

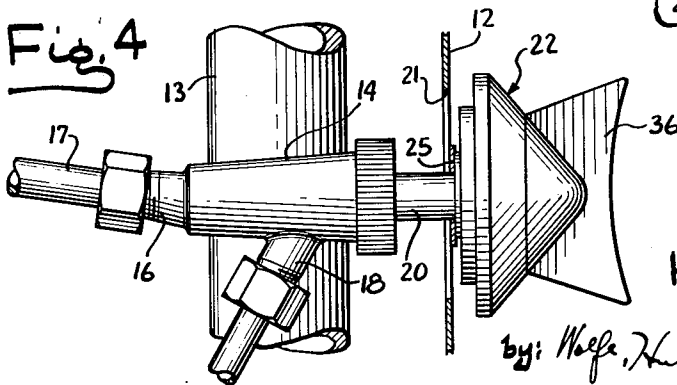
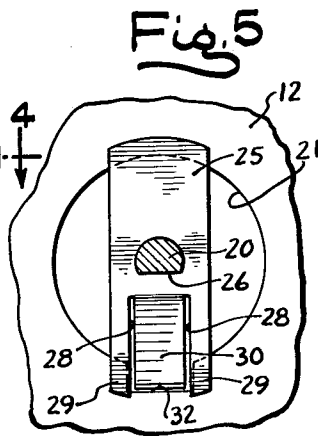
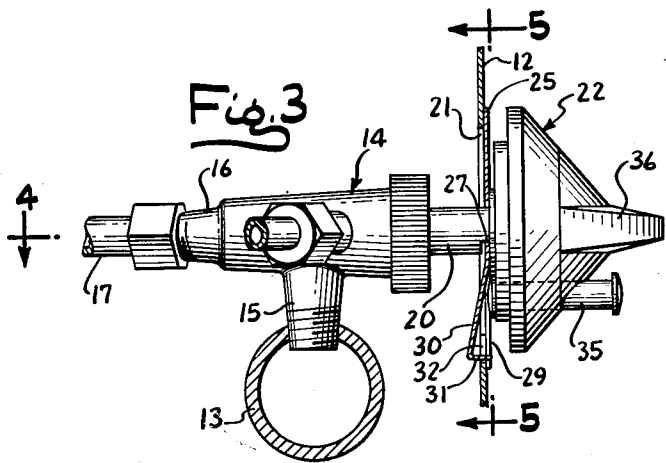
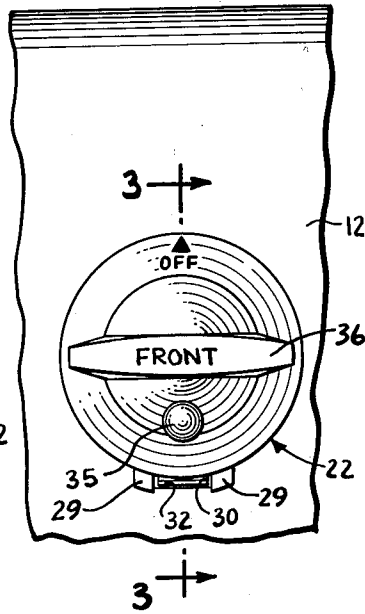
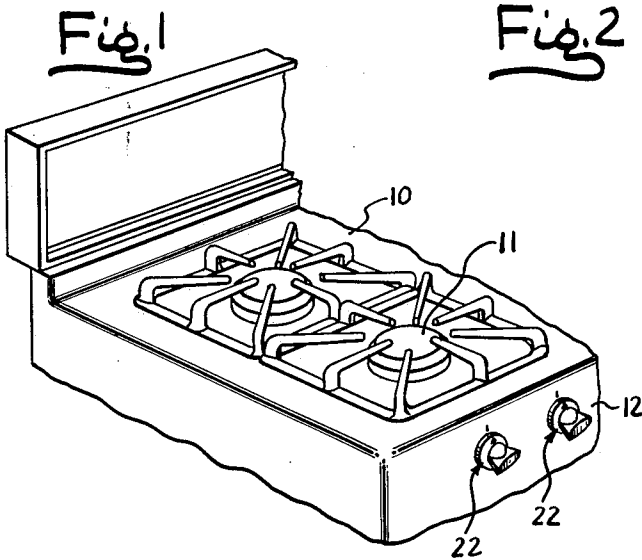
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LOCKING MECHANISM FOR BURNER CONTROL VALVES

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LOCKING MECHANISM FOR BURNER CONTROL VALVES

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The invention relates to burner control valves for gas ranges and more particularly, to improved mechanism for releasably locking a valve of that type in closed position.

