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(54) Suction and/or filtration hood, with improved flow deflection means

(57) The invention relates to a hood for the suction and/or the filtration of cooking fumes in a domestic kitchen, having means (12,17) which allows in a simple and rapid way to direct the air flow inhaled from a cooking hob towards a preferred outlet, among a plurality of possible outlets (13-16) being provided by the hood, and to simultaneously commute the operation of the hood from a filtration mode to a suction mode.

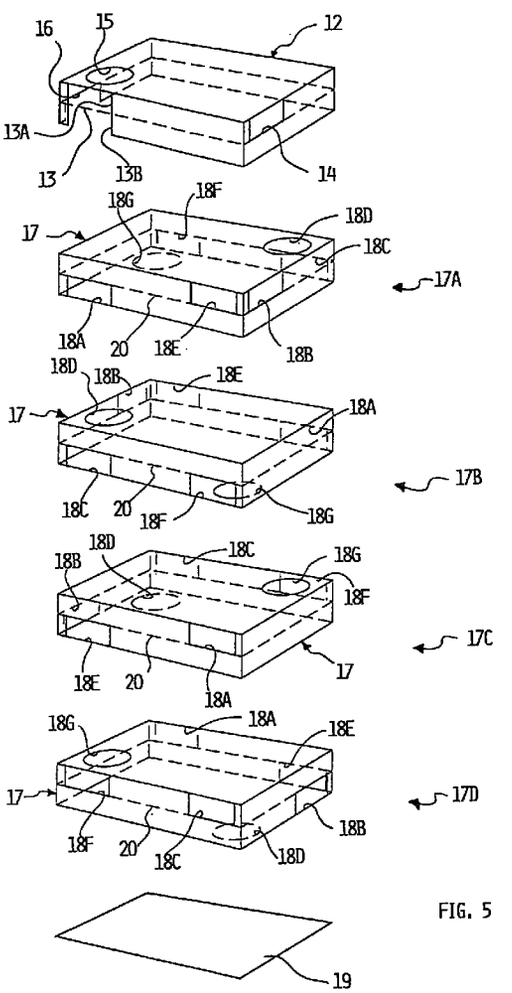

FIG. 5

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Description

The present invention relates to a hood for the suction and/or the filtration of the cooking fumes in a domestic kitchen.

Various types of hoods for domestic use are known, which are used for eliminating the cooking smells in a kitchen; said hoods are called suction hoods if they expel outside the kitchen the air drawn from above the hobs, or filtration hoods if they recycle the air in the room, after having purified it.

In the aspiration mode, in most cases, the air is expelled from the hood in an upward direction, through a conduit being contained and hidden by a overhanging wall cabinet, which expels the air towards the ceiling of the kitchen. Said conduit has usually its axis on the middle vertical plane of the hood, for aesthetic reasons if it is in view, and for reasons of standardization if it is mounted within the wall cabinet.

If the hood is fixed to a wall which is directed outside the building, the air can be expelled towards the rear part of the hood; this embodiment, which is aesthetically pleasant due to the absence of a conduit in view, is however rarely used, because it requires the hole in the wall to be previously made in a very precise position.

On the contrary, in the filtration mode, the air is usually expelled from the hood by means of louvers being present in correspondence of its front part; this is the simplest and cheapest embodiment, because no additional tubes are necessary and the wall cabinet arranged above the hood is free for other purposes, because it is not crossed by the conduit which conveys the air towards the outside; however, due to the fact that the air expelled in this way can be very noisy (because it exits the hood at the users' head height), often it is preferred to expel the air towards the ceiling, by means of a conduit being hidden in an overhanging wall cabinet and which ends on the top of the wall cabinet itself.

Summarizing, therefore, the known hoods may provide for four operating modes: a filtration mode towards the front part (FA), a filtration mode towards the upper part (FA), a suction mode towards the rear part (AP), a suction mode towards the upper part (AS).

In order to reduce the diversification, the known hoods are usually conceived so as to provide all the above mentioned four operating modes, which can be set in part by the installer and in part by the final user of the hood; several users, in fact, prefer to filter and recycle the air during winter, for energy saving reasons, while they prefer to expels the fumes for the remaining part of the year.

The treatment and the path of the air which crosses, in the upward direction, the hood is substantially identical for all the products available on the market: firstly, the air passes through a mechanical filter, called grease filter, which also serves as a panel for closing the lower part of the hood and can be removed and cleaned by the user; said filter, which is always present, retains solid floating residues being conveyed by the cooking fumes, so as to protect the hood from dirt. There are no problems in realizing a sufficiently large grease filter, but care should be taken that the air crosses it without any preferential path.

In the filtration mode, the air path further includes an activated-carbon filter, which absorbs the smells deriving from the cooking; this filter has to be easily accessible, so that the user can replace it once exhausted; the efficiency and the duration of this filter are improved, if its volume and section crossed by the air are large.

After having passed through the above mentioned filters, the air is then inhaled by a fan, which is usually of the centrifugal type, inasmuch as axial fans do not have a sufficient head, and then conveyed in a conduit towards one of the possible outlets.

In the most common case, during the installation, a plug or predetermined fracture zones determines whether the air will exit the hood in the upward or the rear direction. The user, on the other hand, by manoeuvring an appropriate deflection valve which has an easily accessible rod, can cause the air to exit by the front louvers of the hood.

A hood being of a good quality should therefore satisfy the following requisites: a sufficient air head in the suction mode; a good capacity of reducing the smells in the filtration mode, and therefore a large frontal surface of the activated-carbon filter; a reduced noise; reduced dimensions, for optimization of the available spaces; last but not least, also the aesthetic features are very important, which force the design of hoods to be of a very reduced height.

As a general practice, the activated-carbon filter is constituted by a single cartridge which is fixed to the nosepiece of the fan (as shown in Figure 3); in this way the fixing and the replacement of the exhaust cartridge is very easy but, as already said, due to the need of realizing very thin hoods, the space which remains between the grease filter and the activated-carbon filter is reduced and therefore this fact determines chokes around the edge of the activated-carbon cartridge.

Said fixing mode therefore causes the grease filter not to be very efficient, because a great part of the air is inhaled exclusively in its central zone, near the nosepiece; in said zone, an unpleasant grease spot is therefore rapidly created on the external side, which makes evident a non uniform air distribution.

From the same Figure 3 it is evident how, according to said solution, there is no reason for mounting carbon filters having very large dimensions, inasmuch, considering the reduced available space, preferential paths will be created within them, in correspondence of the axis of the nosepiece, while the periphery of the cartridge will not be efficiently exploited; for this reason, the limits to the height of the hood also determines limits for the extension of the cross section of the activated-carbon filter, and therefore, limits to the performances of the hood in relation to the filtration efficiency and charge losses.

From Figure 4, which shows a typical development of the conduits which extend downstream the fan, it is evident that, always due to the reduced spaces available,

the air in the front filtration mode, is compelled to follow a tortuous path, which causes great noise and charge losses, thus limiting the air head which can be inhaled. From the same figure, it is also evident that the same conduits do not leave space for mounting the activated-carbon filter downstream the fan, and upstream the valve for deflecting the air towards the upper or the front part of the hood.

In order to have reduced overall dimensions, some models of hoods are partially encased within the overhanging wall cabinet, with the further drawback that, besides the higher costs, the different dimensional bindings proper of the different furniture producers have to be duly taken into account.

A further drawback is finally constituted by the fact that, in order to pass from a filtration mode to a suction mode, the filter cartridge has to be removed from the hood and stored in another place.

The present invention has the aim of resolving the above mentioned drawbacks. In this light, a first aim of the invention is that of allowing the reduction of the height of the hood or, more generally, of allowing the reduction of the dimensions of the hood in the direction being parallel to the fan axis, even improving the degree of uniformity of the air flow through the grease filter.

