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(54) **HOUSEHOLD APPLIANCE AND METHOD FOR DETACHING A CONTAINER FROM A HOUSING WALL OF A HOUSEHOLD APPLIANCE**

(57) The invention relates to a household appliance (10) comprising or being configured to be equipped with a container (58) for reception and/or collection of substances. The household appliance (10) further comprises a housing (28) with a housing wall (28e). The container (58) is detachably connected to the housing wall (28e) of the household appliance (10). The housing (28) or housing wall (28e) includes at least one recess for receiving or providing space for at least a part of the container (58). The container (58) is configured to be detached from the housing wall (28e) by a first and a second detaching movement. The first detaching movement is configured to be performed in a single plane and com-

prises a transfer of the container (58) from a first position (P1) or first orientation relative to the housing wall (28e) to a second position (P2) or second orientation relative to the housing wall (28e) without moving away the container (58) from the housing wall (28e). The second detaching movement comprises a transfer of the container (58) to a third position, in which the container (58) is detached and/or distant from the housing wall (28e).

Further disclosed are a household appliance (10) according to a second aspect of the present invention as well as a method for detaching a container (58) from a housing wall (28e) of a household appliance (10).

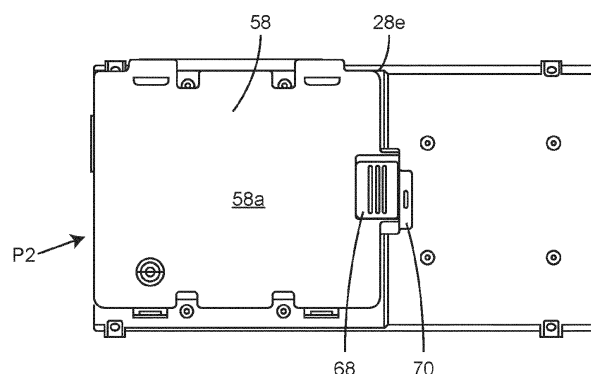


FIG. 8c

Description

[0001] The present invention relates to a household appliances comprising or being configured to be equipped with a container for reception and/or collection of substances. The present invention relates further to a method for detaching a container from a housing wall of a household appliance.

[0002] In the business of household appliances containers forming liquid collectors are known, especially in the technical field of combination apparatuses, which include a hob and an extraction device for extraction of cooking fumes. Such liquids to be collected by the containers may specifically be the result of a boiling over during a cooking process. However, the handling of such containers may be difficult, specifically with regard to emptying the collected liquids and it may well happen that collected liquids are spilled.

[0003] In order to reduce the risk of spillages during an emptying of collected liquids to some extent, EP 3 951 270 A1 discloses different examples for collection devices for spilled liquids, specifically collection devices, which are detachably connected to a housing wall of the household appliance and which are designed to be removed from the housing wall for their emptying.

[0004] It is an object of the present invention to provide an improved household appliance with a detachable container for reception and/or collection of substances, wherein the container is connected to the housing wall allowing its detachment for the emptying process in such a way that the risk of spillage is further reduced or avoided. According to a more specific object of the present invention, the detaching movement, particularly the entire emptying process, shall be performable with only one hand. It is a further object of the present invention to provide a method for detaching a container from a housing wall of a household appliance, in a way that substances, particularly liquid, collected in the container are not spilled during the emptying process, which detachment of the container shall be performable in a simple way.

[0005] According to a first and a second aspect of the present invention, the object is achieved by the household appliance according to claims 1 and 10. The object is further achieved, according to a third aspect of the present invention, by the method for detaching a container from a housing wall of a household appliance according to claim 14. 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.

[0006] According to the first aspect of the present invention, a household appliance is provided, which comprises or is configured to be equipped with a container for reception and/or collection of substances. The household appliance may be any kitchen appliance and/or any fluid-carrying appliances, but more particularly, the household appliance is a combination appliance including a cooking hob and an extraction device, adapted for

performing cooking processes and configured for coping with boil-over situations. The household appliance further comprises a housing with a housing wall. More specifically, the housing wall is a bottom wall of the housing.

5 The container is detachably connected to the housing wall of the household appliance. The housing or housing wall includes at least one recess for receiving or providing space or a passage opening for at least a part of the container. The container is configured to be detached from the housing wall by a first detaching movement and a second detaching movement. The first detaching movement is configured to be performed in a single plane and comprises a transfer of the container from a first position or first orientation relative to the housing wall to a second position or second orientation relative to the housing wall without moving away the container from the housing wall. The first detaching movement in particular comprises a translational or rotatory motion. The second detaching movement comprises a transfer of the container to a third position, in which the container is detached and/or distant from the housing wall. The second detaching movement may be executable by a manual operation only, but preferably it is supported by gravity. The third position is in particular assumable in a movement at least approximately orthogonally to the housing wall. In addition, or as an alternative, the third position may be assumable in a movement towards a lower level.

[0007] In this sense, the present invention provides a household appliance with a detachable container for reception and/or collection of substances, particularly fluids, that can be easily installed and handled in connection with a housing wall of the household appliance such that, for example, the container can be emptied from the substances by a manual operation using one hand only, wherein the container is removable entirely from an installation space of the household appliance, more specifically from a kitchen cabinet, with said one-hand operation. Accordingly, there is less space is needed in the container for draining the liquid from the container.

[0008] According to an embodiment, the container is at least approximately horizontally aligned, when the container is in the first position or orientation and in the second position or orientation, which first and second positions or orientations may be situated in an unchanged horizontal plane. Preferably, the container is also at least approximately horizontally aligned, when the container is in the third position. With such at least approximately horizontal alignment, in particular consistently maintained during movements between first and second position or orientation as well as third position, the container is detachable from the housing walls without or with an only small tilting movement, so that the risk of spillage may be kept on a very low level.

[0009] More specifically, the container comprises a bottom wall and a side wall of closed circumferential configuration to form a collection space or a container volume of the container. The side wall particularly protrudes from or sticks out of the bottom wall, preferably sticking out or

protruding perpendicularly from the bottom wall, and forms an opening of the container, which opening preferably provides an access for the substances to be collected. Moreover, at least a part of the side wall of the container is configured to penetrate the recess of the housing wall of the household appliance.

[0010] The bottom wall of the container may protrude from the border defined by the outer surface of the circumferential side wall, more specifically extend beyond a base area of the collection space or container volume as defined by the circumferential side wall. Said protruding area of the bottom wall may form a contact surface to lay on or to abut an outer surface of the housing wall, particularly the bottom wall of the household appliance, specifically at an edge of the recess.

[0011] In some implementations, in order to provide or at least support a spillage-free handling, the container is dimensioned such that the ratio between a base area of the collection space or container volume and the height of the side wall of the container is determined by one to at least zero point zero seven percent, preferably by one to at least zero point one percent, more preferably by one to at least zero point one five percent. This dimensioning ensures a collection of a sufficient amount of substances, particularly a sufficient liquid volume, which is preferably at least as high as required by specifications and/or standards to comply with in the household appliances business and as particularly reviewed and certified by testing institutes. With such dimensioning, particularly required volumes of at least half a litre of collected liquids may be configurable.

[0012] According to one specific embodiment, the container and/or the housing wall is or are configured to enable a lifting motion of the container. The lifting motion is performable for transferring the container from a connected position, particularly a resting position, to an elevated position. The elevated position is advantageously configured to enable the first detaching movement or to facilitate the performance of the first detaching movement. More specifically, the lifting motion is performable prior to the first detaching movement.

[0013] The household appliance or more specifically the housing wall and/or the container may further be characterized by a limit stop for a limitation of the lifting motion. Said limit stop is preferably a stop surface. More preferably, at least a part of said stop surface forms or includes a sliding surface configured for supporting the first detaching movement. Supporting the detaching movement particularly means, that the first detaching movement is performable in a guided way, specifically by avoiding spillage of the collected liquid.

[0014] In particular, the container comprises at least one mounting hook, preferably at least two mounting hooks, more preferably at least four mounting hooks, configured to engage with a section of the housing wall for a suspended connection of the container to the housing wall. The engagement between the at least one mounting hook and the section of the housing wall is dis-

connected during performance of the first detaching movement and/or during performance of the lifting motion of the container. Said section is in particular arranged on an inner surface of the housing wall, which inner surface forms a contact surface between the at least on mounting hook and the section of the housing wall.

