

⑫ **EUROPEAN PATENT APPLICATION**

⑲ Application number: 83103410.3

⑤① Int. Cl.<sup>3</sup>: **F 24 C 15/16**

⑳ Date of filing: 07.04.83

③① Priority: 13.04.82 IT 3401382 U

④③ Date of publication of application:  
19.10.83 Bulletin 83/42

⑥④ Designated Contracting States:  
AT BE CH DE FR GB IT LI LU NL SE

⑦① Applicant: **INDUSTRIE ZANUSSI S.p.A.**  
**Viale Treviso 15**  
**I-33170 Pordenone(IT)**

⑦② Inventor: **Van Onck, Andries**  
**Via Cavour 26**  
**I-21026 Gavirate (Varese)(IT)**

⑦④ Representative: **Patentanwälte Grünecker, Dr.**  
**Kinkeldey, Dr. Stockmair, Dr. Schumann, Jakob, Dr.**  
**Bezold, Meister, Hilgers, Dr. Meyer-Plath**  
**Maximilianstrasse 58**  
**D-8000 München 22(DE)**

⑤④ Support for extractable grid shelves.

⑤⑦ The invention provides a sliding support for extractable grid shelves in an oven cavity provided with pairs of horizontal guide elements affixed to its side walls. Each support is in the form of an L-shaped profile member adapted to engage said guide elements and one rim portion of a grid shelf. On extraction of the grid shelf, the support is able to slide along the guide elements so as to project forwardly therebeyond for supporting the grid shelf in a cantilevered horizontal position substantially outside of the oven cavity.

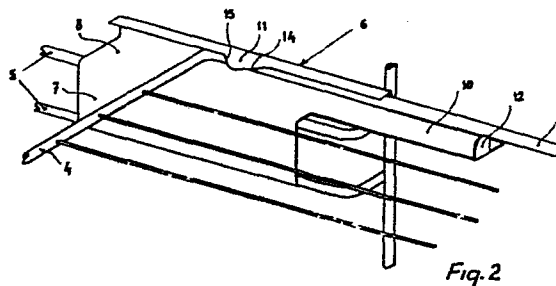


Fig. 2

1                      Support for Extractable Grid Shelves

D e s c r i p t i o n

5        The present invention relates to a support for extractable grid shelves particularly for domestic cooking ranges provided with pairs of guide elements disposed one above the other and fixedly attached to the side walls of the oven cavity.

10       As generally known, the oven cavity of domestic cooking ranges or hearths is suitably designed to slidably receive therein at least one grid shelf acting as a support for foods to be cooked therein. This object is achieved by a great number of known constructions, the pres-  
15       ently preferred one of which provides for the employ of frame structures usually formed of metal rods and fixedly attached to the side walls of the oven cavity as by means of a screw-threaded system. Fixedly attached to each frame are a number of horizontally projecting guide elements disposed at predetermined levels of the oven cavity opposite  
20       one another so as to slidably receive therein, with a certain clearance, the lateral support rim portions of a grid shelf.

             This known embodiment suffers from the disadvantage, however, that it renders the operation of extracting the grid shelf to a cantilevered  
25       position forward of the oven cavity such as for monitoring the cooking process rather cumbersome and even dangerous.

             This is because the supporting frame structures are immovably affixed to the walls of the oven cavity in the cooking position, so that they  
30       are unable to follow the grid shelf as it is being extracted.

             In addition, the play existing in the mechanical coupling between the guides of the oven cavity and the rim portions of the grid shelf is increased by the flexibility of the guides which are normally affixed  
35       to the frame structures only with their end portions. The effects produced by these factors result in that the portion of the grid shelf which may be extracted to a cantilevered position without endangering the stability of the pots or the like carried thereby is rather limited

1 and in many cases insufficient for visually examining all of the  
foods carried by the shelf.

