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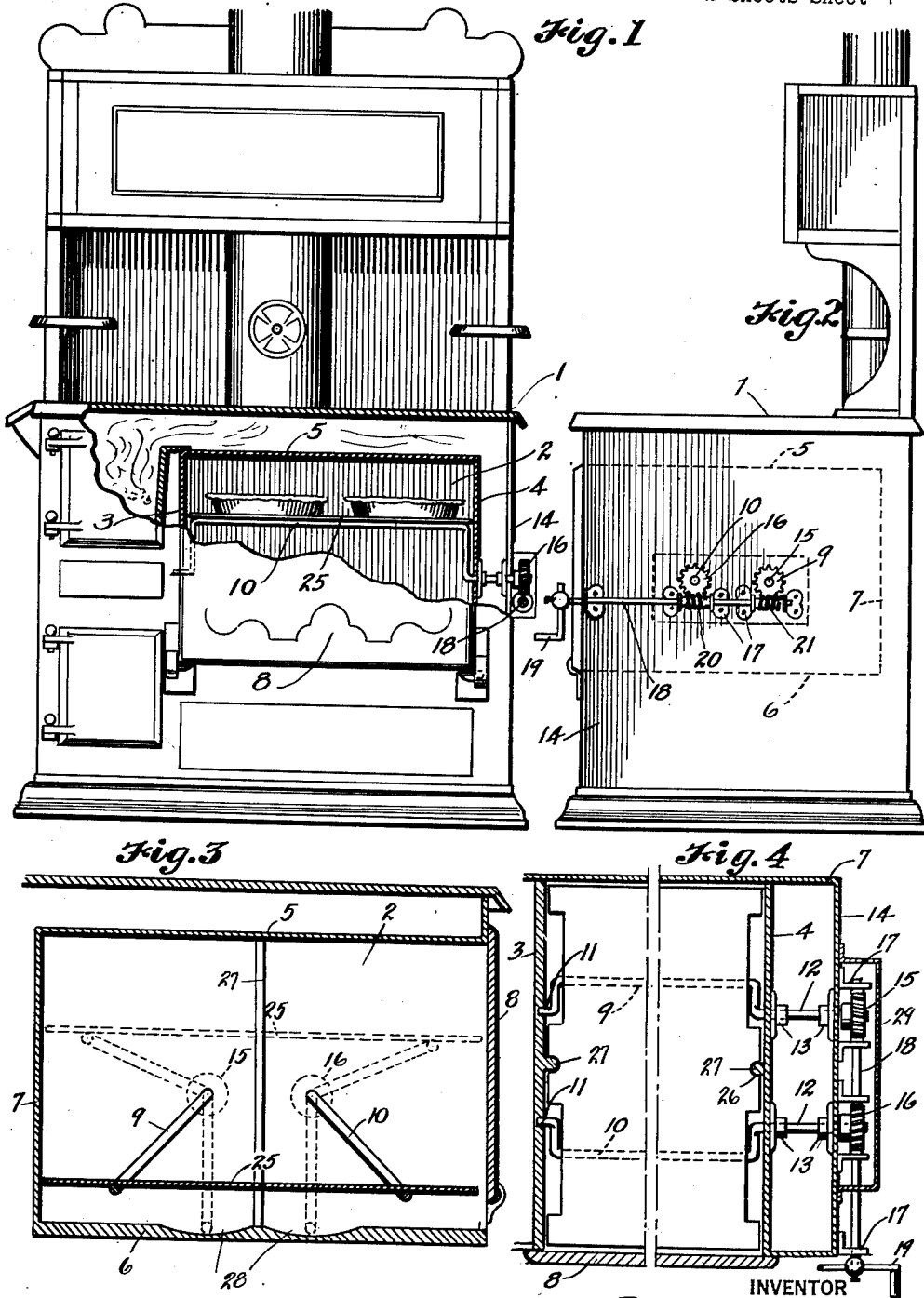
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P. McCAUL