A second aim of the present invention in that of showing how it is possible to install activated-carbon filters being larger that the usual ones, and whose dimensions are limited only by the plan dimensions of the hood itself and not by its thickness, so as to improve the filtration efficiency.

Another aim of the present invention is that of indicating a hood which, in the most general case, allows for the commutation from among the four operating modes without the necessity of a flow deflection valve or closure plugs for the outlets being not used.

These and further aims are attained according to the present invention by a hood for the suction and/or the filtration of cooking fumes in a domestic kitchen having the features of the annexed claims.

Further characteristics and advantages of the present invention will result in being clear from an illustration of the hoods according to the prior art and from the description of some preferred, but not exclusive, embodiments of the hood according to the invention, which are shown as a pure example in the following figures (wherein the parts which do not pertain to the invention have been omitted):

- Figure 1 is a side view of a hood, as it is normally installed above a cooking hob, which shows the air exit zones in the different operating modes, i.e. filtration or suction;
- Figures 2 to 4 show how the filter means and the air conduits are arranged in a hood according to the prior art; in particular, Figure 2 shows in a schematic way the air flow from the drawing zone towards one of the three possible outlets; Figure 3 shows with a side cross section the activated-carbon filter fixed to the nosepiece of the fan and the effects of this assembly on the flow of the inhaled air; Figure 4 shows, with a horizontal cross section, how the air conduits from the fan scroll to the three possible outlets are realized in the known hoods,
- Figure 5 shows, with an exploded axonometric e schematic view, in accordance with one of the preferred embodiments of the invention which does not require any additional flow deflection means, the four operating modes of the hood which are possible in accordance with the invention;
- Figure 6 shows, with an exploded axonometric and schematic view, substantially similar to that of Figure 5, a container being of simplified construction, where the material constituting its external surface is present only in the essential points for structural reasons and for attaining the aim of the invention;
- Figure 7 shows, with an axonometric view, the assembly of the ventilation group and a flow deflection filter according to the embodiment of the invention shown in Figure 5;
- Figure 8 shows, with a plan view, the assembly of the ventilation group and a flow deflection filter according to the embodiment of the invention shown in Figure 5;
- Figure 9 shows, for clarity purposes, a section of Figure 8 according to line A - A;
- Figure 10 shows, with an axonometric view, the assembly of the ventilation group and a flow deflection filter according to a different possible embodiment of the invention;
- Figure 11 shows, with a plan view, the assembly of the ventilation group and a flow deflection filter according to the embodiment of the invention shown in Figure 10;
- Figure 12 shows, with an exploded axonometric and schematic view and in accordance with the embodiment of Figure 10, the flow deflection filter with the container according to the invention arranged in the two advantageous position for said embodiment;
- Figure 12A shows, with an exploded axonometric and schematic view, the flow deflection filter with the container according to the invention and in accordance with Figure 12, but having a cylindrical shape instead of a parallelepiped one;
- Figure 12B shows, with an exploded axonometric and schematic view, the flow deflection filter according to an embodiment being different from the preceding ones, which allows for the same operating modes already shown in Figure 12;
- Figure 13 shows three cross sections of Figure 11, according to line B - B, for indicating the air path respectively in the Front Filtration mode, the Upper Filtration mode and the Upper Suction mode;
- Figure 14 shows, with a vertical cross section, one of the possible embodiments of the container according to the invention;

- Figure 15 shows, with a vertical cross section, a further possible embodiment of the container according to the invention;
- Figure 16 shows graphic symbols stamped on the two main surfaces of the container in accordance with the embodiment of the invention shown in Figure 5.

With reference to Figure 1, the installation of a hood 1 is usually carried out by fixing it underneath a wall cabinet 3; the air inhaled from a cooking hob, when filtered, may be recycled in the room through louvers being present on the front part 2 of the hood 1, or through a tube 4 being hidden by said wall cabinet 3; alternatively, when the inhaled air is expelled, this can occur by means of said tube 4, which is connected to a further conduit 5 directed outside of the room, or directly through a hole 6 being present in the rear part of the hood 1.

With reference to Figure 2, the air flow, following the direction of the arrows, crosses a grease filter 7, and then, according to prior art, an activated-carbon filter 8 (when present), a suction fan and the relative scroll 9; a valve 10, when in position 10A, provides for deflecting the flow in the direction of the front part 2, while in position 10B directs the flow in the direction of one of the two exit, the upper one 4 or the rear one 6; a plug 11A, or other suitable closure means, establishes at the installation, if the hood must to have an upper exit 4 or a rear exit 6; in this latter case, the plug is mounted in the position 11B.

In Figure 3 the grease filter 7 and the activated-carbon filter 8 are shown, according to another pertinent solution of the prior art, the filter 8 having a lower surface 8A permeable to the air and a side wall 8B of a compact material; said filter 8 is mounted on the nosepiece 9A of the fan, not shown in the figure, and is removed in the suction mode.

In Figure 4, there are shown, arranged according to the prior art, a fan 9B, the deflection valve 10, the upper exit 4 or the rear exit 6, the front exit 2.

In Figure 5 an envelope 12 is shown, according to a first possible embodiment of the invention, which has an air inlet 13 connected to the discharge of the fan, not shown in the figure; said inlet 13 is subdivided into two zones, an upper one 13A and a lower 13B one, being separated in the figure by a dotted line; the figure shows furthermore outlets 14, 15, 16, for the connection, respectively, with the front exit 2, the upper exit 4 and the rear exit 6 of Figure 1; under the envelope 12 a hollow means, or container 17, is shown, according to a first embodiment of the invention, in the following four possible advantageous positions:

- 17A indicates the arrangement in which said container 17 is in the position provided for the front filtration operating mode (FA);
- 17B indicates the arrangement in which said container 17 is in the position provided for the upper filtration operating mode (FS); said position 17B is obtained from the previous one (17A), by rotating the container 17 180° around the vertical axis;
- 17C indicates the arrangement in which said container 17 is in the position provided for the rear suction operating mode (AP); said position 17C is obtained from the previous one (17B), by overturning the container 17;
- 17D indicates the arrangement in which said container 17 is in the position provided for the upper suction operating mode (FA); said position 17D is obtained from the previous one (17C), by rotating the container 17 180° around the vertical axis.

References 18A, 18B, 18C, 18D, 18E, 18F, 18G indicate different openings being provided in the container 17; with 19 a lower cover, or other closure means, is indicated, used for closing the container 17 according to one of the position 17A, 17B, 17C, 17D within the envelope or seat 12; the hatched zone 20 indicates a medium zone, wherein air treatment means are located, when being present inside the container 17; said treatment means are not represented in the figure, for clarity purposes.

In Figure 6, with 12 the same envelope of Figure 5 is indicated; with references 17A, 17B, 17D, 17C four different positions as are indicated for a single air flow deflection means 17', wherein the suffixes from "A" to "D" indicates the same position as already shown in Figure 5; references 18A', 18C', 18F' indicate openings having the same function of the corresponding openings 18A, 18C, 18F of Figure 5; with 18BE' a single opening is indicated, that in Figure 5 was instead divided into two openings, respectively 18B and 18E; the hatched zone 20 indicates the position for the air treatment means being eventually present, similarly to Figure 5, and with 19 the lower closure means is indicated. The hollow means 17' has the same function as the container 17 of Figure 5, but in the case shown in Figure 6, it is composed by a sort of frame, which has walls only where necessary for functional or structural reasons.

In Figures 7 and 8, the openings in the envelope 12 are indicated, with the same reference numbers of Figure 5; therefore, 13 is the inlet for the air coming from the scroll 9, while 14, 15, 16 indicate respectively the front exit, the upper exit and the rear exit.

