

March 16, 1943.

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2,314,248

STOVE CONSTRUCTION

Filed Oct. 6, 1941

3 Sheets-Sheet 1

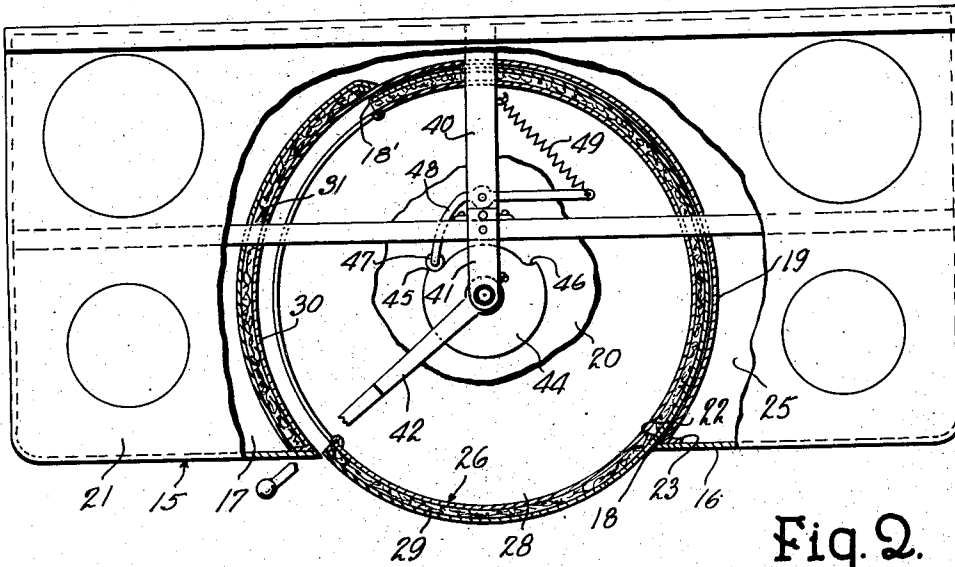


Fig. 2.

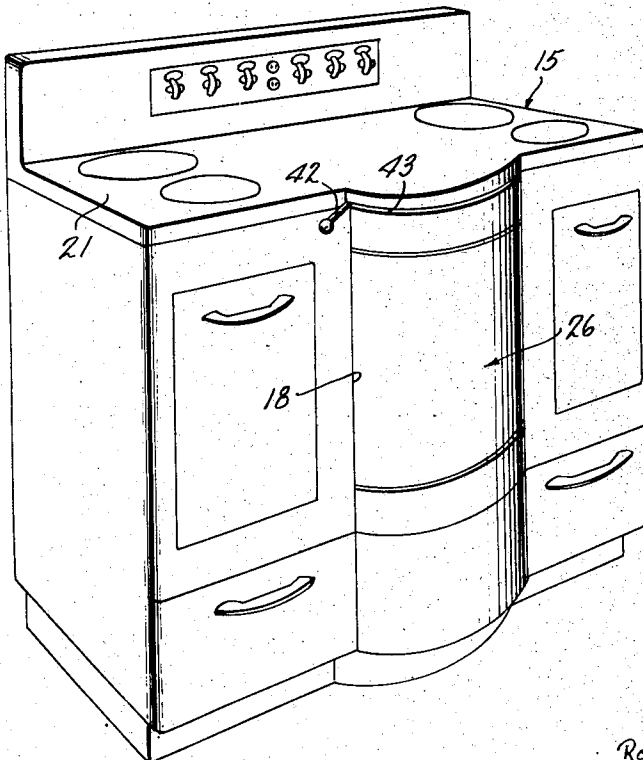


Fig. 1.