[0015] In some implementations, at least a first one of the section of the housing wall and the at least one hook, which may be either the section of the housing wall or the at least one hook, but which is preferably both the section of the housing wall and the at least one hook, comprises at least one elevation, which faces the second one of the section of the housing wall and the at least one hook at their contact surface. The at least one elevation forms a stop element and provides a safety element, which prevents or limits an unintended actuation of the first detaching movement, more specifically by means of a stopping function or event by counteracting elevations arranged on both the section of the housing wall and the at least one mounting hook. Moreover, the height of the previously mentioned lifting motion is preferably at least equal to the height of the elevation or at least the lower one of the plurality of elevations.

[0016] The dimensions of the recess and of the side wall of the container may be selected in a way that the first detaching movement is performable at least to such extent that the second detaching movement is enabled. In more detail, the outer dimensions of the circumferential side wall, on the one hand, and the recess area, which encompasses the circumferential side wall, may be aligned with each other in a way so as to enable a motion of the container or at least of its side wall in parallel to the housing wall surface at least in one direction, specifically in the direction of the first detaching movement.

[0017] According to the second aspect of the present invention, a household appliance is provided, which comprises or is configured to be equipped with a container for reception and/or collection of substances. The household appliance may be any kitchen appliance and/or any fluid-carrying appliances, but more particularly, the household appliance is a combination appliance including a cooking hob and an extraction device, adapted for performing cooking processes and configured for coping with boil-over situations. The household appliance further comprises a housing with a housing wall. More specifically, the housing wall is a bottom wall of the housing. The container is detachably connected to the housing wall of the household appliance. The housing or housing wall includes at least one recess for receiving or providing space or a passage opening for at least a part of the container. The container is configured to be detached from the housing wall by a first detaching movement and a second detaching movement. The first detaching movement comprises a transfer of the container from a first position relative to the housing wall to a second position relative to the housing wall. The second position is an elevated position compared to the first position. The container is further configured in that during, at the end

of or after the first detaching movement, a release mechanism is triggered or triggerable, when the container approaches or assumes the second position. Finally, the second detaching movement comprises a transfer of the container to a third position, in which the container is detached and/or distant from the housing wall. The second detaching movement is enabled to be carried out after the triggering of the release mechanism, and it may be executable by a manual operation only, but preferably it is supported by gravity. The third position is in particular assumable in a movement at least approximately orthogonally to the housing wall. In addition, or as an alternative, the third position may be assumable in a movement towards a lower level.

[0018] More specifically, the household appliance which is designed according to the second aspect of the present invention, comprises a detachment mechanism for detaching the container from the housing wall, which detachment mechanism is operable similar to a pressure mechanism of a ballpoint, i.e. including an initial lifting motion and a following lowering motion. Any specific embodiment, which may form a preferred solution of the household appliance, favourably comprises any one of the individual features of the embodiment according to first aspect of the invention, as herein disclosed and as far as applicable for the embodiment according to the second aspect of the present invention.

[0019] In this sense, according to the second aspect of the present invention, also a household appliance is provided having a detachable container for reception and/or collection of substances, particularly fluids, that can be easily installed and handled in connection with a housing wall of the household appliance such that, for example, the container can be emptied from the substances by a manual operation using one hand only, wherein the container is removable entirely from an installation space of the household appliance, more specifically from a kitchen cabinet, with a one-hand operation. Accordingly, there is less space needed in the container for draining the liquid from the container.

[0020] A particularly specific embodiment provides for a container and/or a housing wall, which comprises or comprise a safety mechanism including at least one locking unit configured to disable, in a first state of the at least one locking unit, or to enable, in a second state of the at least one locking unit, the executability of the first detaching movement. The safety mechanism, in particular the at least one locking unit, comprises a slide lock or a twist lock mechanism including a slide lock element or twist lock element, which interacts with a slide stopping means or a twist stopping means. Notably, the slide lock element or twist lock element may be arranged at the container and the slide stopping means or the twist stopping means may be arranged at the housing wall. But a solution vice versa, i. e. the slide lock element or twist lock element being arranged at the housing wall and the slide stopping means or twist stopping means being arranged at the container, may also be feasible. It is noted that the just

described safety mechanism may be a first safety mechanism, wherein at least a second safety mechanism may be included in the household appliance, too.

[0021] The household appliance according to the first or second aspect of the present invention may be further specified in that the slide lock element or twist lock element is configured to engage a cut-out zone or an indentation or a recessed area of the housing wall in a locking position and, furthermore, in that the slide lock element or twist lock element is configured to be positioned in a position pulled out of the cut-out zone or the indentation in the unlocking position. As an alternative, the slide lock element or twist lock element may be configured to engage a cut-out zone or an indentation or a recessed area of the bottom wall of the container in a locking position, and, furthermore, the slide lock element or twist lock element may be configured to be positioned in a position pulled-out of from the cut-out zone or the indentation or the recessed area in the unlocking position.

[0022] According to embodiments, in order to further increase the safety level, i. e. by further limiting the risk of an unintended detachment of the container, the safety mechanism, particularly the first safety mechanism, comprises an overstroke lifting and shifting mechanism or device configured to enable a shifting of the slide lock element or a twisting of the twist lock element only after an overstroke lifting movement performable onto the slide lock element or twist lock element. Particularly, a resetting force may be provided, which prevents an unintended shifting or twisting and which may be based on spring load or on gravity. As an alternative, the safety mechanism, particularly the first safety mechanism, may comprise a snap-in locking device, which is arranged at or which acts on the slide lock element or the twist lock element, wherein the snap-in locking device is configured to enable a shifting of the slide lock element or a twisting of the twist lock element only by overcoming a snap coupling. Said snap-in locking device more specifically comprises at least one an elevated area, preferably a rib-shaped area.

[0023] The afore-described safety mechanisms either with overstroke lifting and shifting mechanism or with snap-in locking device may be a second safety mechanism, which may be provided in addition to the first safety mechanism. As a matter of fact, said second safety mechanism may be cumulative with the first safety mechanism, wherein second safety mechanism is configured to prevent the first safety mechanism to be overcome.

[0024] According to the third aspect of the present invention, a method for detaching a container from a housing wall of a household appliance is provided. Said container is adapted and/or provided to receive and/or to collect substances, particularly liquids. The housing wall is preferably a bottom wall of the housing of the household appliance. The household appliance is particularly designed according to any one of the herein disclosed embodiment. The housing wall includes at least one recess for receiving or providing space for at least a part

of the container. During the detachment process at least a part of the container performs a first detaching movement and a second detaching movement. During the first detaching movement, which in particular comprises a translational or rotatory motion, the container moves from a first position or first orientation relative to the housing wall to a second position or second orientation relative to the housing wall without moving away from the housing wall. During the second detaching movement, which is preferably supported by gravity, the container moves to a third position, in which the container is detached and/or arranged distant from the housing wall. The starting point of the second detaching movement is preferably the second position.

[0025] The household appliance may comprise a safety mechanism for a prevention of unintended detachment of the container. Said safety mechanism comprises a slide lock or a twist lock mechanism including a slide lock element or twist lock element. The first detaching movement, which is executed by the at least a part of the container, particularly by the entire container, is only executable or executed after an unlocking movement of the slide lock element or of the twist lock element. With the unlocking movement the slide lock element or the twist lock element moves from a locking position to an unlocking position. The safety mechanism may be designed in that way that it automatically returns to the locking position, but preferably, the slide lock element or the twist lock element remains in the unlocking position after the unlocking movement. With the slide lock element remaining in the unlocking position, the intended one-hand operation is further facilitated.

[0026] According to a specific embodiment of the method according to the present invention, the safety mechanism includes a slide lock element, which performs a first translational movement, wherein a second translational movement is defined by the first detaching movement. The first translational movement is executed in a direction different from the second translational movement. More specifically, the first translational movement is at least approximately perpendicular to the second translational movement.

[0027] The previously described examples and features of the present invention can be combined with each other in any way. Novel and inventive features of the present invention are set forth in the appended claims.