Figure 9 shows in section the grease filter 7, the nosepiece 9A, the fan 9B, the scroll 9, the opening 13A-13B, the envelope 12 with the relevant openings 14, 15 and 16; with 17' the deflection means of Figure 6 is indicated, in the position 17A, corresponding to the upper filtration mode (FS); with 19 the lower closure means is indicated and with 20A a zone being delimited by air permeable walls 20B is indicated, which contains the air treatment means, such as an activated-carbon filter.

Figures 10 and 11 refer to an embodiment of the invention, which differs from that of Figures 5 to 9; however, for clarity reasons, similar components are indicated with the same numbers already utilized in the previous Figures; thus, an envelope 12 is shown, having

an opening 14 in the direction of the front part, a scroll with an inlet nosepiece 9A and finally two air outlets, i.e. one, indicated with 13, towards the envelope 12, and the other, indicated with 15, towards the upper discharge of the hood.

In Figure 12 there is shown, in accordance with a second possible embodiment of the invention, an envelope 12' having an air inlet opening 13', being divided into the two zones 13A' and 13B', and connected to the discharge of the fan, not shown in the Figure; furthermore, there are shown the outlet 14' towards the front discharge 2 of Figure 1; under the envelope 12 a flow deflection means 17" is indicated, in the position 17A provided for the front filtration operating mode (FA); in 17B, the container 17" is shown in the position being provided for the upper filtration operating mode (FS); references 18A", 18B", 18C", 18D" show different openings provided in said container, even if they do not necessarily correspond to those shown in Figures 5 and 6; with 19 the cover of lower closure means is indicated, for closing the container 17" according to one of the positions 17A or 17B within the envelope 12; the hatched part 20 indicates a zone being delimited by air permeable walls, which contains the air treatment means, such as the cited activated-carbon filter, being eventually present within the container 17".

In Figure 12A a device is shown, functionally similar to that of Figure 12, but having a substantially cylindrical shape, where the similar parts have been indicated with the same reference numbers utilized in Figure 12; it is evident that, in the same way, a cylindrical device derived from Figure 5 could be obtained.

In Figure 12B a further embodiment of the deflection device of the hood according to invention is shown; the similar parts have been indicated with the same reference numbers utilized in Figure 12.

In Figure 13 there are shown the inlet nosepiece 9A of the scroll 9, the fan 9B, a deflection throttle-valve 21 of the air flow, in the possible positions 21A and 21B, the container 17 having, in an intermediate position, an air permeable means to the air (such as the cited activated-carbon filter 20A), the opening 14 towards the front exit 2 of Figure 1, the outlet 15 in the direction of the upper part, the closure means 19 of the envelope 12.

In Figure 14 the container 17" is shown in section, according to the position 17B of Fig. 12, and an incorporated air treatment means 20. In Figure 15 the container 17" is shown in section, according to the position 17B of Fig. 12, with a housing seat 22 and the air treatment means 20A being evidenced.

In Figure 16 the container 17 is shown in accordance with Figure 5, which has graphic symbols FA, FS, AS and AP; the container 17 is represented in plan, according to the positions 17A and 17B.

It is clear that, though not represented, many other embodiments are possible for the system without departing from the inventive idea, some of which will be briefly cited in the following functioning description.

The functioning and the advantages of the flow deflection filter according to invention will be now described.

With reference to Figures 7 and 8, the air inhaled by the fan is introduced through the scroll 9 in the envelope 12; if said envelope 12, rather that of providing for deflection means, were closed downwards by the cover 19 of Figure 5, the air could simultaneously exit through the outlets 14, 15 and 16; on the contrary, with reference to Figure 5, if the container 17 were arranged within the envelope 12 in any position and said envelope 12 were closed with the cover 19, it is clear that said container 17 would partially obstructs the inlet 13 (part 13A or part 13B), and two of the three outlets 14, 15 and 16. In fact, said container 17 has a size of such to enter with a good precision the envelope 12, so that the air can pass only through the free openings, without any substantial undesired leak through skylights and fissures. If the container 17 is inserted in the position 17A, to which corresponds the cited front filtration operating mode (FA), the air can only enter the envelope 12 through the zone 13B of the inlet 13, which is left free by the opening 18A of the container 17, and can only exit in the direction of the front part 2 of Figure 1 through the outlet 14, which is left free by the opening 18B, and only after having crossed the middle plane 20 of said container 17, while the outlets 15 and 16 are closed by the walls of the same container 17.

Similarly, with the container 17 being rotated 180° in the position 17B, i.e. for the so-called upper filtration mode (FS), the air enters through the openings 13A and 18C, crosses the middle plane 20 and then exits the outlet 15, which is left free by the opening 18D, towards the upper discharge 4 of Figure 1; by overturning the container 17 in the position 17C, which corresponds to the rear suction operating mode (AP), the air enters the envelope 12 and the container 17 through the facing openings 13B and 18E, and therefore the air, without crossing the middle plane storey 20, exits by the openings 18B and 16 in the direction of the rear part 6 of Figure 1.

Finally, by rotating again the envelope 180°, the position 17D is obtained, which corresponds to the upper suction operating mode (AS), in which the air enters the envelope 12 through the zone 13A of the inlet 13, which is left free by the opening 18F of the container 17; the air therefore exits the openings 18G and 15 towards the upper discharge 4 of Figure 1, in the same way as position 17B, but now the air cannot cross the middle plane 20.

It is evident that the closure means 19 and the envelope 12 that house the container 17, could be coupled on any surface, even if not flat, rather than on the lower face as shown in Figure 5; for example, the cover 19 could close on a lateral face and the container 17 will be inserted in the envelope 12 such as a drawer; alternatively, the cover 19 may not be necessary, and be replaced by a continuous face, without any openings, of the container 17; this would be possible, for example,

when only the operating mode allowed by the positions 17A and 17B of Figure 5 are provided; in this case, therefore, the opening 18G would not be necessary.

It is furthermore evident that the envelope 12, which substantially delimits an ensemble of surfaces housing the container 17, might be not expressly realized: it might be totally or partially obtained by the surfaces of the surrounding bodies and means, such as for example the horizontal and vertical walls of the hood.

It is also evident that the container 17 does not necessarily have to be of a box shape as in Figure 5 but, as illustrated in Figure 6, it could be simply composed by a sort of frame 17', having walls only where these are necessary for realizing an obstacle to the air flow, or for ensuring structural sturdiness, or for supporting air treatment means eventually and advantageously contained within.

For a better understanding of the way of functioning, Figure 9 illustrates the same case of Figure 6 with the means or container 17' in the position 17B.

The air enters the envelope 12 through the opening 13B, underlying the air permeable means 20A and arranged in the middle plane of the container 17'; due to the fact that the outlets 14 and 16 are closed by the container 17', the air is obliged to exit only through the outlet 15, after having crossed the means 20A, that could be advantageously constituted by an activated-carbon filter or other air treatment means.

In Figures 10, 11, 12 and 13 a preferred embodiment of the invention is shown, for the case in which the available space in width for the hood is not sufficient to realise the outlet 15, for the coupling with the upper exit conduit in the direction of the channel 4 of Figure 1, directly on the envelope 12 and, as it happens in most cases, the rear exit is not provided. In fact, if the space in width is not sufficient, said opening 15 has to be realized in correspondence with the exit of the scroll 9; in that case, for the deflection of the air flow the auxiliary deflection means 21 of Figure 13 is used. For obtaining the upper suction mode (AS), the deflection means 21 has to be set in the position 21B of Figure 13, while the position of the container 17 is not relevant, being excluded from the air circuit; on the other hand, for obtaining the filtration mode, the deflection means 21 has to be set in the position 21A of Figure 13, so that the air can enter the envelope 12 and obliged to pass through the means 20A; in that case, the upper filtration mode (FS) is obtained, if the container 17 is arranged in the position 17B, while the front filtration mode (FA) is obtained when the container 17 is arranged in the position 17A.

