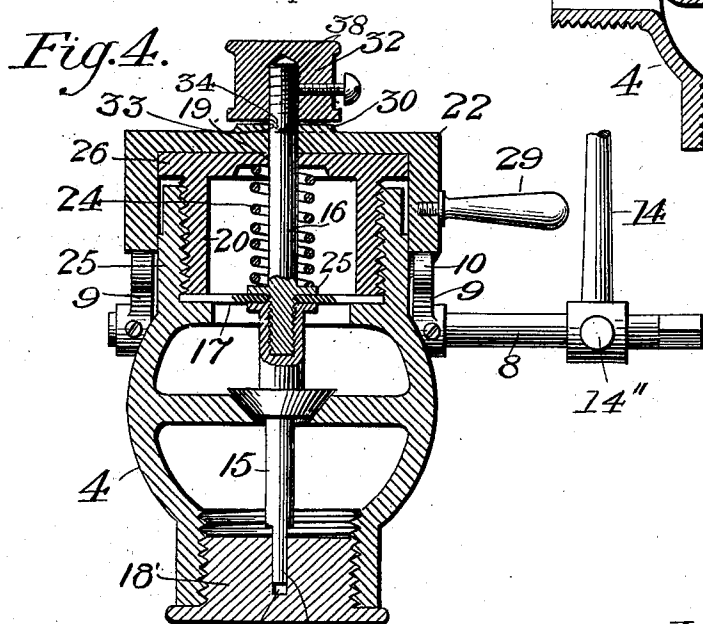
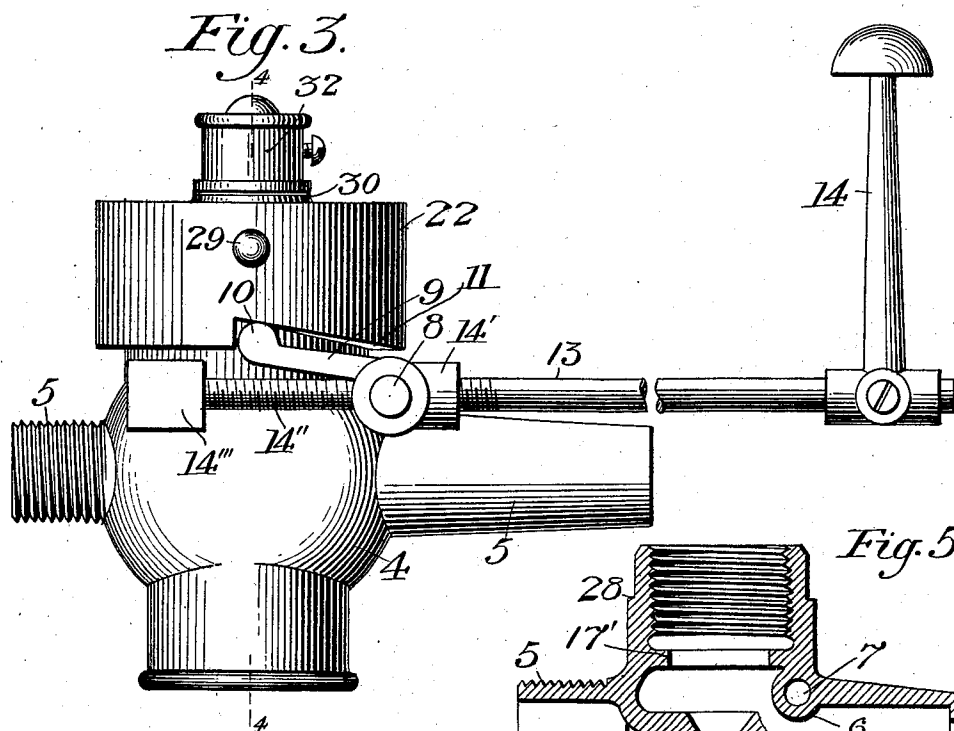
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AUTOMATIC CUT-OFF FOR GAS STOVES.

(Application filed Oct. 27, 1900.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

EDGAR CURTIS HILLYER, OF NEWPORT NEWS, VIRGINIA.

AUTOMATIC CUT-OFF FOR GAS-STOVES.

SPECIFICATION forming part of Letters Patent No. 698,199, dated April 22, 1902.

Application filed October 27, 1900. Serial No. 34,621. (No model.)