One object of the invention is to provide locking mechanism which is simple in construction and which can be installed on a conventional burner control valve without requiring any structural changes in the valve itself.

Another object is to provide means for effectively locking a burner control valve in closed position which permits the valve to be unlocked and turned to open position in a single manipulative step.

Other objects and advantages of the invention will become apparent from the following detailed description of the preferred embodiment illustrated in the accompanying drawing, in which

FIGURE 1 is a fragmentary perspective view of a gas range cooking top equipped with burner control valve locking means embodying the features of the invention.

FIG. 2 is a fragmentary front view of the cooking top showing a valve operating knob in elevation.

FIG. 3 is a fragmentary sectional view through the front of the cooking top taken in a vertical plane substantially on the line 3—3 of FIG. 2.

FIG. 4 is a fragmentary sectional view taken in a horizontal plane substantially on the line 4—4 of FIG. 3.

FIG. 5 is a transverse sectional view through the valve stem taken in a plane substantially on the line 5—5 of FIG. 3.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed but intend to cover all modifications and adaptations falling within the spirit and scope of the invention as expressed in the appended claims.

For purposes of illustration the invention has been shown as incorporated in a gas range having a horizontal cooking top 10 accommodating a plurality of gas burners 11. The particular cooking top shown terminates at its front edge in an upright control panel 12 which in this instance is formed integrally with the sheet metal cooking top. Gas is supplied to the burners 11 from a common manifold 13 through individual burner control valves 14.

As shown in FIGS. 3 and 4, the manifold 13 extends along the front of the range below the cooking top and generally parallel to the control panel 12. The valves 14 are alike and may be of conventional type. A typical valve as shown in FIGS. 3 and 4 has a depending threaded inlet extension 15 adapted to be screwed into an aperture in the manifold. An outlet extension 16, usually at the rear end of the valve body, is adapted to be connected by a conduit 17 with the burner 11 to be controlled by the valve. The particular valve shown also has a pilot outlet 18 through which gas is supplied to a pilot light. Flow of gas through the valve is controlled by the usual valve member or plug adapted to be rotated between closed and open positions by a stem 20 extending from one end of the valve.

For convenience of operation the valves are supported so that their stems 20 project through openings 21 pro-

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vided in the control panel 12. In the exemplary range the openings 21 are circular and each valve is supported with its stems substantially centered in the opening. A knob 22 fixed to the projecting end of each valve stem provides convenient means for manually opening and closing the valve.

In accordance with the invention, simple yet effective means is provided for releasably locking each valve in closed position to prevent inadvertent or accidental opening by children or others. The locking means in its preferred form comprises a locking element herein shown as a thin plate or strip 25 of resilient material, for example, spring steel. The strip 25 is apertured centrally for mounting on the valve stem 20, which is conventionally flattened as at 26 for attachment of the operating knob. As will be seen by reference to FIG. 5, the aperture in the element is shaped complementary to the stem section so that the element is constrained to rotate with the stem. The knob additionally serves to restrain the element against movement longitudinally of the stem by clamping it against a shoulder 27 presented at the end of the flattened section of the stem.

The locking element or strip 25 is preferably dimensioned lengthwise so as to extend over the opening 21 in the panel and thus ride on its outer face as the stem is rotated. Adjacent one end, the strip 25 is formed with slots 28 parallel to the side edges, thus defining two spaced fingers 29 with a somewhat wider tongue 30 interposed between them.

In carrying out the invention the end portion of the tongue is formed with a projection 31 disposed substantially normal to the plane of the panel 12 and adapted to engage in a suitable hole or slot 32 in the panel to lock the valve stem against rotation. The projection 31, as shown, comprises the end portion of the tongue which is bent over in the form of a forwardly projecting flange. The hole or slot 32, of course, is dimensioned to receive this flange and, in the exemplary embodiment, comprises a notch in the panel 12 extending radially from the edge of the opening 21 in the panel.

To enable the element 25 to perform its locking function, the tongue 30 is bent back at an angle to the strip 25 so that it projects through the opening 21 beyond the inner face of the panel 12. The bend in the tongue is preferably closely adjacent its junction with the strip 25 as shown in FIG. 3 and is formed so that resiliency is retained with the strip normally occupying the position shown, that is, the angle of the bend is such that the flange 31 is substantially centered in the slot or notch 32 when alined with it and unrestrained. When engaged in the slot the flange abuts the side edges of the slot and thus effectively prevents rotation of the valve stem. In practice, the element 25 is mounted on the stem 20 and the slot or notch 32 is located so that the tongue alines with the slot when the valve stem is turned to the closed position.

