

Aug. 18, 1925.

1,550,313

J. GRAF, SR

PILOT AND GAS CUT-OFF

Filed Dec. 5, 1924

2 Sheets-Sheet 1

Fig. 1.

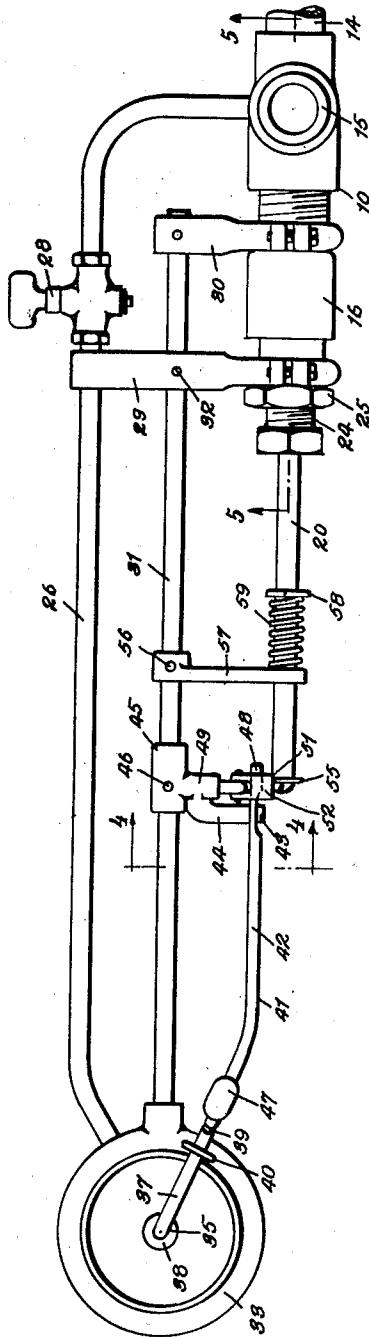
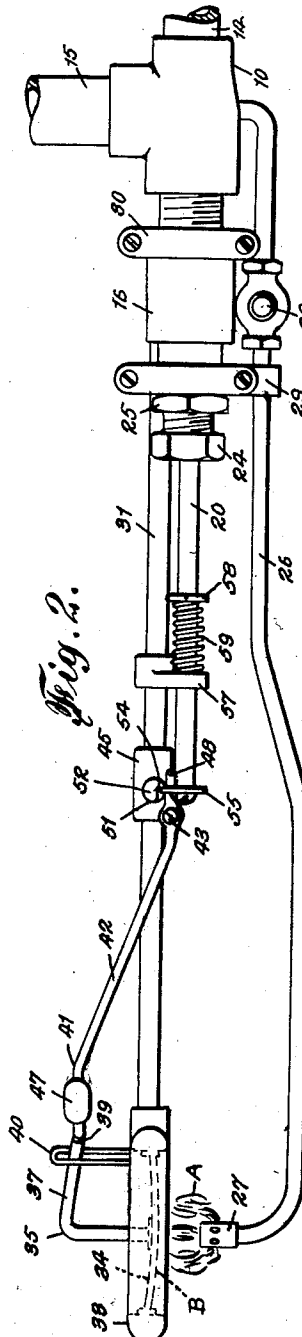


Fig. 2.



