

May 20, 1930.

J. W. HEARL

1,759,696

BALANCE FOR OVEN DOORS

Filed June 15, 1928

3 Sheets-Sheet 1

Fig. 2.

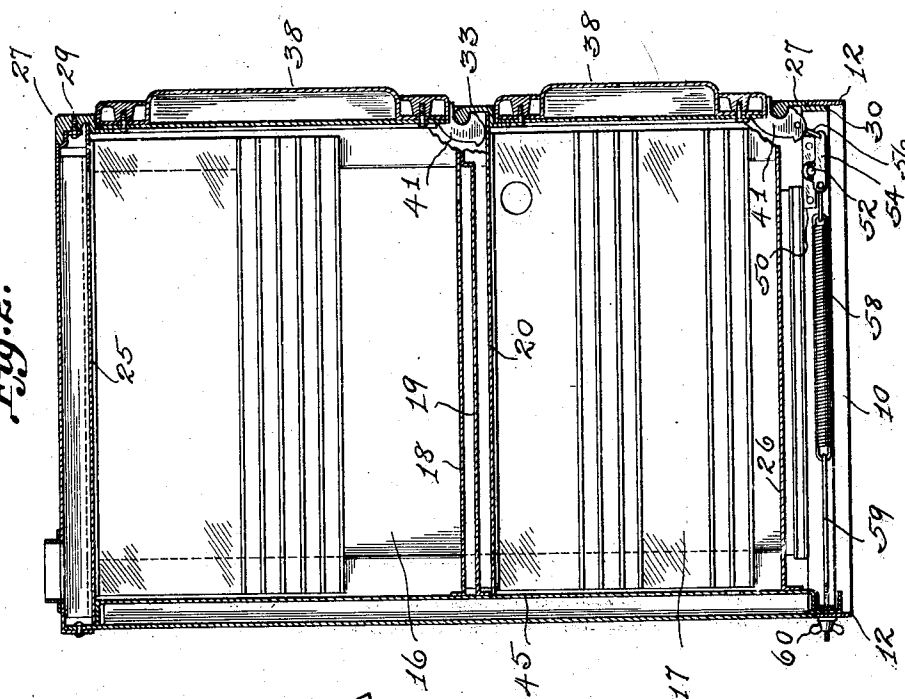
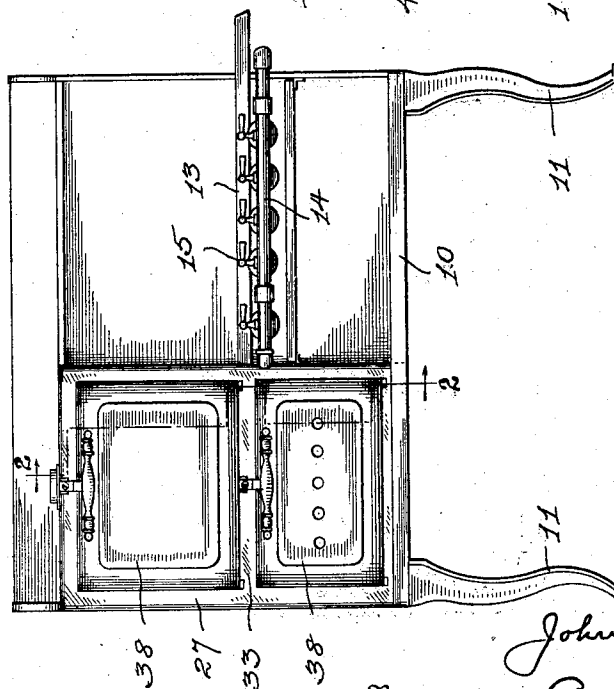


Fig. 1.



