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COMBINATION DOOR LOCK AND VALVE FOR STEAM COOKERS

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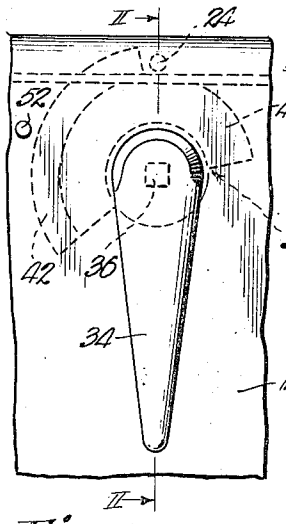


Fig. 1.

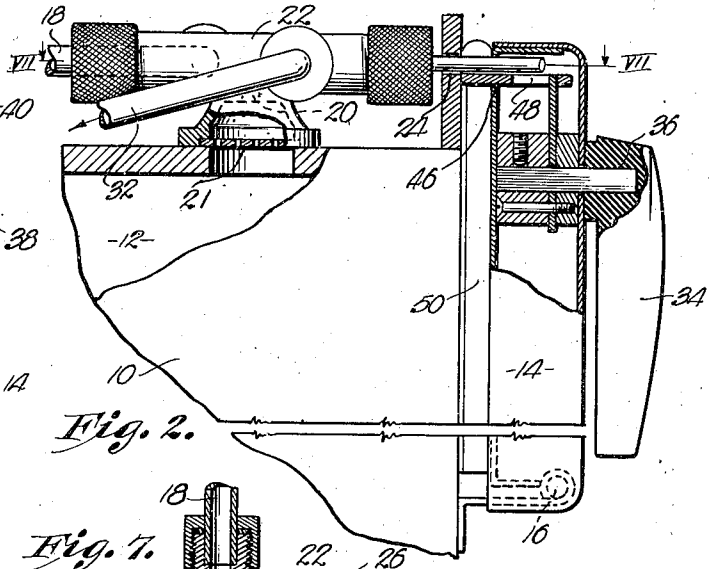


Fig. 2.

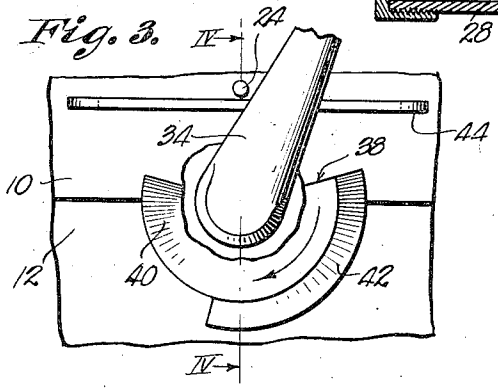


Fig. 3.

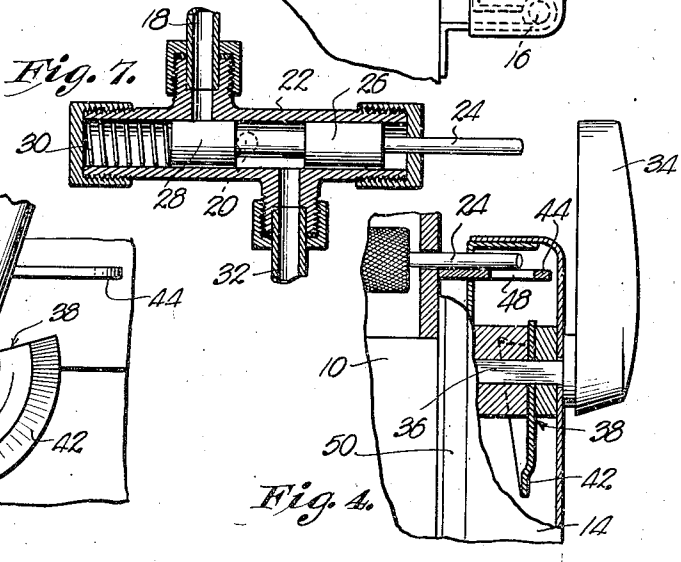


Fig. 4.

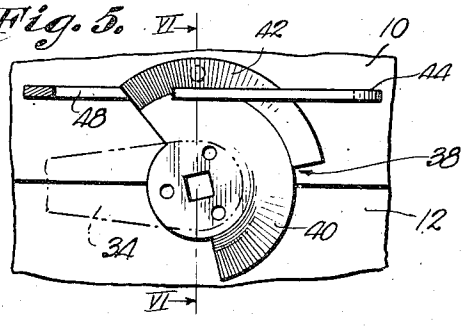


Fig. 5.

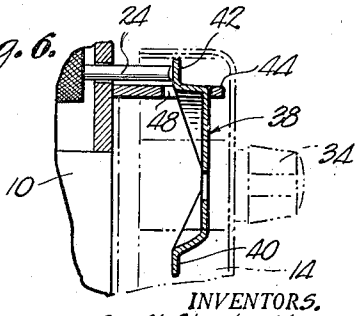


Fig. 6.

