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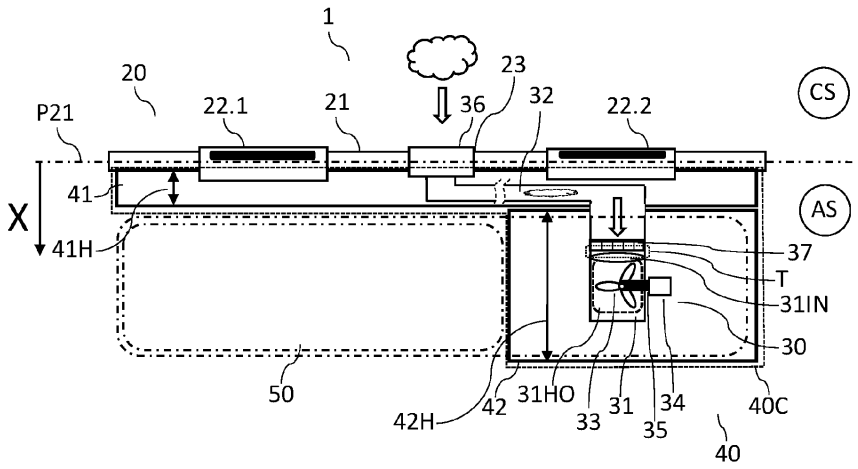
(54) COMBINATION APPARATUS

(57) The present invention relates to a combination apparatus (1) comprising a hob (20) and at least one fume extraction device (30), wherein the hob (20) comprises a cooktop plate (21) and least one cooking unit (22.1, 22.2), wherein the at least one fume extraction device (30) comprises a blower unit (31) and a flow channel (32) for guiding fumes from a cooking side (CS) of the hob (20) in the direction of the blower unit (31), wherein the combination apparatus (1) comprises a support structure (40) that is arranged on an apparatus side (AS) being opposite to the cooking side (CS) with reference to the cooktop plate (21), wherein the hob (20) and the at least one fume extraction device (30) are integrated at least in sections in the support structure (40), wherein the support structure (40) comprises a receiving section (50) being configured to arrange at least partially a drawer (60), preferably to receive at least partially a drawer (60). The present invention relates further to a kitchen furniture being configured to receive a combination apparatus (1) and comprising preferably at least one drawer (60).

Fig. 1A



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Description

[0001] The present invention relates to a household cooking appliance, i.e. a combination apparatus comprising a hob and at least one fume extraction device. The combination apparatus is configured to receive at least partially a drawer. The present invention relates further to a kitchen furniture comprising a combination apparatus.

[0002] Combination apparatuses with a hob and a fume extraction device are increasingly used for the preparation of food. In a large number of such combination apparatuses, the fume extraction device is integrated at least partially into the hob in order to suck fumes generated at the cooking side of the hob downwards through a recess, for example, in the cooktop plate of the hob.

[0003] However, it is known that such combination apparatuses require comparatively large installation space and are sometimes complex to assemble. In particular, the arrangement of flow ducts or channels and the arrangement of a blower unit take up a lot of space which cannot be used for further purposes anymore.

[0004] For example, US patent application No. US 2010/0116263 A1 describes a device for removing vapors in a direction vertically below a hob plane into an exhaust air duct. The exhaust air duct comprises flat duct elements of rectangular cross-section and is correspondingly arranged in a horizontal orientation and a vertical orientation via forming a 90° bend for integration in a kitchen unit such that space for drawers, cupboards or storage can be kept.

[0005] The combination apparatus as known from US 2010/0116263 A1 can only be mounted with a certain extent of effort, for example, as many components such as the flat duct elements have to be connected together. In addition, quadrant arc-shaped duct elements of the device for removing vapors being arranged below the hob plane have a corresponding width despite their low height, so that it is not possible to arrange, for example, a drawer in this area. In addition, the known device for removing vapors does not have its own support structure, for example, so that the respective components are only mounted on the kitchen unit what comes with mandatory compliance with tolerances.

[0006] It is hence an object of the present invention to provide a combination apparatus with a hob and a fume extraction device with improved installation space requirements for the fume extraction device such that available space can be used otherwise, i.e. for other purposes than accommodation of components of the fume extraction device.

[0007] It is a further object of the present invention to provide a kitchen furniture with such a combination apparatus.

[0008] The object is achieved by the combination apparatus according to independent claim 1 and the kitchen furniture according to claim 18. Further examples and applications of the present invention result from the dependent claims and are explained in the following description with partial reference to the figures.

[0009] A first general aspect of the present invention relates to a combination apparatus comprising a hob and at least one fume extraction device, wherein the hob comprises a cooktop plate and least one cooking unit, wherein the at least one fume extraction device comprises a blower unit and a flow channel for guiding fumes from a cooking side of the hob in the direction of the blower unit. The combination apparatus comprises a support structure that is arranged on an apparatus side being opposite to the cooking side with reference to the cooktop plate, wherein the hob and the at least one fume extraction device are integrated at least in sections in the support structure. The support structure comprises a receiving section being configured to arrange at least partially a drawer, preferably to receive at least partially a drawer.

[0010] The present invention provides a combination apparatus that is, for example, optimized or improved with regard to construction space requirements. Preferably, an installation space below the hob can be used to arrange, preferably to accommodate or receive a drawer.

[0011] Further, a combination apparatus can be provided which comprises, for example, increased stiffness and is thus more robust.

[0012] Furthermore, for example, a simplified installation, i.e. a simplified assembly of the combination apparatus in a kitchen furniture or in a kitchen unit can be ensured.

[0013] By using the combination apparatus with its support structure, it is possible, for example, to arrange, preferably to accommodate or receive, a drawer of appropriate configuration. Thus, necessary objects and tools, which are needed for cooking, can be placed in the immediate vicinity of the hob or stored in the drawer.

[0014] As regards receiving at least partially the drawer, the drawer can be, for example, received via at least one rail bearing system comprising slide rails and/or ball rails.

[0015] The support structure may be configured at least in sections essentially plate-shaped and/or essentially basket-shaped and/or essentially lattice-frame-shaped.

[0016] This ensures, for example, that individual or respective components of the combination apparatus such as induction coils, power boards, blower units, etc. can be easily and smoothly mounted on the support structure.