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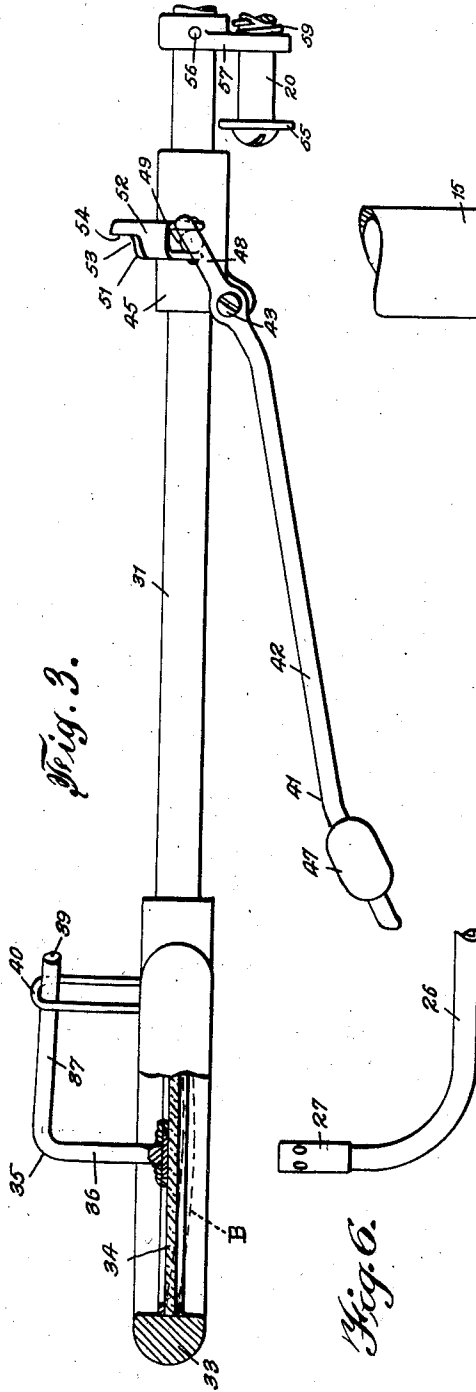
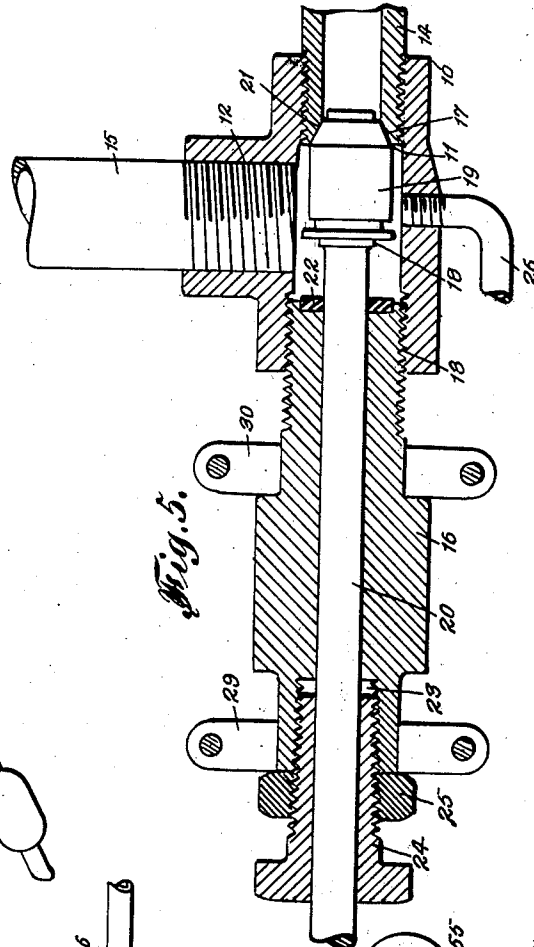
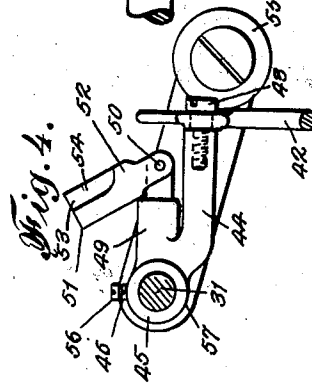
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PILOT AND GAS CUT-OFF

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2 Sheets-Sheet 2



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Patented Aug. 18, 1925.

1,550,313

UNITED STATES PATENT OFFICE.

JOHN GRAF, SR., OF NEW YORK, N. Y.

PILOT AND GAS CUT-OFF.

Application filed December 5, 1924. Serial No. 754,146.

To all whom it may concern:

Be it known that I, JOHN GRAF, Sr., a citizen of the United States, and a resident of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in a Pilot and Gas Cut-Off, of which the following is a full, clear, and exact specification.