In order to illustrate the versatility of the invention, Figure 12A shows the same device already illustrated in Figure 12, with the difference that now it has a substantially cylindrical shape; it is evident that a rotation of 180° of the device modifies the way of functioning exactly as illustrated in Figure 12, with the advantage that the rotation of an element being of cylindrical shape can be realized by means of a suitable command means provided by the hood, for example a tripping knob, having a suitable mechanism, for changing the position of the cylindrical container 12' without any intervention within the hood itself.

Figure 12B shows on the other end how the same way of functioning of Figures 10, 11, 12 and 13 could be obtained, according to a further embodiment of the flow deflection device according to the invention, not by rotating the container 17", but overturning it; it can moreover be noticed that, in the illustrated embodiment of Fig. 12B, the cover 19 is not necessary.

Figure 14 shows how, in a preferred embodiment, the container 17" can be constituted by a cartridge, containing an activated-carbon filter 20A, having lateral walls conformed for example as in Figure 12. Such a cartridge 17" is drawn and replaced when the activated-carbon has lost its filtration efficiency. In Figure 15, on the other end, the container 17", in correspondence of the middle axis, has a hollow 22 wherein the real activated-carbon filter 20A is inserted, or any other air treatment means, that has to be drawn once exhausted.

Apparently, it may seem complicated to entrust the user with the task of orienting the container 17 or 17", or the frame 17', in the correct way; however, on the contrary, from Figure 16, for this purpose it is sufficient to mark the end of the relevant faces with suitable duly oriented symbols; for example said container 17 is shown according to the positions 17A and 17C of Figure 5, and the symbols FA, FS, AP, AS, have been used, which are the initials, in the Italian language, of the previously described operating mode (front filtering, upper filtering, rear suction , upper suction).

It is evident from the given description how the present invention introduces important improvements to the functioning of hoods.

According to the invention, it is in fact possible to eliminate the activated-carbon filter from the scroll inlet, thus freeing some space for an improved uniform circulation of the air between the grease filter and the nosepiece of the fan, and also reducing the overall height of the hood. The arrangement of the filtering means downstream the scroll, according to the present teachings, does not require additional spaces, but instead it better utilizes that already existing; it simplifies the conduits downstream the scroll and finally allows the use of filters having an effective passage section, of the desired dimensions, being limited only by the external dimensions of the hood. On the contrary, it has been seen that in a filter, even being very wide, mounted on the nosepiece, the zone effectively crossed by the air is limited to the area of the nosepiece.

The described invention is susceptible of several modifications and variations, which fall within the inventive idea; it is clear that all the described details and constructive materials can be changed with other being technically equivalent; the practical examples illustrated herein are only some of those possible.

Claims

1. Suction and/or filtration hood, comprising a flow deflection device, characterized in that the flow deflection device comprises a seat or envelope (12;12') defining one or more inlets and one or more outlets (13-16) and is internally shaped for containing a hollow means (17;17';17"), having a plurality of apertures (18A-18G) suitably arranged, in order that the air can pass through said hollow means (17;17';17") only through the appropriate apertures, the external shape of said hollow means (17;17';17") and the internal shape of said envelope (12;12') being apt at avoiding leakage of the air towards undesired paths and wherein the deflection from one air path to another is obtained by changing the position (17A,17B,17C,17D) of the hollow means (17;17';17") within said envelope (12;12').

2. Hood, according to claim 1, characterized in that, depending upon the position (17A,17B,17C,17D) chosen for said hollow means (17;17';17") within said envelope (12;12'), only two couples of apertures of the envelope and of the hollow means, respectively a couple for the air inlet and a couple for the air outlet, are free, while the other apertures remain closed.

3. Hood, according to claim 1, characterized in that, by changing the position (17A,17B,17C,17D) of the hollow means (17;17';17") within the envelope (12;12'), the apertures which remain free are changed.

4. Hood, according to claim 1, characterized in that said hollow means (17;17';17") comprises an internal plane (20) where air treatment means (20A) are arranged, the air being compelled or impeded to pass through said internal plane (20) depending upon the position (17A,17B,17C,17D) chosen for said hollow means (17;17'17") within said envelope (12;12').

5. Hood, according to claim 1, characterized in that said envelope (12;12') and said hollow means (17;17") are respectively constituted by box-like bodies, having in particular an external surface being substantially parallelepiped or cylindrical shaped.

6. Hood, according to one or more of the previous claims, characterized in that the inlets of said envelope (12;12') are realized by two distinct zones (13A,13B) of a single aperture (13).

7. Hood, according to one or more of the previous claims, characterized in that said envelope (12;12') is totally or in part obtained by means of bodies surfaces and means which surround the hollow means (17;17'17"), such as for instance vertical or horizontal walls of the hood.

8. Hood, according to one or more of the previous claims, characterized in that said hollow means (17;17'17") is constituted by a frame (17') having walls only where necessary, for functional or structural or support functions.

9. Hood, according to one or more of the previous claims, characterized in that said hollow means (17;17'17") is contained within the envelope (12;12') by means of a closure means (19), being substantially flat, wherein in particular the closure means (19) and the envelope (12;12') which contains the hollow means (17;17'17") can be coupled on any surface, even a not flat one.

10. Hood, according to one or more of the previous claims, characterized in that an additional flow deflection means (21) is provided, which compels the air to pass through the hollow means (17;17';17") or to by-pass it for a direct exit through a discharge aperture (15), said additional flow deflection device comprising in particular a throttle-valve.

11. Hood, according to one or more of the previous claims, characterized in that said hollow means (17;17'17") contains means for the air treatment (20A), said air treatment means (20A) being in particular arranged in a zone which is crossed, or not, by the air depending upon the position (17A,17B,17C,17D) chosen for the hollow means (17;17'17").

12. Hood, according to the previous claim, characterized in that said air treatment means (20A) are constituted by air permeable walls (20B), which contain substances able to filter, purify or disinfect the air.

13. Hood, according to the previous claim, characterized in that said air permeable walls, which contain said substances, form a single body with said hollow means (17;17'17"), which substantially constitutes a cartridge for containing said substances and which can be replaced once said substances are exhausted.

14. Hood, according to one or more of the previous claims, characterized in that the hollow means comprises a seat for housing a filter, which can be removed and replaced without the need of replacing the hollow means.

15. Hood, according to one or more of the previous claims, characterized in that the correct position for each operating mode, and therefore for each position of the hollow means (17), is indicated by means of letters of symbols being marked on the body of the hollow means.

