UNITED STATES PATENT OFFICE

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AUTOMATIC GAS BURNER CONTROL

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2 Claims. (Cl. 126—52)

The present invention relates to novel and useful improvements in an automatic gas burner control and more specifically pertains to an attachment which may be applied to existing gas ranges or stoves and which provides an automatic means for cutting off the supply of gas to the burner unit whenever there is no pan or utensil over the burner opening of the stove or range.

It is well known that the use of gas burners on ranges or stoves is frequently rendered dangerous and uneconomical by the necessity or habit of permitting burners to remain lighted when there is no utensil requiring their heat placed above the burners. It is therefore a prime object of this invention to provide an attachment which may be readily incorporated into existing gas ranges and stoves and which is adapted to shut off the supply of gas to a burner when the burner opening is uncovered due to the absence of a cooking utensil or the like placed thereover; wherein efficient means is provided for opening a safety gas control valve to thereby supply gas to a burner when a pan or the like is placed over the burner opening; wherein a simple, novel and efficient means is provided for actuating the gas control valve of a burner by means of a weight actuated knob disposed through and slightly above a burner opening in a stove; wherein convenient and efficient means is provided for adjusting the sensitivity of the valve actuating mechanism; and wherein an attachment of the character above set forth is provided which is simple and dependable in construction, readily adapted to all conventional types of gas burner units; and is efficient and dependable for the purposes intended.

These, together with various ancillary objects of the invention which will later become apparent as the following description proceeds, are realized by my invention, one embodiment of which has been illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a top plan view of my attachment;

Figure 2 is a central vertical longitudinal sectional view taken through the device in Figure 1 and showing the same applied to a gas burner opening of a stove or range;

Figure 3 is a rear elevational view of the device of Figures 1 and 2;

Figure 4 is a plan view of but one element of my invention;

Figure 5 is an end elevational view of a portion of the gas conduit of my invention;

Figure 6 is a plan detail view of an element of the invention; and,

Figure 7 is a vertical sectional view through the support pin, looking in the direction of the burner, and showing the mounting of the support pin.

Reference is now made more particularly to the accompanying drawings, wherein like numerals indicate similar parts throughout the several views, and wherein 10 designates a burner plate for the burner opening 12 of a portion of a gas range or stove of any conventional type. The member 10 is provided with a centrally disposed aperture 14 in the conventional manner. As is well known, the conventional gas range or stove is provided with a gas feeder or header, not shown, to which are detachably connected the individual gas burner units which have their burner heads disposed beneath the opening 14.

As shown in Figure 2, a portion of a header is indicated at 16, to which is connected as by a nipple 18, a valve casing 20. As shown, a gas inlet passage extends from the header 16 nipple 18 into the valve casing 28, this gas passage being under the conventional control of a conical type of rotary plug valve 22, extending transversely of said passage, and provided with the customary finger-grip knob 24 thereon. The tapered valve plug 22 has an axially extending stem 26 which is provided with a longitudinally extending keyway 28 and has non-rotatably but slidably mounted thereon an adjustment limiting collar 30 provided with a depending key 32 slidably engaged in the keyway 28. This collar 30, as best shown in Figure 6, is provided with a pair of radially extending angularly spaced arms 34 and 36 constituting stops for selective abutting position limiting engagement with a stop pin 38 suitably mounted at a convenient point upon the header casing 16 as shown in Figure 2. As will be understood, rotation of the valve plug 22 by means of the knob 24 to either its closed or open position is limited by engagement of the appropriate arms 34 or 36 with the stop pin 38. A spring 40 is provided for surrounding the stem 26 and has its left end abutting the collar 30 while its right end is seated against an adjusting and securing means to be set forth hereinafter for the purpose of biasing the rotary plug valve 22 towards the right, to thereby take-up any wear or play between the valve and its seat and thereby establish a good seating engagement between the valve and its seat, and also to urge the collar 30 towards the left as viewed in Figure 2, and thereby insure operational engagement between the arms 34, 36 and the pin 38. As indicated generally at 42, any suitable type of locking means is
provided for adjustably compressing the spring in the manner before mentioned.