[0017] The support structure can extend at least in sections at different distances, preferably from the cooktop plate of the hob or from a workbench of a kitchen furniture on which the combination apparatus is mounted, and/or the support structure may be configured angled, preferably essentially right-angled, at least in sections.

[0018] This allows, for example, different configurations of receiving sections for a drawer. Depending on the use and application (e.g. private household kitchen or canteen kitchen), the combination apparatus can be configured accordingly, after which drawers with greater

depth and/or height or smaller depth and/or height can be arranged, preferably accommodated or received.

[0019] According to a further aspect of the invention, the support structure can comprise at least a first support module and at least a second support module for integration or mounting of the hob and/or the at least one fume extraction device at least in sections, wherein the at least second support module may be configured for arrangement or mounting on the at least first support module at different positions and preferably essentially flush with at least one edge or at least one rim of the at least first support module.

[0020] This allows, for example, a simplified assembly and/or a simplified installation of the combination apparatus, preferably into a kitchen furniture. The support structure may be configured modularly and/or can comprise several structure units being independent from each other.

[0021] It is possible that the at least first support module and the at least second support module may comprise an essentially L-shaped contour or are configured essentially L-shaped in a view, preferably in a front view or in a rear view, wherein the blower unit can be accommodated or received in the at least second support module forming a short web or arm of the essentially L-shaped contour.

[0022] It is alternatively possible that the at least first support module and the at least second support module may comprise an essentially T-shaped contour or are configured essentially T-shaped in a view, preferably in a front view, wherein the blower unit can be accommodated or received in the at least second support module forming a central web of the essentially T-shaped contour.

[0023] An essentially L-shaped configuration or contour of the support structure, preferably in a front view rotated through 90° or in a rear view rotated through 90° when the combination apparatus is in an installed or operating state, allows, for example, that essential components or elements of the at least one fume extraction device, preferably the blower unit, can be integrated in a section of the support structure that does not affect negatively to the configuration of the receiving section and thus to the arrangement, preferably to the receiving of the drawer.

[0024] According to a further aspect of the present invention, the at least first support module may be arranged between the hob, preferably the cooktop plate of the hob, and the at least second support module, and the at least first support module and the at least second support module may extend differently in a direction away from the hob, preferably the cooktop plate of the hob, to form the receiving section.

[0025] This allows, for example, a combination apparatus with further improved characteristics with regard to stiffness and assembling.

[0026] The extension of the at least second support module may be at least three times as great as the extension of the at least first support module. Thus, a drawer of appropriate intake volume may be provided, for example. Preferably, the drawer may be slidably mounted to the second support module of the combination apparatus.

[0027] The at least first support module and/or the at least second support module may comprise an essentially square contour or an essentially rectangular contour in a view, preferably in a bottom view or in a top view, preferably in the direction of the cooktop plate of the hob.

[0028] This makes it possible, for example, to ensure a modular and thus simplified structure of the combination apparatus. Further, space can be provided at and in the combination apparatus in which the receipt of a drawer is simplified.

[0029] Additionally, or alternatively, the at least second support module may be arranged in a corner region, preferably essentially flush with a corner region, of the at least first support module, and/or the at least second support module can be arranged essentially centrally with respect to the at least first support module and may essentially adjoin at least to an edge or to a rim of the at least first support module.

[0030] Thus, for example, it can be achieved that the at least second support module does not need to extend over a total width of the cooktop plate of the hob and/or the at least first support module.

[0031] The at least one cooking unit, preferably at least one power board and at least one heating element of the at least one cooking unit, and/or a user interface device of the combination apparatus may be integrated at least in sections in the at least first support module.

[0032] This allows, for example, further optimization of the available construction space and results in a compact design of the combination apparatus. In particular, electronic components like power boards, control units, mechanical interfaces or the like can be integrated and/or mounted into the at least first support module.

[0033] The blower unit, comprising a propeller and a motor driving the propeller via a drive shaft, can be integrated in the at least second support module, wherein the drive shaft or at least its rotational axis lies or is preferably arranged in a plane that is essentially parallel to a plane of the hob, preferably a plane of the cooktop plate of the hob.

[0034] This realizes, for example, a further compact design of the at east second support module and overall the combination apparatus. It is possible to arrange the blower unit and preferably the propeller of the blower unit accordingly such that its or a resulting rotary motion plane is arranged essentially perpendicular to the hob, preferably to the cooktop plate and/or a plane of the cooktop plate of the hob. The propeller may be configured as an airscrew.

[0035] It is possible that a filter unit comprising at least one grease filter and/or at least one odor filter may be arranged in the at least second support module, preferably in the flow channel at a transition to the blower unit,

within the at least second support module.

[0036] The filter unit may be arranged adjacent to the propeller of the blower unit.

[0037] According to a further aspect of the present invention, the at least one grease filter and/or the at least one odor filter may be configured essentially plate-shaped, and/or the at least one grease filter and the at least one odor filter can be arranged essentially in parallel to each other and/or to a plane of the hob, preferably a plane of the cooktop plate of the hob.

[0038] This allows, for example, a further optimization of the combination apparatus with regard to installation space requirements and thus space available to arrange, preferably to accommodate or receive, a drawer.

[0039] The flow channel can be configured at least in sections essentially in the shape of a flat-tube, preferably within the at least second support module, and/or the flow channel may extend essentially perpendicular to a plane of the hob, preferably to a plane of the cooktop plate of the hob, towards the blower unit, preferably at least within the at least second support module.

[0040] The use of flow channel sections being configured essentially as a flat-tube provides further, for example, reduction of required space of the combination apparatus and thus allows the provision of space for a drawer.

[0041] It is possible that the flow channel can extend at least in sections essentially along and/or essentially perpendicular to the hob, preferably to the cooktop plate of the hob, and/or may be arranged essentially centrally with respect to the hob, preferably to the cooktop plate of the hob.

[0042] An essentially central arrangement of the at least second support module may allow, for example, a drawer with an essentially U-shaped contour or central cut-out to be arranged at or preferably received by the combination apparatus.

[0043] The blower unit may comprise a flow inlet opening, wherein the flow inlet opening can be arranged in a plane that is essentially parallel to a plane of the hob, preferably a plane of the cooktop plate of the hob. This allows, for example, an optimized flow path for fumes in direction to the blower unit and further components or elements to divert the flow of fumes can be avoided.