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COMBINATION DOOR LOCK AND VALVE FOR STEAM COOKERS

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6 Claims. (Cl. 126—20)

1

This invention pertains to closure locks and steam supply mechanism for cookers, and has for a primary aim to provide a unique assembly of parts capable of manual manipulation by the operator when it is desired to seal the cooking compartment, introduce steam thereto, and exhaust the same in sequence and at related times having regard to the locked condition of the closure.

One of the important objects of this invention is to provide a steam supply and exhaust valve assembly for cookers, the operation whereof occurs during certain cycles as the closure lock is manually moved to hold the closure shut and sealed.

This invention has for a still further aim the provision of a combination closure lock and steam supply valve assembly, the parts of which are disposed in operative relation with each other and in a compact group adjacent to the manually manipulable grip carried by the closure at a point convenient to the user of the cooker.

Other objects of the invention include the specific manner of forming steam valve operating parts on a latch so that the latch may successively hold the closure in a shut position, open the valve to introduce steam to the closed compartment, and thereafter exhaust the steam from the compartment immediately prior to releasing the closure for movement to an open position.

Other objects of the invention, including specific details of construction and the manner of exhausting the steam valve and latch, will appear during the course of the following specification, referring to the accompanying drawing wherein:

Fig. 1 is a fragmentary elevational view of the front of a steam cooker closure having the combination door lock and valve made in accordance with the present invention.

Fig. 2 is a fragmentary sectional view taken on line II—II of Fig. 1.

Fig. 3 is a fragmentary front elevational view of the closure illustrating the latch in an inoperative position, parts of the closure front being broken away to completely reveal the latch portion of the lock.

Fig. 4 is a sectional view taken on line IV—IV of Fig. 3.

Fig. 5 is a view similar to Fig. 3, but with the latch in a position to hold the supply valve in an open position.

Fig. 6 is a sectional view taken on line VI—VI of Fig. 5; and

Fig. 7 is an longitudinal sectional view through the steam supply valve per se.

2

The steam cooker of which the assembly about to be described, is a component part, constitutes the subject matter of our co-pending application for U. S. Letters Patent, filed August 28, 1944, Serial No. 551,588, now matured into Patent Number 2,444,587.

The steam cooker comprises a body 10 having a compartment 12 formed therein for the reception of food or the like to be treated when the appliance is in normal use.

The body of the cooker carries a closure 14 swingably mounted as at 16 for movement to and from the operative position illustrated in Fig. 2, where compartment 12 is sealed. This closure is of the type generally employed in that it is movable by the operator when a conveniently disposed latch is manipulated from the locked position.

One of the aims of the invention is to maintain the more or less standardized character of stove or cooker door and at the same time, equip the steam cooker with parts embodying the invention and capable of fulfilling the aforesaid objects. It is also desirable to permit the parts made to embody this invention, to function in a familiar manner in the interest of safety, convenience, and public acceptance of the improvements.

In the steam cooker of which the assembly about to be described in detail is a part, compartment 12 receives the food to be treated, and steam is supplied thereto through a tube 18 extending from any suitable source of supply such as a small boiler not here shown. The port 20 for the steam is in communication with compartment 12 and the hollow interior of valve 22.

Plunger 24 extending longitudinally from the body of valve 22 has a pair of spaced pistons 26 and 28 respectively, normally held in place by a spring 30 where port 20 is in communication with tube 32, leading to a drain or such receiver as may be provided in the cooker. This tube 32 is the exhaust conduit of valve 22 and to insure safety, compartment 12 is always normally being exhausted until plunger 24 is manipulated by the operator, as will more fully hereinafter be disclosed.

When plunger 24 is in the position shown in Fig. 7, steam tube 18 is closed and the compartment 12 is being evacuated by way of port 20 and tube 32. Port 20 serves as both an inlet and an outlet port. When serving as an inlet port, its flared form and baffle 21 precludes a jet of steam from entering compartment 12. The steam is broken into several streams so as to protect the contents of compartment 12.

Grip 34 mounted on pintle 36 rotatably journalled in closure 14, as illustrated in Fig. 2, is exposed to view and within easy reach.

A specially formed latch plate, broadly designated by the numeral 38, is mounted upon pintle 36 and formed to present two parts 40 and 42 respectively. Each part is an arcuate cam face, substantially concentric with the axis of rotation of grip 34, and disposed a distance from this center to cooperate with plate 44. This latch plate 44 is rigid to body 10 of the steam cooker, and enters the double walled closure 14 through an opening 46 to come into engageable position with cam 40. An elongated, relatively wide aperture 48 formed through plate 44 receives latch 38 as grip 34 is rotated about the axis of pintle 36.

In Fig. 3, the lock assembly is inoperative and the closure may be moved about its hinge connection 16. Plunger 24 is in the normal position where chamber 12 is being exhausted if any steam should remain therein. When the closure 14 is swung across the open front of compartment 12, the sealing means 50 carried by closure 14 and lying between the same and body 10, insures a steam-tight joint. As grip 34 is turned in the direction of the arrows shown in Fig. 3, part 40, which is a cam face, enters aperture 48 and frictionally engages the edge of plate 44, as shown in Fig. 2. This cam 40 is so formed as to draw closure 14 against body 10 and maintain the relation between these parts as grip 34 is forced through the latter portion of its path of travel toward a stop 52 mounted in any suitable place upon closure 14 to engage grip 34.