10 This invention relates more particularly to a class of safety gas appliances.

My invention has for its object primarily to provide a device wherein is employed a pilot and gas cut-off for use especially on gas stoves and the like to enable the heating burners to be lighted when desired for avoiding the frequent use of matches, and which is of a form adapted to cause the main supply of the gas to be cut-off automatically in event of the pilot flame being accidentally extinguished so as to overcome the liability of liberation of the gas in buildings and other structures with the consequent danger of explosions and fire as well as to overcome the danger of persons occupying the premises inhaling the poisonous gaseous products.

The invention consists essentially of a chamber or casing having an inlet adapted to be connected to the main supply of fuel gas, and having an outlet adapted to be connected to the feed pipe of the burners of a gas stove. A spring actuated valve is movable inwardly and outwardly of the chamber for admitting and cutting-off the flow of gas, and a pilot burner having a valve controlled pipe leads from the chamber for providing a flame for use to ignite the burners of the stove. Above the pilot burner is supported a disk of mica for being heated by the flame to cause the disk to move toward the burner, and on the mica disk is carried a clip adapted to be moved upwardly and downwardly with the movements of the disk. A lever is fulcrumed with one of its ends movable toward and from the valve and so that its other end is movable into and out of engagement with the clip. When the valve is moved against the tension of its spring to open the inlet of the chamber for admitting gas a catch is provided for releasably locking the valve. When the clip is moved downwardly with the downwardly movement of the mica disk under the influence of the heat of the pilot flame the lever is positioned into engagement with the clip,

and the catch is also adapted to releasably lock the lever so that in event of the accidental extinguishing of the pilot flame the reverse movement of the mica disk will cause upward movement of the clip which in turn will separate the lever therefrom. The lever will then automatically release the catch from the valve which by the thrust of its spring will move to close the inlet for cutting-off the flow of gas into the chamber and to the stove for preventing accidents.

A further object of the invention is to provide a pilot and gas cut-off of a simple, efficient and durable construction which may be made in appropriate sizes and shapes.

With these and other objects in view, the invention will be hereinafter more fully explained with reference to the accompanying drawings forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is a top plan, partly fragmentary, of one form of pilot and gas cut-off embodying my invention.

Fig. 2 is a side elevation, partly fragmentary, of the device with its parts in positions for operation.

Fig. 3 is an enlarged side elevation, partly fragmentary and partly broken away, of a number of parts of the device.

Fig. 4 is an enlarged detail sectional view taken on the line 4-4 of Fig. 1.

Fig. 5 is an enlarged fragmentary sectional view taken on the line 5-5 of Fig. 1, and

Fig. 6 is an enlarged fragmentary view of a portion of the pilot burner used in the device.

The device has a chamber or casing 10 which may be of any appropriate size and shape, though the form of the chamber illustrated is substantially T-shaped to provide an inlet 11 in one of its ends, an outlet 12 in its upper part and an opening 13 in its second end which is opposite to the inlet 11. The inlet 11 is threaded for receiving the threaded end of a pipe, as 14, leading from a source of gas supply, and the outlet 12 may also be interiorly threaded for receiving the threaded end of a pipe, as 15, which may lead to the burners of a gas stove, not shown. The opening 15 may likewise be threaded, and in this threaded opening is screwed the exteriorly threaded end

of a tubular or cylindrical member 16 having its bore in register with the inlet 11, and the inlet or the pipe 14 may be beveled as at 17, to provide a valve seat.

Reciprocable in the bore of the tubular member 16 is a valve 18 having a head 19 which may be made of rubber or other suitable material, and this head or valve is mounted on a stem 20 which is movable inwardly and outwardly of the chamber 10 through the tubular member. The valve head 19 is of larger diameter than the inlet 11 of the chamber, and the free end of this valve is tapered, at 21, for closely engaging the valve seat 17 of the inlet 11 to effectually cut-off the admission of gas into the chamber 10. The stem 20 is of a length so that its end portion opposite to the valve head 19 protrudes beyond the tubular member 16. On the free end of the exteriorly threaded part of the tubular member 16 may be a suitable washer 22 which surrounds the stem 20 of the valve head 19 for preventing leakage of gas from the chamber through the passage of the tubular member. The end portion of the passage of the tubular member 16 opposite to the chamber 10 may be enlarged, as at 23, with its wall being threaded, and in this threaded enlarged part is screwed a threaded gasket, as 24, which surrounds the stem 20 of the valve. Also on the gasket 24 at the adjacent end of the tubular member 16 may be nut 25 for tightening the gasket in the tubular member.