[0044] The support structure, preferably the at least second support module, may comprise at least one bearing element, wherein the at least one bearing element may be configured to slidably support the drawer in a sliding direction.

[0045] This allows, for example, receiving the drawer by the combination apparatus and operating the drawer with reference to the combination apparatus in a predetermined or predefined manner. Furthermore, for example, a further step of mounting can be avoided.

[0046] A second general aspect of the present invention relates to a kitchen furniture, the kitchen furniture being configured to receive or comprising a combination apparatus as disclosed herein, and comprising preferably at least one drawer as disclosed herein.

[0047] It is possible that the at least one drawer may be configured essentially cuboidal at least in sections and may comprise an essentially L-shaped configuration or preferably an essentially L-shaped contour in a view, preferably in a top view or in a bottom view, preferably being formed by a cut-out of corresponding position.

[0048] The at least one drawer may be configured alternatively essentially cuboidal at least in sections and may comprises an essentially U-shaped configuration or preferably an essentially U-shaped contour in a view, preferably in a top view, preferably being formed by a cut-out of corresponding position, i.e. an essentially central position. The cut-out may be preferably configured to receive the at least second support module of the combination apparatus.

[0049] According to a further aspect of the present invention, the at least one drawer may be configured, at least in sections, essentially identically or at least similarly, or complementary to the support structure, preferably to at least one second support module of the support structure, to be arranged, preferably to be received, at least partially in the receiving section.

[0050] For example, the course of side walls of the at least one drawer can be similar or complementary to the design of corresponding opposite sections or walls of the at least one second support module.

[0051] The previously described examples and features of the present invention can be combined with each other in any way.

[0052] Further or other details and advantageous effects of the present invention are described in more detail below with reference to the attached figures:

Fig. 1A illustrates schematically a first example of a combination apparatus according to the present invention in a front view;

Fig. 1B illustrates schematically components of the combination apparatus as shown in figure 1A in a top view;

Fig. 1C illustrates schematically an example of a drawer being configured for arrangement, preferably for receiving, at least partially by the combination apparatus as schematically illustrated in figures 1A and 1B;

Fig. 2A illustrates schematically a second example of a combination apparatus according to the present invention in a front view;

Fig. 2B illustrates schematically components of the combination apparatus as shown in figure 2A in a top view;

Fig. 2C illustrates schematically an example of a drawer being configured for arrangement,

preferably for receiving, at least partially by the combination apparatus as schematically illustrated in figures 2A and 2B.

[0053] Identical or functionally equivalent components or elements are marked or labeled in the figures with the same reference signs.

[0054] For their explanation, reference is also made to the description of other examples and/or figures in order to avoid repetition.

[0055] The following detailed description of the examples shown in the figures serves as a closer illustration or exemplification and is in no way intended to limit the scope of the present invention.

[0056] Figure 1A illustrates schematically a first example of a combination apparatus 1 according to the present invention.

[0057] Respective components and units of the combination apparatus 1 have corresponding walls and/or wall sections with corresponding wall thicknesses as well as further elements, which are not described in more detail or labelled for reasons of clarity.

[0058] The combination apparatus 1 comprises a hob 20 and a fume extraction device 30. The hob 20 comprises a cooktop plate 21 and cooking units 22.1, 22.2. The cooktop plate 21 is preferably configured essentially plate-shaped and/or essentially flat. The cooktop plate 21 can be made, for example, from a glass-ceramic material. The orientation of the hob 20 and preferably of the cooktop plate 21 can be described by a plane P21. The plane P21 can be preferably a definable or determinable mid-plane of the hob 20, preferably of the cooktop plate 21. In the operating status or in an installed status of the combination apparatus 1, the cooktop plate 21 is arranged substantially horizontally.

[0059] The cooking units 22.1 and 22.2 are preferably induction cooking units 22.1, 22.2 each comprising at least an induction coil and a power board (not shown in the figures for reasons of clarity). Alternatively, the cooking units 22.1 and 22.2 can be configured differently with regard to the principle of generating heat, for example, as heating coils, gas burners or the like.

[0060] The cooking units 22.1 and 22.2 are at least partially integrated and/or mounted into the cooktop plate 21. In other words, the cooktop plate 21 comprises recesses (not identified in figure 1A) in which the cooking units 22.1 and 22.2 are accommodated or arranged at least in sections.

[0061] The combination apparatus 1 comprises further a fume extraction device 30. The fume extraction device 30 comprises a blower unit 31 as suction unit for fumes that are generated during a cooking process at the cooking side CS of the hob 20. The blower unit 31 can comprise a blower housing 31HO with a flow inlet opening 31IN through which fumes passes when the blower unit 31 is activated. The blower housing 31HO can at least accommodate the propeller 33. The flow inlet opening 31IN is in flow connection with the flow channel 32 at a transition T. Upstream of the flow inlet opening 31IN, a filter unit 37 is arranged in the flow channel 32, preferably at the transition T of the flow channel 32 to the flow inlet opening 31IN or at least adjacent thereto.

[0062] The filter unit 37 can preferably comprise at least one grease filter and/or at least one odor filter (not shown in figure 1A). The at least one grease filter and/or the at least one odor filter can be preferably configured essentially plate-shaped. More preferably, at least one grease filter and/or the at least one odor filter can be arranged essentially in parallel to each other and/or essentially parallel to the plane P21 of the cooktop plate 21.

[0063] The flow inlet opening 31IN can be characterized by a flow inlet cross-section which can comprise an essentially round, essentially oval or even an essentially rectangular, preferably essentially square, contour.

[0064] Further, the blower unit 31 comprises a propeller 33, a drive shaft 35 and a motor 34 as drive unit driving the propeller 33 via the drive shaft 35. The blower unit 31 can be preferably configured as an axial ventilator with a propeller 33 as known from the prior art. The propeller 33 can be configured as an airscrew. The motor 34 can be preferably an electric motor 34, for example, a brushless DC electric motor.

[0065] As described above, the fume extraction device 30 comprises a flow channel 32 for guiding fumes from the cooking side CS of the hob 20 in the direction of the blower unit 31. In order to extract fumes from the cooking side CS, an inlet shaft 36 is arranged at a recess 23 being formed in the cooktop plate 21. The inlet shaft 36 is in flow connection with the flow channel 32 which in turn is in flow connection with the blower unit 31.