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3 Sheets-Sheet 2

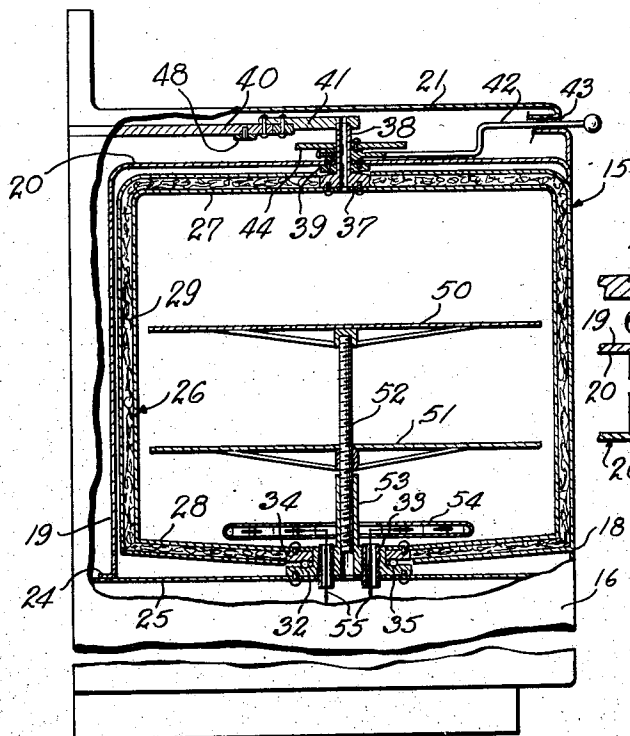


Fig. 3.

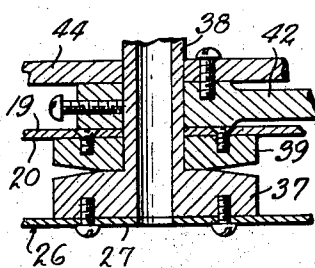


Fig. 4.

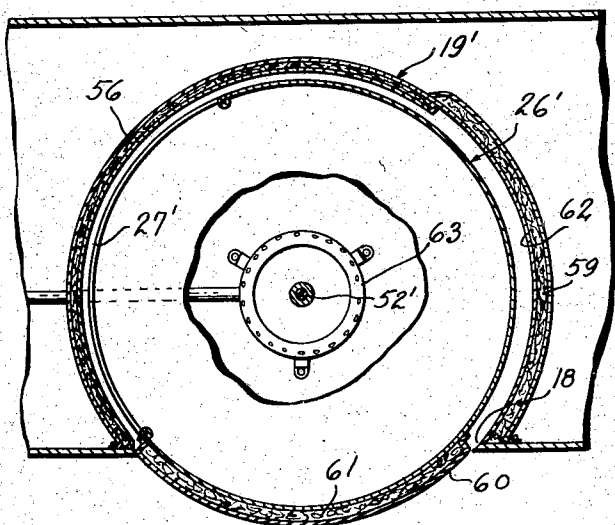


Fig. 7.

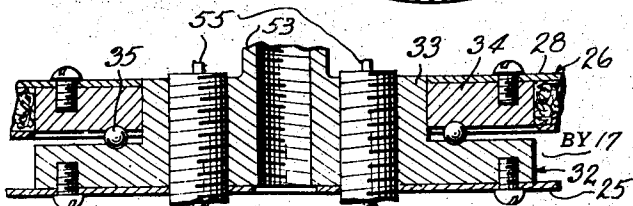


Fig. 5.

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Fig. 6.