If the grid shelf is extracted beyond this safe support position,  
5 in which it is retained substantially horizontal, its own weight as  
well as that of the foods carried thereon results in the formation of  
a fulcrum at the forward end of the lower guides so as to act on the  
upper guides, whereby the latter are bent upwards and the plane of the  
grid shelf assumes a forwardly inclined attitude, so that the pots  
10 supported thereon may start to slip. If the extra--ction of the grid  
shelf occurs too rapidly or if the guides and/or the supporting rims  
of the grid shelf are overly slippery due to the presence thereon  
of cooking oils or fats, there is the danger that the grid shelf is  
completely withdrawn from the guides, so that it drops down outside  
15 of the oven cavity.

For these reasons, the user is nearly always constrained to not extract  
the grid shelf beyond its safe horizontal end position and to take care  
that the grid shelf is not completely withdrawn from the guides while  
20 supporting it in a substantially horizontal position.

It is evident that these working conditions do not readily permit the  
user to busy himself with the foods contained in a number of pots at  
the same time without performing a number of operations rendered  
25 difficult and even dangerous by the high cooking temperatures.

According to other known solutions, the oven is provided with a door  
and a carriage connected thereto for displacement along horizontal  
guides within the oven cavity. In another known embodiment, a movable  
30 structure provided with table-shaped supports for the grid shelves is  
slidably installed within the oven cavity so as to be extracted there-  
from as the door of the oven cavity is being opened.

Another known solution provides that telescope supports of the type  
35 employed for the drawers of metal furniture are mounted at various  
levels within the oven cavity. In this case, however, the material  
employed for the telescope supports is required to be particularly  
resistant to high temperatures and the expansion caused thereby.

1 Although the described alternative solutions permit the grid shelf to  
be extracted to its full length, they are disadvantageous in that they  
require considerable modifications in the traditional construction of  
the oven and are excessively costly due to the quantities of the  
5 material employed and the characteristics required thereof.

In addition, the described alternative solutions do not provide for  
the extraction of any single shelf of a plurality of shelves disposed  
in the oven, it being inevitable to extract all of the shelves simul-  
10 taneously in any case.

Finally it is inavoidable that these systems employing a carriage or  
telescopic supports are difficult to disassemble, rendering maintenance  
and cleaning of the oven undesirably complicated.

15

It is therefore an object of the present invention to create a domestic  
cooking range provided with an extractable grid shelf and an associated  
support system presenting the structural simplicity and uncomplicated  
operability of the traditional solution while permitting the grid shelf  
20 to be fully extracted to a horizontally cantilevered position outside  
of the oven cavity.

A further object of the invention to create an oven of the type des-  
cribed, which is provided with retaining means adapted to prevent the  
25 grid shelf from being inadvertently withdrawn completely from the  
guide elements within the oven cavity.

Finally it is an object of the invention to create an oven of the type  
described provided with a grid shelf which may, if need be, be readily  
30 and quickly withdrawn from the oven cavity so as to simplify the  
cleaning and maintenance thereof, and in which any grid shelf may be  
extracted singly and independently of any further grid shelves con-  
tained in the oven cavity.

35 These objects are attained by a domestic cooking range comprising an  
oven cavity provided with pairs of horizontal guides disposed one above  
the other so as to project at corresponding levels from the lateral  
walls of the oven cavity for carrying and guiding the grid shelves.

1 The characteristic feature of the invention is the provision of a  
sliding support for the extractable grid shelf in the form of a  
profile member of L-shaped cross section with inwardly bent end portions  
for engagement respectively with the rim portion of a grid shelf and  
5 with the lower one of the pair of guide elements, said profile member  
being also provided with stop means for limiting the extraction of the  
grid shelf.

Further characteristics and advantages of the invention will become  
10 evident from the following description of an exemplary embodiment  
with reference to the accompanying drawings, wherein:

fig. 1 shows a diagrammatic perspective view of a grid shelf and the  
associated supporting system in an oven according to the invent-  
15 ion,

fig. 2 shows a detail of fig. 1 on an enlarged scale, and

fig. 3 shows a partial side view of the detail shown in fig. 2.  
20

The cooking range according to the invention comprises an oven cavity  
to the side walls of which pairs of horizontal guide elements 5 are  
fixedly attached as by means of a thread system (not shown) so as to  
project inwardly of the oven cavity opposite each other and to form  
25 sliding seats for each lateral support rim portion 9 of a conventional  
metal grid shelf 4 (fig. 1).

