

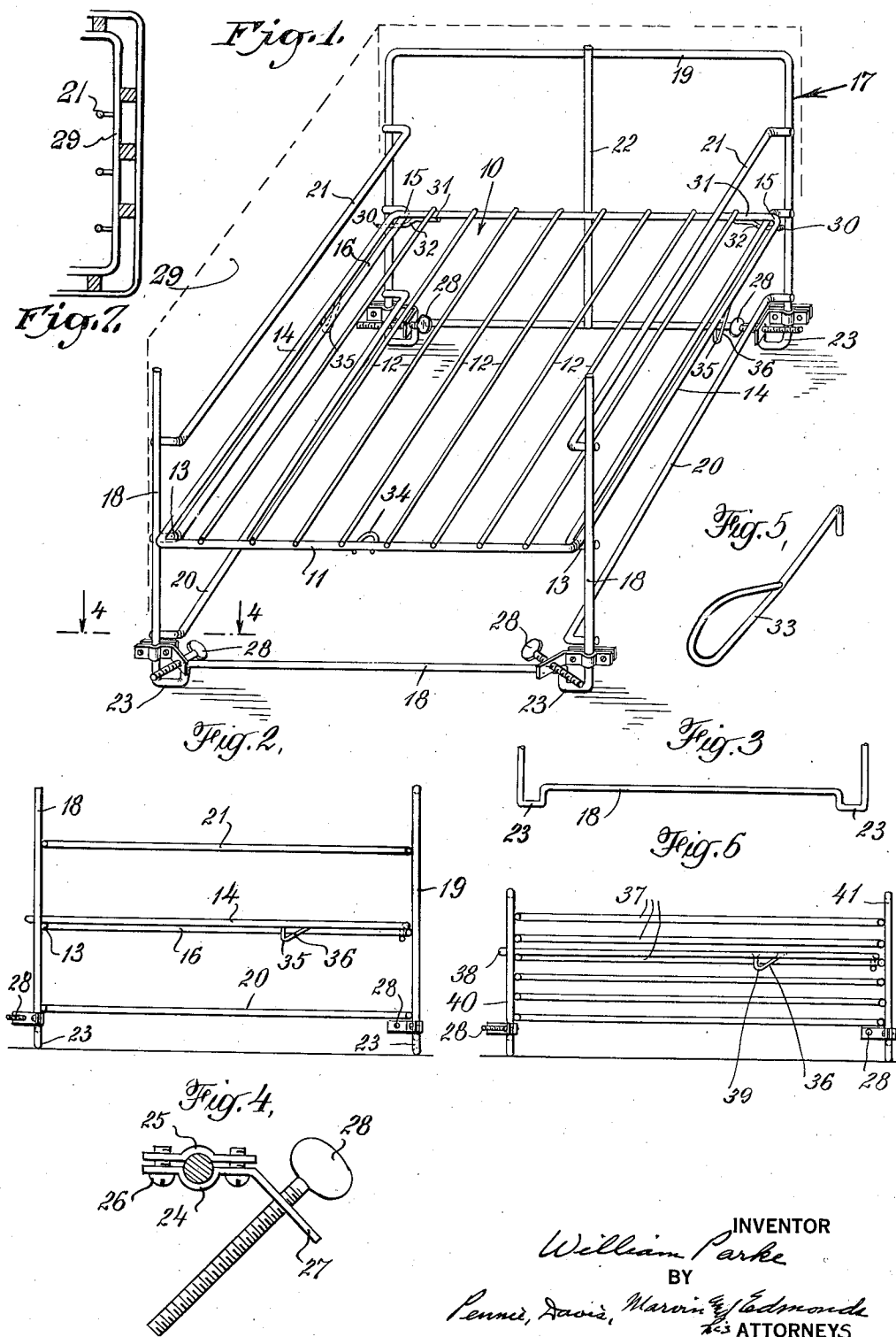
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SAFETY OVEN SHELF

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SAFETY OVEN SHELF.

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This invention, like those set forth in Patent No. 1,560,847, granted to me on November 10, 1925, and in my application Serial No. 64,840, filed October 26, 1925, is directed to improvements in food supports for ovens and has for its object the provision of an improved safety oven shelf or other food support such as a rack or broiler pan, which can be advanced or retracted in a manner favorable to an inspection, or turning, or a basting or other operation incidental to baking or broiling or the like—enabling such operations to be executed more safely and more expeditiously than heretofore.