ADJUSTABLE SHELF FOR OVENS

Filed April 19, 1924

2 Sheets-Sheet 1



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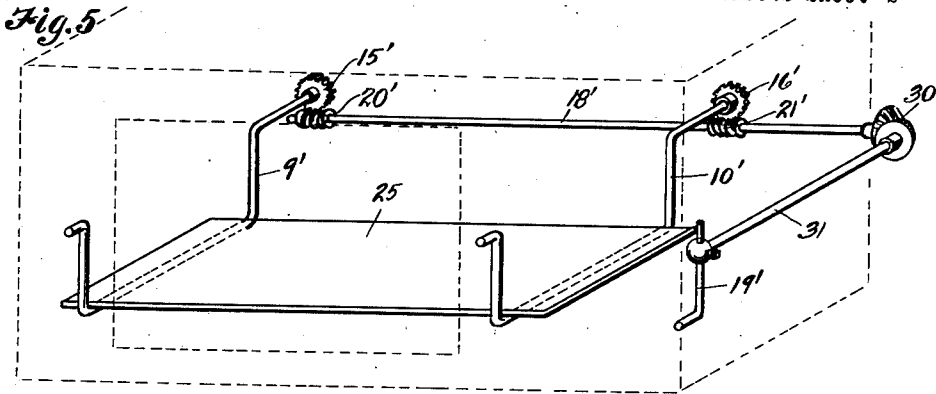
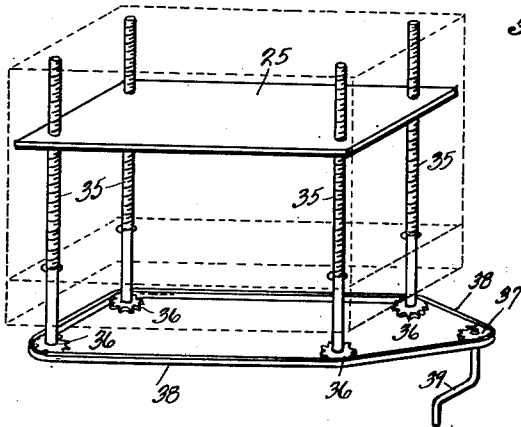
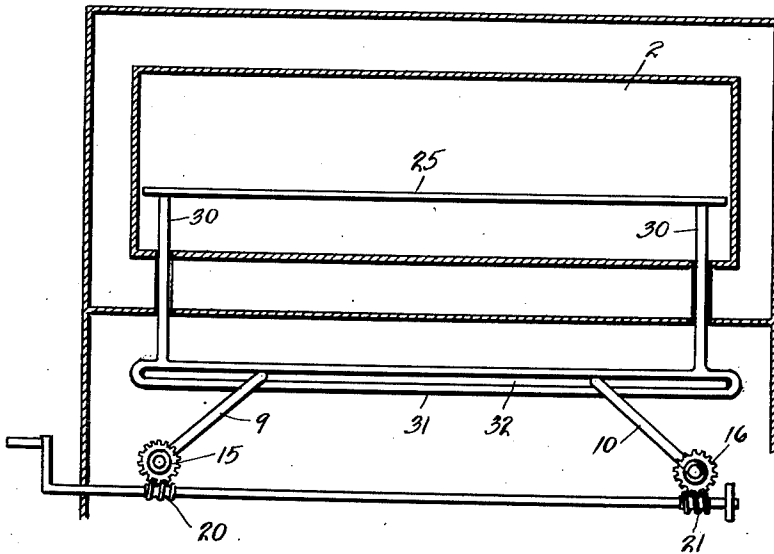


Fig. 6



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UNITED STATES PATENT OFFICE.

PHILIP McCAUL, OF TACOMA, WASHINGTON

ADJUSTABLE SHELF FOR OVENS.

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To all whom it may concern:

Be it known that I, PHILIP McCAUL, a citizen of the United States, and a resident of Tacoma, Pierce County, Washington, have invented certain new and useful Improvements in Adjustable Shelves for Ovens, of which the following is a specification.

This invention relates to improvements in ovens, more particularly to adjustable shelves, plates or screens for use in the ovens of ranges, cook stoves, or the like; the principal object of the invention being to equip an oven with a horizontal shelf whereon goods to be baked within the oven may be placed, and to provide manually operable means, operable from a point exteriorly of the oven, whereby the shelf may be adjusted vertically to different positions between the upper and lower walls of the oven so as to bake the goods under the most advantageous conditions.

More specifically stated, the invention resides in the provision within the oven, of a vertically adjustable shelf supported horizontally from a pair of rotatably mounted crank shafts having ends extended outside the oven and equipped with gear wheels that operate in mesh with worm gears on a manually operable adjusting shaft which may be rotated to effect movement of the crank shafts whereby the shelf will be raised or lowered.