Slidably guided on each pair of vertically spaced horizontal guide  
elements 5 is a support member preferably made of metal sheet in the  
30 form of a profile member 6 having an L-shaped cross section with a  
vertical portion 7 and a horizontal portion 8 (fig. 2). Vertical  
portion 7 is in sliding engagement with the pair of horizontal guide  
elements 5, while horizontal portion 8 slidably receives therein one  
of the support rim portions 9 of grid shelf 4.

35 The free end sections of portions 7 and 8 of profile member 6 are rear-  
wardly or inwardly bent so as to grippingly engage the lower one of  
the pair of guide elements 5 and the support rim portion 9 of the

- 1 frame surrounding grid shelf 4, respectively, both of which are preferably formed of metal rods.

Horizontal portion 8 is formed with a plate-shaped extension 10, the  
5 free end of which is provided with a vertical lug 12 extending only over part of the width of horizontal portion 8 and being of sufficient height for constituting a stop for the extraction movement of grid shelf 4 so as to prevent the latter from being completely withdrawn from the guide elements 5 of the oven cavity.

10

Adjacent vertical lug 12, the inwardly bent end portion of horizontal leg 8 is formed with an interruption of sufficient length to provide a passage 13 for the introduction and extraction of the rim portion of grid shelf 4 by lifting it over vertical lug 12 (fig. 3).

15

Adjacent the forward end of vertical portion 7, the inwardly bent end portion of horizontal portion 8 is formed with a flexible, downwards bent lug 11 having a forward flank 14 and a rearward flank 15 of different inclination.

20

In the embodiment described, sliding support 6 is first brought into engagement with the lower guide element 5 and subsequently pivoted to the position shown in fig. 2. In this position, sliding support 6 is able to slide along horizontal guide elements 5 between positions  
25 defined by the engagement of the forward or rearward end of its vertical section 7 with the bent end portions of lower guide element 5.

After the two sliding supports 6 have been so positioned, the support rim portions 9 of grid shelf 4 are inserted into passage 13 and sub-  
30 sequently introduced into the inwardly bent end portions of horizontal portion 8 until they come into resilient engagement with flank 14 of lug 11, whereupon the sliding support 6 is dragged along by grid shelf 4 until it is stopped by the engagement of the end of vertical section 7 with the bent end portion of horizontal guide element 5. At this  
35 point, the continued thrust exerted on grid shelf 4 causes the latter to slip with respect to flank 14 of lug 11 until the grid shelf has been completely pushed into the oven cavity.

1 On being extracted, grid shelf 4 slides on its sliding supports 6 until  
its rear rim portion comes into engagement with the rear flank 15 of  
lug 11, whereafter the sliding supports 6 are dragged along by the  
grid shelf 4 until they come into engagement with the bent forward  
5 ends of lower guide elements 5.

In this instance, grid shelf 4 is completely extracted to a cantilevered horizontal position outside of the oven cavity.

10 If the user intends to withdraw grid shelf 4 from the oven, he has to overcome the resilient resistance offered by flank 15 of lug 11, whereupon the rearward rim of grid shelf 4 slides along plate-shaped extension 10 until it comes in to engagement with vertical lug 12, from which position it can be lifted off through passage 13.

15

In the described manner the grid shelf 4 can be safely extracted from the oven cavity to a cantilevered horizontal position.

After the grid shelf 4 has been completely withdrawn, the sliding  
20 supports 6 may be readily dismounted by pivoting them about lower guide elements 5 and disengaging them therefrom.

In addition to these advantages, the described embodiments safeguards the user against accidental withdrawal of the grid shelf from the  
25 oven cavity and in a simple manner offers the possibility to individually extract any of the grid shelves contained in the oven cavity.

It is finally to be noted that the support according to the invention offers the quoted advantages without requiring any definite modification  
30 of the traditional construction of the oven, thanks to its being designed as an accessory.

The described invention may of course be modified in various manners within the scope of the appended claims.

