Title: BUILT-IN HORIZONTALLY OPERATING EXTRACTOR HOOD WITH FRONTPULL-OUT COOKING SURFACE

Abstract: New extractor hood with fan motor unit (M) for the extraction of vapours and fumes produced by the cooking of food and at least one device for filtering and purifying the flow of air extracted, suitable for generating an extraction air flow with substantially horizontal direction and comprising at least one grill or filter (F), located in a substantially vertical position to cover the extraction front of said hood, in front of which a substantially horizontal cooking surface (P) can be positioned.
TITeL

BUILT-IN HORIZONTALLY OPERATING EXTRACTOR HOOD
WITH FRONT PULL-OUT COOKING SURFACE

DESCRIPTION

The present patent relates to electric household appliances for cooking food and in particular concerns a new built-in horizontally operating extractor hood with extraction front acting on a sliding and/or hinged anterior cooking surface.

Barbecues or grills are known, used for grilling food of various types, such as meat, vegetables, cheese, etc. and powered by wood and/or charcoal and where the food to be cooked is rested on a grille or surface in cast iron suitable for supporting the food above the hot embers.

Lava stone barbecues or grills are also known, provided with electric devices that heat lava stones or lava stone slabs, on top of which the grille for resting the food is positioned.

Grilled or barbecued food acquires a characteristic flavour and texture and is much tastier than food cooked in the oven or on the hob.

Electric barbecues are known, where the grille or cooking surface is electrically powered, so that the user does not have to bother with long and laborious operations for lighting and preparing the embers.

The known barbecues or grills, both charcoal and electric, must be used in open well-ventilated environments, such as a terrace or garden, because food cooked in this way produces particularly smelly fumes, due mainly to the evaporation of water, oils and fats.

Alternatively, it is possible to use the known indoor chimney-barbecues, where the fumes produced by the cooking are extracted by the hood and conveyed to the outside of the house.
Unfortunately, flats and the majority of modern houses do not have chimneys and there is not enough space to use the known barbecues. Furthermore, an electric household appliance able to cook the food obtaining the same result as grill cooking but without the drawbacks described does not exist on the market. For these reasons, although barbecued or grilled food is generally very popular, barbecuing and grilling are hardly ever carried out in the domestic environment.

The subject of the present patent is a new type of built-in horizontally operating extractor hood with extraction front on a sliding and/or hinged anterior cooking surface.

The aim of the present invention is to grill food, also within domestic environments that are closed and without extraction of the fumes to the outside.

A further aim is for the present invention to be installed in the known modular kitchens.

A further aim of the present invention is to have overall dimensions equal to an ordinary oven or other built-in element for modular kitchens.

A further aim of the present invention is to re-introduce into the environment a flow of filtered deodorized air.

These and further aims, direct and complementary, are achieved by the new built-in horizontally operating extractor hood with extraction front on a sliding and/or hinged anterior cooking surface.

The new hood with pull-out cooking surface comprises in its main parts an external bodywork or frame containing at least one electrically-powered cooking surface, at least one extractor hood and at least one device for filtering and purifying the fumes generated by cooking of the food, and
where said cooking surface is pull-out, being for example horizontally sliding or with flip-down opening, like the doors of the known ovens.

The new invention is suitable for being completely built into the known modular kitchens and its overall dimensions, when fully closed, are equal to the dimensions of an ordinary element of a modular kitchen, such as an ordinary oven.

Said pull-out cooking surface comprises a pyroceram surface with electric element, above which is positioned a surface for supporting the food, for example a grille or a cast iron plate.

Alternatively, a layer or slab of lava stone can be used with grille for supporting the food on top if necessary.

Said hood generates a flow of extraction air with a substantially horizontal direction, acting on said cooking surface located in an anterior position with respect to the extraction front.

Said hood is connected to a coupling which conveys the extracted air into said device for filtering and purifying.

In particular, said filtering and purifying device can be a water filter, comprising a receptacle or reservoir containing water or other filtering liquid, and where the flow of air is introduced near the bottom, i.e. inside the mass of water, below the surface of the water.