The present invention is directed more especially to the simplification of the structure of the apparatus of the prior patent and application just referred to, and involves modifications which effect even greater convenience in the manipulation of baking and broiling operations and the like, and which at the same time result in a construction that can be manufactured at relatively low cost. In ovens as at present constructed the shelves are supported upon ledges of flat sheet metal secured to the opposite walls of the oven. Sometimes these ledges are spaced sufficiently close to one another so as to support the shelf in an advanced or extended position with the major portion thereof outside of the oven. Inasmuch, however, as the shelf is supported by contact at the front with the ledge below it, and by upward pressure at the rear against the bottom of the ledge above it, and inasmuch as the spacing of the shelves is determined more with the idea of obtaining a suitable adjustment of the height of the shelf within the oven, than of providing means for supporting the shelf in the extended position, the shelves thus supported almost invariably tilt forward to an undesired extent when in the extended position, even to the point of spilling the contents of food receptacles resting upon the shelves.

With shelves thus supported directly upon the walls of the oven, it is necessary to provide a certain amount of play between the sides of the shelf and the oven walls so as to allow for the bulging of the walls under expansion due to the heat. Even with the relatively large clearances which are customary it is difficult to pull the shelf

straight out. If the shelf is grasped near one side instead of near the center it very easily becomes wedged against the side walls of the oven and sticks or jams in such a way as to be almost immovable, particularly when it is considered that the shelf must be handled hot with the aid of cloths or other protection for the hands.

When it is desired to inspect a roast which is being cooked in an ordinary oven as thus constructed, with the opening of the oven door a hot blast strikes the face of the cook or housewife and, as a result, in grabbing for the shelf she is as liable to catch hold of it at one side as near the center. The shelf sticks and in the effort to straighten it or to pull it out in spite of the jamming, she is extremely liable to be burned—although perhaps not seriously, yet most uncomfortably. Moreover, the likelihood of the shelf sticking or jamming is increased by the fact that by the time the oven has been in use for a short while various foods will have been spilled therein to a greater or less extent which is impossible to prevent. The shelf supporting ledges, unfortunately, are efficient collectors of these spilled foods, and material such as sugar or flour carbonize and harden upon these ledges and within the grooves formed between the ledges, and these together with the accumulating rust partially obstruct the grooves and make the sliding of the shelves still more difficult. These ledges are extremely difficult if not almost impossible to clean. The sticking and jamming of these shelves is probably the most direct cause of all oven burns.

In the present construction of oven shelves and their supports there is no provision made for limiting or even indicating when the shelf has been pulled out or extended as far as it can be with safety, and in the excitement of inspection or basting not only is the hot blast from the oven uncomfortable to the hands and face, but also this blast together with the vapors from the product being cooked seriously interfere with the vision. Hence a sticking or jamming shelf is liable to be pulled out too far, either to the damage of the stove, or even to the extent of allowing the roast to fall to the floor with the attendant danger of additional burns by the flying grease. For this reason, with the present construction the cook or

housewife seldom attempts to perform a basting or other similar operation without entirely removing the roast from the oven to the top of the stove or to a table, this being an undesirable and inconvenient procedure.

According to the present invention the food support, such for example as a rack or shelf or broiling pan, is appropriately constructed and supported within the oven so as properly to guide the support as it slides outwardly to the advanced or extended position where the major portion of the support is outside of the oven. In addition, the food support, in this normal extended position, where it presents the food carried upon it for inspection, basting, etc., cannot be moved beyond this fully extended position inadvertently. It can, however, be removed from the oven by tilting it backward slightly; that is, by lifting the front of the support but the provision for limiting the outward movement of the food support does not interfere with its replacement in the oven. Moreover, the food support, even when in the normal fully extended position, is accurately held in a position very closely approximating the horizontal. Furthermore, the construction of the supports upon which the food support is slidable is such as to resist the collection of foreign substances and, although easy to clean, actually requires substantially no cleaning. Also, in accordance with the invention, the shelf is carried upon supports which are substantially unvariable in position under changes in temperature.