Other objects of the invention reside in the various details of construction and combination of parts whereby the shelf will be maintained in horizontal position at all times and whereby the crank shafts will remain set at any adjusted position.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a front elevation of a range having an oven equipped with a vertically adjustable shelf in accordance with the present invention; a part of the front wall of the range being broken away for better illustration.

Fig. 2 is a side view of the range showing the shelf adjusting mechanism.

Fig. 3 is a vertical section through the oven, taken substantially on the line 3—3 in Fig. 1; showing the shelf and its suspending crank shafts.

Fig. 4 is a horizontal, sectional view through the oven showing the gearing of the shelf adjusting mechanism.

Fig. 5 is a perspective view illustrating an alternative construction for an oven of a different character.

Fig. 6 is a vertical sectional view through an oven, showing another alternative construction wherein the shelf adjusting mechanism is located below the oven.

Fig. 7 is a perspective view illustrating still another alternative construction.

Referring more in detail to the drawings—

1 designates what may be a cooking range of any ordinary type of construction, having an oven 2 enclosed by the opposite end walls 3 and 4, top and bottom walls 5 and 6, a back wall 7 and closed at the front by means of a door 8.

Mounted rotatably within the oven in parallel and spaced apart relation are two horizontal crank shafts 9 and 10 having end portions 11 pivotally supported in sockets in the end wall 3, as best shown in Fig. 4, and having opposite end portions 12 extended through bushings 13 fixed to the end wall 4 and adjacent outer end wall 14 of the range and provided respectively at their outer ends with gear wheels 15 and 16.

Supported rotatably in brackets or bearings 17 that are fixed in horizontal alignment to the outside of the end wall 14 of the range, is a shaft 18 that extends forwardly to the front of the range where it is equipped with a turning crank 19 and on this shaft are fixed right and left hand worm gears 20 and 21 that operate in mesh with the gear wheels 15 and 16 respectively in such manner that upon rotation of the shaft 18 by means of the crank 19, the shafts 9 and 10 will be rotated in opposite directions.

The bearing points of the shafts 9 and 10, within the oven, are at the same horizontal level and the throws of the shafts are equal, and supported on the throw portions of the shafts is a shelf, plate or screen 25 adapted to be raised and lowered in accordance with the rotative movements of the shafts. The dimensions of the shelf are slightly less than those of the oven so as not to engage with the walls of the latter and it is provided in its ends with notches 26 through which ribs 27, fixed vertically to the end walls of the oven, extend to prevent lateral shifting of the shelf during vertical movement.

It is intended that the throw portions of the crank shafts whereon the shelf is supported be of such length that the shelf may be lowered against the bottom wall of the oven and may also be raised against the top wall. To permit it to be lowered against the bottom it would be necessary to provide radially formed recesses 28, as shown in Fig. 3, in the bottom wall of the oven into which the cranks may swing. If this should not be desired, the front edge of the shelf could be bent downwardly to bring it flush with the front bottom edge of the oven.

In using the shelf, it could be adjusted against the bottom of the oven at the start and the goods to be placed upon it. Then by rotative movement of the crank 19 and shaft 18, the two crank shafts 9 and 10 will be rotated outwardly in opposite directions to lift the shelf according as they swing upwardly. By virtue of the locking relation of the gears 15 and 16 within the worm gears 20 and 21 the cranks will remain at any adjusted position regardless of the weight on the shelf and no locking mechanism beside that provided by the gears is necessary. Thus the articles on the shelf may be adjusted to the elevation desired for the most favorable results for baking or cooking.

Another use for the plate or shelf when the goods being baked are first placed on the bottom wall of the oven, is to raise the shelf against the top wall of the oven to heat it to a high degree, then to lower it to closely overlie whatever is being cooked so that its heat will be transferred thereto to hasten the baking, cooking or toasting.

If it should not be desired to use the shelf, it can be easily removed from the oven and the articles to be cooked, or baked, placed directly on the bottom of the oven. Then, at any time, the shelf may be replaced within the oven and the articles placed upon it and adjusted to any desired height to obtain the most beneficial results.

If it should be desired, the gearing could be enclosed in a housing 29 and this filled with a lubricant to make the operation of the device easy.