The impurities contained in the flow of air which crosses the mass of water are retained by the water and the air flows out purified via apertures which convey it directly inside the room.

The flow of air discharged is therefore not conveyed to the outside of the room, but directly to the inside, since it has been purified, deodorized and cooled.

A duct for discharging the air to the outside of the house is therefore not
necessary.

Said water filter also comprises exchanger fins for condensation of the humidity collected by the flow of air inside said reservoir.

Said receptacle or reservoir can be extracted for changing or topping up the water or fluid contained.

Alternatively to or in combination with said water filter, an activated carbon filter or other suitable devices can also be used.

To cook the food, the user opens said cooking surface and switches on the electric element of the cooking surface which heats up until it reaches the required temperature.

The user then places the food to be cooked on said supporting surface, grille or plate in cast iron or other type of surface, cooking it as if he/she were using a known barbecue.

The fumes produced during cooking are extracted inside said hood which has the extraction front facing forward, i.e. directly towards said cooking surface on which the food is placed.

The flow of air extracted is then conveyed inside said water filter, where it is purified and again discharged into the environment.

The new invention can therefore be used for grilling food and can be installed in modular kitchens, in any position in the kitchen, and does not require ducts for expelling the air to the outside.

The characteristics of the new hood with pull-out cooking surface will be better clarified by the following description with reference to the illustrations attached as a non-limiting example.

Figures 1 and 2 show two three-dimensional views, rear and front respectively, of the new invention.

Figure 3 shows a rear three-dimensional view of the new invention
completely assembled, with containing frame or bodywork (T).

Figure 4 shows a rear three-dimensional view of an alternative embodiment, with conveyor (E) of the discharge flow directed towards the lower part of the door (S).

Figure 5 shows a three-dimensional view of the new invention, with door (S) partially open, where the reservoir (C) of the water filter and the fume extraction filter (F) can also be seen.

Figure 6 shows a cross section of the new invention, where the inside of the reservoir (C) of the water filter can be seen.

In figure 7 an overhead view of the inside of the new invention can be seen, while figure 8 shows the vertical section according to the section line a-a traced in figure 7.

The present invention comprises at least one bodywork or frame (T) containing one or more couplings or conveyor elements (A) connected to at least one fan motor unit (M), with extraction front facing towards at least one electrically powered surface (P) for cooking food.

Said cooking surface (P) is contained in a frame or thermally insulated housing (I) and comprises a pyroceram surface with at least one electric element and at least one supporting surface (P1) for the food, for example a grille or plate in cast iron or a layer of lava stone with supporting grille on top.

Said cooking surface (P) can be pulled out of said frame (T). In the case shown in figure 5, said cooking surface (P) for example translates in a substantially horizontal direction and also comprises a vertical front door (S), with handle (S1).

Alternatively said cooking surface (P) can be hinged and provided with flip-down opening, with or without fan-out side walls.
The food is placed on top of said supporting surface (P1) and cooked by the heat generated by the cooking surface (P) below. The fumes and vapours produced by the cooking process, due to evaporation of fats, oils and water, is extracted by the hood into the conveyor elements (A), having extraction front facing forward towards said supporting surface (P1).

Said vertical door (S) and/or said fan-out side walls therefore also have the function of limiting dispersion of the fumes and vapours produced by the cooking in the surrounding environment, maximising the effectiveness of the extraction hood.

The flow of extraction air generated by said new hood therefore has a substantially horizontal direction.

A filter (F) located in an anterior position with respect to the extraction front of the extraction hood prevents objects or bodies of any type getting into the hood.

The air and the fumes extracted are conveyed by means of the coupling element (B) into a water filter, comprising a receptacle or reservoir (C), contained in a support (C1) integral with said frame (T).

The flow of air is introduced via ducts or deflectors (C2) into said reservoir (C) near the bottom, in order to maximise the time the flow of air to be purified remains in the mass of water contained in said reservoir (C). A plurality of exchanger fins (C3) are positioned inside said reservoir (C), so that the humidity collected by the air flowing out of the reservoir (C) is condensed and not conveyed to the outside.