The invention will be better understood by referring to the accompanying drawings which, by way of example illustrate the preferred construction of two similar embodiments of the invention. In these drawings—

Fig. 1 is a perspective view of a rack or shelf carried upon a frame-work which is removably secured in an oven, only fragments of the oven walls being illustrated;

Fig. 2 is a side elevation of the devices shown in Fig. 1 drawn to a somewhat smaller scale;

Figs. 3 and 4 illustrate details of construction, Fig. 3 showing the formation of the feet of the frame-work and Fig. 4 being a sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a perspective view of a handle which may be used for moving the shelf; and

Fig. 6 is a side elevation of a modification intended particularly for use in the broiler compartment of a stove.

Fig. 7 is a modification showing the guide rail built into the walls of an oven.

Referring now to these drawings, the shelf 10 comprises a rim 11 of heavy wire having

longitudinally extending bars 12 welded to the front and rear portions of the rim. This shelf is supported upon short projections 13 which extend transversely or laterally of the oven and which are appropriately supported therein near the side walls of the oven. The sides 14 of the rim 11 rest upon these projections and slide freely over them. The rear end of the rim 11 at the points 15 rests upon and slides freely over the supporting guide rails 16.

As shown in Fig. 1, projections 13 and guide rails 16 are supported upon a frame-work 17 so constructed as to be removably secured within the oven thus adapting the apparatus to be installed in ovens already in use. In fact, projections 13 may conveniently be formed integrally with the guide rails 16 and serve as the support for the front ends of these rails to hold them in spaced relation to the walls of the oven. The rear ends of rail 16 are also conveniently formed with similar projections for the purpose of support.

These projections are welded respectively to the front and rear rectangular wire frames 18 and 19. To give rigidity to the frame-work 17, and for the purpose of providing supports for additional shelves 10, or for supporting the shelf 10 in different positions within the oven, additional guide rails 20 and 21 are also welded to the front and rear frames 18 and 19.

The frames 18 and 19 are preferably made of wire of suitable gauge appropriately bent and welded together. A vertical rod 22 is welded to the rear frame 19 as a rear stop for the shelves 10. These frames are so bent at the bottom as to form the feet 23 and to prevent the lower cross bars of each of the frame heads 18 and 19 from coming in contact with the oven floor. In this way the frame-work 17 is firmly supported upon the floor of the oven without danger of irregularities therein causing an uncertain or rocking support.

The frame-work 17 is removably secured within the oven by means of the devices shown in detail in Fig. 4. These devices include members 24 and 25 which are clamped about the uprights of the frame heads 18 and 19 by means of screws 26, and member 24 is provided with an angular extension 27 having a tapped hole there-through into which the thumb screw 28 is threaded. These devices at the front of the frame-work 17 have their angular extensions 27 so bent as to cause the thumb screws 28 to be directed at an angle such that any tendency to pull the frame-work forward will cause the ends of the thumb screws to press more firmly against the walls of the oven. The angular extensions 27 of the fastening devices at the rear of frame-work 17 are preferably bent at right angles to the

members 24 and 25 so as to position the rear thumb screws 28 perpendicularly to the side walls of the oven one of which is indicated at 29.

5 Returning now to the particular means for supporting and guiding the shelf 10 provided by the present invention, the shelf 10 is provided at its rear end preferably upon the rim 11 with members 30 for en-
10 gaging the under surfaces and the inside surfaces of the guide rail 16. These members are shown as hooks welded to the under-side of rim 11 at 31 and they extend underneath the guide rail 16 and also en-
15 gage the inside surfaces of these guide rails by means of their vertically curved portions 32. As a result of the support of the shelf 11 on the projections 13 and at the points 15, the shelf may be slid forward
20 with relatively low friction, and because of the engagement of portions 32 of members 30 with the inside of the guide rails 16 of the rear end of shelf 10 is accurately guided during this movement. Hence, even when
25 the shelf is grasped with the hands or with the prong of the handle 33 even close to one side of the shelf, the shelf will slide forward easily being guided at the rear end in the manner just described and at its front end
30 by contact with the uprights of frame head 18. A loop 34 is shown as being welded to the front portion of rim 11 for the insertion of the prong of handle 33 when it is desired to push the shelf back into the oven.
35 It is, however, not necessary to use the handle 33 unless desired as the shelf can easily be pushed back into position by pressing upon any portion of the front thereof.