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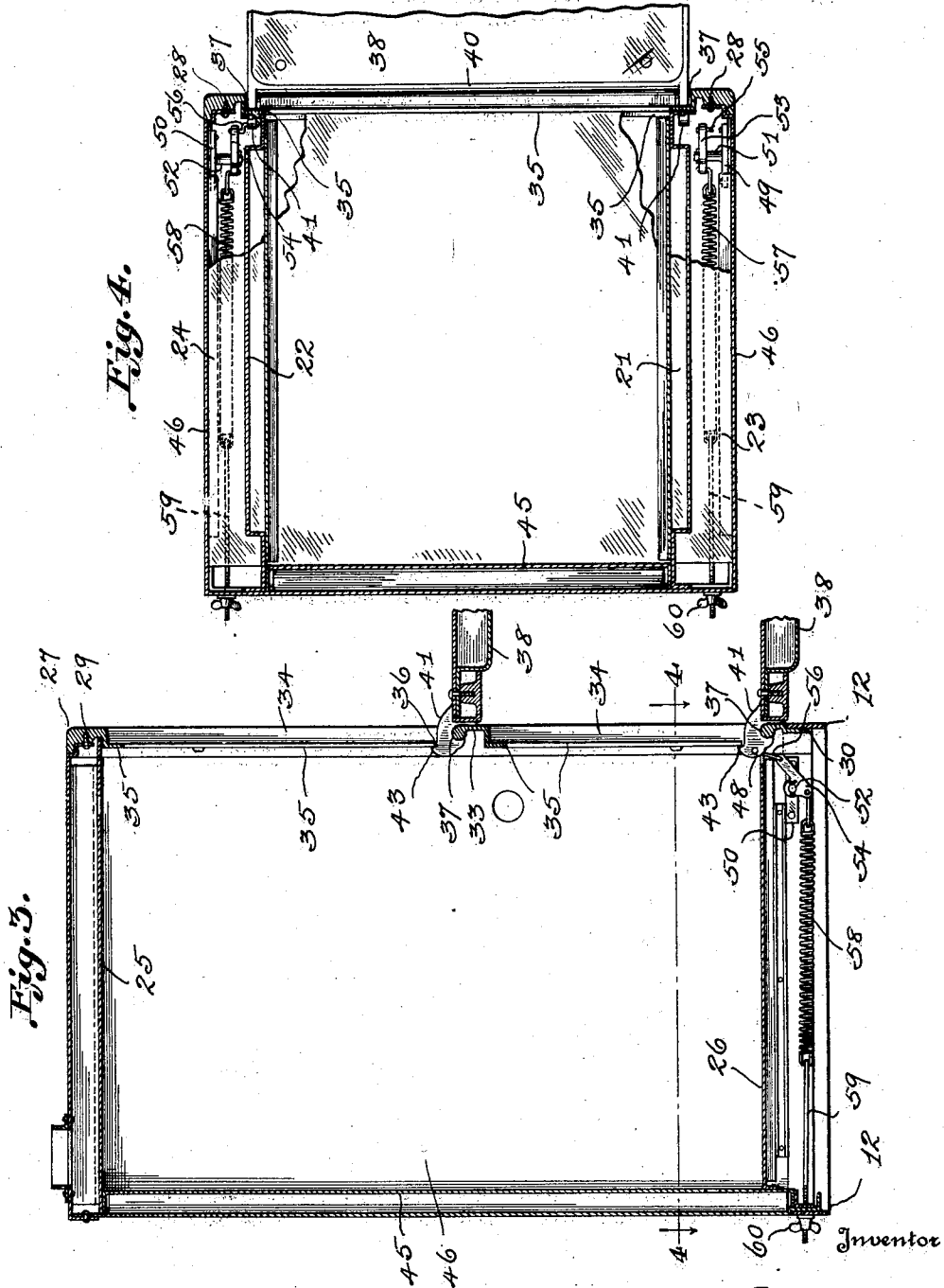
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Fig. 6.