[0066] The arrangement and configuration of the blower unit 31, the flow channel 32 and the inlet shaft 36 will be described in more detail below.

[0067] The combination apparatus 1 further comprises a support structure 40 as the main mechanical structure of the combination apparatus 1 for mounting and/or accommodating components of the hob 20 and/or the fume extraction device 30.

[0068] The support structure 40 is arranged on an apparatus side AS that is opposite to the cooking side CS with reference to the hob 20, preferably to the cooktop plate 21 or at least the plane P21 of the cooktop plate 21.

[0069] The hob 20 and the fume extraction device 30 are integrated and/or mounted at least in sections in the support structure 40 and the support structure 40 comprises a receiving section 50 that is configured to arrange, preferably to receive at least partially a drawer 60 that will be described in more detail below. The receiving section 50 can comprise bearing elements (not shown in the figures for the sake of clarity) that are configured to slidably support the drawer 60 in a sliding direction that is - relating to figure 1A - the direction of view.

[0070] As is can be retrieved from figure 1A, the support structure 40 comprises an essentially L-shaped contour 40C in a view, i.e. in a rear view rotated through 90°. The support structure 40 of the example of the combina-

tion apparatus 1 according to the present invention as schematically illustrated in figure 1A comprises a first support module 41 and a second support module 42.

[0071] The first support module 41 and the second support module 42 can each be made and/or configured as independent mechanical support structures. Preferably, the first support module 41 is connected to the second support module 42 by at least one form-fit and/or force-fit connection. The connection can be, for example, a screw connection. It is also possible that the first support module 41 is connected to the second support module 42 via at least one material-fit connection. The connection can be, for example, an adhesive joint or a welded joint.

[0072] The first support module 41 carries inter alia the cooktop plate 21 and is configured frame-shaped. In a view, preferably in a top view in direction to the cooktop plate 21, the first support module 41 comprises an essentially rectangular contour 41C (see figure 1B). The first support module 41 and/or the second support module 42 can be made, for example, from metallic material. The first support module 41 comprises a comparatively small extension away from the cooktop plate 21, i.e. an extension in the direction of the arrow labelled with "X" in figure 1A. In other words, the first support module 41 has comparatively small height 41H that can be, for example, in the range of 3cm to 8cm.

[0073] Besides carrying the cooktop plate 21, the first support module 41 can serve for accommodating or integrating at least partially the cooking units 22.1 and 22.2, i.e. the induction coils and power boards of the induction cooking units 22.1 and 22.2.

[0074] In addition, it is possible that a user interface device (not shown in figure 1A) is at least partially integrated in the cooktop plate 21 and/or at least partially arranged in the first support module 41 via a carrier unit of the first support module 41 (not shown in figure 1A).

[0075] In addition, the first support module 41 can comprise cross struts or cross beams (not shown in figures 1A and 1B) to increase overall the stiffness of the first support module 41.

[0076] As it can be further retrieved from figure 1A, the first support module 41 is arranged between the cooktop plate 21 and the second support module 42 on the apparatus side AS. In other words, the second support module 42 is arranged below the cooktop plate 21 and more preferably below the first support module 41.

[0077] The second support module 42 can be configured essentially cuboidal or can comprise an essentially cuboidal contour. The second support module 42 can be preferably configured at least in sections essentially plate-shaped and/or lattice-frame-shaped. It is alternatively possible, that the second support module 42 is configured basket-shaped. The second support module 42 extend differently in the direction X away from the hob 20, preferably from the cooktop plate 21 than the first support module 41. As it can be retrieved from figure 1A, the height 42H of the second support module 42 is greater than the height 41H of the first support module 41. Preferably, the height 42H of the second support module 42 is at least three times greater than the height 41H of the first support module 41.

[0078] Figure 1B illustrates schematically components of the combination apparatus 1 as shown in figure 1A in a top view.

[0079] As it can be retrieved from figures 1A and 1B, the second support module 42 is preferably arranged below the first support module 41 in a corner region 41CR of the first support module 41. In other words, the second support module 42 adjoins to at least one edge or to at least one rim 41R of the first support module 41 which allows a corresponding arrangement of components of preferably the fume extraction device 30 as it will be described below.

[0080] The second support module 42 is configured to preferably accommodate or integrate the blower unit 31 of the fume extraction device 30, the filter unit 37 and a predominant part of the flow channel 32. Preferably and as described above, the blower unit 31 comprises a blower housing 31HO with the flow inlet opening 31IN. The blower housing 31HO and/or at least the flow inlet opening 31IN is arranged at a rim 42R of the second support module 42. The rim 42R and thus the blower unit 31 is located on the opposite (rear) side to the arrangement side, preferably to the receiving side, for the drawer 60.

[0081] The blower unit 31 is further arranged in the second support module 42 such that the propeller 33 is oriented in an upright position according to which a plane of rotary motion of the propeller 33 is substantially perpendicular to the plane P21 of the cooktop plate 21. In other words, the drive shaft 35 for driving the propeller 33 or its resulting rotational axis lies or is arranged preferably in plane that is essentially parallel to the plane P21 of the cooktop plate 21.

[0082] The blower unit 31 and thus the blower housing 31HO can further be arranged in the second support module 42 such that the propeller 33 is located at an edge or at a rim 42R of the second support module 42. In addition, at least the section of the flow channel 32 within the second support module 42 with the correspondingly arranged filter unit 37 as described above can also be arranged at an edge or at a rim 42R of the second support module 42.

[0083] The flow channel 32 is configured at least in sections in the shape of a flat-tube, preferably within the second support module 42. Further, the flow channel 32 can be configured angled, preferably configured essentially right-angled at least in sections to the transition into the inlet shaft 36.

[0084] It is possible that the flow channel 32 is formed at least in sections by the second support module 42.

[0085] This allows the provision of space of corresponding size and shape for the receiving section 50 such that a drawer 60 can be arranged at least partially in the receiving section 50, preferably received at least partially by the receiving section 50.

[0086] The receiving section 50 of the combination apparatus 1 being preferably configured to receive at least partially the drawer 60 (not shown in further detail in figures 1A and 1B for reasons of clarity) and is thus arranged below the first support module 41 and in the region adjacent to the second support module 42.