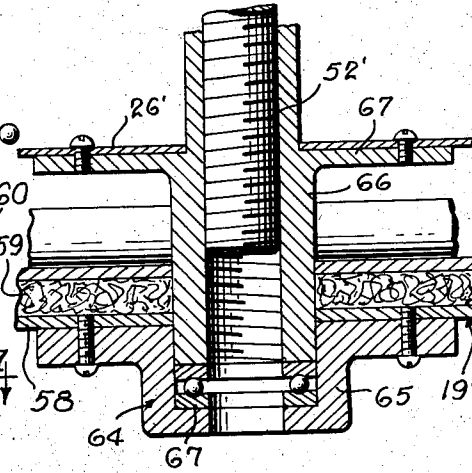
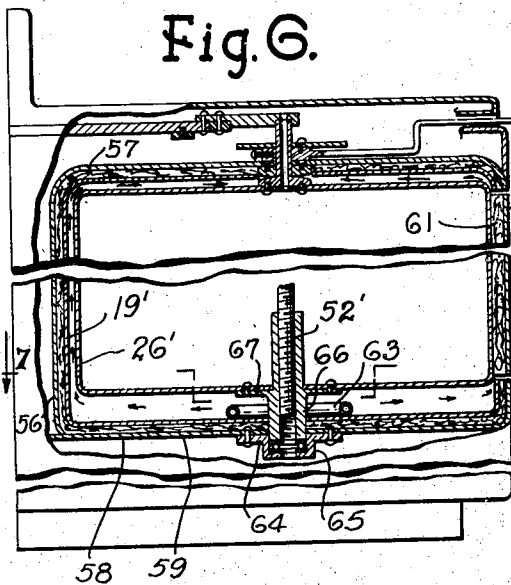


Fig. 8.

Fig. 9.

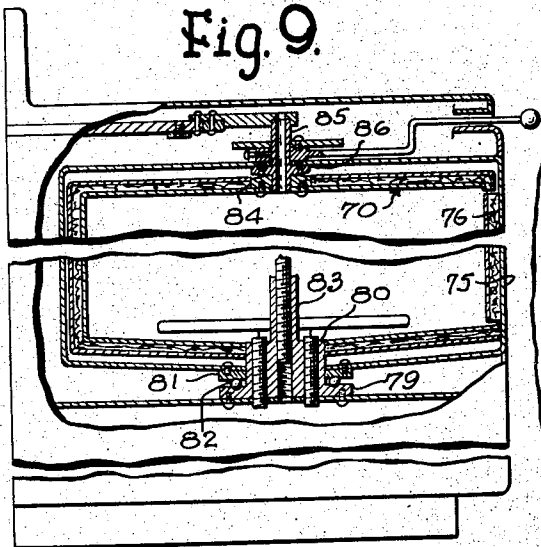


Fig. 10.

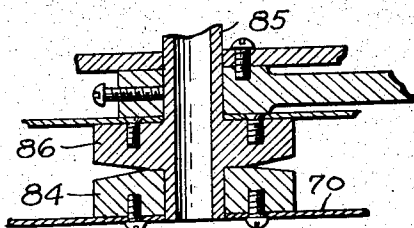
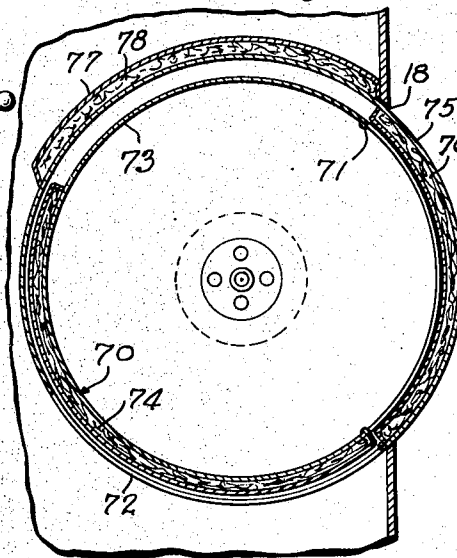


Fig. 11.

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STOVE CONSTRUCTION

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Application October 6, 1941, Serial No. 413,891

11 Claims. (Cl. 126—39)

This invention relates generally to cook stoves and refers more particularly to improvements in oven constructions for cook stoves.

One of the objects of this invention is to provide an oven structure which is circular and thereby affords maximum efficiency in the circulation and distribution of heat.

Another object of this invention is to provide a circular oven wherein either the oven proper or the surrounding casing is mounted for rotation about a vertical axis to enable the oven to be readily opened and closed with the minimum amount of effort.