[0028] The present invention will be described in further detail with reference to the drawings, in which

Fig. 1 is a perspective view of a general setup of a combination appliance comprising a cooking hob and a downdraft extraction device installed in a kitchen cabinet, wherein the combination appliance is structured according to a first example;

Fig. 2 is a cross-sectional perspective view of the disassembled combination appliance

of Fig. 1 with a frontal surface cut away;

Fig. 3 is a top perspective view of a second example of a combination appliance;

Fig. 4 is a bottom perspective view of the combination appliance according to Fig. 3 rotated upside down;

Fig. 5 is a perspective view of a fluid collector for collection of liquids removed from the bottom wall of the extraction device;

Figs. 6a...c are detail views of the fluid collector according to Fig. 5 implemented in the combination appliance according to Figs. 3 and 4 illustrating a sequence of positions of a mounting hook of the fluid collector relative to a contact section of the bottom wall of the extraction device;

Fig. 7 is an enlarged detail view of detail VII indicated in Fig. 6b; and

Figs. 8a...c are detail views of detail VIII, indicated in Fig. 4, illustrating a sequence of positions of a slide lock element and the fluid collector of Fig. 5 during the detachment process.

[0029] In all figures the same or equivalent part are marked with the same reference numerals.

[0030] Fig. 1 illustrates a general setup of a combination appliance 10 comprising a cooking hob 12 and a downdraft extraction device 14 installed in a kitchen cabinet 16. The combination appliance 10 illustrated in Figs. 1 and 2 presents a structure of a combination appliance 10 according to a first example. In general, and as shown in Fig. 1, the combination appliance 10 is implemented in a cut-out of a kitchen countertop 18 forming a top cover plate of the kitchen cabinet 16. The downdraft extraction device 14 is configured to take away cooking vapours occurring during cooking processes, in particular when cooking with uncovered cookware. The cooking hob 12 comprises cooking regions 20a, 20b arranged on a left half and a right half of a cooktop 22 of the cooking hob 12, which left and right halves are separated from each other by a suction opening 24 for an intake of the cooking vapours, the suction opening 24 being arranged alongside a cooktop centreline. The suction opening 24 is covered by a cover grid 26 for preventing items, e. g. cookware, to fall into the suction opening 24. Instead of the cover grid 26 a lid may be used for entirely covering the suction opening when the extraction device 14 is out of use, but for the operation of the extraction device 14 the lid is pivotable into an upright open position.

[0031] A housing 28 of the extraction device 14 is shown in Fig. 1 in transparent illustration. Said housing

28 provides a closed outer shell or channel segment for a flow of the sucked-in cooking vapours on their way from the suction opening 24 to an exhaust opening 30 in a base area 32 of the kitchen cabinet 16. Said exhaust opening 30 is also covered, namely by an outlet grille 34.

[0032] The flow of the sucked-in cooking vapours through the extraction device 14 is driven by the operation of an extraction fan 36 arranged inside of the housing 28. Said extraction fan 36 comprises a bottom-sided intake opening 38 for sucking the cooking vapours from the interior space of the housing 28.

[0033] A rear-sided fan outlet is arranged for a horizontal exit of the air blown out backwards from the extraction fan housing 42. The fan outlet is connected to a first end of an air duct 44 designed as a rectangular tube and forms a second channel arranged downstream the above-mentioned first channel. Directly at the passage from the fan outlet to the air duct 44, an air duct bending by 90 degrees is implemented, which redirects the air flow from horizontal to vertical downwards. The air duct 44 may be guided alongside a rear side of the kitchen cabinet 16 and may be bent again by 90 degrees close to a rear lower edge of the kitchen cabinet 16 in order to direct the airflow towards exhaust opening 30 in the base area 32 of the kitchen cabinet 16. Accordingly, the second end of the air duct 44 is connected to the exhaust opening 30. The embodiment illustrated in Fig. 1 shows a solution of the air duct 44 with an inclined section of its downwardly directed portion, directed slightly to the right. Naturally, a solution with said portion arranged in an exact vertical direction is considerable as well.

[0034] The course of the cooking vapours from the cooking area through the extraction device 14 to a re-entry into ambient air is illustrated in Fig. 1 by dotted arrows 46¹ to 46⁵. On their way through the extraction device 14, the cooking vapours pass through a filter assembly 48, which is arranged downstream directly behind the suction opening 24 for providing a purification of the conveyed air. Said filter assembly 48 includes a filter carrier 50 supporting a filter element (not shown) that is usually configured for filtering out grease particles and droplets.

[0035] The cross-sectional view of Fig. 2 further shows two power boards 54, one for the left cooking region 20a and one for the right cooking region 20b, the power boards 54 providing cooking zones in the left and right cooking regions 20a, 20b with electrical power. In the present embodiment, the cooking hob 12 is an induction cooking hob and the cooking zones are defined by induction coils (not shown) that are arranged below the cooktop 22 of the cooking hob 12. Attached to the bottom side of the power board 54 assigned to the right cooking region 20b, a further circuit board is arranged forming a control electronics 56 for the combination appliance 10.

[0036] The embodiment illustrated in Fig. 3 is a structure of a combination appliance 10 according to a second example. In contrast to the first example, the combination appliance 10 according to second example provides a

modular setup for a combination appliance 10 with a general downdraft extraction device 14, which can be combined with different models of cooking hobs 12. In this respect, the cooking hob 12 of the combination appliance 10 according to Fig. 3 having a width of about 60 cm in order to be installable above a standard kitchen cabinet of 60 cm, is only one representative of a number of different cooking hobs 12, in particular with different widths, which can be combined with the general extraction device 14. Insofar, the general extraction device 14 may be connected for example to a cooking hob 12 having a width of 80 or 90 cm. The general extraction device 14 is configured to be placed in a top section of a standard kitchen cabinet 16 having a width of 60 cm, namely such that the cabinet space in the horizontal plane is utilised in best way, i. e. only a minimized gap between the housing 28 of the extraction device 14 and internal surfaces of the sidewalls of the kitchen cabinet 16 may be left.

[0037] The combination appliance embodiment according to Fig. 3 generally differs from the setup of the combination appliance 10 according to Figs. 1 and 2 in that all parts or modules of the cooking hob 12, except the two power board modules 54, are aggregated in a hob assembly part 12', which is dimensioned such that this hob assembly 12' will entirely find place in a cut-out area provided by a kitchen installer in a standard kitchen countertop 18, whereas said non-accommodated power board modules 54 are attached to an outer surface of the housing 28 of the extraction device 14.

[0038] The housing 28 of the extraction device 14 is formed as a plastic box or plastic container of prism-shaped nature. Two opposing side walls of the housing 28, which are first 28a and second 28b side walls, are inclined from the vertical axis. The other two opposing and essentially trapezoid third 28c and fourth 28d side walls are vertically oriented in installation alignment. With this configuration, the four side walls 28a, 28b, 28c, 28d form a box, more precisely a container, which is tapered towards its bottom wall 28e.

[0039] The perspective bottom view according to Fig. 4, which illustrates the combination appliance 10 in an upside down view, shows a bottom side of a fluid collector 58 arranged in a recess worked into the bottom wall 28e, which may be formed like a shell open to the top, i. e. to the interior of the extraction device housing 28. The fluid collector 58 is configured to be detached from the bottom wall 28e of the housing 28 for emptying it. Said detachment is only possible after a lateral movement of the fluid collector 58 towards inclined side wall 28b, which lateral movement is particularly enabled after unlocking a locking mechanism, as will be described in more detail further down below.

[0040] The fluid collector 58, as it is illustrated in its entirety in Fig. 5, is of a rectangular design and comprises a bottom plate 58a and a circumferential rectangular side wall 58b. For a particularly touching integration of the fluid collector 58 in the respective recess in the bottom wall 28e of the extraction device housing 28, the bottom

plate 58a of the fluid collector 58 circumferentially protrudes outwardly from the side wall 58b, said bottom plate projection 60 forming a lay-on surface touching with its inner surface the outer surface of an edge around the recess.

[0041] As is further apparent from Fig. 5, the fluid collector 58 comprises four mounting hooks 62, wherein only three thereof are visible due to the perspective view. Said mounting hooks 62 are arranged close to the four corners of the rectangular fluid collector 58, more specifically arranged at the inner surface of the bottom plate projection 60, so that these mounting hooks 62 are facing the bottom wall 28e, when the fluid collector 58 is going to be implemented in the recess of the bottom wall 28e. In order to be capable of carrying a fluid collector 58 filled up with collected substances like liquid, the mounting hooks 62 are equipped with external reinforcement ribs 62', more specifically, in the illustrated embodiment three enforcement ribs 62' per single mounting hook 62.