[0087] By the configuration of the first support module 41 and the second support module 42 and the arrangement of the second support module 42 towards the first support module 41 preferably in a corner region 41CR (and further the blower unit 31 and the flow channel 32 within the second support module 42), additional space or room for a drawer 60 can thus be provided.

[0088] Figure 1C illustrates schematically an example of a drawer 60 being configured for arrangement, preferably for receiving at least partially by the combination apparatus 1 as schematically illustrated in figures 1A and 1B. The drawer 60 is shown in a top view, i.e. in direction of the bottom 60B of the drawer 60.

[0089] As it can be retrieved from figure 1C, the drawer 60 comprises more or less an essentially L-shaped or at least an angled contour 60C in a corresponding view.

[0090] Furthermore, the contour 42C of the second support module 42 is shown in figure 1C for better illustration.

[0091] Figure 2A illustrates schematically a second example of a combination apparatus 1 according to the present invention in a front view.

[0092] In the combination apparatus 1 shown in figure 2A, the second support module 42 is arranged or mounted essentially centrally, i.e. centered and, in addition, located at an edge or rim 41R of the first support module 41 below the first support module 41, i.e. opposite to the side of the first support module 41 where the cooktop plate 21 is carried.

[0093] Figure 2B illustrates schematically components of the combination apparatus 1 as shown in figure 2A in a top view.

[0094] Regarding the second example of the present invention, the flow channel 32 is further optimized since it extends merely with one deflection to the blower unit 31 as it can be retrieved from figures 2A and 2B.

[0095] Figure 2C illustrates schematically an example of a drawer 60 being configured for arrangement, preferably for receiving at least partially by the combination apparatus 1 as schematically illustrated in figures 2A and 2B.

[0096] As it can be retrieved from figure 2C, the drawer 60 comprises an essentially U-shaped contour 60C. In other words, the drawer 60 has a cut-out that is located essentially centrally, i.e. in the middle of the drawer with regard to the width 60W of the drawer 60.

[0097] Furthermore, the contour 42C of the second support module 42 is shown in figure 2C for better illustration.

[0098] The present invention is not limited to the examples described above. Rather, a large number of variants and modifications are possible, which also make use of the inventive idea and therefore fall within the scope of protection.

List of reference signs

[0099]

1	combination apparatus
20	hob
21	cooktop plate
22.1	cooking unit
22.2	cooking unit
23	recess
30	fume extraction device
31	blower unit
31HO	blower housing
31IN	flow inlet opening
32	flow channel
33	propeller
34	motor
35	drive shaft
36	inlet shaft
37	filter unit
40	support structure
40C	contour
41	first support module
41C	contour
41CR	corner region
41H	height of the first support module
41R	edge/rim
42	second support module
42C	contour
42H	height of the second support module
42R	edge/rim
50	receiving section
60	drawer
60B	bottom (wall)
60C	contour
60W	width of drawer
AS	apparatus side
CS	cooking side
P21	plane related to the cooktop plate
X	direction

Claims

1. A combination apparatus (1) comprising a hob (20) and at least one fume extraction device (30),

wherein the hob (20) comprises a cooktop plate (21) and least one cooking unit (22.1, 22.2),
wherein the at least one fume extraction device (30) comprises a blower unit (31) and a flow channel (32) for guiding fumes from a cooking side (CS) of the hob (20) in the direction of the blower unit (31),
wherein the combination apparatus (1) compris-

es a support structure (40) that is arranged on an apparatus side (AS) being opposite to the cooking side (CS) with reference to the cooktop plate (21),
wherein the hob (20) and the at least one fume extraction device (30) are integrated at least in sections in the support structure (40),
wherein the support structure (40) comprises a receiving section (50) being configured to arrange at least partially a drawer (60), preferably to receive at least partially a drawer (60).

2. The combination apparatus (1) according to claim 1, wherein the support structure (40) is configured at least in sections plate-shaped and/or basket-shaped and/or lattice-frame-shaped.

3. The combination apparatus (1) according to claim 1 or 2,
wherein the support structure (40) extends at least in sections at different distances, preferably from the cooktop plate (21) of the hob (20), and/or is configured angled, preferably right-angled, at least in sections.

4. The combination apparatus (1) according to any one of the preceding claims,
wherein the support structure (40) comprises at least a first support module (41) and at least a second support module (42) for integration of the hob (20) and/or the at least one fume extraction device (30) at least in sections, wherein the at least second support module (42) is configured for arrangement on the at least first support module (42) at different positions and preferably flush with at least one edge or at least one rim (41R) of the at least first support module (41).

5. The combination apparatus (1) according to claim 4, wherein the at least first support module (41) and the at least second support module (42) comprise an L-shaped contour (40C) in a view, preferably in a front view or in a rear view, wherein the blower unit (31) is accommodated in the at least second support module (42) forming a short web of the L-shaped contour (40C).

6. The combination apparatus (1) according to claim 4, wherein the at least first support module (41) and the at least second support module (42) comprise a T-shaped contour (40C) in a view, preferably in a front view, wherein the blower unit (31) is accommodated in the at least second support module (42) forming a central web of the T-shaped contour (40C).

7. The combination apparatus (1) according to any one of the preceding claims 4 to 6,
wherein the at least first support module (41) is arranged between the hob (20), preferably the cooktop plate (21) of the hob (20), and the at least second support module (42), and
wherein the at least first support module (41) and the at least second support module (42) extend differently in a direction (X) away from the hob (20), preferably the cooktop plate (21) of the hob (20), to form the receiving section (50).

8. The combination apparatus (1) according to claim 7, wherein the extension of the at least second support module (42) is at least three times as great as the extension of the at least first support module (41).

9. The combination apparatus (1) according to any one of the preceding claims 4 to 8,
wherein the at least first support module (41) and/or the at least second support module (42) comprises a square contour (41C, 42C) or a rectangular contour (41C, 42C) in a view, preferably in a bottom view or in a top view, preferably in the direction of the cooktop plate (21) of the hob (20), and/or
wherein the at least second support module (42) is arranged in a corner region (41CR), preferably flush with a corner region (41CR), of the at least first support module (41), and/or
wherein the at least second support module (42) is arranged centrally with respect to the at least first support module (41) and adjoins at least to an edge or to a rim (41R) of the at least first support module (41).