A further feature of this invention is to reduce the heat loss in the oven to a minimum by reducing the number of exposed joints and by arranging the insulating material in a manner so that when the oven is closed it is thoroughly insulated.

Still another object of this invention is to provide circular supporting racks mounted within the oven for rotation about the vertical axis of the oven to facilitate loading and unloading of the racks through the front of the oven when the latter is open.

A still further feature of this invention is to provide an oven structure of the above type wherein the racks may be readily adjusted vertically with respect to each other and with respect to the top and bottom walls of the oven.

With the foregoing, as well as other objects in view, this invention resides in the novel oven structure and in the means for supporting either the oven or the surrounding casing for rotation about a vertical axis.

In the drawings:

Figure 1 is a perspective view of a stove constructed in accordance with my invention;

Figure 2 is a top plan view of the stove shown in Figure 1 with certain parts broken away;

Figure 3 is a side elevational view of the stove shown in Figure 1 and also having a portion of the casing broken away to illustrate the oven structure;

Figure 4 is an enlarged sectional view of the pivot mounting at the top of the oven structure;

Figure 5 is an enlarged sectional view of the pivot mounting at the bottom of the oven structure;

Figure 6 is a side elevational view of a stove having certain parts broken away to show an oven structure having a different form of heating unit;

Figure 7 is a horizontal sectional view taken substantially on the line 7—7 of Figure 6;

Figure 8 is an enlarged sectional view of the pivoted mounting for the bottom of the oven structure shown in Figure 6;

Figure 9 is a side elevational view partly broken away of another modified form of the oven construction;

Figure 10 is a horizontal sectional view of the oven shown in Figure 9; and

Figure 11 is an enlarged sectional view of the pivotal mounting at the top of the oven structure.

Referring first to the embodiment of the invention illustrated in Figures 1 to 5, inclusive, it will be noted that in Figure 1 of the drawings, I have illustrated a stove in the form of an electric range 15 comprising a cabinet 16 having a compartment 17 therein and having an opening 18 in the front wall intermediate the ends thereof. A circular casing 19 is supported in the compartment 17 with its axis extending vertically and having a top wall 20 spaced below the top wall 21 of the stove cabinet 16. The front wall of the casing 19 is provided with an opening 22 which registers with the opening 18 in the front wall of the stove compartment and corresponds in size to the opening 18. The opposite side edges of the opening 22 are bent laterally outwardly to form attaching flanges 23 which are welded or otherwise suitably secured to the front wall of the stove cabinet 16. Upon reference to Figure 3, it will be noted that the bottom marginal edges of the circular casing 19 are also bent laterally outwardly to form attaching flanges 24 which are riveted or otherwise suitably secured to the bottom wall 25 of the compartment 17. Thus, it will be noted that the circular casing 19 is fixed in the compartment 17 in such a manner that the axis of the casing extends in a vertical direction.

Supported within the casing 19 in concentric relation thereto is a circular oven casing 26 having an opening 18' in one side thereof corresponding in size to the opening 18 in the front wall of the stove cabinet 16 and adapted to register with the opening 18. As shown in Figure 3, the oven casing 26 is also provided with top and bottom walls 27 and 28, respectively. It will also be observed from Figure 3 that the side, top and bottom walls of the oven casing are of double construction in order to provide ample space for heat insulating material 29. In this connection, attention is also directed to Figure 2 wherein it will be noted that the portion 30 of the side wall of the fixed circular casing 19 is also of double construction in order to accommodate the heat insulating material 31. The double wall portion

30 of the fixed casing 19 corresponds in area to the area of the opening 18' in the oven casing 26 and is adapted to register with the opening 18' in the closed position of the oven casing so as to cooperate with the insulated walls of the oven casing to completely insulate the interior of the oven casing when the latter is in its closed position shown in Figure 2.