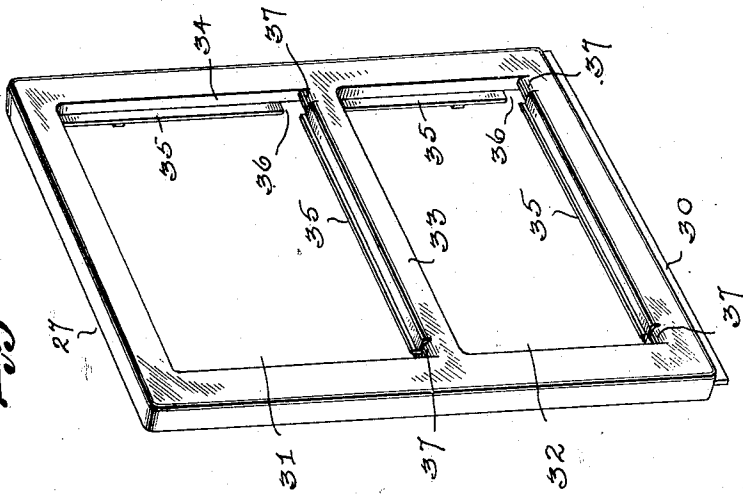
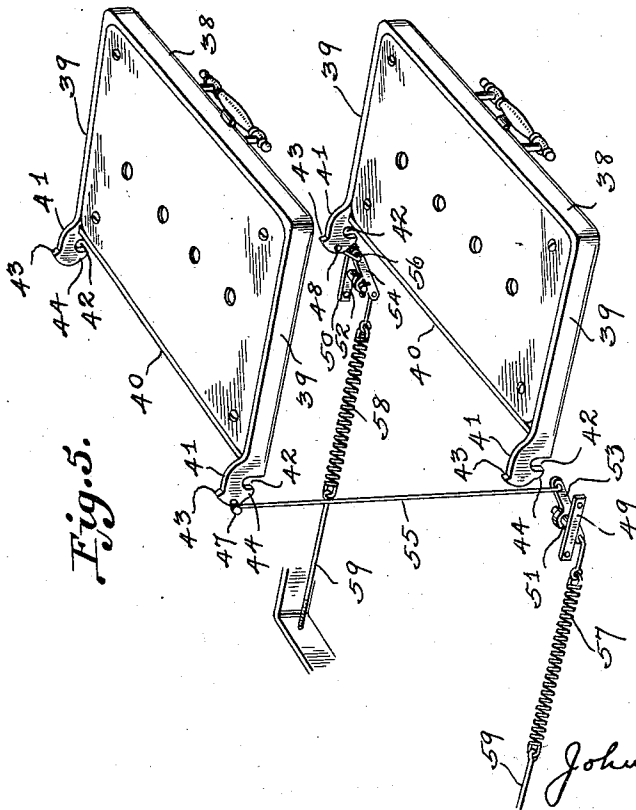


Fig. 5.



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UNITED STATES PATENT OFFICE

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BALANCE FOR OVEN DOORS

Application filed June 15, 1928. Serial No. 285,514.

This invention relates to improvements in door hangings and balances for cooking ovens.

One object of the invention is to provide an improved construction of hanger for an oven-door whereby when the latter is swung down to a horizontal open position, it will be yieldingly checked.

Another object is to provide an improved construction of balance for oven doors which will be completely concealed, and

A further object is to provide an adjustment for oven door balances which will be located on the outer side of the oven and removed from the intense heat therein whereby more uniform accuracy in the balance may be maintained.

With these, and other objects in view, the invention is illustrated in the accompanying drawings, wherein,—

Fig. 1 shows a gas range in front elevation embodying my invention.

Fig. 2 illustrates a vertical sectional detail on an enlarged scale, taken through the oven structure on the line 2—2 of Fig. 1.

Fig. 3 shows another vertical sectional detail through the oven with the inner side wall of the oven removed.

Fig. 4 illustrates a horizontal cross-sectional detail through the oven,—the section being taken on the line 4—4 of Fig. 3 but with the inner oven walls in place.

Fig. 5 shows a diagrammatic perspective view of the two detached oven doors with the balancing means attached thereto, and

Fig. 6 illustrates in perspective, the detached front oven-plate.

Referring to the drawing, the numeral 10 designates a horizontal base frame supported, in this instance, on legs 11, and comprising a band or strap 12 of metal and of sufficient thickness to provide the stiffness and rigidity desired.