10. The combination apparatus (1) according to any one of the preceding claims 4 to 9,
wherein the at least one cooking unit (22.1, 22.2, 22.3, 22.4), preferably at least one power board and at least one heating element of the at least one cooking unit (22.1, 22.2), and/or a user interface device of the combination apparatus (1) is integrated at least in sections in the at least first support module (41).

11. The combination apparatus (1) according to any one of the preceding claims 4 to 10,
wherein the blower unit (31), comprising a propeller (33) and a motor (34) driving the propeller (34) via a drive shaft (35), is integrated in the at least second support module (42), wherein the drive shaft (35) is preferably arranged in a plane that is parallel to a plane (P21) of the hob (20), preferably a plane (P21) of the cooktop plate (21) of the hob (20).

12. The combination apparatus (1) according to any one of the preceding claims 4 to 11,
wherein a filter unit (37) comprising at least one grease filter and/or at least one odor filter is arranged

in the at least second support module (42), preferably in the flow channel (32) at a transition (T) to the blower unit (31), within the at least second support module (42).

13. The combination apparatus (1) according to claim 12,
wherein the at least one grease filter and/or the at least one odor filter is configured plate-shaped, and/or wherein the at least one grease filter and the at least one odor filter are arranged in parallel to each other and/or to a plane (P21) of the hob (20), preferably a plane (P21) of the cooktop plate (21) of the hob (20).

14. The combination apparatus (1) according to any one of the preceding claims,
wherein the flow channel (32) is configured at least in sections in the shape of a flat-tube, preferably within the at least second support module (42), and/or wherein the flow channel (32) extends perpendicular to a plane (P21) of the hob (20), preferably to a plane (21) of the cooktop plate (21) of the hob (20), towards the blower unit (31), preferably at least within the at least second support module (42).

15. The combination apparatus (1) according to any one of the preceding claims,
wherein the flow channel (32) extends at least in sections along and/or perpendicular to the hob (20), preferably to the cooktop plate (21) of the hob (20), and/or is arranged centrally with respect to the hob (20), preferably to the cooktop plate (2) of the hob (20).

16. The combination apparatus (1) according to any one of the preceding claims,
wherein the blower unit (31) comprises a flow inlet opening (31IN), wherein the flow inlet opening (31IN) is arranged in a plane that is parallel to a plane (P21) of the hob (20), preferably a plane of the cooktop plate (21) of the hob (20).

17. The combination apparatus (1) according to any one of the preceding claims,
wherein the support structure (40) comprises at least one bearing element, wherein the at least one bearing element is configured to slidably support the drawer (60) in a sliding direction.

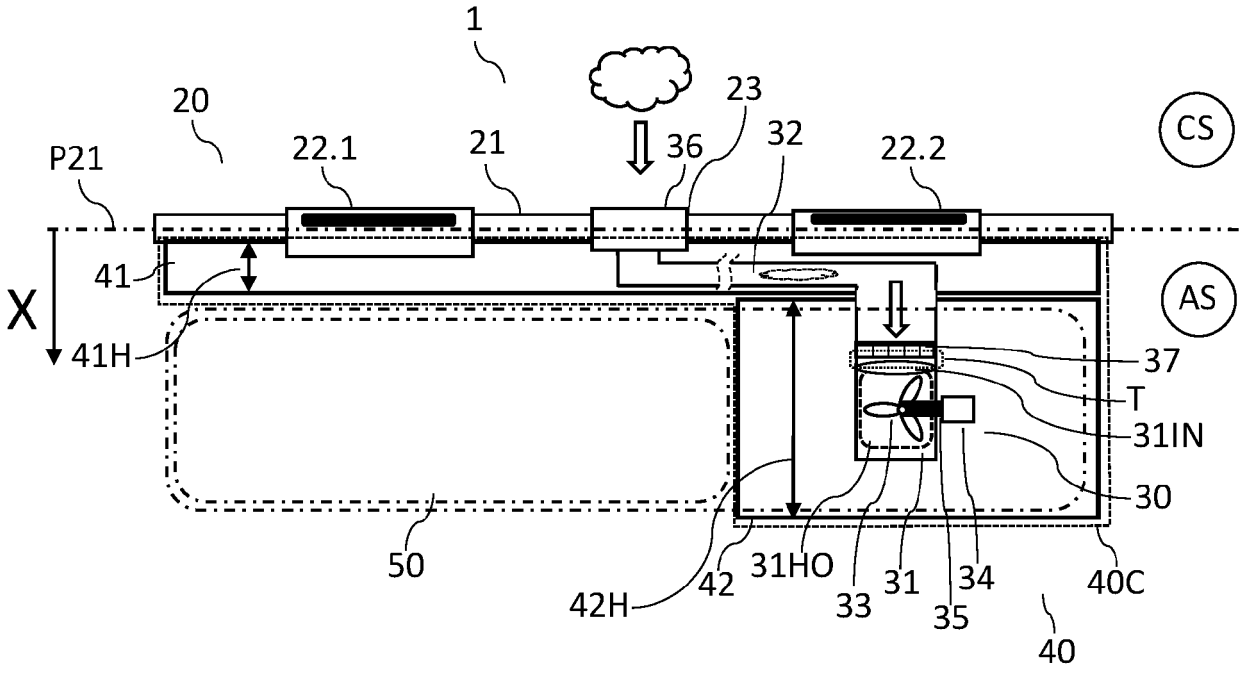
18. A kitchen furniture, the kitchen furniture being configured to receive a combination apparatus (1) according to any one of the preceding claims, and comprising preferably at least one drawer (60).

19. The kitchen furniture according to claim 18,
wherein the at least one drawer (60) is configured cuboidal at least in sections and comprises a L-shaped configuration or preferably an L-shaped contour (60C) in a view, preferably in a top view or in a bottom view.

20. The kitchen furniture according to claim 18,
wherein the at least one drawer (60) is configured cuboidal at least in sections and comprises a U-shaped configuration or preferably a U-shaped contour (60C) in a view, preferably in a top view.

21. The kitchen furniture according to any one of the preceding claims 18 to 20,
wherein the at least one drawer (60) is configured, at least in sections, identically or at least similarly, or complementary to the support structure (40), preferably to at least one second support module (42) of the support structure (40), to be arranged, preferably to be received, at least partially in the receiving section (50).