In the first four figures of the drawing I have illustrated my preferred construction wherein the shelf is suspended by a pair of crank shafts extending between the opposite side walls of the oven, but in ovens of considerable width this method might not be practical or desirable, so I have provided for suspending the shelf on crank shafts extended between the front and back walls of the oven. This alternative construction is illustrated in Fig. 5 wherein the crank shafts 9' and 10' are located within the oven at opposite sides of the door. These shafts are equipped at their rearward ends with gear wheels 15' and 16' that mesh with right and left hand worm gears

20' and 21' on a shaft 18' that extends along the rear to one side of the oven and is there connected through a set of intermeshing gears 30 with a shaft 31 that extends to the front of the oven and is there equipped with a turning crank 19'. In this construction, just described, as in the preferred construction, rotation of the shaft 18' causes a synchronized, rotative movement of shafts 9' and 10' and a vertical adjustment of the shelf.

In Figure 6 I have illustrated another alternative construction wherein the crank shafts 9 and 10 are mounted beneath the oven and are rotated in a manner similar to that previously described through the intermediacy of gears 15 and 16 fixed thereto and worm gears 20 and 21 on an actuating shaft 18. In this construction, the shelf is supported upon the upper ends of posts 30 extended upwardly through the bottom wall of the oven near its corners and which at their lower ends are fixed to the ends of bars 31 provided with longitudinal slots 32 through which the crank shafts extend. Movement of the crank shafts effects the raising or lowering of the bars and through the posts 30 adjusts the shelf accordingly within the oven.

In Fig. 7 is still another alternative construction wherein the shelf 25 is supported at its four corners by means of screws 35 extended vertically between the top and bottom walls of the oven and threaded through the shelf. At their lower ends the shafts have sprocket wheels 36 thereon and extended about these and about a driving sprocket wheel 37 is a sprocket chain 38. The wheel 37 is provided with a crank 39 whereby it may be rotated to move the chain to thereby rotate all of the screws at the same rate and to thereby raise or lower the shelf according to the direction of rotation.

Such a shelf is applicable to ovens of most any type and makes possible the adjustment of goods being baked to positions farther from or closer to the top of the oven and its rate of baking thereby regulated as desired.

It is readily apparent that various details in the construction and mode of operation could be departed from without departing from the spirit of the invention and for this reason I do not wish to be limited only to the details of construction herein illustrated and described.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. In an oven, a pair of crank shafts mounted in parallel relation within the oven, a shelf supported horizontally on the throws of the said crank shafts, gear wheels fixed to the ends of the shafts, an adjust-

ing shaft operable from outside the oven, worm gears fixed to the latter shaft in mesh with the first named gears and means for rotating the adjusting shaft.

5 2. In an oven, a pair of crank shafts mounted in parallel relation within the oven, a shelf removably supported on the throws of said shafts and held in horizontal position thereby, gear wheels fixed to the ends of said shafts, an adjusting shaft, 10 worm gears on the adjusting shaft in mesh with the first named gears that are adapted, upon rotation of the adjusting shaft, to rotate the crank shafts in opposite directions and which serve to lock the crank shafts at 15 different positions of adjustment.

3. In an oven, a pair of crank shafts rotatably supported from opposite side walls of the oven, a shelf removably supported 20 on the throws of said crank shafts and held in horizontal position thereby, means operable from outside the oven to rotate the crank shafts to raise or lower the shelf and means secured to walls of the oven and 25 engageable with the shelf to prevent lateral shifting thereof.

4. In an oven, a pair of crank shafts rotatably supported from opposite side walls of the oven, a shelf removably supported on

the throws of said shafts and held in horizontal position thereby; said shelf having 30 notches in its opposite end edges, means operable from outside the oven to rotate the crank shafts to effect the raising or lowering of the shelf and ribs fixed to the end 35 walls of the oven for registration within the notches of the shelf to retain it against lateral shifting when moved vertically by the crank shafts.

5. In an oven, a pair of crank shafts supported rotatably within the oven from opposite walls thereof and having ends extended from the oven, a shelf supported removably upon the throws of the crank shafts and held horizontally thereby, gear 40 wheels fixed to the outer ends of the crank shafts, a rotatably mounted actuating shaft, right and left hand worm gears fixed to the actuating shaft in mesh with the first 45 named gears and a crank on the actuating shaft whereby it may be rotated to effect 50 rotation of the crank shafts in opposite directions to raise or lower the shelf within the oven.

Signed at Tacoma, Pierce County, Washington, this 2nd day of April, 1924. 55

PHILIP McCAUL.