The oven casing 26 is mounted for rotation in opposite directions about the vertical axis of the fixed casing 19 so as to enable the opening 18' in the oven casing to be moved into and out of registration with the opening 18 in the front wall of the stove cabinet. In Figure 5 of the drawings, I have shown the manner in which the lower end of the oven casing 26 is pivotally supported. In detail, the reference character 32 indicates a bracket or plate secured to the bottom wall 25 of the compartment 17 and having an upwardly extending hub 33 coaxially arranged with respect to the fixed casing 19. The hub 33 forms a journal for a plate 34 which is secured to the bottom wall 28 of the oven casing and is rotatably supported on the plate 32 by means of ball-bearings 35.

In Figure 4, I have shown the manner in which the upper end of the oven casing 26 is rotatably supported. In detail, a plate 37 is secured to the top wall 27 of the oven casing 26 and is provided with an upwardly extending sleeve 38 aligned with the axis of the hub 33 and projecting through the top wall 20 of the fixed casing 19. A bearing plate 39 is secured to the bottom surface of the top wall 20 in a position to receive the sleeve 38 and form a bearing for the latter. As shown in Figure 3, the top pivotal mounting is stabilized by means of a brace 40 secured to the frame structure of the stove and having a bracket 41 recessed to receive the upper end of the sleeve 38. Thus, it will be noted that the oven casing 26 is effectively supported in the fixed casing 19 for rotation about the vertical axis of this latter casing.

The oven casing 26 is rotated by means of a control bar 42 having a hub at the inner end secured to the sleeve 38 and having the outer end projecting through an elongated slot 43 formed in the front wall of the stove cabinet adjacent the top wall 21. As shown in Figure 1, the slot 43 extends for substantially the full width of the opening 18 in the front wall of the stove cabinet.

As a result of the above construction, movement of the control bar 42 from the position thereof shown in Figure 2 to a position adjacent the opposite edge of the opening 18 effects a rotative movement of the oven casing from the position shown in Figure 2 to a position wherein the opening 18' in the oven casing registers with the opening 18 in the front wall of the stove cabinet. Of course, return movement of the control bar 42 to the position shown in Figure 2 effects a rotative movement of the oven casing 26 in the opposite direction to again register the opening 18' with the insulated wall portion 30 of the fixed casing 19 so that when the oven is closed it is completely insulated.

Provision is also made herein to definitely limit the extent of movement of the oven casing 26 in both directions of rotation. Upon reference to Figures 2 to 4, inclusive, it will be noted that a disc 44 is mounted on the sleeve 38 and is secured to the hub of the control bar 42 for movement as a unit with the latter about the axis of the sleeve 38. The disc 44 is provided with axially

spaced stops 45 and 46, respectively, engageable with a roller 47 upon movement of the oven casing 26 in opposite directions. The roller 47 is mounted on one end of an arm 48 which, in turn, is pivotally supported intermediate the ends thereof on the brace 40. The free end of the arm is connected to the brace by means of a spring 49 which acts to yieldably urge the roller 47 into engagement with the peripheral portion 10 of the disc 44. It will, of course, be understood that the spacing of the stops 45 and 46 is predetermined so that the stop 45 will locate the oven casing in its closed position and the stop 46 will locate the oven casing in its open position, wherein the opening 18' registers with the opening 18. The purpose of the spring 49 is to apply a sufficient pressure against the disc to retard the rotative movement of the oven casing.

In Figure 3 of the drawings, I have shown a pair of racks 50 and 51 mounted in the oven casing for rotation about the vertical axis of the oven casing so as to facilitate loading and unloading of the racks. In detail, a vertical screw 52 is threaded in an extension 53 of the hub 33 and the lowermost rack 51 is threaded on the screw 52. The uppermost rack 50, on the other hand, is merely rotatably supported at the top of the screw 52. The construction is such that the vertical position of the top rack 50 in the oven casing may be varied by rotating the screw 52 in one direction or the other and the vertical position of the lower rack 51 may be adjusted relative to the rack 50 by rotating the same on the screw 52. Thus, it will be noted that the racks are not only rotatably supported in the oven casing but are, also, capable of vertical adjustment with respect to the oven casing.