Fig. 1A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22.2
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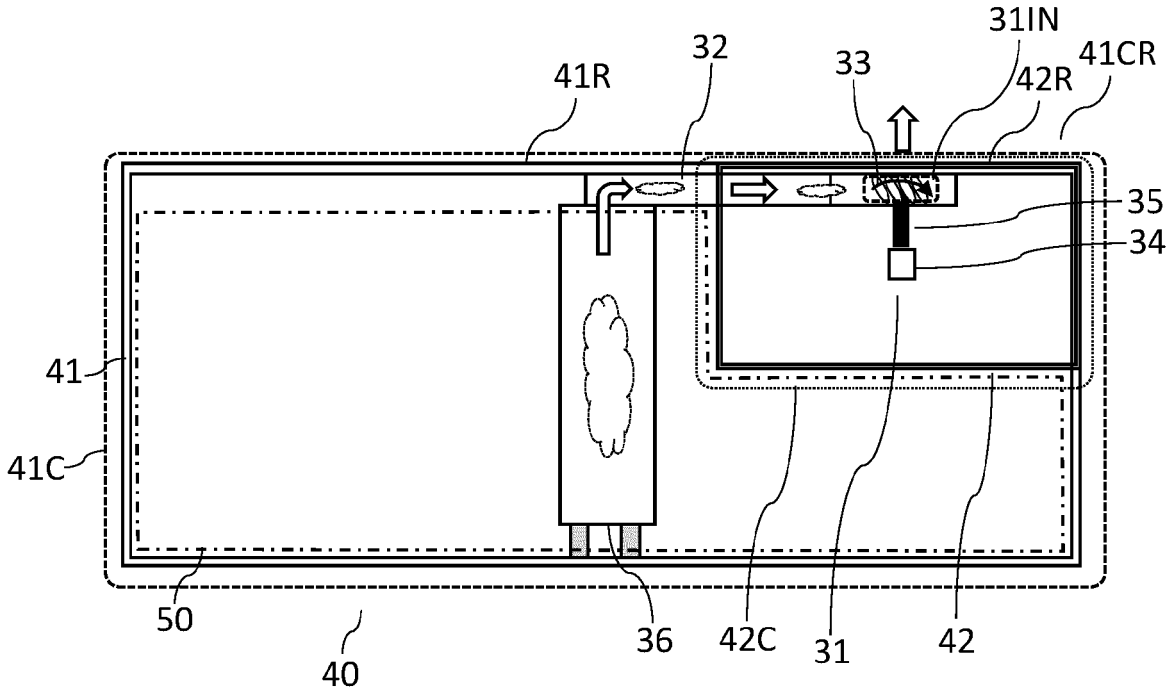
42H
42
31HO
33
31
34
35
40C
40

Fig. 1B


41R
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41C
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42C
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Fig. 1C

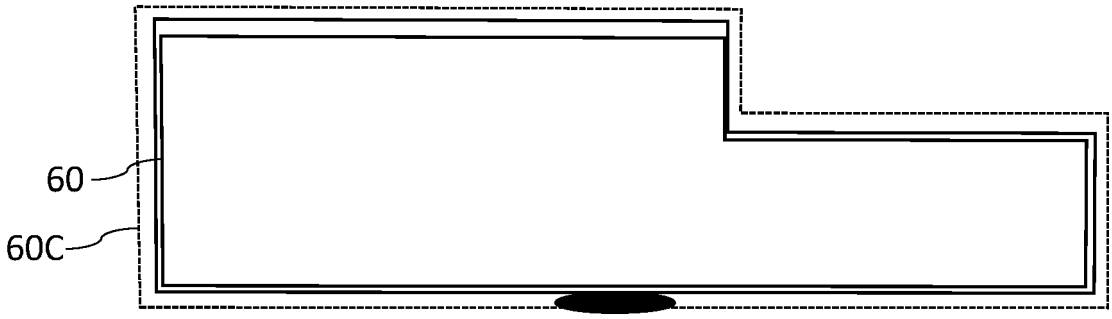

Fig. 2A

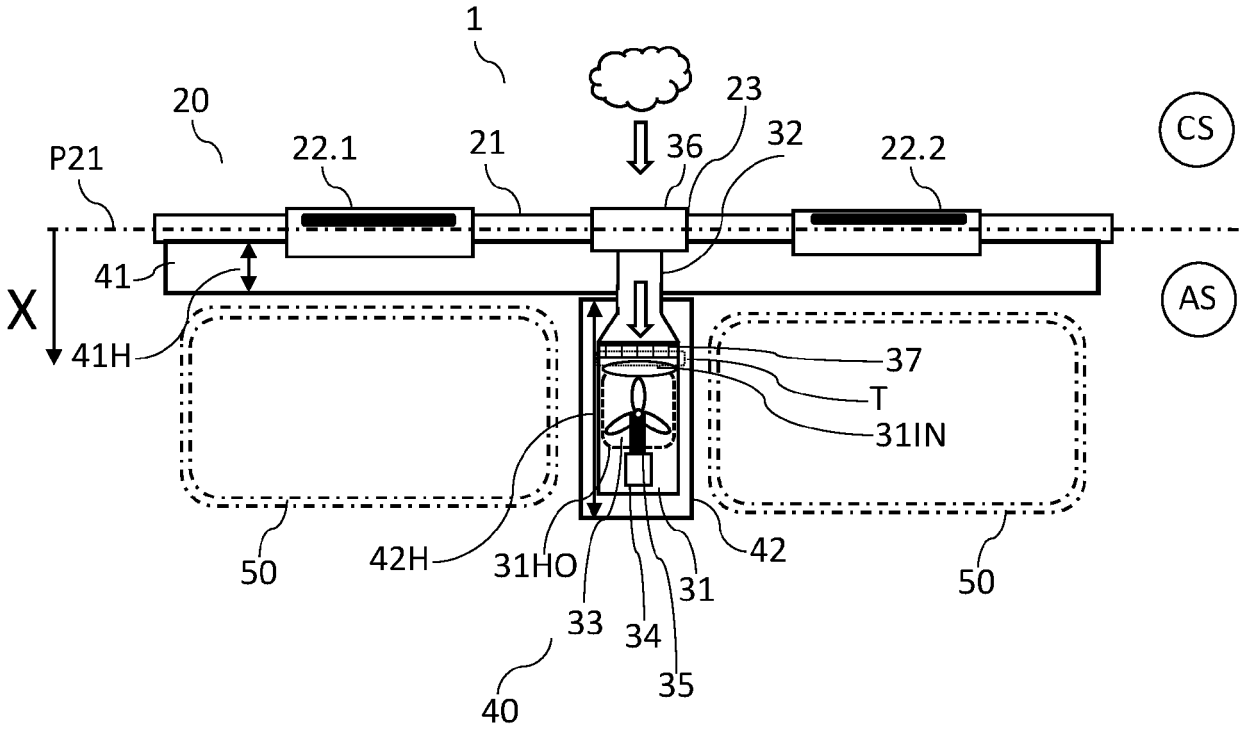
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Fig. 2B