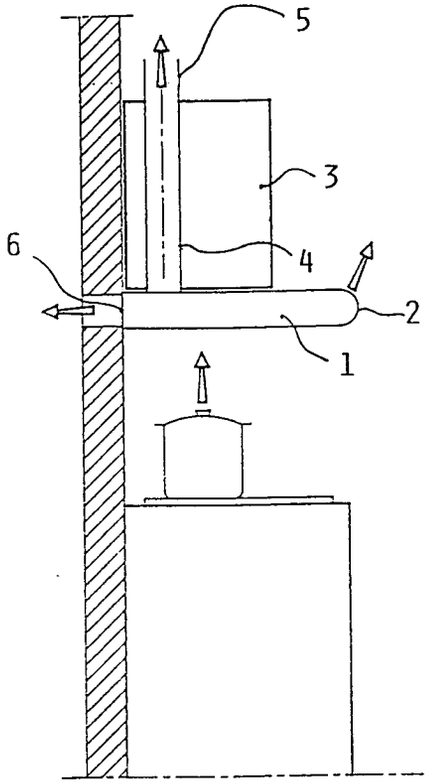


FIG. 1

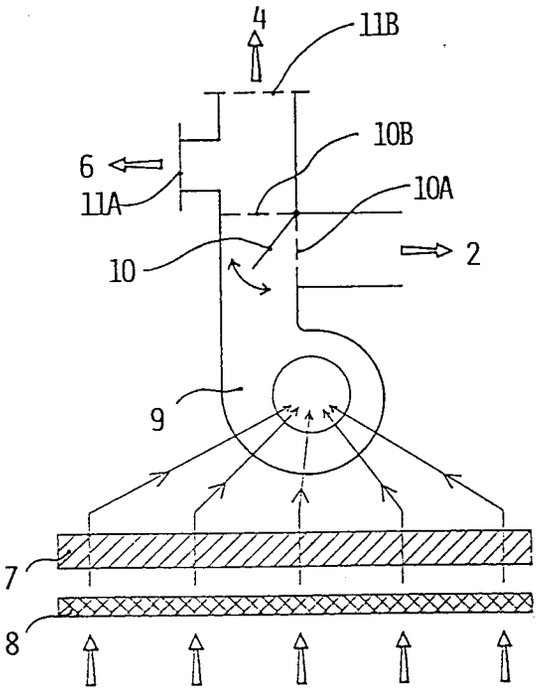


FIG. 2

FIG. 4

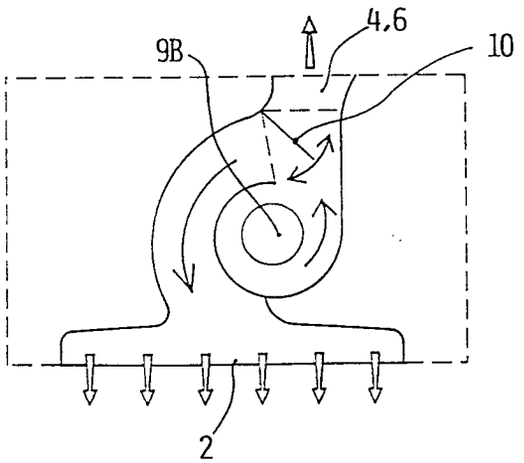
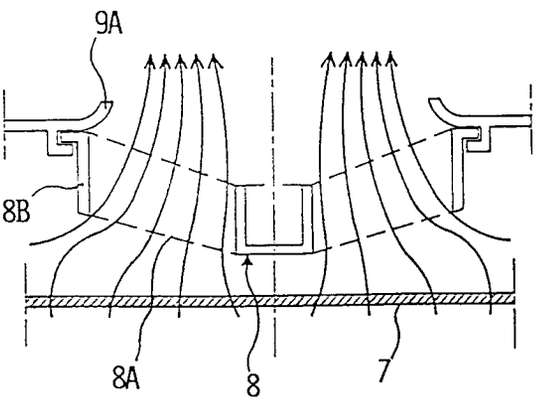
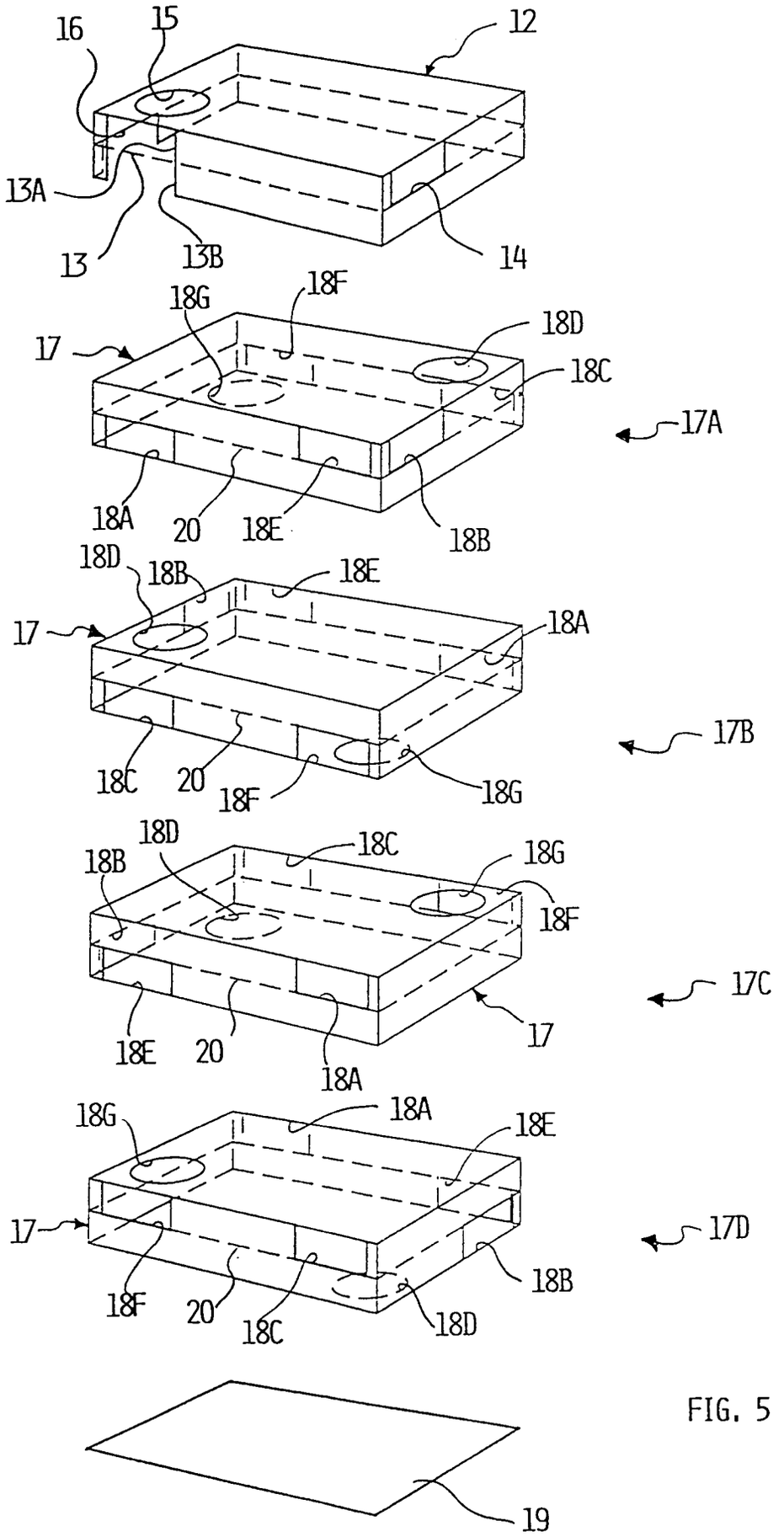