After closure 14 is locked, cam 42 moves through aperture 48 and into engagement with plunger 24. Plunger 24 will be moved inwardly against the pressure of spring 30 and interconnect tube 18 and outlet port 20 to introduce steam into compartment 12. While this action is occurring, cam 40 is in engagement with plate 44 and closure 14 is held in place. To the end that this operation may be successful, cam 40 is in overlapping side-by-side relation with cam 42, and cam 42 is shorter than cam 40, whereby plunger 24 will be disengaged as grip 34 is returned to the position shown in Fig. 3. Cam 40 will not release its hold upon plate 44 until after plunger 24 has been released by cam 42 and outlet port 20 has been placed to communicate with tube 32. Thus, any steam remaining in compartment 12 will escape before closure 14 can be opened. The advantages of this are obvious, and even though a low pressure steam is employed in the cooker, it is desirable to eliminate the fear due to the presence of any steam within compartment 12 and/or its escape through the open front when and as closure 14 is unlatched and swung open

Plunger 24 of valve 22 should be so disposed as to enter the space within closure 14 when the latter is in the position shown in Fig. 2. all to the end that a compact and inter-related assembly of valve and lock may be provided.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a steam cooker having a body provided with a compartment, a connection with a steam supply, an exhaust tube, a closure swingable to and from a position closing the compartment, and a steam supply and exhaust valve constructed to admit steam to the compartment when in one position and to exhaust steam from the compartment through the exhaust tube when in the normal position; a latch having parts on the closure and parts on the cooker body, said parts on the closure being manually movable through a path of travel during the first portion whereof the parts on the closure interconnect with the parts on the body to hold the closure shut, the parts on the closure being formed to engage and actuate the valve from said normal position exhausting the compartment through said tube to the position supplying steam to the compartment as the latch is moved through the last portion of its path of travel.

2. In a steam cooker having a body provided with a compartment, a connection with a steam supply, an exhaust tube, a closure swingable to and from a position closing the compartment, and a steam supply and exhaust valve constructed to admit steam to the compartment when in one position and to exhaust steam from the compartment through the exhaust tube when in the normal position; a latch having parts on the closure and parts on the cooker body, said parts on the closure being manually movable through a path of travel during the first portion whereof the parts on the closure interconnect with parts on the body to hold the closure shut, the parts on the closure being formed to engage and actuate the valve from said normal position exhausting the compartment through said tube to the position supplying steam to the compartment as the latch is moved through the last portion of its path of travel, said parts on the body and parts on the closure being continuously interconnected to maintain the closure shut while the parts on the closure are moved through said last portion of their path of travel to actuate the valve to supply steam to the compartment.

3. A steam cooker having a latch as described in claim 2 wherein the part on the closure comprises a pair of cams, one of the said cams being formed to engage the part of the latch on the cooker body, the other of said cams being positioned and formed to operate the steam supply valve after the first mentioned cam has functioned.

4. A steam cooker having a latch as described in claim 2, wherein the part on the closure comprises a pair of cams, one of the said cams being formed to engage the part of the latch on the cooker body, the other of said cams being positioned and formed to operate the steam supply valve after the first mentioned cam has functioned, said cams being movable as a unit about a common axis of rotation.

5. In a steam cooker having a body forming a compartment, a connection with a steam supply, an exhaust tube, and a closure swingable to and from a position closing the compartment; a lock and steam supply and exhaust valve assembly, constructed to admit steam to the compartment when in one position and to exhaust steam from the compartment through the exhaust tube when in the normal position, in combination with a latch on the closure manually shiftable in one direction to a place where the closure is locked in a shut condition, said body and said latch each having parts interengageable as the latch is shifted in said direction, said parts of the latch being engageable with said valve after the closure is locked shut and upon further movement of the latch in said one direction to actuate the steam supply valve to a condition where steam is admitted to the compartment, said valve

having yieldable means for normally maintaining the same in a condition to exhaust the compartment through the exhaust tube, said latch having parts for releasing the valve to permit its return to the normal condition as the latch is manually shifted in another direction toward a position where the closure is unlocked, whereby the compartment is exhausted before the closure is swingable to an open condition.

6. In a steam cooker having a body forming a compartment, a connection with a steam supply, an exhaust tube, and a closure swingable to and from a position closing the compartment; a lock and steam supply and exhaust valve assembly constructed to admit steam to the compartment when in one position and to exhaust steam from the compartment through the exhaust tube when in the normal position in combination with a latch on the closure manually shiftable in one direction to a place where the closure is held shut, said body and said latch each having parts interengageable as the latch is shifted in said direction, said parts of the latch being engageable with said steam supply valve upon further movement thereof in said one direction to actuate

said valve to a condition where steam is admitted to the compartment; and yieldable means for holding the valve normally in a condition to exhaust the compartment through the exhaust tube until the latch has secured the closure in a shut position.

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