As the shelf moves outwardly the center
40 of gravity of the weight thereof eventually passes the projections 13 and the rear end of the shelf is moved upwardly to a slight extent until the members 30 which closely engage the under-surface of guide rails 16
45 come into contact therewith, thus preventing the tilting or canting forward of shelf 10 and maintaining it in very close to the horizontal position during the entire movement and even when it reaches the fully
50 extended or fully advanced position. In order to limit the forward movement of the shelf, depending stop members 35 are welded to the bottoms of the sides 14 of shelf 10. The forward ends of stop
55 members 35 are made substantially vertical and they engage the projections 13 to stop the forward movement.

If it should be desired, however, to entirely remove shelf 10 from the oven this
60 may be done merely by lifting slightly on the front end of the shelf which will cause the bottoms of stop members 35 to pass the tops of projections 13 whereby the shelf may be moved beyond the normal fully ex-
65 tended position and removed from the oven.

It is desirable to make the replacement of the shelf within the oven as convenient as possible and for this reason the stop members 35 have sloping cam-like surfaces 36 so that as the shelf is replaced and stop
70 members 35 come in contact with projections 13, these cam-like surfaces will effect the automatic lifting of the shelf over projections 13.

By employing the frame-work 17 for
75 supporting the projections 13 and guide rails 16, these supports for the shelf 10 are not subject to lateral movement due to changes of temperature and likely to cause binding of the sides of the shelf. This ad-
80 vantage proceeds from the fact that the upright posts at the corners of the frame-work 17 formed by the side members of frame heads 18 and 19 are rigid and being secured
85 to the oven at one end only, that is, by means of the clamping devices shown in Fig. 4, are free to expand vertically, these posts being free of restraint at their opposite ends.

This advantage may also be secured, though perhaps to a somewhat less extent,
90 if the guide rails 16 are attached directly to the interior of the stove, provided, however, that these rails are attached at their ends only, thus supporting the intermediate
95 portions of the rails in spaced relation to the walls of the oven so that the bulging of these walls when heated does not bring them into contact with the rails.

Another advantage of removably securing the frame-work 17 within the oven is
100 to be found in the convenience of cleaning the oven afforded thereby. By loosening the thumb screws 28 the entire frame-work together with the shelves 10 can be taken
105 bodily from the oven, leaving no obstructions in the oven to interfere with the cleaning operation. Thus with stoves manufactured with the intention of supporting the
110 shelves 10 by the removable frame-work 17, there being no ledges or grooves or other means of supporting the shelves on the walls of the oven, these walls may be made smooth and without any obstructions to interfere with cleaning.

A modified form of the apparatus shown
115 in Fig. 6 is intended particularly for use in the broiling compartment of the stove where it is desirable to be able to adjust the distance of the food from the flame or other heating means. Hence the support-
120 ing guide rails 37 are spaced relatively close together, although there is sufficient clearance between them to allow the shelf 38 with its stop 39 to be inserted on any one
125 of the rails. The frame-work shown in Fig. 6 is of welded construction similar to that of frame-work 17, the front and rear frame heads 40 and 41 being shorter than the frame heads 18 and 19 so that they may be
130 accommodated in a stove compartment

which is smaller than an oven, such for example as the compartment for broiling which is usually situated below the oven.

The improved oven shelf and support of the present invention is of great convenience in carrying on roasting, baking and other oven operations for the reason that the shelf is readily slidable from within the oven to the fully extended position where the entire surface of the shelf is readily accessible. The shelf in its normal horizontal or food-carrying position can not be moved outwardly beyond the fully extended position at which the shelf is safely and firmly supported as securely as though it were withdrawn within the oven. Another feature which adds to the convenience of the shelf is its ability to be readily removed from the oven by lifting slightly the forward end, and still another advantage of the present construction resides in the fact that the shelf may be easily replaced within the oven.

I claim:

1. A device of the character described comprising the combination of a movable shelf for supporting food within an oven, carrying means mounted within the oven upon which the front of the shelf is slidably carried, a guide rail extending from the rear towards the front of the oven, a finger secured near the rear end of the shelf for closely engaging the rail, said finger serving to support the shelf accurately in a horizontal position and to guide the shelf in a substantially straight line movement as the shelf is moved outwardly, and a projection depending from the shelf and engageable with said carrying means, said projection being spaced forward of the rear end of the shelf a sufficient distance to arrest the movement of the shelf in its extreme outward load-carrying position, and said projection being raised by the tilting of the shelf about the rear end of the shelf as a pivot, and said projection having a front face which is disengaged when in this raised position from said carrying means so as to permit the removal from the oven of the shelf while loaded.

