

March 29, 1932.

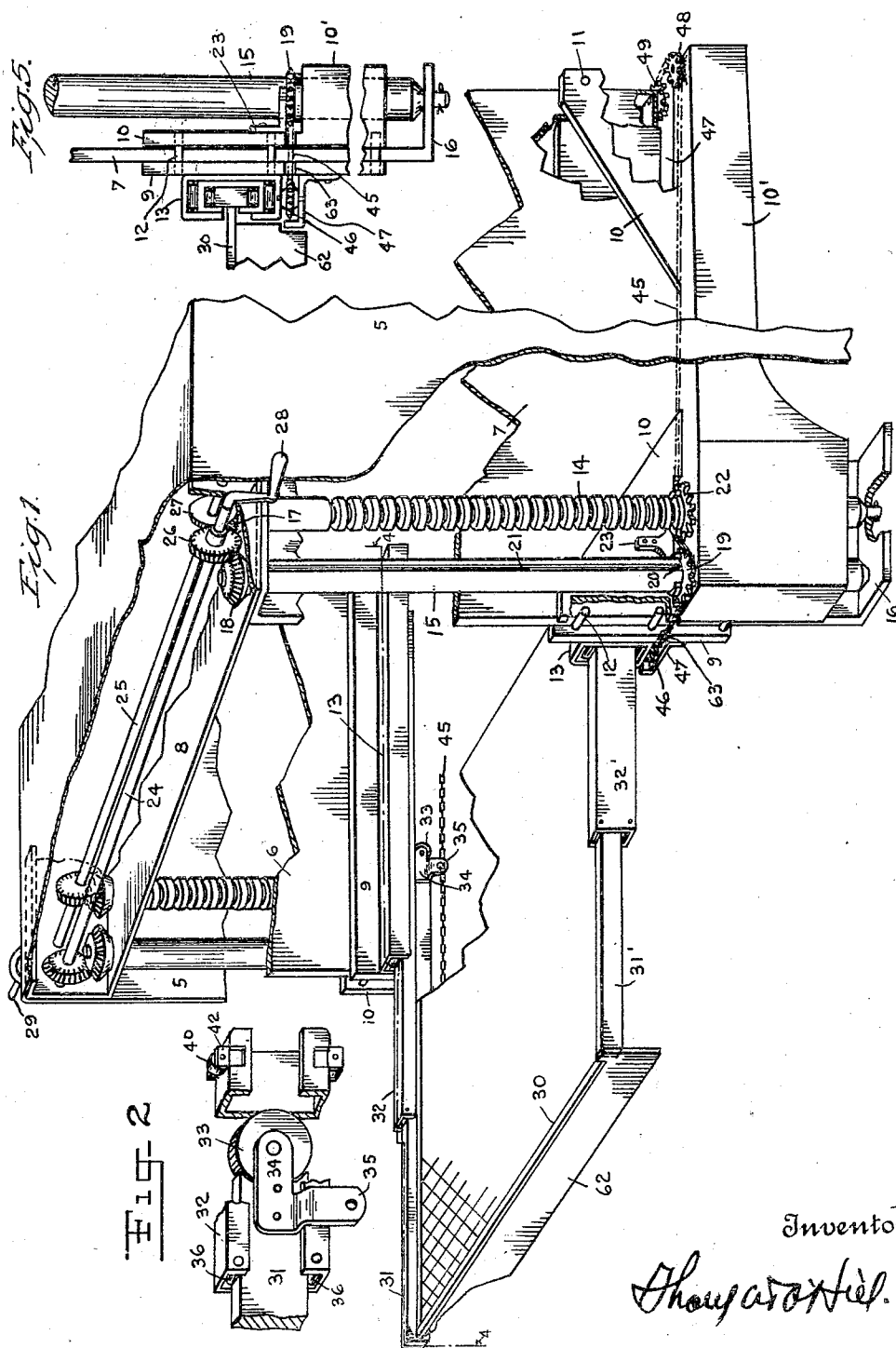
T. A. HILL

1,851,183

OVEN

Filed March 14, 1927

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

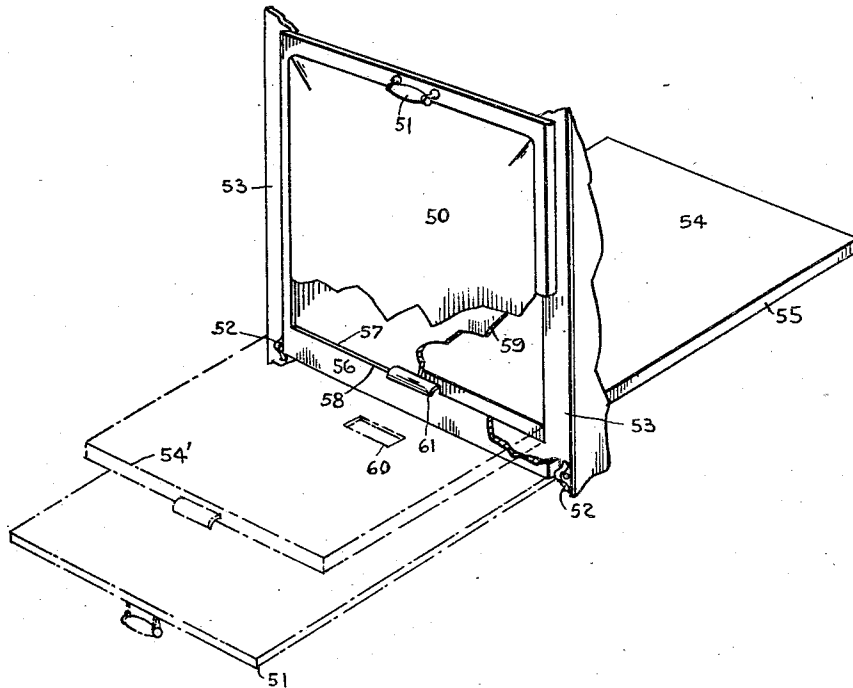


Fig. 3

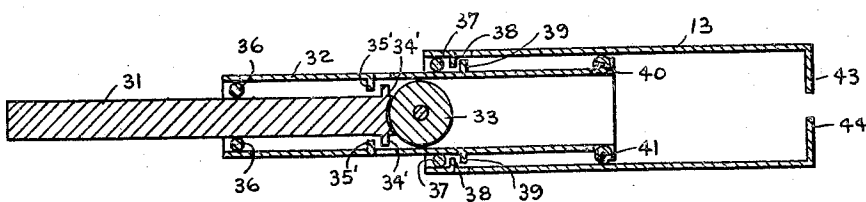


Fig. 4

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OVEN

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My invention relates to improvements in cooking ranges or stoves, and more particularly has reference to an oven having an adjustable shelf or bottom, or both, with means for operating the same, so as to bring the food in and out of the oven, or raise or lower the same as may be desired.

Referring to the accompanying drawings, Fig. 1 illustrates in perspective, parts being broken away, part of a gas range oven embodying an application of my invention. Fig. 2 is an enlarged detail in perspective of part of the slide mechanism thereof. Fig. 3 is a perspective view, parts omitted, illustrating an oven door and sliding bottom arrangement, Fig. 4 is a longitudinal sectional view of the slide mechanism on the line 4-4 of Fig. 1, and Fig. 5 is a front view at one side of the oven, parts being broken away, illustrating the slide mechanism.

5 indicates the outer shell or casing of the stove, within which is suitably secured side linings 6, 7, and top lining 8, said linings being in the form of stamped plates, spaced inwardly from the outer casing about an inch and a half as usual. At each side of the oven, projecting and elevating mechanism is operatively mounted with reference to said linings, but as the mechanism at each side is substantially the same, parts have been omitted from one side or the other side to prevent undue confusion and detail.

At opposite sides of the side linings 6, 7, are mounted vertically sliding carriers 9, 10, connected together by pins 11, having tubes or rollers 12 thereon, to ride against the front and back edges of the side linings 6, 7. The carriers 9 serve to carry the slide bearings 13, while the carriers 10 are preferably cast with the enlarged portion 10', through which the screw 14, and shaft 15, pass, the lower ends of said screw and shaft having bearing support on the flange 16, extending outwardly from the side linings 6, 7, and the upper ends of said screw and shaft being rotatably supported in the top lining 8, and having beveled pinions 17, 18.