In the structure shown, the invention is applied to an oven of a gas range of conventional form wherein the cooking top 13 is located at one side of the oven with the usual gas supply-pipe 14 and burner valves 15 shown in front elevation in Fig. 1 of the drawings.

The particular construction of the oven is not essential to the invention, but in this instance, there are upper and lower oven chambers 16 and 17 separated by suitable partitions 18, 19 and 20 which latter form respectively a bottom for the upper chamber; an air-space and a top for the lower chamber.

A rear vertical plate 45 provides a dead air-space at the rear of the oven-chambers, while side plates 21 and 22 serve the same function at opposite sides so as to produce one vertical side air-space 23 at one side and another vertical side air-space 24 at the opposite side of the oven-chambers.

A top-plate 25 also produces an air-space over the upper oven chamber. A bottom 26 is provided in the lower oven-chamber.

The entire front of the oven from the top of the upper chamber to the bottom of the lower chamber is closed by a front cast-metal frame 27 which is shown detached and in perspective in Fig. 6 of the drawing.

It is not essential to the invention as to just how the joints are effected between the front frame 27 and the top, sides, bottom and the intermediate partition plates, although these joints are more or less shown in Figs. 2, 3 and 4 of the drawings.

The front frame, in practice, is of cast metal and is secured by bolts 28 to the side walls and to the top by bolts 29, as shown in Figs. 3 and 4 of the drawings.

The bottom of the front frame has a depending flange 30 which projects down on the inner side of the band or strap 12 as can be seen in Figs. 2 and 3 of the drawings.

The front frame 27 has an upper opening 31 and a lower opening 32 separated by a horizontal cross-bar 33.

Each upper and lower opening is provided with a door-receiving recess 34 with top, side and bottom stop-flanges 35, and in the opposite lower corners of the said openings, the side and bottom stop flanges are cut away to form a notch 36 and to also enable a rounded bearing face 37 to be formed on the upper sides and ends of the cross-bar 33 at said corners, for a purpose that will presently be explained.

The doors 38, are of the drop type, in that

each is mounted at its lower edge to the front frame and swings down to a horizontal position at said front openings.

The doors 38 have two side bars 39, whose inner ends project beyond the inner edge 40 of the door proper, as clearly shown in Fig. 5 and each of these inner projecting ends has a bearing-head 41 with a rounded bearing-notch 42 at its under side and with a stop-shoulder 43 at its upper side and slightly to the rear of said notch.

The bearing-notch 42 in each head corresponds in shape to and fits and seats upon the bearing-faces 37 at the end of the cross-bar 33 of the front frame, while the rear edge of each notch has a hook formation 44 which extends around the bearing face 37 far enough to prevent the door from drawing forward and becoming disengaged from said bearing faces when the door is swung down, as shown in Fig. 3 of the drawings.

When the doors are in place, the bearing heads 41 extend through the notches 36 beneath the vertical side stop-flanges 35, and are concealed in the vertical air-spaces between the inner side-walls 21, 22 and the outer vertical side-walls 46 of the ovens.

By now referring particularly to Fig. 5, of the drawing, it will be noted that the bearing-head 41 at one side of the upper oven-door has a laterally-projecting pin 47 while the bearing-head 41 at the opposite side of the lower oven-door has a similar lateral pin 48,—the purpose of which pins 47 and 48 will presently be explained.

Below the bottom 26 of the lower oven and secured against the outermost side walls are two stud-plates 49 and 50 respectively.

These stud-plates 49 and 50 are located at opposite sides and near the front of the oven structure but directly beneath the side air spaces 23 and 24.

The plate 49 has a stud 51 while the plate 50 has a stud 52, and these studs carry levers 53 and 54 respectively whose functions are quite similar to those of bell-crank levers, as will presently more fully appear.

The bell-crank lever 53 has a rod 55, connecting one end of it with the stud 47, of bearing-head 41 on the upper door while the bell-crank lever 54 has a short link-rod 56, connecting it and the stud 48 of the bearing-head on the lower door.