2. A device of the character described comprising the combination of a movable shelf for supporting food within an oven, carrying means mounted within the oven upon which the front of the shelf is slidably carried, a guide rail extending from the rear towards the front of the oven, a finger secured near the rear end of the shelf for closely engaging the rail, said finger serving to support the shelf accurately in a horizontal position and to guide the shelf in a substantially straight line movement as the shelf is moved outwardly and a projection depending from the shelf and engageable with said carrying means, said projection being spaced forward of the rear

end of the shelf a sufficient distance to arrest the movement of the shelf in its extreme outward load-carrying position, and said projection being raised by the tilting of the shelf about the rear end of the shelf as a pivot, said projection having a front face which is disengaged when in this raised position from said carrying means so as to permit the removal from the oven of the shelf while loaded, and said projection having a sloping rear face by which a loaded shelf reinserted in the oven is automatically raised over said carrying means.

3. A device of the character described comprising a combination of supporting and guiding rail mounted within an oven, a shelf slidable upon said rail from a point within the oven to an extended load-carrying position where the major portion of the shelf is without the oven, and means for arresting the outward movement of the shelf when it remains in the normal horizontal position, said means being rendered inoperative by lifting the front of the shelf while in the extended load-carrying position so as to allow the shelf to be removed from the oven.

4. A device of the character described comprising the combination of supporting and guiding rails mounted within an oven, a shelf slidable upon said rails from a point within the oven to an extended load-carrying position where the major portion of the shelf is without the oven, means for arresting the outward movement of the shelf when it remains in the normal horizontal position, said means being rendered inoperative by lifting the front of the shelf while in the extended position so as to allow the shelf to be removed from the oven while loaded, and means for rendering said arresting means inoperative when the shelf is reinserted upon the rails so as to allow the shelf to be reinserted while in a substantially horizontal load-carrying position.

5. A device of the character described comprising the combination of a movable shelf for supporting food within an oven, carrying means mounted within the oven upon which the front of the shelf is slidably carried, a guide rail extending from the rear toward the front of the oven at each side, fingers secured near the rear end of the shelf for closely engaging the bottom and inner side of each rail, said fingers serving to support the shelf accurately in a horizontal position and to guide the shelf in a substantially straight line movement as the shelf is moved outwardly, and a projection depending from the shelf and engageable with said carrying means, said projection being spaced forward of the rear end of the shelf a sufficient distance to arrest the movement of the shelf in its extreme outward load-carrying position, said projection being

raised by the tilting of the shelf about the rear end of the shelf as a pivot, and said projection having a front face which is disengaged when in this raised position from said carrying means so as to permit the removal from the oven of the shelf while loaded.

6. A device of the character described comprising the combination of a movable shelf for supporting food within an oven, carrying means mounted within the oven upon which the front of the shelf is slidably carried, a guide rail extending from the rear toward the front of the oven at each side, fingers secured near the rear end of the shelf for closely engaging the bottom and inner sides of each rail, said fingers serving to support the shelf accurately in the horizontal position and to guide the shelf in a substantially straight line movement as the shelf is moved outwardly and a projection depending from the shelf and engageable with said carrying means, said projection being spaced forward of the rear end of the shelf a sufficient distance to arrest the movement of the shelf in its extreme outward load-carrying position, and said projection being raised by the tilting of the shelf about the rear end of the shelf as a pivot, said projection having a front face which is dis-

gaged when in this raised position from said carrying means so as to permit the removal from the oven of the shelf while loaded, and said projection having a sloping rear face by which a loaded shelf reinserted in the oven is automatically raised over said carrying means.

7. A device of the character described comprising the combination of a movable shelf for supporting food within an oven, means mounted within the oven upon which the front of the shelf is slidably carried, a guide rail extending from the rear toward the front of the oven, a finger on the shelf for engaging the rail to support the shelf accurately in the horizontal position and to guide the shelf in substantially a straight line movement as the shelf is moved outward, and coacting stop members on said shelf and rail respectively positioned to arrest the movement of the shelf in its extreme outward load-carrying position, said means being disengageable from one another by tilting the loaded shelf when in said position so as to permit the removal from the oven of the shelf while loaded.

In testimony whereof I affix my signature.

WILLIAM PARKE.