Resting upon the carrier 10' is a sprocket wheel 19, slidably engaging the splined shaft 15, by tongue or pin 20, adapted to travel in

the groove 21, and also upon the carrier 10' is sprocket wheel 22, through which freely passes the screw 14, and 23 indicates a suitable forked member secured to the carrier 10, and resting over said sprocket wheels 19, 22, to keep the same from lifting. 24 and 25 indicate transverse shafts in the upper lining of the oven having pinions 26, 27, meshing with the shaft 15, and screw 14 respectively, and similarly connected at the opposite side, so that by turning the handle 28 at the outside of the oven, the splined shafts 15 are rotated simultaneously and equally, and by turning the handle 29 at the outside of the oven, the screws 14 are turned equally and simultaneously. The carriers 10' are of course threaded to receive the screws 14, are lifted thereby, and lift the carriers 9 and slide carriers 13, or depress the same according to the direction in which the handle 29 is turned.

Referring now more particularly to Figs. 2 and 4, it will be observed that the shelf or tray 30, of the oven, is preferably in the form of a grid or grill, and is carried by the side slides 31, 31', which are slidably mounted within the channels 32, 32', which in turn slide within the channels 13. The rear ends of each of the slides 31, 31', are provided with rollers 33, mounted upon brackets 34, shown to advantage in Fig. 2, said brackets having depending lug 35, for attachment to the operating sprocket chain. Immediately in front of the roller 33, may be provided suitable stops such as 34', for abutting similar stops 35', in the channel 32, for limiting the outward extension of the slide 31, in the slide 32, and rollers 36 are also preferably provided within and at the outer end of the slide 32, as shown. Similar rollers 37 are also preferably provided in the outer end of the carrier 13, within which the channel 32 slides or rolls, and the said carrier 13 is also preferably provided with stops 38, which like the other stops may be pressed out of the flange of the channel if desired, thus serving as an abutment for similar stops 39, which may be pressed out of the flanges 32, thus limiting the outward projection of the channel 32 from the carrier 13. 40, 41, also indicate

rollers, pivotally mounted in the turned out flanges 42, of the channel 32, and 43, 44, indicate turned in flanges at the inner end of the carrier 13, serving as a stop for the inward projection of the channels.

In assembling the slide or roller mechanism, the smaller slide member 31 is first pushed leftwardly through the channel 32, after which, and before the flanges 43, 44, are bent in, the channel 32 is slid from right to left into the carrier 13. The tray 30 being secured along the inner sides of the slides 31, 31', it will be observed may now be rolled entirely into or substantially entirely out of the oven, being well braced or supported in either position. The entire weight is carried in the carriers 13, supported by the carrier plates 9, and in turn supported by the vertical slide casting 10, 10', through the connecting pins and rollers 11, 12, so that when the handle 29 is rotated, the entire shelf or tray of the oven may be raised or lowered the entire vertical length of the oven.

An endless sprocket chain 45 is connected to the lugs 35 at each side of and beneath the tray 30, said chain extending forwardly from the lug 35 around the sprocket wheel 46, pivotally mounted on the Z-plate 47, secured to the carriers 9, beneath the slide carriers 13. This chain continues laterally around the outside of the sprockets 19, and inwardly again around the inner sides of the sprockets 22, continuing rearwardly around sprocket 48, pivotally mounted on the carrier 10', and then around the sprocket 49, also mounted upon the Z-bracket 47, as shown, and forwardly again to the bracket 35, so that when the splined shafts 15 are rotated by the handle 28, the tray or shelf is projected substantially entirely out of the oven, and may be returned within the same by reversed movement of said handle.

Similar slide projecting mechanism may be employed for the bottom of the oven, except that instead of using the splined shafts and sprocket mechanism, the same may, if desired, be withdrawn by hand, the handle of the bottom being always outside of the oven and insulated therefrom so as to remain cool. Such an arrangement is shown to advantage in Fig. 3, where it will be seen that the door 50 is provided with the usual handle 51, and hinges 52, secured to the side frames 53, the top frame of the door opening being broken away for convenience. 54 indicates the usual type of oven bottom with depending flanges 55. The lower part of the door frame 56 has an upper portion 57, separated therefrom by the transverse cut 58. 59 indicates the usual inner lining of the door, which lays flush against the entire four sides of the door framing. The door panel 50, and lining 59, are cut away rectangularly as shown at 60, for the passage of the handle 61, which is attached to the