The valve casing 20, as shown in Figure 3, terminates in a gas discharge orifice 44, which is controlled by a needle valve 48 normally urged into closed position as by a spring 49 secured in any suitable manner. The valve 46 has an axially extending stem 50 which protrudes from the orifice 44 for a purpose to be later set forth. A gas conduit member 52 is provided with a laterally extending lug 54 for mounting the unit in the conventional manner upon the frame of a gas stove or gas range, and has detachably mounted upon the end thereof, a burner head unit 56. As shown in the drawings, the burner head 56 is mounted immediately below the burner opening 14 and is provided with a plurality of gas discharge openings 58 in the upper surface thereof for the purpose of supplying a burner flame to the opening 14. The pilot flame conduit 60 supplies as by means of openings 62 a small amount of combustible gas to the burner head 56 for the purpose of maintaining a pilot flame by which the main burner flame orifices 56 may be ignited as desired. At its opposite extremity, the gas conduit 52 is provided with an air inlet opening 64 controlled by a slidable mixing valve 66 under the control of an adjusting screw 68. As shown best in Figure 1, the mixing valve 66 is provided with a longitudinally extending slot 70, whereby the latter may be slidable adjusted upon the screw 68 for adjusting the air mixing valve or for moving the valve as desired. The open inlet extremity of the gas conduit 52 is closed by a plate 72 shown best in Figure 4. This plate is provided with a pair of apertures 74 axially positioned relative to the inlet extremity of the gas conduit 52, whereby the fluid conduit may be removably inserted upon a reduced shoulder portion 76 upon the extremity of the valve casing 20, for supporting the burner unit thereon and for positioning the valve inlet orifice 44 axially within the conduit 52. At any convenient point, the plate 72 is provided with an orifice or aperture 78 by which the same may be rigidly attached to the end of the conduit 52, and is also provided with a pair of apertures 80 in which are screws threadedly mounted a pair of adjusting spring seats 82 to be referred to hereinafter. Upon its lower surface, and substantially diametrically opposite the air inlet opening 64, the conduit 52 is provided with a longitudinally extending slot 84. A flat plate-like element 98 constituting a slide is arranged for slidding longitudinal movement in the guide slot 84 and is provided with an upwardly extending arm 88. A transversely extending support rod 96 is suitably supported by the walls of the fluid conduit 52 and constitutes a guide and support for the lower surface of the slide 86 for positioning the latter within the confines of the guiding slot 84, and for maintaining the arm 88 in position to engage the actuating stem 90 of the valve 46. Depending from the slide 86 is a transversely disposed plate 92 having a pair of projecting stems 94 constituting seats for coil springs 86' which are compressed between the seats 92 before mentioned and the depending plate 92, and are preferably centered by a longitudinally extending pin 88 carried by the seats 82. Integrally formed upon the slide 86 and extending forwardly thereof, is a rod 100 pivoted as at 102 to one arm 104 of a bell crank which is fulcrumed at 106 in any suitable manner upon the fluid conduit 52, the other end 108 of the bell crank being adapted to engage the lower end of a stem 110 whose upper portion is provided with...

a button or knob 112 disposed centrally of the burner opening 14. The stem 110 is suitably guided axially of the burner head 56 by means of guides 114 in the head 56 and 116 formed in the base of the fluid conduit 52 below the head 56. The arrangement is such that the springs 96 urge the slide 86 to the right as viewed in Figure 2, causing counter-clockwise rotation of the bell crank about its pivot 106, and elevating the stem 110 and knob 112 until the latter is disposed slightly above the upper plane surface of the burner opening 14. In this position of the device, the arm 88 is retracted whereupon the spring 48 is free to close the valve 46, thereby shutting off the main supply of gas to the gas conduit 52 and the burner outlets 58. The device maintains this position when there is no pan or utensil over the opening 14, and there is therefore no need for the burner to be ignited. When, however, a pot, pan or the like is placed upon the burner opening 14, the weight thereof depresses the button 112, actuates the bell crank and thereby urges the slide 86 towards the left as viewed in Figure 2, whereby the arm 88 engages the axial stem 50 and opens the valve 46. The gas is therupon permitted to enter the conduit 52, being mixed with air through the air openings 64, and the mixture passing upwardly through the outlets 58 is ignited by the gas pilot which is of known construction.

I desire to call attention to the location of the slide 86 by which the gas control valve is actuated. This element is so positioned that it is in proximity to the air inlet openings 64, whereby any leakage of air occurring through the guide slot 84, merely supplements the air admitted through the openings 64 and thereby avoids a disadvantageous entry or leakage of air into the conduit 52.

Since the many and manifold advantages in my construction are readily apparent to those skilled in the art, further explanation thereof is believed to be unnecessary.

I claim:
1. In a gas stove having a gas burner opening and a gas burner therebeneath, a gas conduit supplying gas to said burner, a valve controlling flow through said conduit, an article actuated depressible control knob and actuating means connecting said knob with said valve; said valve having a stem extending longitudinally of and housed wholly within said conduit, a slot in said conduit, a slide reciprocable in said slot, an arm on said slide movable towards and from the end of said stem for abutting engagement and actuation thereof, a linkage connecting said knob to said slide, said slide having a plate oppositely disposed relative to said arm, a spring engaging said plate and biasing said slide into inoperative position in said slot, said slide having oppositely disposed portions perpendicular to said arm and plate, one of said portions being connected to said knob and the other portion comprising guide means supporting and retaining said slide in said slot.
2. The structure of claim 1 wherein said guide means supporting and retaining said slide in said slot comprises a lower guide seat, a pin carried by said conduit on the exterior surface thereof and adjacent said slot, said pin engaging said lower guide surface for maintaining said slide in said slot.

WILLIAM T. HAMILTON.

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