FIG. 3




16
15
12
13A
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13B
14
18G
18F
17
18D
18C
17A
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18E
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18A
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18C
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18F
17C
18E
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18A
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18E
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17D
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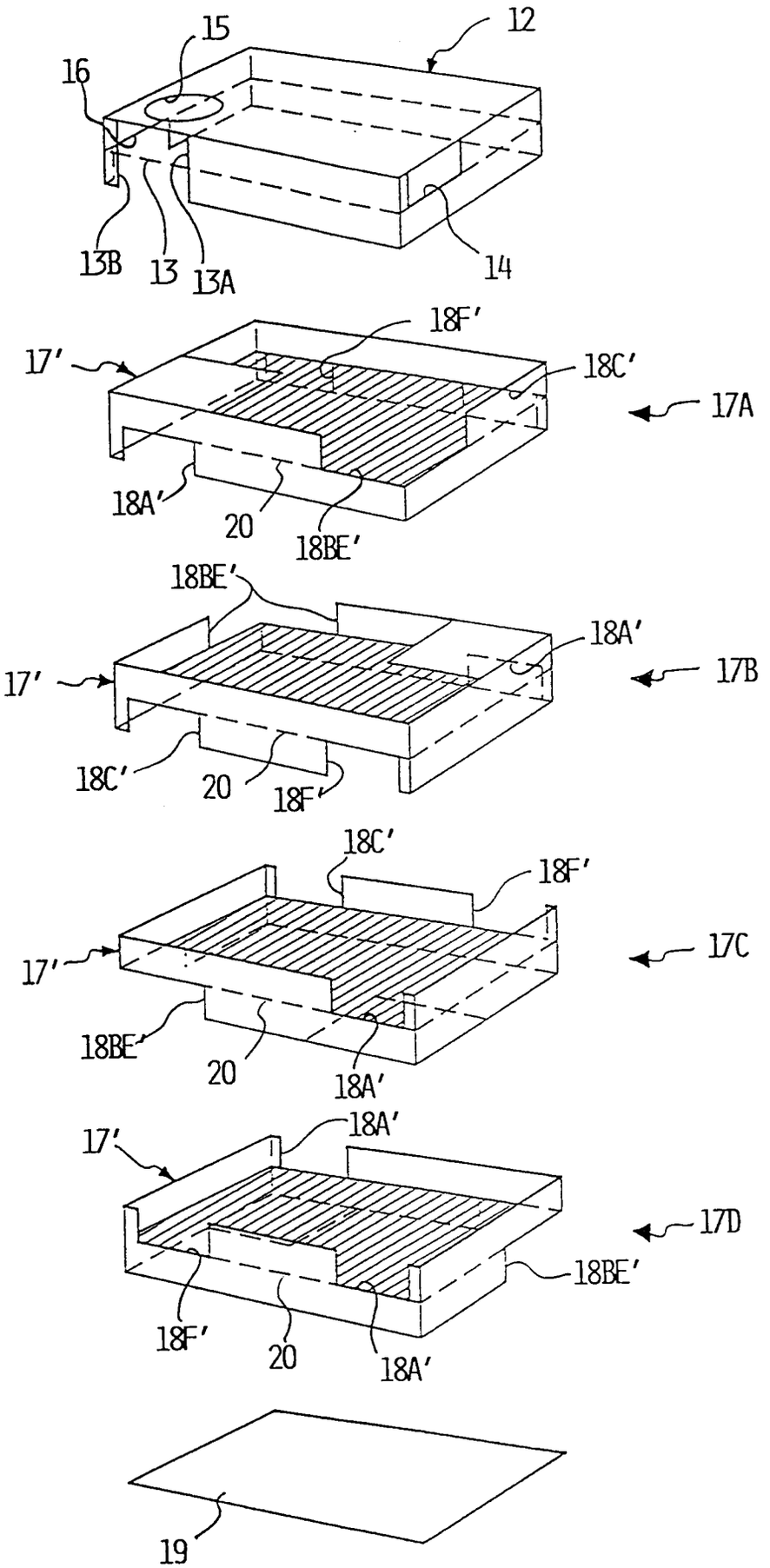
20
18C
18B
18D
19

FIG. 5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13B
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18F'
17'
18C'
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18BE'
18BE'
18A'
17'
17B
18C'
20
18F'
18C'
18F'
17'
17C
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18A'
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18A'
17D
18BE'
18F'
20
18A'
19

FIG. 6

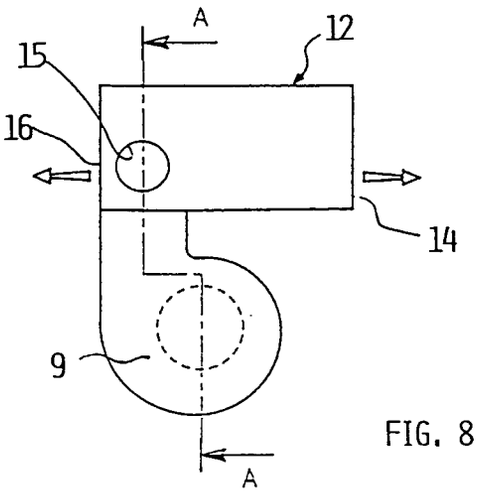


FIG. 8

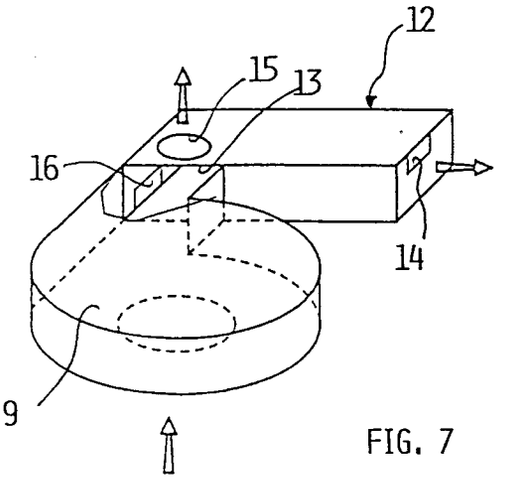


FIG. 7

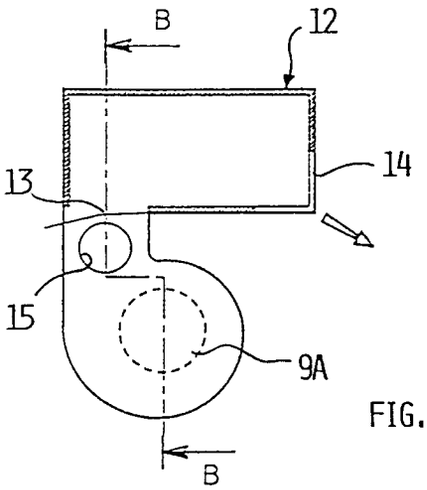


FIG. 11

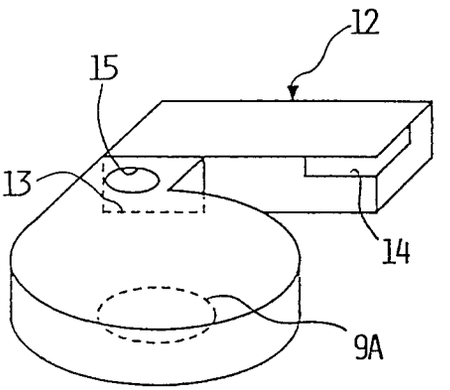
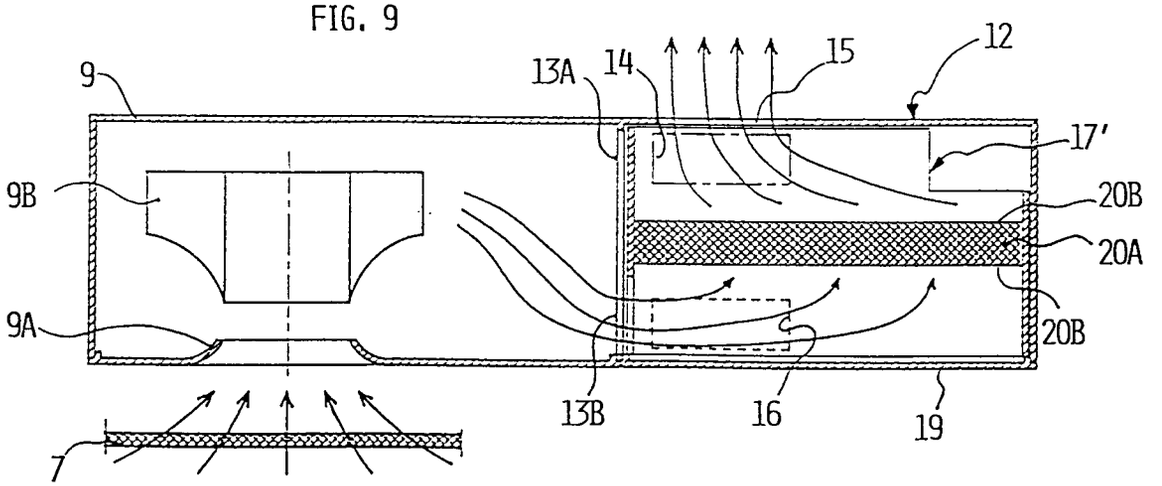