35

GRÜNECKER, KINKELDEY, STOCKMAIR & PARTNER

PATENTANWÄLTE  
EUROPEAN PATENT ATTORNEYS

A. GRÜNECKER, DPL.-ING.  
DR. H. KINKELDEY, DPL.-ING.  
DR. W. STOCKMAIR, DPL.-ING., A.E.E. (ALTECH)  
DR. K. SCHUMANN, DPL.-PHYS.  
P. H. JAKOB, DPL.-ING.  
DR. G. BEZOLD, DPL.-CHEM.  
W. MEISTER, DPL.-ING.  
H. HILGERS, DPL.-ING.  
DR. H. MEYER-PLATH, DPL.-ING.

8000 MÜNCHEN 22  
MAXIMILIANSTRASSE 43

EP 1016

Support for Extractable Grid Shelves

P a t e n t   C l a i m s

1. A support for extractable grid shelves, particularly for domestic cooking ranges provided with pairs of guide elements disposed one above the other and fixedly attached to the walls of the oven cavity, characterized in that it is formed by a profile member (6) having an L-shaped cross-section (7, 8) with inwardly bent end portions for engagement respectively with the rim portion (9) of a grid shelf (4) and with the lower one of said pair of guide elements (5), said profile member (6) being also provided with coupling means (11) and stop means (12) for controlling the extraction of said grid shelf (4).

2. A support for extractable grid shelves according to claim 1, characterized in that the horizontal upper portion (8) of said profile member (6) is formed with a forwardly projecting plate-shaped extension (10) the forward end portion of which is formed with a lug (12) and an opening (13) adapted respectively to permit said grid shelf (4) to be



1 arrested with respect to said profile member (6) and subsequently dis-  
engaged therefrom.

3. A support for extractable grid shelves according to claim 1,  
5 characterized in that the edge of said horizontal upper portion (8)  
of said profile member (6) opposite the forward end of the vertical  
lower portion (7) of said profile member (6) is formed with cam means  
(11) having two flanks (14, 15) of different inclination adapted  
respectively to permit said profile member (6) to be dragged along  
10 said guide elements (5) and to arrest said grid shelf (4) in a canti-  
levered extracted position.