To all whom it may concern:

Be it known that I, EDGAR CURTIS HILLYER, a citizen of the United States, and a resident of Newport News, county of Warwick, and State of Virginia, have invented certain new and useful Improvements in Automatic Cut-Offs for Gas-Stoves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to automatic cut-off attachments for gas-stoves and the like.

The object of my invention is to provide a cut-off attachment adapted to be applied to gas-stoves and the like as already constructed and on the market without change in the ordinary connecting means for the supply-valves as originally employed.

To this end my invention consists of a valve with means for partially opening the same to start and maintain a small or taper flame, an automatic device actuated by a receptacle or the like placed upon the stove to further or fully open the valve, and an auxiliary-valve actuator adapted to regulate or cut off the flow of gas entirely from the burner independently of the operation of the automatic device.

In the drawings, Figure 1 is a broken plan of a well-known form of gas-stove with my invention applied thereto. Fig. 2 is a sectional elevation on line 2 2 of Fig. 1. Fig. 3 is an elevation of my improved valve mechanism, showing the valve in its closed position. Fig. 4 is a vertical section on line 4 4 of Fig. 3. Fig. 5 is a vertical section of the valve-casing, taken at right angles to Fig. 5.

Referring to Fig. 1 of the drawings, 1 illustrates a gas-stove of ordinary construction having a burner which is connected with the supply-pipe 2 by a pipe 2' in the ordinary way. 3 indicates the gas-valve as commonly used in stoves of this type. 4 indicates a valve of my improved construction, which is adapted to replace the common form of valve 3 and is provided for this purpose with connecting-nipples 5 5, which are secured to supply-pipe 2 and open into the inlet-pipe 2', leading to the burner. Valve 4 comprises a reciprocating valve of the regular globular type, having a two-part stem 15 16, which parts are connected by a screw and socket, as illustrated particularly in Fig. 4, and between the

contiguous parts of the stem is securely clamped a washer 17, of leather or like material, to provide a packing for the valve. The upper portion of the valve-casing is internally screw-threaded to receive an externally-threaded cap-nut 20, provided with a flange 26, extending over the periphery of the valve-casing and bearing with its lower edge firmly upon the washer 17. Surrounding the upper part of the stem 16 and bearing at one end upon the flange 25 thereof and at the other upon the under side of the screw-cap is a spiral spring 24, adapted to hold the valve normally to its seat. The lower portion of said valve-stem 15 terminates in a flattened projection 15'', which fits in a corresponding slot 18 in the inner face of the screw-threaded nut 18', which closes the lower portion of the valve-casing. The upper portion of the valve-stem projects beyond the cap-nut and is provided with an external screw-thread 38. Loosely surrounding the valve-stem below this screw-thread and snugly fitting the sides of the valve-casing and the screw-cap 20, on the top face of which it always rests except when a utensil is in contact with the push-rod 14 or when said push-rod is otherwise actuated, is a cap or cup shaped actuating device 22, the lower periphery of which is furnished with two diametrically opposite inclines or cams 11. Laterally projecting from said actuator is a handle-piece 29. Centrally disposed on the top of the actuator is a boss 30, having a V-shaped groove 33 disposed diametrically across its upper face. Threaded upon the upper end of the valve-stem is a nut 32, which is secured to said valve-stem by a radial set-screw. The under face of said nut has a V-shaped rib 34, corresponding with and adapted to cooperate with the V-shaped slot 33 in the actuator.

The valve-casing is provided with an integral bearing-lug 6, provided with a transverse orifice 7, which is adapted to receive a spindle or shaft 8, upon which are adjustably secured two rock-lever arms or wipers 9, which engage with the cams 11 on the depending flange of the actuator 22. On the outer end of the spindle is adjustably secured a T-coupling 14', receiving the screw-threaded end of a lever 13, to the outer end of which is secured a push-rod 14 by means of a suitable set-screw. On the upper end of said push-rod is a button, generally hemispherical in

form, the top of which is about one-eighth of an inch below the surface of the stove-top when the valve is in closed position. Projecting from the rear of the coupling 14' is a screw-threaded stud 14", which receives an adjustable counterweight 14'''.

The valve-actuating mechanism, as shown in the drawings, is disposed upon the right-hand side of the valve; but in the construction illustrated I provide means whereby said mechanism may be changed to the left-hand side, as desired. For this purpose the shaft 8 may be removed from the bearing 7 and reversed in position, after which the wipers 9 are attached to said shaft, when the circular heads 10 thereof will engage with their opposite edges the cams 11, as before.