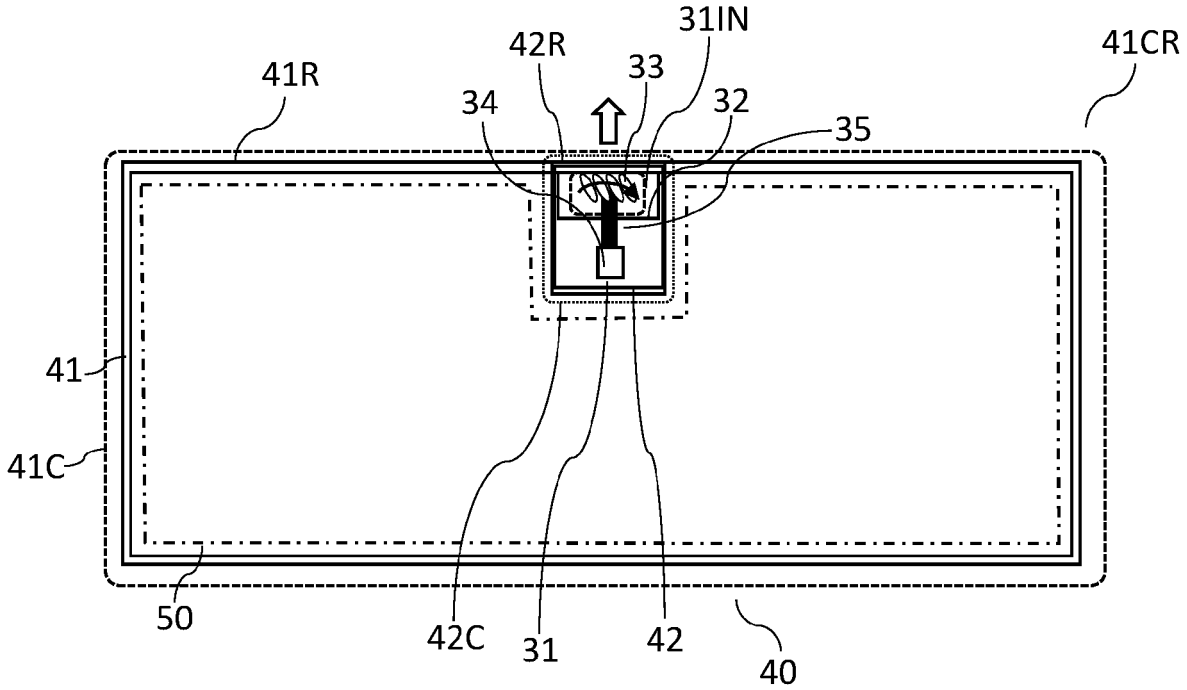
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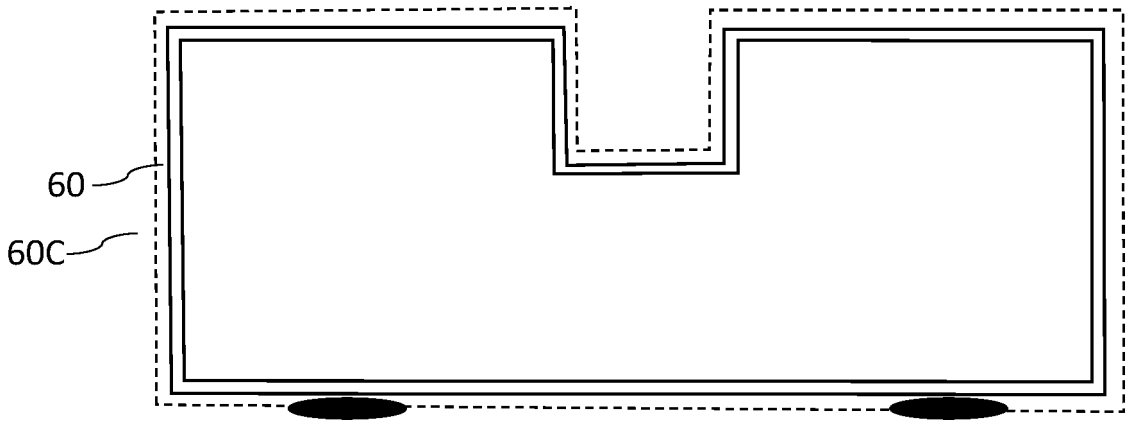
Fig. 2C



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EUROPEAN SEARCH REPORT

Application Number
EP 21 20 5145

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	DE 10 2019 202088 A1 (BRUCKBAUER WILHELM [DE]) 20 August 2020 (2020-08-20) * paragraphs [0105], [0130]; claim 1; figures 7,8 *	1-17	
X	EP 3 767 184 A1 (INTELL PROPERTIES B V [NL]) 20 January 2021 (2021-01-20)	18-21	
A	* figure 6 *	1-17	
X	WO 2018/130916 A1 (ELICA SPA [IT]) 19 July 2018 (2018-07-19)	18-21	
A	* figure 2 *	1-17	
A	US 2004/056569 A1 (MCGILTON JAMES [US]) 25 March 2004 (2004-03-25) * figures 1-3 *	19-21	
A	EP 2 353 442 A1 (NINKAPLAST GMBH [DE]) 10 August 2011 (2011-08-10) * figure 1 *	19-21	TECHNICAL FIELDS SEARCHED (IPC) F24C A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 July 2022	Meyers, Jerry

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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Application Number
EP 21 20 5145

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 21 20 5145

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-17

A combination apparatus comprising a hob, at least one fume extraction device and a support structure

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2. claims: 18-21

A kitchen furniture

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 21 20 5145

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REFERENCES CITED IN THE DESCRIPTION

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