Leading from the interior of the receiving chamber 10 is a pipe 26 which terminates with a burner 27 having one or a number of spaced holes therein for the flow of gas to provide a pilot flame, as A, Fig. 2. The pipe 26 is of a length for positioning the burner at a suitable distance from the chamber 10, and interposed in the pipe may be a suitable cock or valve 28 which is operative for controlling the feed of gas from the receiving chamber to the pilot burner 27. The pipe 26 of the pilot burner may be supported by a bracket or strap, as 29, which extends from the tubular member 16. On the tubular member 16 is another bracket or strap, as 30, which supports one end of a bar 31 disposed in spaced relation to the pipe 26 of the pilot burner. The bar 31 may also be fastened, at 32, to the bracket 30, and this bar is of a length so that its second end terminates in proximity to the pilot burner 27. On the second end of the bar 31 is carried an annular frame, as 33, and in this frame is mounted a disk of mica, as 34.

The frame 33 is so positioned that the central part of the disk of mica is spaced above the pilot burner 27 for the flame A of the burner when lighted to heat the mica disk. The mica disk 34 is of a thickness so

that the heat from the flame will cause the mica to be attracted thereto sufficiently for the central part of the disk to move or bend downwardly or toward the pilot burner, as indicated in dotted lines, at B, Figs. 2 and 3. On the central part of the upper face of the mica disk is a clip 35 which is preferably in the form of a rod of substantially the shape of an inverted L to provide a vertical arm 36 and an arm 37 disposed angularly on an incline toward the frame 33 of the disk 34. The free end of the arm 36 of the L-shaped rod or clip 35 is fixed, at 38, to the mica disk, and the arm 37 is of a length so that its free end protrudes beyond the outer edge of the frame 33. The free end of the arm 37 is also preferably beveled on an incline, as at 39. When the heated mica disk moves downwardly toward the burner 27 the L-shaped rod 35 with its arm 37 will likewise move downwardly, and to limit the upward movement of the arm 37 this arm may be disposed through a substantially arch shaped strap, as 40, of a size that when the arm raises a determined height it will contact with the arched part of the strap. The beveled end 39 of the arm 37 is engageable by one end of a lever 41 for automatically operating to cause the valve 18 to operate for cutting-off the flow of gas through the inlet 11 should the pilot flame A be accidentally extinguished, as will be hereinafter more fully explained.

The lever 41 is preferably a form having a rod 42 disposed so that one of its ends will removably engage the beveled end 39 of the arm 37 of the L-shaped rod or clip 35 when the lever is manually adjusted accordingly. The other end portion of the rod 42 of the lever 41 is fulcrumed or pivoted, at 43, to an arm 44 which protrudes angularly from a sleeve, as 45, held, at 46, to part of the bar 31 of the frame of the mica disk 34 in proximity to the free end of the stem 20 of the valve or head 19. Adjacent the end of the rod 42 opposite to its pivot 43 may be a weight 47 adapted to cause the rod 42 to move with a downward thrust when the rod is disengaged from the L-shaped rod or clip 35, and part of the other end of the rod 42 protrudes some distance, as at 48, beyond the pivot 43.

Protruding from the fixed sleeve 45 adjacent the arm 44 is a lug 49 to the free end of which is pivoted, at 50, a catch, as 51, for releasably locking the lever when engaging the clip or L-shaped rod 45 and for releasably locking the valve 18 in open position from the inlet 11 of the receiving chamber 10. The catch 51 is preferably in the form of a block or short bar 52 having its outer end portion cut away or notched lengthwise, as at 53, to provide a tooth or lug, as 54. The toothed bar or catch 51 is adapted to be

swung laterally from the sleeve 45 over the protruding end 48 of the rod 42 of the lever 41, and the toothed bar is of a length as well as being positioned for releasably engaging a collar or annular flange, as 55, which is provided on the stem 20 of the valve head 19. To the bar 31 in spaced relation to the sleeve 45 of the catch 51 is secured, at 56, one end of a bracket arm 57 having in its other end an opening through which the stem 20 of the valve head is disposed. On the valve stem 20 in spaced relation to the bracket arm 57 is held a collar 58, and encircling the valve stem between the collar 58 and bracket arm 57 is a spiral spring 59 tensioned for normally serving to force the stem in a direction inwardly of the receiving chamber 10 for yieldingly closing the inlet 11 of the receiving chamber against the admission of gas.