Conveniently accessible means is provided for deflecting the tongue 30 rearwardly, in this instance, to withdraw the projection 31 from the notch and thereby release the valve stem for rotation toward open position. The release means as shown comprises a pin or plunger 35 supported on the knob 22 for movement toward and from the tongue. In the exemplary structure the plunger is slidably received in an aperture in the knob and retained therein by enlarged heads formed at its opposite ends. The aperture is located closely adjacent a gripping member 36 formed integrally with the knob for convenient gripping by the fingers when the knob is to be turned. Preferably the plunger is located below the gripping member and thus to an extent concealed from view, yet it is in a position such that it may be pushed in by one of the fingers utilized to turn the knob.

Inward movement of the plunger deflects the tongue rearwardly and withdraws the projection 31 from the slot 32. The valve stem may then be turned freely to open the valve. Once the tongue 30 is rotated out of alignment with the slot the plunger may then be released and the projection then rides on the inner face of the panel 12 without interfering in any way with the valve stem. However, when the valve stem is turned back to valve closing position, the resiliency of the tongue snaps the projection back into the slot and thus automatically locks the valve in closed position.

It will be apparent from the foregoing that the invention provides simple yet effective means for locking the burner control valves of a gas range in closed position. The locking mechanism is inexpensive to produce and its installation requires no structural changes in the valve itself. The mechanism and its actuator are effectively concealed by the valve operating knob and in no way detract from the appearance of the range. Moreover, the lock release means is positioned so that release of the valve for opening may be effected as an incident to gripping the knob for preliminary to turning it to valve opening position.

I claim as my invention:

1. The combination in a gas range having a sheet metal panel with a circular opening therein and a rotary burner control valve supported adjacent said panel with its stem axially alined with and projecting through the opening, said panel being cut to present a notch opening radially from said circular opening, a knob fixed to the projecting end of the valve stem for rotating it between closed and open positions, a locking element mounted on and constrained to rotate with said valve stem, said element including a pair of spaced fingers adapted to ride over the outer face of the panel and a resilient tongue disposed between said fingers and inclined so as to present its free end beyond the inner face of the panel, said tongue having an outwardly turned flange at its free end adapted to be projected into said notch when the valve stem is turned to closed position, and means on said knob operable manually for shifting said tongue to withdraw said flange from the notch and thereby free the valve stem for rotation.

2. The combination in a gas range having a sheet metal panel with a circular opening therein and a burner control valve supported adjacent said panel with its stem axially alined with and projecting through the opening, said panel being cut to present a notch opening radially from said circular opening, a knob fixed to the projecting end of the valve stem for rotating it between closed and open positions, a locking element mounted on and constrained

to rotate with the valve stem, said locking element comprising a metal strip extending diametrically across the opening with both ends engaging the outer face of the panel, one end of said strip being formed to present a resilient tongue extending radially of the valve stem, a flange on the free end of said tongue spaced from the axis of the valve stem so as to ride over the inner face of said plate when out of alignment with the notch, said tongue being tensioned so as to yieldably urge said flange into said notch when alined with it and to maintain it in a position to engage the sides of the notch for restraining the valve stem against rotation in either direction, and manually operable means on said knob for shifting said tongue in a direction to withdraw the flange from the notch and thereby free the valve stem for rotation.

3. The combination in a gas range having a sheet metal panel with a circular opening therein and a burner control valve supported adjacent said panel with its stem axially alined with and projecting through the opening, said panel being cut to present a notch opening radially from said circular opening, a knob fixed to the projecting end of the valve stem for rotating it between closed and open positions, a relatively thin strip of resilient sheet metal mounted on and constrained to rotate with the valve stem, said strip being interposed between said knob and the panel and having a length greater than the diameter of said circular opening and the depth of said notch to enable it to ride on the outer face of said panel as the valve stem is rotated, spaced slots at one end of said strip defining a tongue having a width slightly less than the width of said notch, the end portion of said tongue being bent over to form a forwardly projecting flange and to reduce the effective length of the tongue sufficiently to allow it to pass through said notch when alined therewith, said tongue being bent rearwardly relative to the plane of the plate so as to normally retain said flange within the notch with its side edges engageable with the sides of the notch to restrain the strip and valve stem against rotation, and a plunger mounted on said knob shiftable manually in a direction to deflect said tongue to withdraw said flange from the notch and thereby release the valve stem for rotation by said knob.

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