[0042] The mounting hooks 62, just described with reference to Fig. 5, are provided for a suspended connection of the fluid collector 58 with the bottom wall 28e, which suspended connection is realized in that each one of the mounting hooks 62 rests with its inside surface, which is a lower surface in mounting position being the operating position of the combination appliance 10, on a related support section, or contact section 64 respectively, arranged at the inner surface of the edge around the recess, which inner surface is an upper surface in mounting position and faces towards the interior of the extraction device 14.

[0043] The illustration sequence according to Figs. 6a to 6c shows the fluid collector 58, by Fig. 6a completely implemented in the recess of the bottom wall 28e of the extraction device 14 (operating position) and with two consecutive steps (according to Figs. 6b and 6c) of a beginning detachment process. Accordingly, a related sequence of different positions of one of the mounting hooks 62 relative to its related contact section 64 at the bottom wall 28e is presented. In order to detach the fluid collector 58 from its operating position, specifically for emptying the collected liquid, the fluid collector 58 has to be lifted with a small lifting motion (Fig. 6b) in order to move it in horizontal direction away from the operating position until the vertical projection of the mounting hook 62 is no longer overlapping the related contact section 64. The movement illustrated by the sequence of Figs. 6a to 6c forms a first detaching movement and may be executed by the user of the combination appliance 10 notably by a one-hand operation.

[0044] The operating position of the fluid collector 58 shown in Fig. 6a may be defined as a first position P1 of the detachment process and the position of the fluid collector 58 shown in Fig. 6c, forming an intermediate position of the operating process, may be defined as a second position P2. In this second position P2, the fluid collector 58 is positioned for being effectively detached from the bottom wall 28e of the housing 28 of the extraction

device 14 by means of a second detaching movement towards a third position (not shown in the figures), in which position the fluid collector 58 is removed from its installation position, or operating position. Said second detaching movement is particularly performed orthogonally to the bottom wall 28 in downwards direction.

[0045] As previously described, the fluid collector 58 is not directly moveable from its first position P1 according to Fig. 6a to the second position P2 according to Fig. 6c, but the lifting motion illustrated by the sequence of Figs. 6a and 6b is required. This is due to the fact that a stop device formed by two elevations 66a, 66b, which can be best seen in the enlarged detail view according to Fig. 7, prevents an unintended execution of the first detaching movement, when the elevations 66a, 66b adjoin each other sideways in the first position according to Fig. 6a. In fact, the mutual blocking of the elevations 66a, 66b is unblocked by the previously described small lifting motion, according to Fig. 6b, but best visible in Fig. 7. Said small lifting motion may be in a range around 5 mm.

[0046] The described stop device formed by the two elevations 66a, 66b is not the only one safety mechanism preventing an unintended detachment of the fluid collector 58. Instead, the shifting of the fluid collector 58 illustrated by Figs. 6a to 6b is only possible after an unlocking action of a locking unit 68, 70 as is shown by the figure sequence according to Figs. 8a to 8c. This figure sequence illustrates a sequence of different positions of a slide lock element 68, which is a moving part of the locking unit 68, 70, and different positions of the fluid collector 58 during the detachment process. The fluid collector 58 is shown in Fig. 8a not only in its first position P1, but also with the locking unit 68, 70 in its locking position. Said locking position is characterized by the slide locking element 68 being in a slid-out position defined by a position furthestmost from the centre of the bottom plate 58a. In this position, an exterior section of the slide locking element 68 engages with an indentation 70 of the bottom wall 28e, which is arranged adjacent to that side of the bottom plate 58 of the fluid collector 58, at which the slide locking element 68 is positioned. The indentation 70 has a width, which is slightly larger than the width of the slide locking element 68. When the slide locking element 68 engages with the indentation 70, the bottom plate 58a is not movable, and consequently the entire fluid collector 58 not either, in a direction towards the side edges of the slide locking element 68, which direction is congruent with the first detaching movement of the fluid collector 58. Only after an unlocking movement of the slide locking element 68 towards the centre of the bottom plate 58a by retracting from the locking position according to Fig. 8a and to an unlocking position, illustrated by Fig. 8b, the first detaching movement is enabled.

[0047] After the unlocking movement, the slide locking element 68 remains in this unlocking position, so that the first detaching movement, as previously described in detail, can be executed and the fluid collector 58 is trans-

ferred to the second position P2 (Fig. 8c), which, as also described in detail, allows the effective detachment of the fluid collector 58 from the bottom wall 28a by means of the second detaching movement towards the third position.

[0048] The unlocking movement performed by the slide locking element 68 and the first and second detaching movements of the fluid collector 58 are operable by the user of the combination appliance 10 by using the same hand, so that a one-hand operating solution is provided for the entire detachment process.

[0049] Even though not explicitly illustrated, the combination appliance 10 according to the first example shown in Figs. 1 and 2 is also configured to include the afore-described concept according to the present invention. Also in this case, the detachable fluid collector 58 may be arranged at the bottom wall of the housing 28 of the extraction device 14, preferably directly below the filter assembly 48.

[0050] Although illustrative embodiments of the present invention have been described herein with reference to the accompanying drawings, it is to be understood that the present invention is not limited to these precise embodiments, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

[0051] Moreover, features which are described in the context of separate aspects and embodiments of the invention may be used together and/or be interchangeable. Similarly, features described in the context of a single embodiment may also be provided separately or in any suitable sub-combination.

List of reference numerals

[0052]

10	combination appliance
12	cooking hob
12'	hob assembly
14	downdraft extraction device
16	kitchen cabinet
18	kitchen countertop
20a,20b	cooking regions
22	cooktop
24	suction opening
26	cover grid
28	extraction device housing
28a	first side wall
28b	second side wall
28c	third side wall
28d	fourth side wall
28e	bottom wall
30	exhaust opening
32	base area

	34	outlet grille
	36	extraction fan
	38	intake opening
	42	fan housing
5	44	air duct
	46 ^{1 to 5}	arrows indicating air flow
	48	filter assembly
	50	filter carrier
	54	power boards
10	56	control electronics
	58	fluid collector
	58a	bottom plate
	58b	side wall
	60	bottom plate projection
15	62	mounting hooks
	62'	reinforcement ribs
	64	contact sections
	66a,b	elevations
	68	slide lock element
20	70	indentation

P1	first position
P2	second position

25 Claims

1. A household appliance (10), in particular a combination appliance including a cooking hob (12) and an extraction device (14), comprising or being configured to be equipped with a container (58) for reception and/or collection of substances, the household appliance (10) further comprising a housing (28) with a housing wall (28e), in particular a bottom wall (28e) of the housing (28), the container (58) being detachably connected to the housing wall (28e) of the household appliance (10), wherein the housing (28) or housing wall (28e) includes at least one recess for receiving or providing space for at least a part of the container (58),

wherein the container (58) is configured to be detached from the housing wall (28e)