front of the oven bottom, said lining 59 engaging the frame around the handle 61, preventing the ingress or egress of any air from into or out of the oven when the door is closed, the handle 61 being preferably curved at the top on a radius drawn from the center of the hinge 52, so as to provide a sliding fit between the top of the handle and the door. From the foregoing, it will be obvious that when the door is opened out and down, as indicated in dotted outline at 51', the bottom may be drawn outwardly as indicated in dotted outline at 54', thus presenting the contents of the oven bottom for manipulation or treatment, after which the same may be returned, and the oven door closed, thoroughly sealing the front of the oven, but leaving the handle 61 exposed in the room, where it is kept cool, and any suitable arrangement may be provided for insulating said handle from the oven bottom, such as asbestos backing, etc. The hood-like portion 61 of the handle being curved, presents the conventional hollow under portion for engagement with the fingers in the usual manner.

From the foregoing it will be obvious that when the door of the oven is opened, the bottom of the oven will be immediately with the bottom frame of the door. The elevating tray 30 when entirely depressed may be brought down so that the apron 62 rests upon the top of the bottom 55, so that when the shelf is entirely down and the oven is opened, it presents the appearance of a slightly elevated bottom, of grill form, until the elevating handle is operated, when the shelf may be carried upwardly behind the top cross frame of the door entrance, leaving the entire interior area available for use, and thus presenting an appearance so nearly identical with the ordinary oven as to leave only the outside handles for suggesting the use of any mechanism in connection therewith. The channel plates or side lining 6, 7, are of course slightly spaced, say not more than a quarter of an inch from the front and back of the oven to allow for the passage of the carriers 9, and chains 45 transversely therethrough, as indicated at the cut-away portion 63. These spaces are so small, however, as not to be observed, owing to the sides of the door frame 53, and are too small to permit of interference in any manner. An oven thus constructed may be said to be completely clear of all operating mechanism which is substantially entirely concealed within the linings thereof, avoiding the loss of any of the cubic capacity of the oven, providing for maximum movements of the shelf in two directions, and of the oven bottom outwardly and inwardly, and of course it will be readily understood that suitable automatic operating mechanism may be pro-

vided, such as an electric motor, in place of the handles, should the same be desired.

Of course it will be understood that various modifications may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

I claim:—

1. In an oven grid movement having means for moving the grid vertically and horizontally, linings within said movement, said grid adapted to be moved between said linings.

2. In a device of the class described, a chamber having a movable grid therein, and means for moving the same vertically and horizontally without varying the useful capacity of said oven.

3. In a movement of the class described, a rigid open outer frame, removable linings therein, a grid, and means for moving said grid vertically and horizontally between said linings.

4. In combination with an oven of the class described, an adjustable support therein, means for adjusting said support vertically and longitudinally without obstructing said oven above or below the same.

5. In combination with an oven grid operating device and the oven of a cook-stove, side linings in said device spaced apart a distance substantially equal to the width of the opening to said oven.

6. In combination with an oven grid movement and a cook-stove having an oven, means for operating said grid in two directions at right angles one to the other, said means clear of the useful area of said oven.

7. In combination with an oven having an adjustable shelf and means for raising same, means for projecting said shelf from said oven, none of said means occupying space within the projected area of the opening to said oven.

8. In combination with an oven having an adjustable shelf and means for raising same, means for projecting said shelf from said oven, all of said means substantially clear of the inwardly projected area of said oven.

9. An oven of the class described having a shelf, means for moving the same vertically or horizontally, substantially all of said means outside the useful portion of said oven and within the walls and shelf thereof.

10. In combination with a stove of the class described, an oven and removable linings therein, a movement for shifting the grid of said oven vertically and horizontally, said movement operative irrespective of said linings.

11. In combination with an oven of the class described, an adjustable support therein, and means for adjusting said support vertically and longitudinally without obstructing said oven above or below the same.

12. In combination with an oven of the class described, a movable shelf, means for moving the same vertically and horizontally, outside control for operating said means, said first mentioned means clear of the useful area of said oven.

13. In combination with an oven having an adjustable shelf and means for raising same, means for projecting said shelf from said oven, all of said means substantially clear of the opening to said oven, and operative by a single lever.

14. A chamber having a movable shelf, mechanism for moving said shelf in two directions at right angles to each other, said mechanism outside the useful zone of said oven, and said shelf of an area substantially equal to the cross sectional area of said oven.