The operation of my device is as follows: In the normal position of the parts with the valve closed, as in Fig. 3, when it is desired to light the gas the handle 29 is given a partial turn, thereby causing the groove 33 in the boss 30 on the top of the actuator 22 to be disengaged by the lug 34 on the bottom of the nut 32 as the valve-stem and nut are held from rotation. By this means the nut 32 is slightly elevated against the tension of the spiral spring surrounding the valve-stem, thus opening the valve partially and permitting a small flow of gas to the burner. This constitutes a "taper flame," which may be left burning permanently, if desired. Upon reversing the movement of the handle it is obvious that the flow of gas will be entirely checked and the flame extinguished. When the handle 29 is turned to produce the taper flame, the cams 11 on the lower edge of actuator 22, which cams are in contact with the rounded ends 10 of rock-levers 9, depress said rock-levers and rock the shaft 8, which movement raises the lever 13 and brings the top of button on rod 14 above the top face of the stove. With the taper flame lighted, as above indicated, when a cooking utensil or the like is placed upon the burner the bottom of said utensil coming in contact with the button depresses the rod 14, thereby rocking the shaft 8 by means of the lever 13, which movement elevates the rounded ends of rock-levers 9, thereby lifting the valve through the agency of actuator 22, nut 32, and its connecting stem farther from its seat and permitting an increased flow of gas to the burner. The increase of flow depends on the position of the actuator-handle 29.

It is evident that if the utensil is removed from the burner the movement of the parts will be reversed and the valve will return to its former position, allowing only the taper flame to burn irrespective of the amount the actuator-handle has been turned, for it is clear that when the ribs 34 of nut 32 have once been disengaged from the groove 33 on actuator, thus producing a taper flame, any further movements of the actuator-handle do not operate directly on the nut to further lift the valve, as the ribs 34 simply slide around

on the horizontal top face of the boss 30 on the actuator. After the valve has been opened sufficiently to establish a taper flame a further opening movement is accomplished by depressing the rod 14 by means of a utensil placed upon the stove, which lifts the actuator 22 through the agency of the rod 13, wipers 9, and cooperating cams 11. Consequently when said utensil is removed the actuator falls bodily until it rests again on the top of the screw-cap 26 and reduces the flow of gas to an amount just sufficient to constitute a taper flame.

If it be found desirable to vary the flow of gas to the burner while the utensil is still in position on the stove, it will be only necessary to turn the actuator 22 a slight degree to the left or right, thereby causing the cams 11 to slide along the rounded ends of the rocking levers until said levers pass to a lower or higher part of said cams, thus partially opening or closing the valve.

Should it be found desirable to entirely stop the flow of gas, the actuator is turned to its original position or until the groove 33 is again engaged by the ribs 34, which drops the valve on its seat. In this position of the actuator the rocker-arms 9 will rest on the highest part of the cams of said actuator, as illustrated in Fig. 3, in which position the button on rod 14 is depressed below the surface of the top of the stove and a utensil placed thereover will not operate to open the valve.

Heretofore it has been common to employ automatic cut-off attachments for gas-stoves whereby the placing of a receptacle upon the stove would open the valve and the removal of such receptacle would close the valve. Such constructions were open to the objection that the accidental or careless placing of any receptacle on the stove before the gas was lighted would turn on a full head of gas, thereby entailing great danger of explosion as well as waste. With my device it is impossible to turn on the gas at all by the simple act of placing of a receptacle on the stove without first operating the actuator 22 by means of the handle 29, and thereby partly opening the valve to admit of a taper flame, which is then lighted. When the actuator is not in operative position, as shown in Figs. 2 and 3, the button on rod 14 is below the face of the stove, and a vessel placed upon the stove-top will not come in contact with it.

The constructions heretofore in use, so far as I am aware, are further open to the objection that for other than a taper flame the burner must be operated at full flame, whereas my device provides for any degree of flame between a taper and full flame, and yet when the utensil is removed from the burner the flame is reduced to the taper, which remains constant for all positions of the actuator-handle until the valve is closed.

The particular embodiment of my invention as shown and described merely illustrates a preferred form thereof, and it must

be understood that I am not limited by the particular means shown, but may substitute equivalent mechanisms for the various parts without departing from my invention.

5 Having thus described my invention, what I claim is—

1. In a gas-stove, the combination with a valve for controlling the gas-supply, of a hand-operated device for partially opening
10 the valve to burn a taper flame, and a supplemental device connected to said hand-operated device and operating therethrough to open the valve farther when a larger flame is required, said supplemental device being
15 adapted to be actuated by placing a vessel on the stove.