The purified flow of air flows out of said reservoir (C) via the coupling (D) and is then conveyed to the outside of said frame (T) via at least one conveyor discharge element (E), the outlet of which is positioned for
example near the top of said frame (T).

Alternatively, as shown in figure 4 for example, said conveyor (E) has the outlet positioned near the lower part of said door (S).

Said reservoir (C) can be extracted, for example it slides in a substantially horizontal direction, to permit changing and topping up of the water or fluid contained.

Therefore with reference to the preceding description and the illustrations provided, the following claims are made.
CLAIMS

1. New extractor hood with fan motor unit (M) for extraction of vapours and fumes produced by the cooking of food and at least one device for filtering and purifying the flow of air extracted, characterised in that it generates an extraction air flow in a substantially horizontal direction and comprising at least one grill or filter (F), located in a substantially vertical position to cover the extraction front of said hood, in front of which is positioned a substantially horizontal cooking surface (P).

2. New extractor hood according to claim 1, characterised in that it is suitable to be contained in and/or built into a frame (T) or unit of substantially parallelepiped shape.

3. New extractor hood according to claim 1, characterised in that said cooking surface (P) is electrically powered.

4. New extractor hood according to claim 3, characterised in that said cooking surface (P) comprises a pyroceram surface with at least one electric element and at least one upper surface (P1) for supporting the food.

5. New extractor hood according to claim 4, characterised in that said upper supporting surface (P1) is a plate or grille made of cast iron or other heat conducting metal.

6. New extractor hood according to claim 4, characterised in that said upper supporting surface (P1) is made with a layer of lava stone and/or a slab of lava stone with supporting grille on top.

7. New extractor hood according to claims 1, 2, 3, 4, 5, 6, characterised in that said cooking surface (P) slides in a substantially horizontal direction, so as to be completely or partially built into said frame (T) or unit and completely or partially extracted and located in an anterior position with respect to said extraction front.
8. New extractor hood according to claim 7, characterised in that said cooking surface (P) is integral with a frontal vertical closing door (S) suitable for limiting dispersion of the fumes and vapours generated by cooking of the food positioned on said supporting surface (P1).

9. New extractor hood according to claims 1, 2, 3, 4, 5, 6, characterised in that said cooking surface (P) has a flip-down opening, i.e. it is hinged to said frame (T) near the bottom and is suitable for being positioned with said substantially horizontal supporting surface (P1) in an anterior position with respect to said extraction front.

10. New extractor hood according to claim 9, characterised in that said cooking surface (P) comprises one or more side and/or front walls suitable for limiting dispersion of the fumes and vapours generated by cooking of the food positioned on said supporting surface (P1).

11. New extractor hood according to claim 1, characterised in that said filtering device comprises at least one receptacle or reservoir (C) containing water or other filtering liquid.

12. New extractor hood according to claim 11, characterised in that said filtering device comprises one or more deflectors or ducts (C2) suitable for conveying the incoming flow of extracted air near the bottom of said reservoir (C), to maximise the time the air remains in said mass of water or filtering liquid.

13. New extractor hood according to claims 11, 12, characterised in that said reservoir (C) comprises exchanger fins (C3) to condense the humidity collected by the extracted air flow and purified as it leaves the reservoir (C).

14. New extractor hood according to claims 11, 12, 13, characterised in that the purified flow of air is re-introduced into the environment via one or more couplings or conveyor elements (D, E).
15. New extractor hood according to claims 11, 12, 13, 14, characterised in that said reservoir (C) can be extracted for changing or topping up the water or filtering liquid contained in it.

16. New extractor hood according to claim 1, characterised in that said filtering and purifying device comprises one or more activated carbon filters.
### A. CLASSIFICATION OF SUBJECT MATTER

**INV. F24C15/20**

According to International Patent Classification (IPC) or to both national classification and IPC.

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C.

See patent family annex.

### Date of the actual completion of the international search

12 March 2007

Name and mailing address of the ISA/ European Patent Office, P.B. 5815 Patentlaan 2 NL – 2280 HV Ljssel
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Authorized officer

Merk, Andreas

Date of mailing of the international search report

23/03/2007
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