- 45 - by a first detaching movement configured to be performed in a single plane, the first detaching movement comprising a transfer of the container (58) from a first position (P1) or first orientation relative to the housing wall (28e) to a second position (P2) or second orientation relative to the housing wall (28e) without moving away the container (58) from the housing wall (28e), the first detaching movement in particular comprising a translational or rotatory motion,

and

- by a second detaching movement comprising a transfer of the container (58) to a third position, in which the container (58) is detached and/or distant from the housing wall (28e), wherein the second detaching movement is preferably supported by gravity,
- and wherein in particular the third position is assumable in a movement
- at least approximately orthogonally to the housing wall (28e)
- and/or
- towards a lower level.
2. The household appliance (10) according to claim 1, wherein the container (58) is at least approximately horizontally aligned, when the container (58) is in the first position (P1) or orientation and in the second position (P2) or orientation, preferably also when the container (58) is in the third position.
3. The household appliance (10) according to claim 1 or 2,
- wherein the container (58) comprises a bottom wall (58a) and a side wall (58b) of closed circumferential configuration to form a collection space or a container volume of the container (100),
- wherein the side wall (58a) protrudes from the bottom wall (58b), preferably perpendicularly from the bottom wall (58a), and forms an opening of the container (58),
- wherein at least a part of the side wall (58b) of the container (58) is configured to penetrate the recess of the housing wall (28e) of the household appliance (10).
4. The household appliance (10) according to claim 3, wherein the container (58) is dimensioned such that the ratio between a base area of the collection space or container volume and the height of the side wall (58b) of the container (58) is determined by one to at least zero point zero seven percent, preferably by one to at least zero point one percent, more preferably by one to at least zero point one five percent.
5. The household appliance (10) according to any one of the preceding claims, wherein the container (58) and/or the housing wall (28e) is or are configured to enable a lifting motion of the container (58), the lifting motion is performable for transferring the container (58) from a connected position (P1) to an elevated position, in particular performable prior to the first detaching movement, the elevated position being configured to enable or to facilitate the first detaching movement.
6. The household appliance (10) according to claim 5, wherein the household appliance (10), in particular the housing wall (28e) and/or the container (58), comprises a limit stop for a limitation of the lifting motion, the limit stop preferably being a stop surface, wherein more preferably at least a part of the stop surface forms or includes a sliding surface configured for supporting the first detaching movement.
7. The household appliance (10) according to any one of the preceding claims,
- wherein the container (58) comprises at least one mounting hook (62), preferably at least two mounting hooks (62), more preferably at least four mounting hooks (62), configured to engage with a section of the housing wall (28e) for a suspended connection of the container (58) to the housing wall (28e), the section in particular being arranged on an inner surface of the housing wall (28e), which inner surface forms a contact surface between the at least one mounting hook (62) and the section of the housing wall (28e),
- wherein the engagement between the at least one mounting hook (62) and the section of the housing wall (28e) is disconnected during performance of the first detaching movement and/or during performance of the lifting motion of the container (58).
8. The household appliance (10) according to claim 7, wherein at least a first one of the section of the housing wall (28e) and the at least one mounting hook (62), preferably both the section of the housing wall (28e) and the at least one mounting hook (62), comprises at least one elevation (66a, 66b), which faces the second one of the section of the housing wall (28e) and the at least one mounting hook (62) at their contact surface, the at least one elevation (66a, 66b) forming a stop element and providing a safety element, which prevents or limits an unintended actuation of the first detaching movement.
9. The household appliance (10) according to any one of the preceding claims, wherein the dimensions of the recess and of the side wall (58b) of the container (58) are selected in a way that the first detaching movement is performable at least to such extent that the second detaching movement is enabled.
10. A household appliance (10), in particular a combination appliance including a cooking hob (12) and

an extraction device (14), comprising or being configured to be equipped with a container (58) for reception and/or collection of substances, the household appliance (10) further comprising a housing (28) with a housing wall (28e), in particular a bottom wall (28e) of the housing wall (28), the container (58) being detachably connected to the housing wall (28e) of the household appliance (10), wherein the housing (28) or housing wall (28e) includes at least one recess for receiving or providing space for at least a part of the container (58),

wherein the container (58) is configured to be detached from the housing wall (28e)

- by a first detaching movement comprising a transfer of the container (58) from a first position relative to the housing wall (28e) to a second position relative to the housing wall (28e), wherein the second position is an elevated position compared to the first position,
- by a release mechanism being triggered or triggerable, when the container (58) approaches or assumes the second position,

and

- by a second detaching movement comprising a transfer of the container (58) to a third position, in which the container (58) is detached and/or distant from the housing wall (28e), wherein the second detaching movement, which is preferably supported by gravity, is enabled to be carried out after the triggering of the release mechanism, and wherein in particular the third position is assumable in a movement
- at least approximately orthogonally to the housing wall (28e)

and/or

- towards a lower level.

- 11.** The household appliance (10) according to any one of the preceding claims,

wherein the container (58) and/or the housing wall (28e) comprise(s) a safety mechanism including at least one locking unit (68, 70) configured to disable, in a first state of the at least one locking unit (68, 70), or to enable, in a second state of the at least one locking unit (68, 70), the executability of the first detaching movement, wherein the at least one locking unit (68, 70) comprises a slide lock or a twist lock mechanism including a slide lock element (68) or twist lock

element, which interacts with a slide stopping means (70) or twist stopping means.

- 12.** The household appliance (10) according to claim 11,

wherein the slide lock element or twist lock element is configured to engage a cut-out zone or an indentation or a recessed area of the housing wall (28e) in a locking position and to be positioned in a position pulled out or twisted out of the cut-out zone or the indentation or the recessed area in the unlocking position, or wherein the slide lock element (68) or twist lock element is configured to engage a cut-out zone or an indentation (70) or a recessed area of the bottom wall (58a) of the container (58) in a locking position and to be positioned in a position pulled out or twisted out of the cut-out zone or the indentation (70) or the recessed area in the unlocking position.

- 13.** The household appliance (10) according to claim 11 or 12, wherein the safety mechanism comprises

- an overstroke lifting and shifting mechanism or device configured to enable a shifting of the slide lock element (68) or a twisting of the twist lock element only after an overstroke lifting movement performable onto the slide lock element (68) or twist lock element, wherein particularly a resetting force is provided, which prevents an unintended shifting or twisting and which is based on spring load or on gravity,
- or
- a snap-in locking device, particularly comprising at least one an elevated area, preferably a rib-shaped area, arranged at or acting on the slide lock element (68) or the twist lock element, wherein the snap-in locking device is configured to enable a shifting of the slide lock element (68) or a twisting of the twist lock element only by overcoming a snap coupling.

- 14.** A method for detaching a container (58) for reception and/or collection of substances from a housing wall (28e), preferably a bottom wall (28e) of the housing (28), of a household appliance (10), in particular from the household appliance (10) according to any one of the preceding claims, wherein the housing wall (28e) includes at least one recess for receiving or providing space for at least a part of the container (58),

wherein during the detachment process at least a part of the container (58) performs a first detaching movement and a second detaching movement,

wherein during the first detaching movement, which in particular comprises a translational or rotatory motion, the container (58) moves from a first position (P1) or first orientation relative to the housing wall (28e) to a second position (P2) or second orientation relative to the housing wall (28e) without moving away from the housing wall (28e),
and wherein during the second detaching movement, which is preferably supported by gravity, the container (58) moves to a third position, preferably from the second position to the third position, in which the container (58) is detached and/or distant from the housing wall (28e).

15. The method according to claim 14,

wherein the household appliance comprises a safety mechanism for a prevention of unintended detachment of the container (58), the safety mechanism comprises a slide lock or a twist lock mechanism including a slide lock element (68) or twist lock element,
wherein the first detaching movement of the at least a part of the container (58) is only executable after an unlocking movement of the slide lock element (68) or the twist lock element, with which unlocking movement the slide lock element (68) or the twist lock element moves from a locking position to an unlocking position,
and wherein the slide lock element (68) or the twist lock element preferably remains in the unlocking position after the unlocking movement.

16. The method according to claim 15,

wherein the safety mechanism includes a slide lock element (68), which performs a first translational movement, wherein the first detaching movement is a second translational movement, and wherein the first translational movement is executed in a different direction than the second translational movement, preferably the first translational movement is at least approximately perpendicular to the second translational movement.