2. In a gas-stove, the combination with a valve for controlling the gas-supply, of a hand-operated device for partially opening
20 the valve to burn a taper flame, and a supplemental device connected to said valve to open it farther when a larger flame is required, said supplemental device being located normally below the stove-top, and being con-
25 nected with the hand-operated device so that when the latter is operated to light the taper flame, the supplemental device will be raised above the stove-top in position to be operated by placing a vessel thereon.

3. In a gas-stove, the combination with a valve for controlling the gas-supply, of an automatic device for opening the valve by plac-
30 ing a vessel on the stove, said device being normally out of operative position, and a hand-operated device for setting the automatic device into operative position, said
35 hand-operated device being connected to the supply-valve so as to partially open the same before setting the automatic device.

4. In a gas-stove, the combination with a valve for controlling the gas-supply, of a taper-
40 flame device, and a full-flame device, said devices being connected to the supply-valve, and being also connected together, so that the actuation of the taper-flame device will
45 set the full-flame device into operative position.

5. In a gas-stove, the combination with a supply-valve, a device for partially opening the
50 valve by hand to burn a taper flame, and a supplemental device actuated by a vessel placed on the stove to open the valve farther when a larger flame is required, said hand device act-
55 ing to open the valve to a limited extent in the first part of its movement, and the further movement of said device operating to lift the supplemental device into operative position without further opening the valve.

6. In a gas-stove, the combination with a
60 supply-valve, of a device to operate said valve by hand, and an automatic device to open the valve farther by a vessel placed on the stove, said hand device having a preliminary move-
65 ment to open the valve partially to burn a taper flame, and a connection between the hand device and the automatic device, where-
by the continued movement of the hand de-

vice after lighting the taper flame lifts the automatic device into operative position with-
out further opening the valve.

7. A valve mechanism for gas-stoves, com-
prising a reciprocating supply-valve, a casing
therefor, an actuator, means coöperating with
the actuator and the valve-stem for partially
opening the valve, automatic mechanism co-
75 operating with the actuator to further or fully
open the valve and means for disengaging
said mechanism and said actuator, whereby
the valve may be closed independently of
said automatic mechanism.

8. A valve mechanism for gas-stoves, com-
prising a reciprocating valve, a casing there-
for, an actuator coöperating with the valve-
stem, a cam-rim on said actuator a rock-lever
coöperating with said rim, a rod attached to
85 said lever, and means for rendering inopera-
tive said lever and said cam-rim whereby the
valve may be closed and remain closed inde-
pendently of said rock-lever and its connec-
tions.

9. A valve mechanism for gas-stoves, com-
prising a reciprocating valve, a casing there-
for, an actuator, a nut on the valve-stem, co-
operating means on said nut and said actua-
tor to partially open the valve, a cam-rim on
95 said actuator, a rock-lever coöperating with
said cam-rim, a rod attached to said lever and
means for rendering inoperative said lever
and said cam-rim, whereby the valve may be
closed independently of said lever and its con-
100 nections.

10. A valve mechanism for gas-stoves, com-
prising a non-rotary, reciprocating valve, a
casing therefor, a cap on said casing coöper-
ating with the valve-stem, cam-rim on said
105 cap, a rocking lever pivoted to said casing,
and engaging said cam-rim, a rod attached
to said rock-lever, and adapted to be engaged
by a utensil on the stove-top to further or
fully open the valve, and means for render-
110 ing inoperative said lever and said cam-rim,
whereby the valve may be closed independ-
ently of said rock-lever.

11. A valve mechanism for gas-stoves com-
prising a non-rotary reciprocating valve, a
115 casing therefor, a cap on said casing, a nut
secured to the valve-stem, coöperating means
on said nut and said cap to partially open the
valve, a cam-rim on said cap, a rock-lever
pivoted to said casing and engaging said cam-
120 rim, a rod attached to said rock-lever, and
adapted to be engaged by a utensil on the
stove-top to further or fully open the valve
and means for rendering inoperative said le-
ver and said cam-rim, whereby the valve may
125 be closed independently of said rock-lever and
its connections.

In testimony whereof I affix my signature
in presence of two witnesses.

EDGAR CURTIS HILLYER.

Witnesses:

O. D. BATCHELOR,
W. E. COTTRELL.