When the device is in use it is operated by adjustably moving the stem 20 of the valve 18 outwardly of the receiving chamber 10 against the tension of the spring 59 for unseating the valve head 19 to allow gas to flow into the receiving chamber. The lever 41 is moved for positioning its rod 42 into engagement with the beveled end 39 of the clip or L-shaped rod 35. When the stem 20 of the valve 18 is moved so that its collar 55 is alongside the protruding end 48 of the rod 42 of the lever the catch or block 51 is swung over the protruding end 48 of the rod 42, and the tooth 54 of the catch is moved into engagement with the collar 55 of the stem 20. The valve 18 then will be releasably locked in open position from the inlet of the receiving chamber and the lever will be releasably held to the clip 35. With the locking of these parts the pilot burner 27 is lighted, and the flame A of the burner will heat the disk 34 of mica for causing the disk to bend sufficiently, as at B, for holding the clip or L-shaped rod 35 in downward position with the lever 41 still in engagement with the arm 37 of the clip. In event of accidental extinguishing of the pilot flame the mica disk will rapidly cool and reversely move to its normal position. The clip or L-shaped rod 35 will likewise move upwardly and the engagement of its arm 37 with the lever 41 will be severed. The lever will then automatically swing downward, and its protruding end 48 will move upwardly to cause the catch 51 to be freed from its engagement with the collar 55 of the stem 20 of the valve 18. The tension of the spring 59 will move the stem inwardly of the receiving chamber for also moving the valve head 19 on the inlet 11 of the receiving chamber to cut-off the flow of gas supply.

In the foregoing description, I have embodied the preferred form of my invention, but I do not wish to be understood as limit-

ing myself thereto as I am aware that modifications may be made therein, without departing from the principle or sacrificing any of the advantages of this invention, therefore, I reserve to myself the right to make such changes as fairly fall within the scope thereof.

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

1. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a spring controlled valve movable inwardly and outwardly of the chamber, a pilot burner on the chamber, a disk of mica supported above the burner for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a clip carried by the mica disk for being moved upwardly and downwardly with movements of the mica disk, a lever fulcrumed with one of its ends movable toward and from the valve and the other end of the lever movable into and out of engagement with the clip, and a catch supported for releasably locking the valve when moved against the tension of its spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the clip.

2. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a stem movable inwardly and outwardly of the chamber, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem in the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner leading from the chamber, a disk of mica supported above the burner for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a clip carried by the mica disk for being moved upwardly and downwardly with the movements of the mica disk, a lever fulcrumed with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the clip, and a catch supported for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the clip.

3. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a tubular member leading into the chamber opposite to the inlet, a stem movable in the tubular member, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem inwardly and outwardly of the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner hav-

ing a valve controlled pipe leading from the chamber, a disk of mica supported above the burner for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a clip carried by the mica disk for being moved upwardly and downwardly with the movements of the mica disk, a lever fulcrumed with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the clip, and a catch supported for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by lever when engaging the clip.

4. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a stem movable inwardly and outwardly of the chamber, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem in the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, a bar supported on the tubular member and disposed in spaced relation to the pipe of the pilot burner, a disk of mica supported by the bar for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a clip carried by the mica disk for being moved upwardly and downwardly with the movements of the mica disk, a lever fulcrumed to the bar with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the clip, and a catch on the bar for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the clip.

5. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a tubular member leading into the chamber opposite to the inlet, a stem movable in the tubular member, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem inwardly and outwardly of the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, an annular frame supported above the pilot burner, a disk of mica in the frame for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a clip carried by the mica disk for being moved upwardly and downwardly with the movements of the mica disk, a lever fulcrumed with one of its ends movable

toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the clip, and a catch supported for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the clip.

6. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a tubular member leading into the chamber opposite to the inlet, a stem movable in the tubular member, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem inwardly and outwardly of the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, a bar supported on the tubular member and disposed in spaced relation to the pipe of the pilot burner, an annular frame on the bar above the pilot burner, a disk of mica in the frame for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a clip carried by the mica disk for being moved upwardly and downwardly with the movements of the mica disk, a lever fulcrumed to the bar with one of the ends of the lever movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the clip, a weight on the second end of the lever, and a catch on the bar for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the clip.

7. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a spring controlled valve movable inwardly and outwardly of the chamber, a pilot burner on the chamber, a disk of mica supported above the burner for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a substantially L-shaped rod having the end of one of its arms fixed to the disk of mica with its other arm disposed toward said valve and the free end of the second arm of the L-shaped rod being beveled, a lever fulcrumed with one of its ends movable toward and from the valve and the other end of the lever movable into and out of engagement with the beveled end of the L-shaped rod, and a catch supported for releasably locking the valve when moved against the tension of its spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the L-shaped rod.

8. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a

stem movable inwardly and outwardly of the chamber, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem in the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner leading from the chamber, a disk of mica supported above the burner for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a substantially L-shaped rod having the end of one of its arms fixed to the disk of mica with its other arm disposed toward the stem of said valve and the free end of the second arm of the L-shaped rod being beveled, a lever fulcrumed with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the beveled end of the L-shaped rod, and a catch supported for releasably locking the stem and valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the L-shaped rod.

9. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a tubular member leading into the chamber opposite to the inlet, a stem movable in the tubular member, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem inwardly and outwardly of the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, a disk of mica supported above the burner for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a substantially L-shaped rod having the end of one of its arms fixed to the disk of mica with its other arm disposed toward the stem of said valve and the free end of the second arm of the L-shaped rod being beveled, a lever fulcrumed with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the beveled end of the L-shaped rod, and a catch on the bar for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the L-shaped rod.

10. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a stem movable inwardly and outwardly of the chamber, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem in the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, an annular frame supported above the pilot burner, a disk of mica in the frame for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a substantially L-shaped rod having the end of one of its arms fixed to the disk of mica with its other arm disposed toward the stem of said valve and the free end of the second arm of the L-shaped rod being beveled, a lever fulcrumed with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the beveled end of the L-shaped rod, and a catch on the bar for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the L-shaped rod.

11. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a tubular member leading into the chamber opposite to the inlet, a stem movable in the tubular member, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem inwardly and outwardly of the chamber, a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, a disk of mica supported above the pilot burner, a disk of mica in the frame for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a substantially L-shaped rod having the end of one of its arms fixed to the disk of mica with its other arm disposed toward the stem of said valve and the free end of the second arm of the L-shaped rod being beveled, a lever fulcrumed with one of its ends movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the beveled end of the L-shaped rod, and a catch on the bar for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the L-shaped rod.

12. A pilot and gas cut-off, comprising a chamber having an inlet and an outlet, a tubular member leading into the chamber opposite to the inlet, a stem movable in the tubular member, a valve on the stem within the chamber for opening and closing the inlet with movement of the stem inwardly

and outwardly of the chamber a spring on the stem for normally forcing the stem and its valve yieldingly to closed position on the inlet of the chamber, a pilot burner having a valve controlled pipe leading from the chamber, a bar supported on the tubular member and disposed in spaced relation to the pipe of the pilot burner, an annular frame on the bar above the pilot burner, a disk of mica in the frame for being heated by the flame of the pilot burner to cause the disk to move toward the burner, a substantially L-shaped rod having the end of one of its arms fixed to the disk of mica with its other arm disposed toward the stem of said valve and the free end of the second arm of the L-shaped rod being beveled, a lever fulcrumed to the bar with one of the ends of the lever movable toward and from the stem of the valve and the other end of the lever movable into and out of engagement with the beveled end of the L-shaped rod, a weight on the second end of the lever, and a catch on the bar for releasably locking the stem and the valve when moved against the tension of the spring to open the inlet of the chamber and also to be releasably engaged by the lever when engaging the L-shaped rod.

This specification signed this 4th day of December, A. D. 1924.

JOHN GRAF, SR.