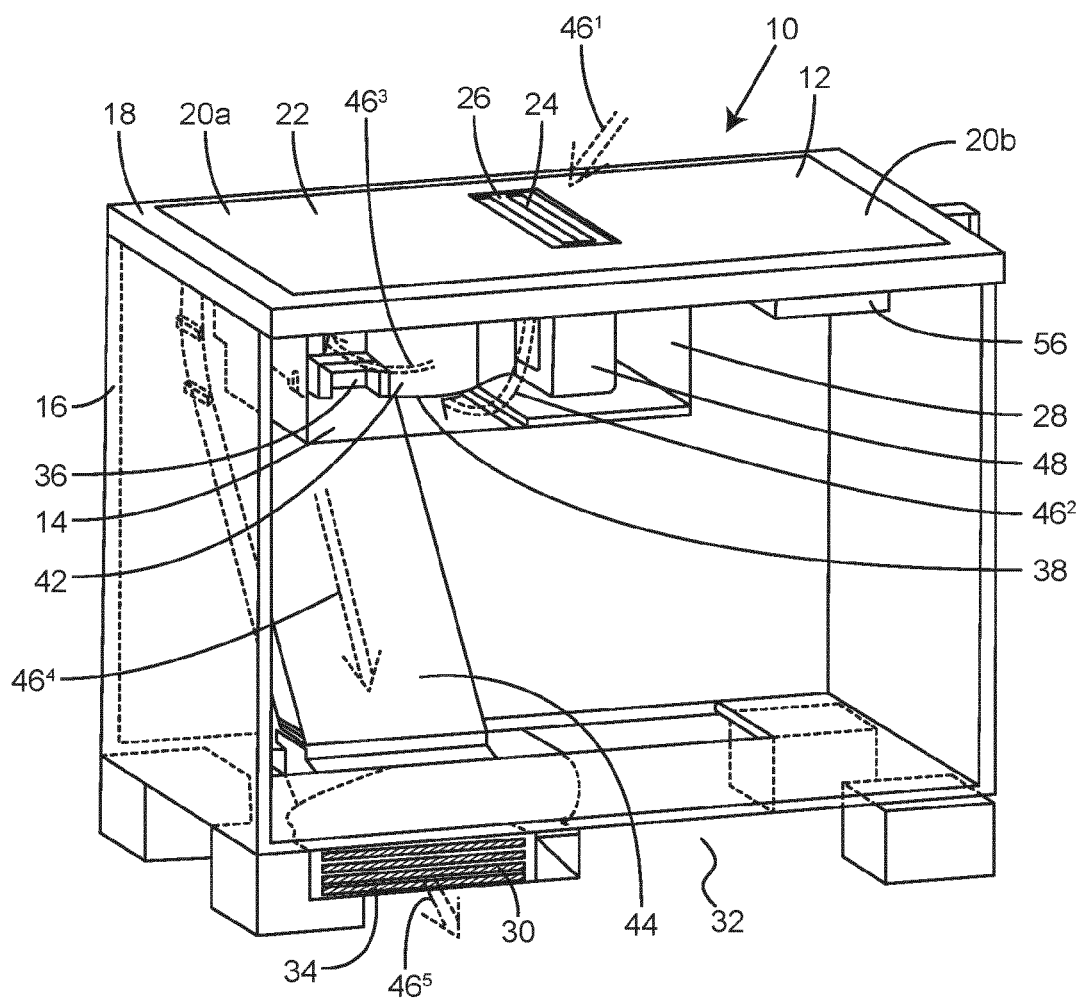


FIG. 1

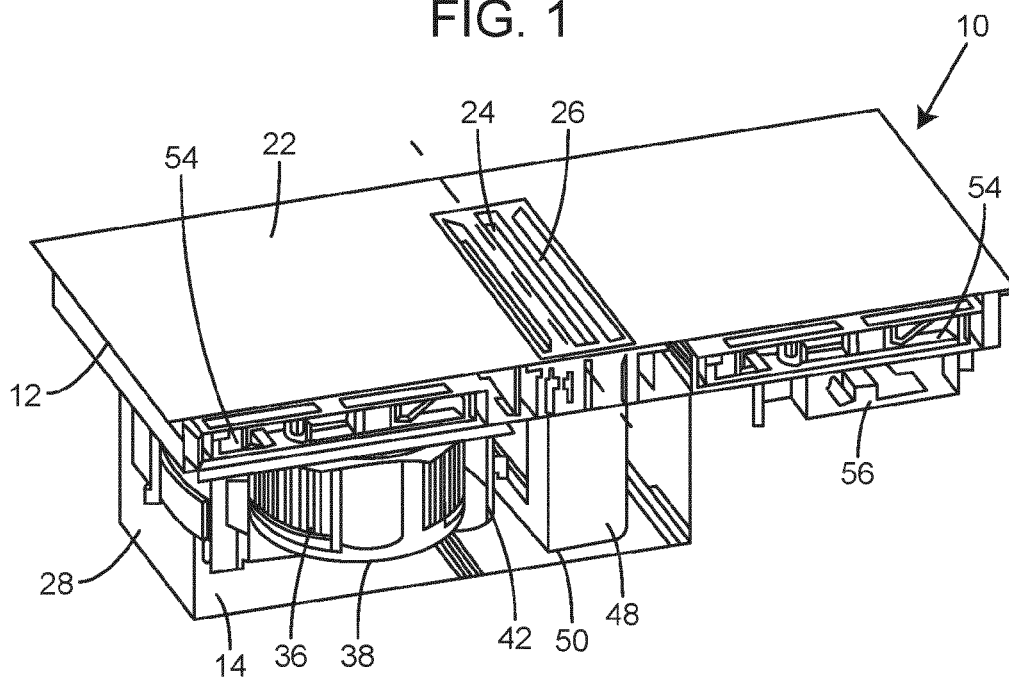


FIG. 2

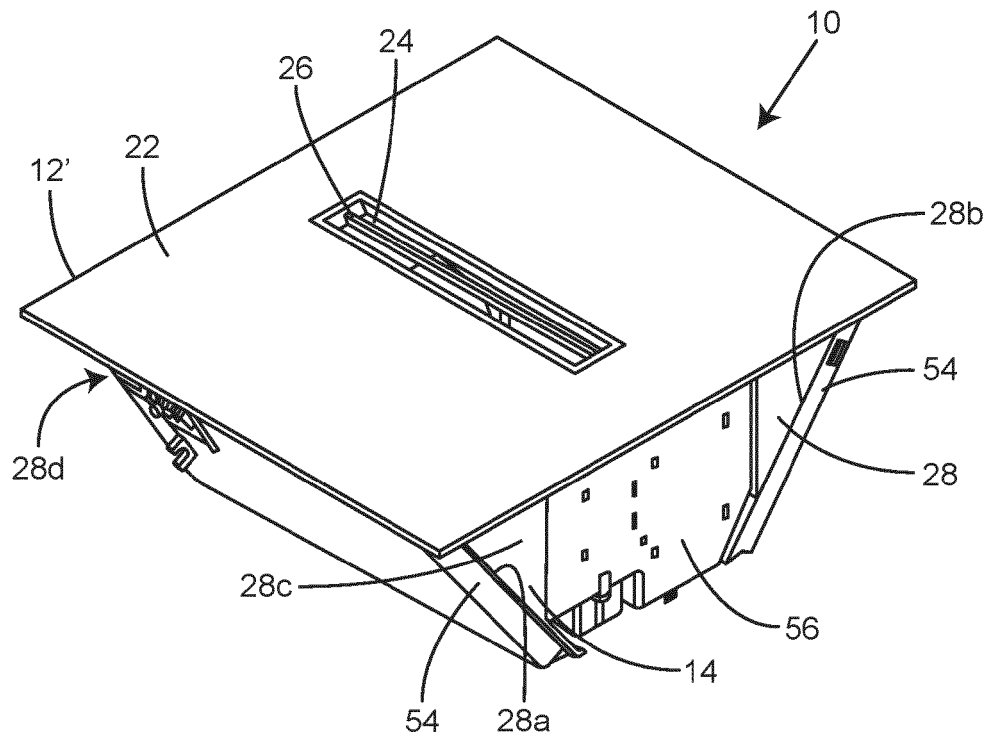


FIG. 3

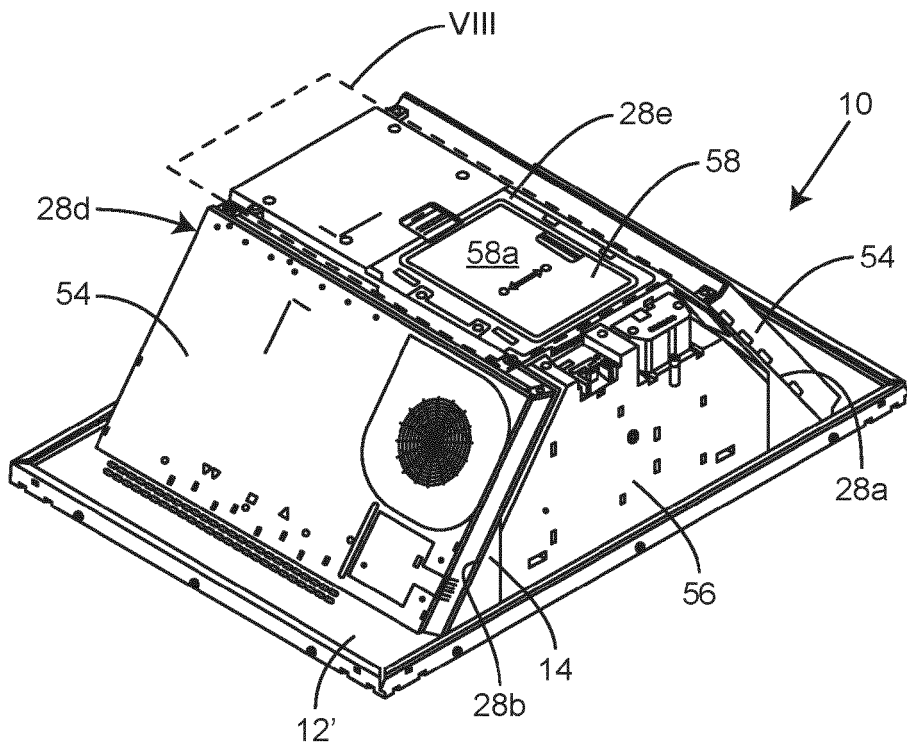


FIG. 4

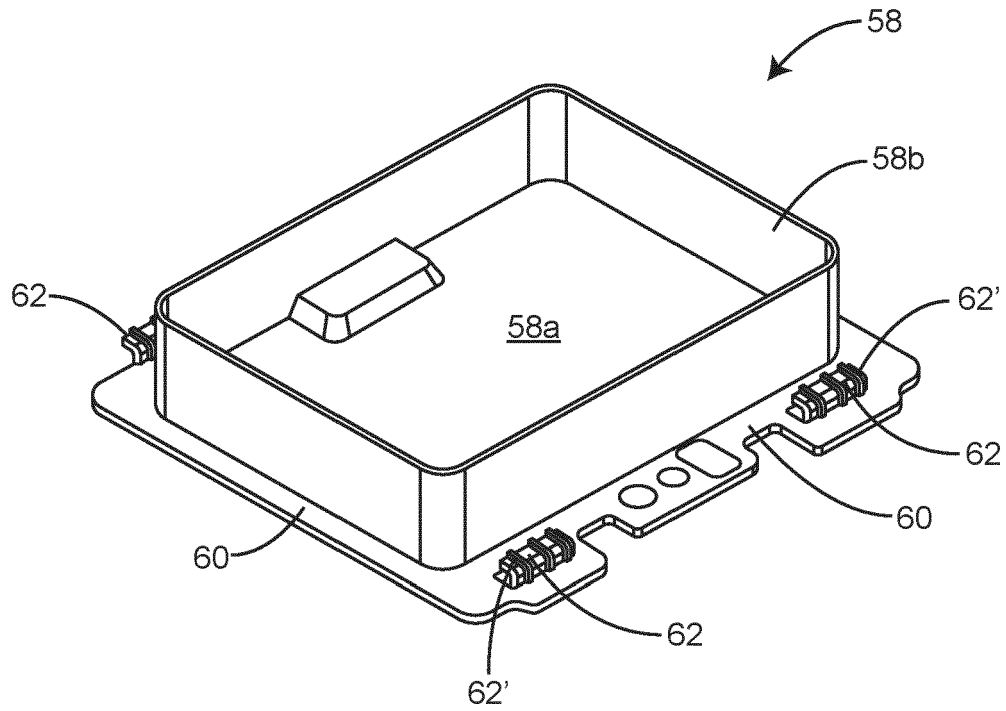


FIG. 5

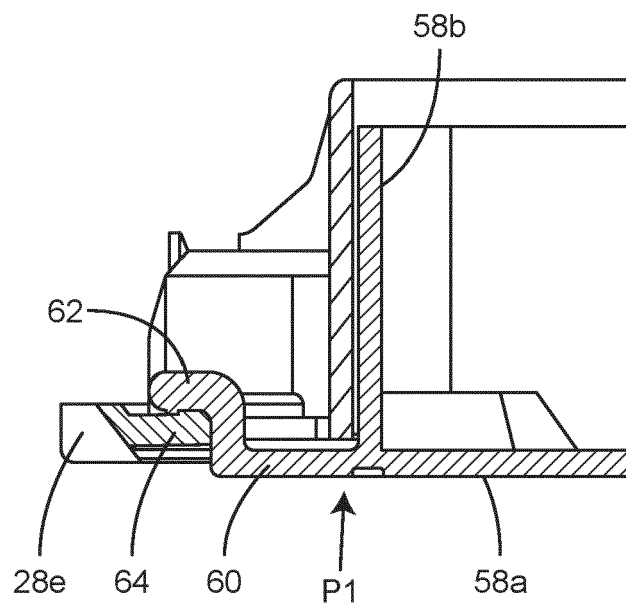


FIG. 6a

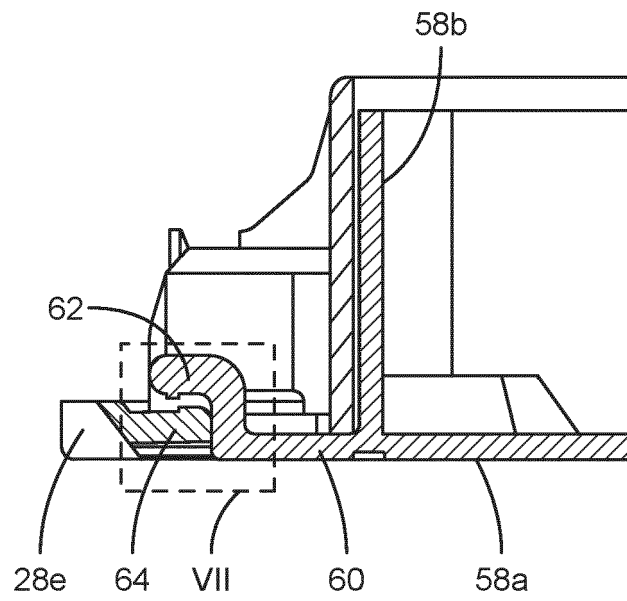


FIG. 6b

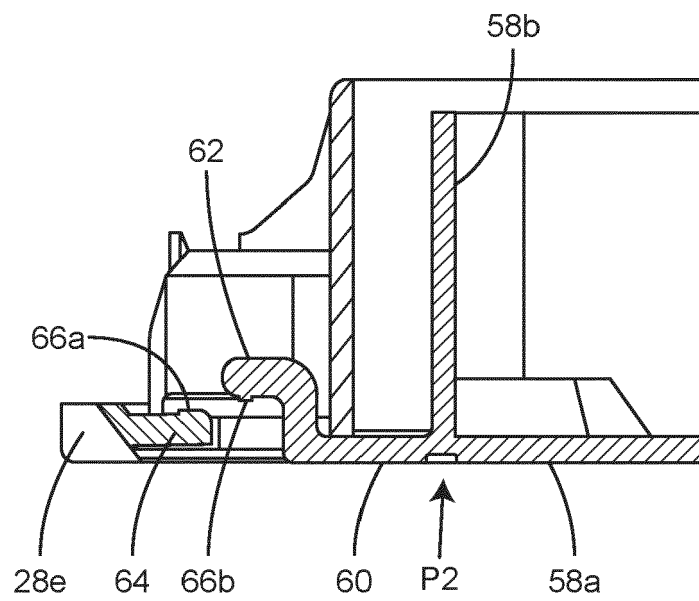


FIG. 6c

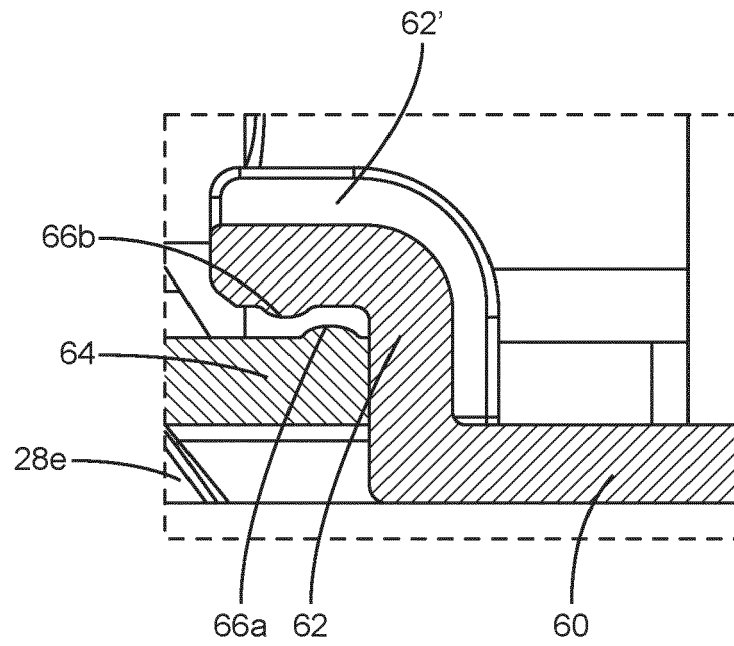


FIG. 7

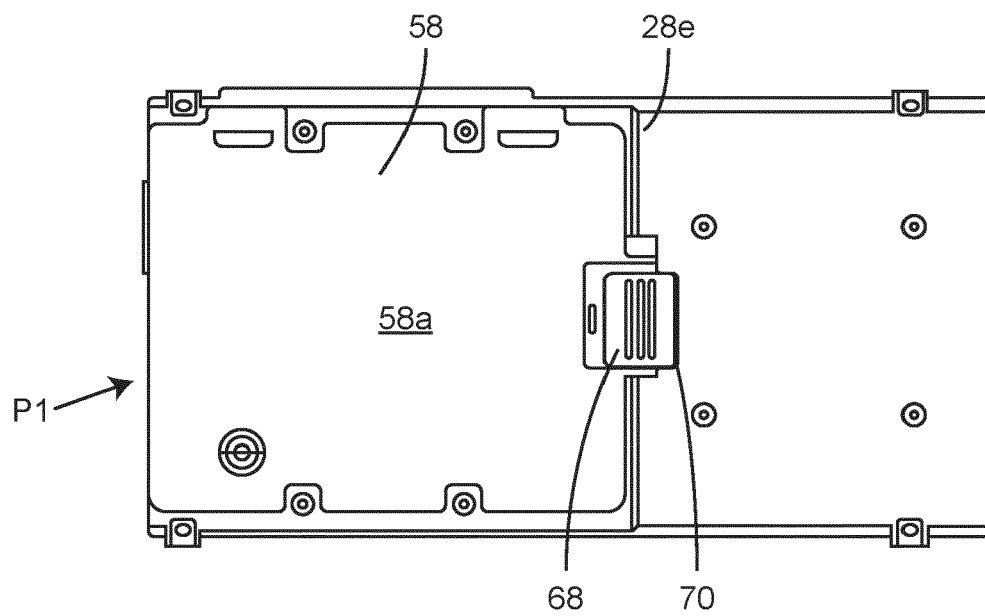


FIG. 8a

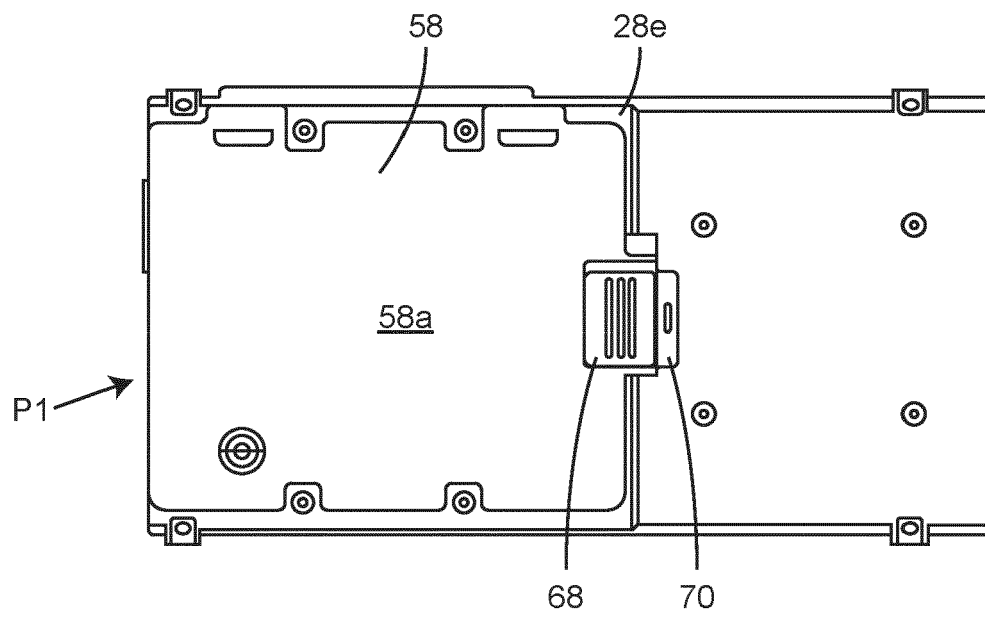


FIG. 8b

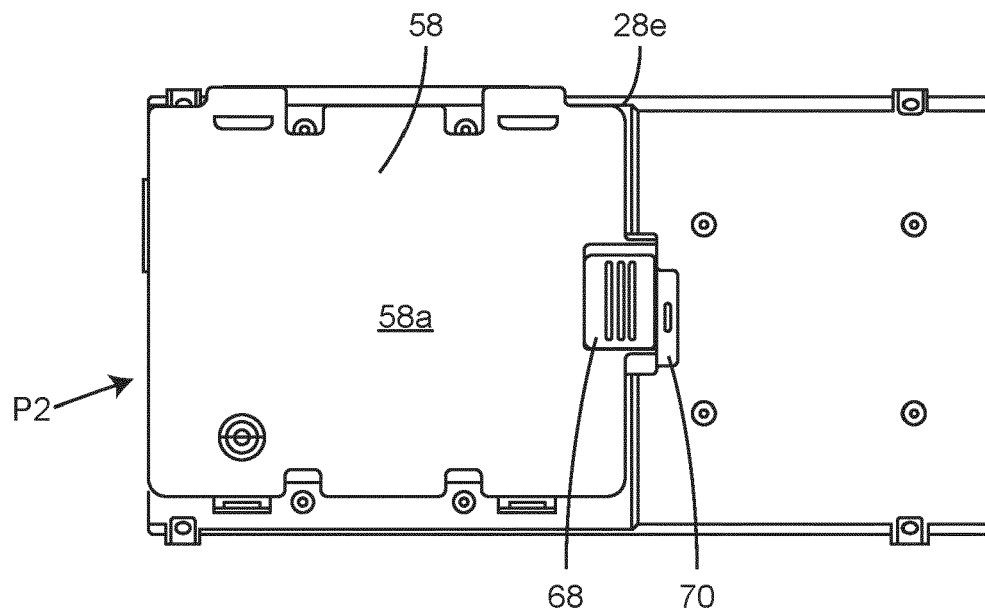


FIG. 8c