15. In combination with an oven having an adjustable shelf and means for raising same, means for projecting said shelf from said oven, all of said means substantially clear of the opening to said oven, and operative by a single lever.

16. In combination with an oven of the class described, an adjustable support therein, and means for adjusting said support vertically and longitudinally without obstructing said oven above or below the same, and in combination therewith, means for automatically securing said support in its vertically adjusted position.

17. In a device of the class described, an oven having a movable shelf, a plurality of shelf supports, means for simultaneously raising and lowering said supports while maintaining same in parallel horizontal position with respect to one another, said shelf upon said supports, an operating member positioned exterior and removable from the heated area, and operative connections between said member and said shelf for moving the same longitudinally of said supports, whereby said member remains cool and the operating connections are clear of the space of said oven above and below said shelf.

18. An oven shelf projecting mechanism including slides at opposite sides of said shelf, a sprocket chain connected thereto, and means for driving said chain.

19. An oven shelf projecting mechanism including slides at opposite sides of said shelf, a sprocket chain connected thereto, and means for driving said chain, said slides having roller bearings.

20. In an oven of the class described, a movable shelf, and roller bearing sectional extension supports therefor, and sprocket chain driven mechanism for projecting said shelf from outside said oven.

21. An oven shelf projecting mechanism including slides at opposite sides of said shelf, a sprocket chain connected thereto, and means for driving said chain, and a hand control for said means outside of said oven.

22. An oven shelf projecting mechanism including slides at opposite sides of said shelf, a sprocket chain connected thereto, and means for driving said chain, said means between the lining and walls of said oven.
23. In an oven of the class described, a movable shelf, and roller bearing sectional extension supports therefor, and sprocket chain driven mechanism for projecting said shelf from outside said oven, including splined shafts for driving sprocket wheels.
24. In an oven shelf elevating and projecting mechanism, a driven sprocket chain for projecting, and a worm for elevating said shelf, said projecting and elevating mechanism substantially concealed, and independently operative from separate controls outside said oven.
25. In an oven of the class described, a movable shelf, and roller bearing sectional extension supports therefor, and sprocket chain driven mechanism for projecting said shelf from outside said oven, including splined shafts for driving sprocket wheels, lifting screws for said shelf, said screws and shafts respectively and operatively connected, but separately operative.
26. An oven of the class described having a movable shelf and a movable bottom, and means for imparting six different movements thereto.
27. An oven of the class described having a movable shelf and a movable bottom, controlling means therefor outside said oven.
28. An oven of the class described having a movable bottom and means for moving the same in and out of said oven, said means outside of said oven and free of the door thereof.
29. An oven having a shelf and bottom therein, and a handle for said bottom extending outside said oven, said handle projecting through the door of said oven only when same is closed.
30. In an oven grid movement of the class described, means for moving the grid vertically and horizontally, and a movable bottom adapted to be moved horizontally independently of said grid.
31. An oven of the class described having a movable bottom and means for moving the same in and out of said oven, a handle attached to said bottom but free of and extending outside the same.
32. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally.
33. An oven of the class described having a movable shelf and a movable bottom, and means for imparting six different movements thereto, controlling means therefor outside of said oven.
34. An oven of the class described having a movable shelf and bottom therein, and means outside said oven for automatically adjusting either said shelf or said bottom.
35. An oven of the class described having a movable shelf and a movable bottom, and means for imparting six different movements thereto, without occupying the useful space of said oven.
36. An oven of the class described having a movable bottom and means for moving the same in and out of said oven, and an outside controlled tray adapted to rest immediately above said bottom.
37. An oven of the class described having a movable shelf and a movable bottom, controlling means therefor outside said oven, said bottom movable independently of the movement of said shelf.
38. An oven of the class described having a movable shelf and a movable bottom, controlling means therefor outside said oven, said shelf movable independently of the movement of said bottom.
39. An oven of the class described having a movable shelf and a movable bottom, controlling means therefor outside said oven, said shelf movable in two planes at right angles to each other.
40. An oven of the class described having a movable shelf and a movable bottom, and means for imparting six different movements thereto, without substantially detracting from the capacity of said oven.
41. An oven of the class described having a projectable shelf and means for elevating the same, and in combination therewith a projectable bottom adapted to be operated independently of said shelf.
42. An oven of the class described having a movable bottom and means for moving the same in and out of said oven, said means adapted to project through but unattached to the door of said oven when the same is closed.
43. An oven of the class described having a movable shelf and bottom therein, and means outside said oven for automatically adjusting either said shelf or said bottom in the same or different directions.
44. An oven of the class described having a movable shelf therein, and means for moving the same either vertically or transversely, a movable bottom in said oven, and means for operating the same without interference with said movable shelf.
45. An oven of the class described having a movable bottom and means for moving the same in and out of said oven, a hinged door for said oven, a handle for said bottom extending through said door, said handle curved about the axis of said door hinge.
46. In a device of the class described, a chamber having a movable bottom and movable shelf therein, and means controlled from outside said chamber for moving said shelf vertically in two directions or for moving said bottom laterally in two directions.