Referring again to Figure 3, it will be noted that the reference character 54 indicates a heating element which is suitably supported in the lower portion of the oven casing. The electrical conductors 55 for the heating element are shown as extending into the oven casing through suitable bushings anchored in the hub 33 on the plate 32.

Referring now to the embodiment of the invention shown in Figures 6 to 8, inclusive, it will be noted that this construction differs from the one previously described in two major respects. In general, the oven casing is insulated in a somewhat different manner and a fluid type heating element is employed instead of an electrical heating element.

In detail, it will be noted that the side, top and bottom walls 56, 57 and 58, respectively, of the circular fixed casing 19' are of double construction in order to accommodate the insulating material 59. It will be particularly noted from Figure 7 that the oven casing 26' is of single wall construction with the exception of the portion 60 which is of double wall construction in order to accommodate the insulating material 61.

The double wall portion 60 of the oven casing has an area which corresponds to the area of the opening 27' in the side wall of the oven casing 26' and is so positioned that when the oven is closed, it registers with the opening 18 in the front wall of the stove cabinet. As a result, the heat insulating material 61 cooperates with the heat insulating material 56 in the closed position of the oven to thoroughly insulate the interior of the oven. As shown particularly in Figure 7, the double side wall of the fixed casing 19' is offset outwardly to provide a recess 62 of

sufficient size to accommodate the double wall portion 60 on the oven casing 26' when the latter is moved to register the opening 27' with the opening 18.

As pointed out above, a fluid fuel burner 63 is employed in the embodiment of the invention shown in Figures 6 to 8, inclusive, instead of an electric heating element. The fluid fuel burner 63 is in the form of an annular tube supported in the space provided between the bottom walls of the oven casing and the fixed casing. The heat generated by the burner 63 circulates through the space provided between the walls of the oven casing and the adjacent walls of the fixed casing.

Another slight difference between the embodiment of the invention shown in Figures 6 to 8, inclusive, and the one shown in Figures 1 to 5, inclusive, is the manner in which the bottom wall of the oven is pivotally supported. Upon reference to Figure 8, it will be noted that a plate 64 is secured to the underside of the bottom wall 58 on the fixed casing and is provided with a recessed hub 65 positioned coaxially with respect to the oven casing 26'. The hub 65 receives the lower end of a vertical sleeve 66 and a thrust bearing 67 is positioned between the lower end of the sleeve 66 and the adjacent wall of the hub 65. The sleeve 66 extends vertically through the bottom wall of the fixed casing and through the adjacent wall of the oven casing and is provided with a radial flange 67 which is secured to the bottom wall of the oven casing. The construction is such that the oven casing is rotatably supported with its bottom wall spaced above the bottom wall of the fixed casing. It may be pointed out at this time that the sleeve is internally threaded for adjustably receiving the lower end of the rack supporting screw 52'.

The embodiment of the invention shown in Figures 9 to 11, inclusive, differs principally from the first embodiment of the invention in that the oven casing is fixed and the outside casing is rotated relative thereto. In detail, the oven casing 70 is fixedly supported in the stove compartment and has an opening 71 in the front side thereof adapted to register with the opening 18 in the front wall of the stove cabinet. The outer casing is concentrically supported with respect to the inner casing and is provided with an opening 72 adapted to move into and out of registration with the openings 18 and 71 upon rocking movement of the outer casing about its vertical axis in opposite directions. It will be observed from Figure 10 that with the exception of the arcuate side wall portion 73 of the oven casing, the walls of the latter are of double construction in order to accommodate the heat insulating material 74. It will also be noted from Figure 10 that the portion 75 of the outer casing is also of double construction in order to accommodate insulating material 76 and the area of the portion 75 corresponds to the area of the opening 71 in the front wall of the oven casing. The portion 75 of the outer casing is so located that when the outer casing is in the position shown in Figure 10, the opening 71 is insulated by the portion 75. The single wall portion 73 of the oven casing provides a sufficient clearance for receiving the double wall portion 75 on the outer casing when the latter is rotated to register the opening 72 therein with the openings 18 and 71. In this connection, it may further be pointed out that when the oven is closed by rotation of the outer casing to the position shown