EUROPEAN SEARCH REPORT

Application Number

EP 23 17 6497

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 102 55 317 A1 (LANGNER MANFRED H [DE]) 9 June 2004 (2004-06-09) * claim 1; figure 3 * -----	1-16	INV. F24C15/20
X	DE 132 820 C (SIEGISMUND VON EHRENSTEIN IN BRESLAU) 9 October 1901 (1901-10-09) * the whole document * -----	1-16	
X	WO 2019/038006 A1 (BSH HAUSGERAETE GMBH [DE]) 28 February 2019 (2019-02-28) * paragraph [0028]; figure 1 * -----	10-14, 16	
			TECHNICAL FIELDS SEARCHED (IPC)
			F24C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		30 October 2023	Meyers, Jerry
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ON EUROPEAN PATENT APPLICATION NO.**

EP 23 17 6497

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30-10-2023

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10255317 A1	09-06-2004	NONE	

DE 132820 C	09-10-1901	NONE	

WO 2019038006 A1	28-02-2019	CN 110945289 A	31-03-2020
		DE 102017214928 A1	28-02-2019
		EP 3673210 A1	01-07-2020
		ES 2930024 T3	05-12-2022
		PL 3673210 T3	16-01-2023
		US 2020182485 A1	11-06-2020
		WO 2019038006 A1	28-02-2019

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Patent documents cited in the description

- EP 3951270 A1 [0003]