FIG. 10

FIG. 9



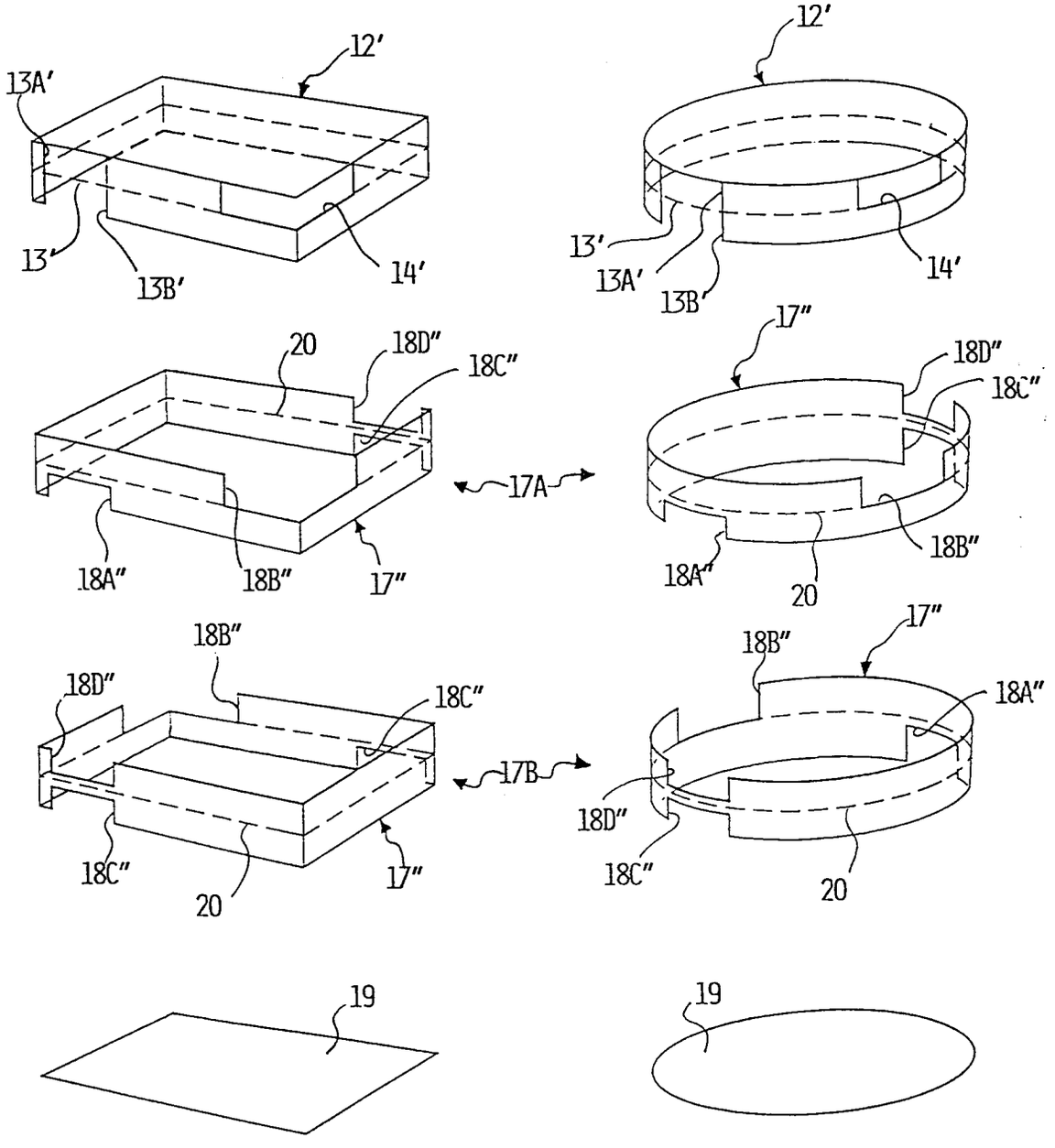


FIG. 12

FIG. 12A

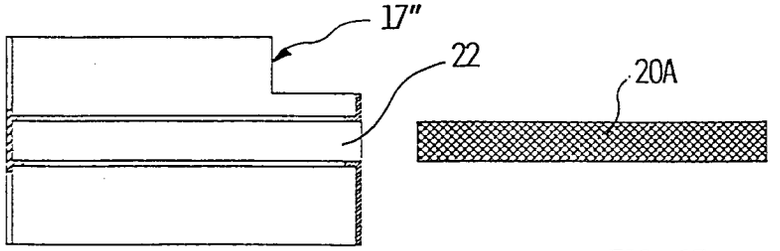
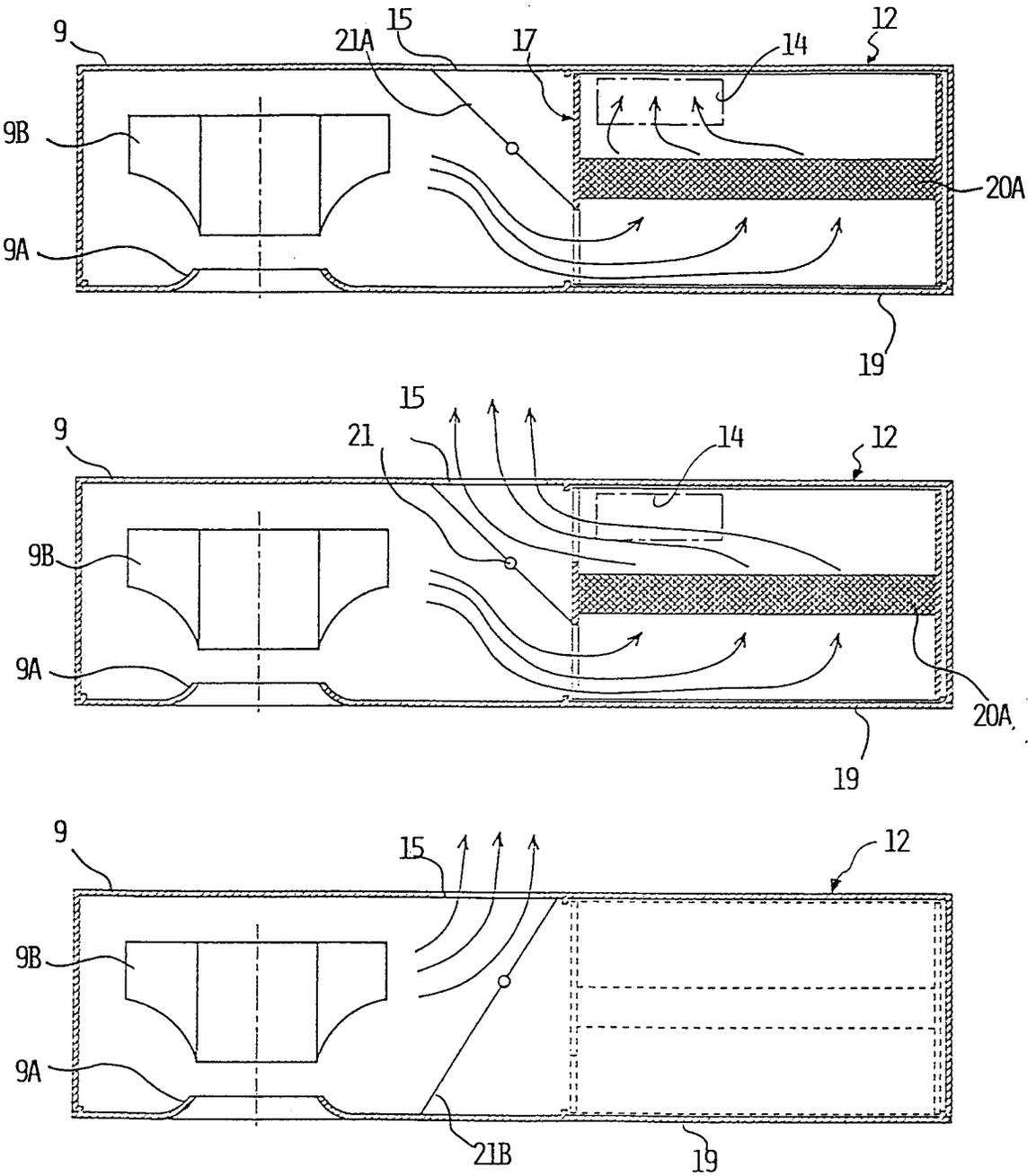