in Figure 10, the single wall portion 73 is insulated by the portion 77 on the outer rotatable casing. The portion 77 is of double wall construction and accommodates the insulating material 78. Thus, it will be apparent that when the oven is closed, it is completely insulated.

The means for rotatably supporting the outer casing is similar to the means illustrated in connection with the first embodiment of this invention for pivotally supporting the oven casing. In detail, a plate 79 is secured to the bottom wall of the stove compartment and is provided with a hub 80 concentrically arranged with respect to the casings. The hub 80 extends through the bottom walls of the casings and forms a journal for a plate 81 which is secured to the underside of the bottom wall of the outer casing and is rotatably supported on the plate 79 by means of ball-bearings 82. The bottom wall of the oven casing is suitably secured to the top of the hub 80 and the latter is provided with an extension 83 for threadably receiving the rack supporting screw.

Referring now to the pivotal mounting for the outer casing at the upper end thereof, it will be noted that a bearing plate 84 is secured to the top wall of the fixed oven casing and is provided with an opening therethrough in axial alignment with the hub 80. The opening through the bearing plate 84 rotatably receives the lower end of a sleeve 85 having an integral bearing flange 86 engaging the upper end of the plate 84. The bearing flange 86 is secured to the top wall of the rotatable outer casing so that the latter is rotated as a unit with the sleeve 85. The sleeve 85 is rotated to operate the outer casing and the upper end of the sleeve 85 is supported in the same manner as described in connection with the first embodiment of this invention.

What I claim as my invention is:

1. In a stove having a compartment provided with an opening in the front wall thereof, a pair of circular casings supported in concentric relationship about a vertical axis, one of the casings being fixed in the compartment and having an opening in the front side thereof registering with the opening in said compartment, the other of said casings being rotatable about said vertical axis and having an opening in one wall movable from a position out of registration with the openings in said compartment and in said fixed casing to a position in registration with the latter openings, a panel of insulating material secured to the rotatable casing to occupy a position in the opening in the compartment when the opening in the rotatable panel is out of registration with the opening in the compartment, and an insulating panel extending around the side wall of the fixed casing from one side edge of the opening in the compartment to the opposite side edge of the latter opening.

2. In a stove having a compartment provided with an opening in the front wall thereof, a pair of circular casings supported in concentric relationship about a vertical axis, one of the casings being fixed in the compartment and having an opening in the front side thereof registering with the opening in said compartment, the other of said casings being rotatable about said vertical axis and having an opening in one wall movable from a position out of registration with the openings in said compartment and in said fixed casing to a position in registration with the latter openings, a panel of insulating material secured to the rotatable panel and adapted to insulate

the area of the rotatable casing which assumes a position opposite the opening in the compartment when the opening in the rotatable casing is out of registration with the opening in the compartment, and additional insulating material on the fixed casing for insulating the area of the fixed casing opposite the opening in the rotatable casing when the latter opening is out of registration with the opening in the compartment.

3. In a stove having a compartment provided with an opening in the front wall thereof, a pair of circular casings supported in concentric relationship about a vertical axis, one of the casings being fixed in the compartment and having an opening in the front side thereof registering with the opening in said compartment, the other of said casings being rotatable about said vertical axis and having an opening in one wall movable from a position out of registration with the openings in said compartment and in said fixed casing to a position in registration with the latter openings, a panel of insulating material extending around the side wall of the rotatable casing from one side edge of the opening in the latter to the opposite side edge of the latter opening, and a panel of insulating material secured to the side wall of the fixed casing opposite the opening in the rotatable casing when the latter is in a position wherein the opening therein is out of registration with the opening in the compartment.