It will be understood that the lever and rod connection to the upper door is at the left-hand side of the oven and door while the lever and rod connection to the lower door is at the right-hand side of the oven and door so that one connection will not interfere with the other.

The bell-crank lever 53 has its other end connected to a coil spring 57 while bell-crank lever 54 has its other end connected to a similar coiled spring 58.

These two coiled springs 57 and 58 extend

horizontally beneath the bottom 26 of the lower oven in a direction from front to rear of the ovens and the rear ends of these springs are attached to screw-threaded rods 59 which extend rearwardly and horizontally and pass through the band or strap 12 at the rear of the stove. Wing nuts 60 are provided on the rear ends of the rods 59, at the outer side of the strap whereby the rods may be drawn rearwardly by adjusting the wing nuts at the rear of the stove and on the rod-ends to stretch the coil springs 57 more or less, and thereby adjust the tension of the latter.

It will thus be seen that the coiled springs 57 and 58 are connected indirectly to the upper and lower oven doors respectively and by pulling on the bell-crank levers 53 and 54, and through them drawing the rods 55 and 56 downwardly serve as checks when the doors are opened and also serve, when the doors are closed, to hold the latter in the closed positions.

It will further be noted that the bell-cranks, hangers, springs and adjustable rods are all removed from the heat of the ovens where the tendency of the springs to expand and contract is reduced to a minimum and a more uniform and constant pull is maintained.

It will further be seen that the adjusting wing-nuts 60 are also located on the exterior of the stove and at the rear thereof where they are accessible for adjustment at any time, so that these adjustments may be made without detaching spring casings or removing oven linings.

Having described my invention, I claim,—

1. In a stove oven structure the combination with an oven with vertical air spaces at opposite sides thereof, of an oven-front provided with a door-opening which opening has bearing surfaces at opposite sides of its lower edge, a door having two side bars whose inner ends project inwardly beyond the hinge-edge of the door proper and each of said projecting bar-ends having a bottom edge-notch,—the said bottom edge-notches engaging the side bearing surfaces at the lower edge of the oven-front door-opening and in vertical alinement with the air-spaces at the sides of the oven, a stud-plate secured to the outer wall of the oven structure below the side air-spaces, a bell-crank lever carried on said stud-plate and movable in a vertical plane parallel with said side air spaces, a connection between one end of the bell-crank lever and one projecting end of a door above it and a coiled spring extending in a direction between the front and rear of the stove and having its front end connected to the other end of the said bell-crank lever.

2. In a stove oven structure the combination with outer and inner spaced walls forming an oven with vertical side air spaces between the same and with horizontal partitions to form an upper and a lower oven-

chamber, of a front for said oven having upper and lower door-openings, a door for each of said openings and each door being hung at its lower edge so as to swing up to close its opening and down to expose said openings and each door having two side bars whose inner ends project inwardly beyond the hinge-edge of the door and form bearing heads the said bearing heads extending edge-wise into the vertical air spaces at the sides of the ovens, a stud-plate secured to one outer side wall below the lowermost oven and below the side air space at one side thereof, another stud plate secured to the other outer side wall and also below the said lowermost oven and the side air space at the opposite side of the oven, a bell-crank lever carried on each stud-plate and each lever swinging in a vertical plane parallel with the side walls of the oven, a connection extending upwardly from one end of one bell-crank lever at one side of one door above and engaging the bearing head of one door, a connection extending upwardly from the other bell-crank lever and at the opposite side of the doors and engaging the bearing-head on the opposite side of another door above, two coiled springs extending horizontally between the front and back of the stove below the lower oven-chamber,—one spring having position directly beneath one side air space and the other directly beneath the opposite side air space, and one spring engaging an end of one bell-crank lever while the other engages an end of the other bell-crank lever, separate rods engaging the other ends of said springs and each rod projecting rearwardly to the back of the stove, and means at the rear ends of said rods to adjust the same and vary the tension of the coiled springs.

In testimony whereof I affix my signature.

JOHN W. HEARL.