FIG. 15


9
21A
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17
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9B
20A
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14
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9B
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20A
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9
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9B
9A
21B
19

FIG. 13

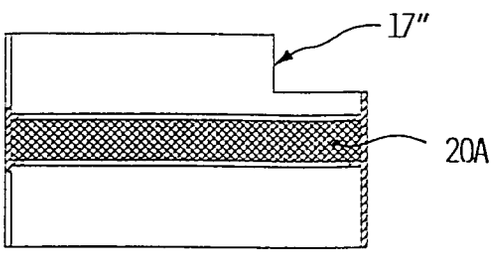

17"
20A

FIG. 14

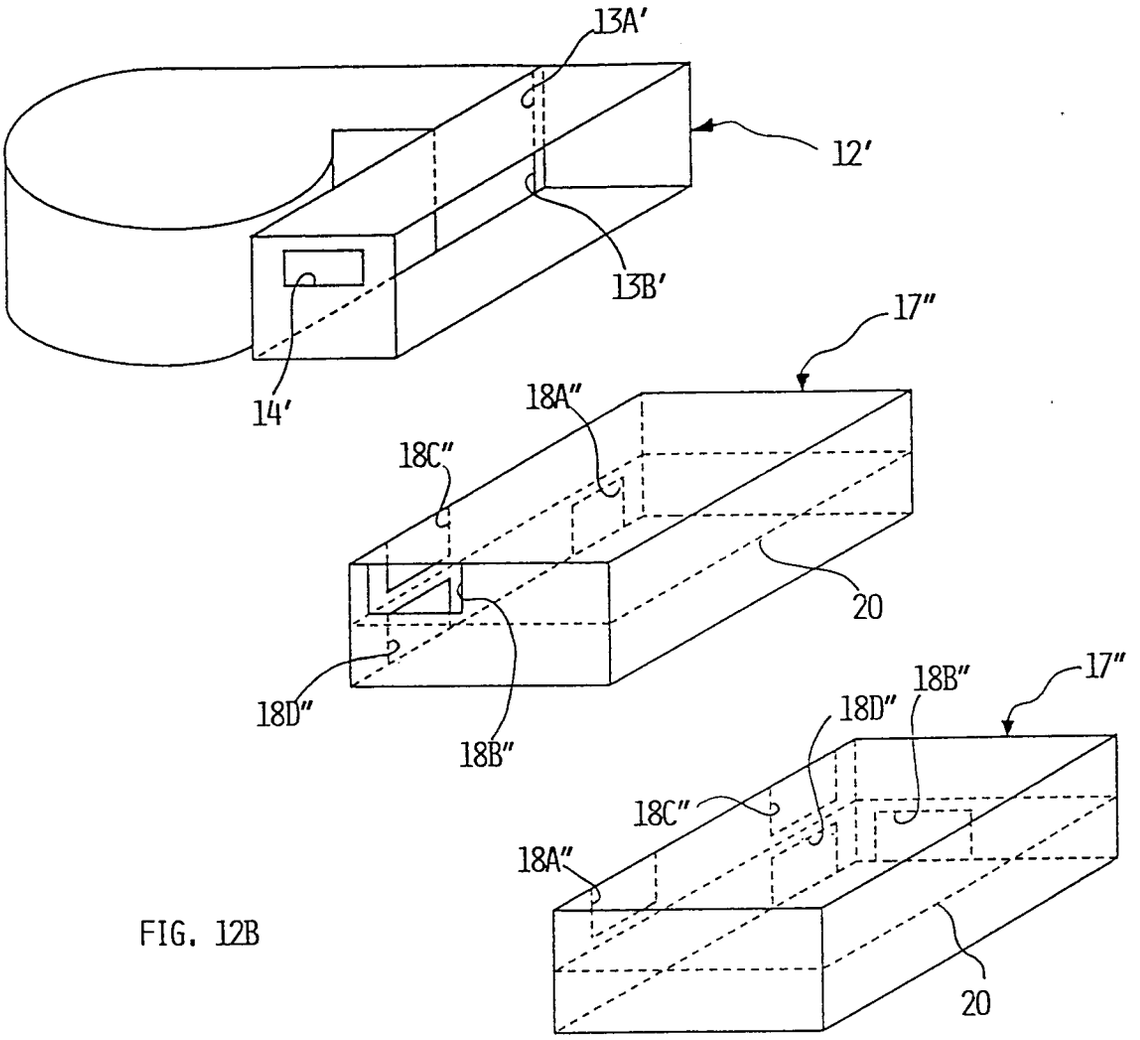
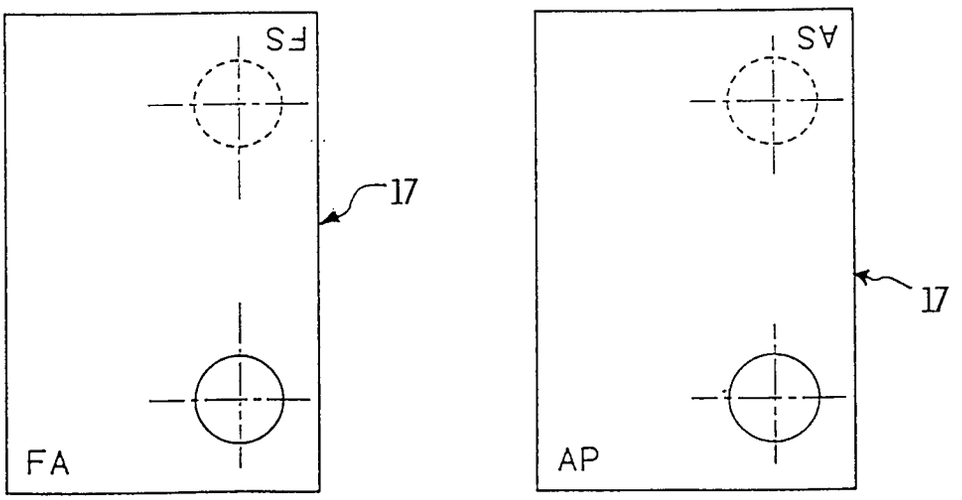


FIG. 12B

FIG. 16



17A 17B