4. In a stove having a circular casing supported with its axis extending vertically and having an opening in one side wall thereof, a circular oven casing rotatably supported within said casing in concentric relation thereto and having an opening in one side wall registrable with the opening in said casing, and means for rotating said oven casing to move the opening therein from a position out of registration with the opening in the first casing to a position in registration with the latter opening.

5. In a stove having a circular open casing supported with its axis extending vertically and having an opening in the front side thereof, a casing having an annular side wall surrounding the oven casing in concentric relation to the latter and having an opening in the side wall thereof registrable with the opening in the oven casing, and means supporting the second casing for rotation relative to the oven casing in opposite directions about the vertical axis aforesaid to move the opening in the second casing into and out of registration with the opening in the oven casing.

6. In a stove having a circular casing supported with its axis extending vertically and having an opening in one side wall thereof, a circular oven casing rotatably supported within said casing in concentric relation thereto and having an opening registrable with the opening in said casing, and an operating handle extending through an elongated slot in the front side of the stove and connected to the oven casing for rotating the latter in opposite directions to move the opening in the oven casing into and out of registration with the opening in the first casing.

7. A stove having a pair of circular casings supported in concentric relation about a vertical axis, one of said casings having laterally spaced annular side walls and having an opening in one side thereof, insulation material arranged in the space between the side walls, the other of said casings having an opening in one side wall registrable with the opening in the first casing and having a double wall portion at one side edge of the opening therein of an area approximating

the area of the opening in the first casing, insulating material located between the walls of the double wall portion, and means supporting the casings for relative rotation about the vertical axis aforesaid to register the openings with each other upon relative rotation of the casings in one direction and to locate the insulated double wall portion of the second casing in registration with the opening in the first casing upon relative rotation of said casings in the opposite direction.

8. A stove having a circular casing supported with its axis extending vertically and provided with an opening in the front side thereof, said casing having laterally spaced side walls and having a recess in the inner surface extending from one side edge of the opening, insulating material located in the space between the side walls, a second circular casing supported within the first casing for rotation about the vertical axis aforesaid and having an opening in one side registrable with the opening in the first casing, said second casing having a double wall portion of an area corresponding to the area of the opening in the first casing and positioned to register with the opening in the first casing when the openings are out of registration and to occupy a position in said recess when the openings are in registration, insulating material in the space between the double wall portion, and means for rotating the second casing.

9. A stove having a pair of circular casings supported in concentric relation about a vertical axis, one of the casings being fixed with respect to the other and having an opening in the front side, the other of said casings being supported for rotation about the vertical axis aforesaid and having an opening in one side registrable with the opening in the fixed casing, and means for rotating the second casing in opposite directions to move the opening in the latter into and out of registration with the opening in the fixed casing.

10. A stove having a pair of circular casings supported in concentric relation about a vertical axis, one of the casings being fixed with respect to the other and having an opening in the front side, the other of said casings being supported for rotation about the vertical axis aforesaid and having an opening in one side registrable with the opening in the fixed casing, means for rotating the second casing in opposite directions to move the opening in the latter into and out of registration with opening in the fixed casing, and a bracket fixed to the stove below the bottom of the rotatable casing and having a hub extending upwardly through the bottom wall of the rotatable casing forming a pivot support for the lower end of the rotatable casing.

11. A stove having a pair of circular casings supported in concentric relation about a vertical axis, one of the casings being fixed with respect to the other and having an opening in the front side, the other of said casings being supported for rotation about the vertical axis aforesaid and having an opening in one side registrable with the opening in the fixed casing, an arm having the inner end secured to the top of the rotatable casing and extending through an elongated slot in the front of the stove for rotating the rotatable casing in opposite directions to move the opening therein into and out of registration with the opening in the first casing, and means for limiting rotation of the rotatable casing in both directions of rotation.

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