15

20

25

30

35

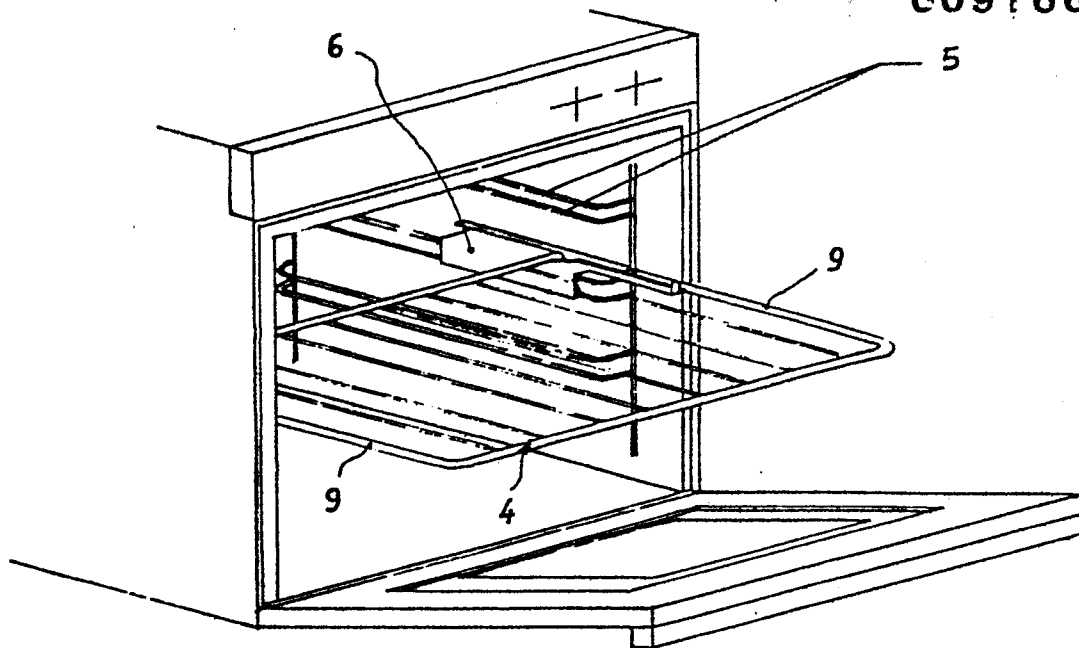


Fig. 1

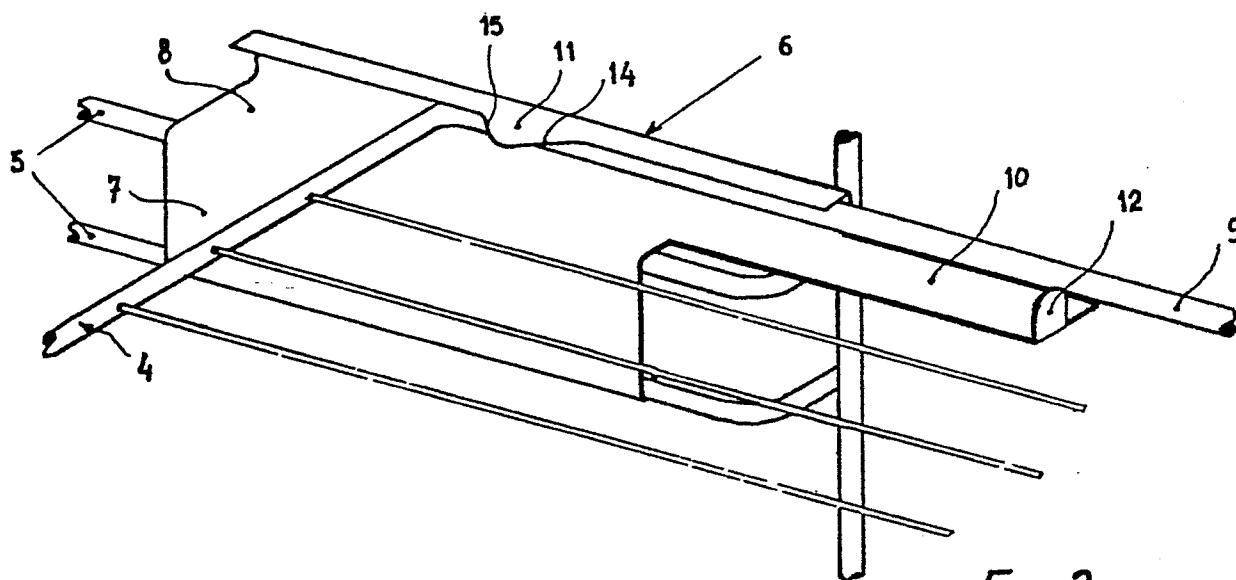


Fig. 2

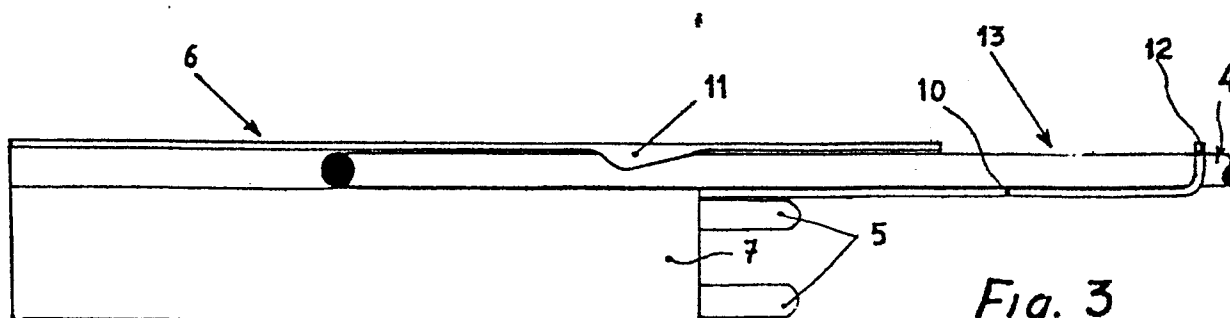


Fig. 3