47. An oven of the class described having a movable shelf and bottom therein, and means outside said oven for automatically adjusting either said shelf or said bottom, so as to bring either substantially out of or into said oven.

48. An oven of the class described having a movable shelf and bottom therein, and means outside said oven for automatically adjusting either said shelf or said bottom, each of said means adapted to impart either of two opposed movements.

49. An oven of the class described having a movable shelf and a movable bottom, controlling means therefor outside said oven, said controlling means adapted to operate said shelf in four directions and said bottom in two directions.

50. An oven of the class described having a shelf independently movable in directions at an angle one to the other, and means outside said oven for controlling said movements, and in combination therewith means for moving the bottom of said oven.

51. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally, said means controlled from outside said chamber.

52. An oven of the class described having a movable shelf and a movable bottom, controlling means therefor outside said oven, said bottom behind and secured to a part of the front frame of said oven and projectable therewith.

53. An oven of the class described having a movable bottom and means for moving the same in and out of said oven, said means adapted to pass through but unattached to the door of said oven when closed without allowing the passage of air through the opening therefor.

54. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally, all of said means being substantially concealed beyond the useful zone of said chamber.

55. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally, said shelf being adapted to be moved laterally at any point of elevation of the same.

56. An oven of the class described having a shelf and means for moving the same in two directions at an angle one to the other, said means adapted to operate independently of any similar mechanism in any adjoining oven, and a movable bottom in said oven.

57. In a device of the class described, a chamber having a movable bottom and mov-

able shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally, said shelf adapted to be raised against the top or lowered upon the bottom of said chamber.

58. An oven of the class described having a shelf independently movable in directions at an angle one to the other, and means outside said oven for controlling said movements, a movable bottom therein, and three outside controls for imparting six different movements to said shelf and bottom.

59. An oven of the class described having a shelf and means for moving the same in two directions at an angle one to the other, said means adapted to operate independently of any similar mechanism in any adjoining oven, a movable bottom in said oven, and means outside said oven for operating the same.

60. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means controlled from outside said chamber for moving said shelf vertically and means for moving said bottom laterally, said lateral moving means being inoperative until the door of said chamber has been opened.

61. An oven of the class described having a movable shelf and bottom therein, and means outside said oven for automatically adjusting either said shelf or said bottom, said means comprising three independent instrumentalities, each of which are adapted to inaugurate either of two opposed movements.

62. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally, said chamber having side and top linings, and the whole of said moving mechanism within the cubic area of said shelf, bottom and lining.

63. An oven of the class described having a shelf independently movable in directions at an angle one to the other, and means outside said oven for controlling said movements, and in combination therewith means for moving the bottom of said oven, and means outside said oven for controlling said last mentioned means.

64. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means controlled from outside said chamber for moving said shelf vertically substantially the entire height of said chamber or for moving said shelf or said bottom laterally substantially the entire depth of said chamber.

65. In a device of the class described, a chamber having a movable bottom and movable shelf therein, means for moving said shelf vertically and means for moving said shelf or bottom laterally, said means controlled from outside said chamber.

chamber having a door, and said lateral moving means inoperative until said door has been opened.

66. In an oven shelf elevating and projecting mechanism, a driven sprocket chain for projecting, and a worm for elevating said shelf, said projecting and elevating mechanism substantially concealed, a projectable bottom, and separate controls outside said oven for projecting said shelf or bottom and for elevating said shelf.

In testimony whereof I hereunto affix my signature.

THOMAS A. HILL.

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