(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 September 2014 (18.09.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/142767 A2

(51) International Patent Classification:
F24C 15/20 (2006.01)

(21) International Application Number:
PCT/SI2014/000013

(22) International Filing Date:
11 March 2014 (11.03.2014)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P-201300057 14 March 2013 (14.03.2013) SI

(71) Applicant: **PROVENT D.O.O.** [SI/—]; Pod lipami 5 Poslovna cona Žeje pri Komendi, 1218 Komenda (SI).

(72) Inventor: **RENAR, Florijan**; Brilejeva 3, 1000 Ljubljana (SI).

(74) Agent: **PIPAN, Marjan**; Kotnikova 5, 1000 Ljubljana (SI).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

(54) Title: KITCHEN HOOD

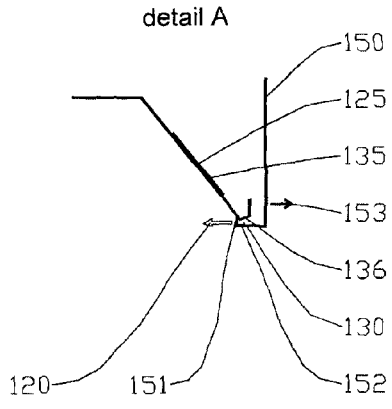


Fig. 2

(57) Abstract: The object of the invention is a kitchen hood that allows for efficient extraction of exhaust air and installation of a sufficient filtering surface despite a low height of the hood and a low height of an air capturing space within the hood. Unlike typical existing kitchen hoods that are provided with only one row of filters arranged at the rear wall of the hood, the kitchen hood of the invention, if a wall-mounted hood or a hood mounted above one row of thermal elements is in question, is provided with two rows of filters (170, 190) in the central part of the hood, from where a substantial quantity of exhaust air normally originates. The capturing space of the hood for capturing exhaust air is divided into a front capturing space (110) and a rear capturing space (205). The lower inner part of lateral sides of the hood is provided along the entire circumference of the hood, with the exception of the rear side of the hood (210), with narrow slots designed for blowing-in fresh air directly back into the hood in order to prevent potential steam-saturated air from flowing outside the area of the hood. The front blowing-in slot (130) is arranged between the backwards bent lower edge of the lamp holder (135) and the lower edge of the front side (150) of the hood, the construction of which defines also the system for opening the front side of the hood.

WO 2014/142767 A2

KITCHEN HOOD

The object of the invention is a kitchen hood that allows for efficient extraction of exhaust air and installation of a sufficient filtering surface despite a low height of the hood and a low height of an air capturing space within the hood. Unlike typical existing kitchen hoods that are provided with only one row of filters arranged at the rear side of the hood, the kitchen hood of the invention, if a wall-mounted hood or a hood mounted above one row of thermal elements is in question, is provided with two rows of filters in the central part of the hood, from where a substantial quantity of exhaust air normally originates. The lower inner part of lateral sides of the hood is provided along the entire circumference of the hood, with the exception of the rear side of the hood, with narrow slots designed for blowing-in fresh air directly back into the hood in order to prevent potential steam-saturated air from flowing outside the area of the hood. The invention belongs to class F24C15/20 of the International Patent Classification.

The technical problem efficiently solved by the proposed construction of the kitchen hood is capturing exhaust air closely above the sources of exhaust air with such an arrangement of filters to obtain a sufficient surface of filters despite their small height. In this way hoods with a small height of the capturing space even up to 250 mm can be fabricated that efficiently extract exhaust air despite the fact that they have a much smaller extracting volume than the existing hoods. The extraction capacity of this hood is even further increased by blowing-in of a small quantity of fresh air from a narrow slot having a height of 2 mm to 10 mm and arranged on the lower inner part of the lateral sides of the hood towards the interior of the hood. To increase the extraction capacity it is important that the air from the kitchen reaches the hood along its entire

circumference in as laminar manner as possible without disturbances, which is reached in the hood of the invention by blowing-in fresh air into the kitchen space in horizontal direction and in vertical direction towards the ceiling along the entire circumference of the hood. All these solutions combined with other technical solutions of the invention allow for an efficient extraction of exhaust air despite a small height of the capturing space of the hood; the hood therefore not only reaches an average extraction efficiency of the existing higher hoods but even increases it. For this reason it can even be called an energy saving kitchen hood.

Existing conventional kitchen hoods for professional kitchens according to Figure 1 designed to be mounted onto a wall 50 or above one row of thermal elements 5 have a metallic housing with a front side 15 of the hood, an upper side 20 of the hood, a rear side 25 of the hood and two lateral sides of the hood. Under the upper side 20 of the hood there are normally a lamp 40 and a ceiling 30 of the hood underneath said lamp, said ceiling delimiting a capturing space 55 of the hood together with slantingly arranged segments of filters 35 at the rear side of the hood. A stream 10 of steam-saturated exhaust air is collected in the area 55 above cooking/baking elements 5. As segments of filters 35 grease traps or baffle filters are most often used, through which exhaust air is extracted via space 60 to an exhaust air duct 45. Such typical design of a kitchen hood is encountered in patent applications US3978777, US4475534 and EN1250556B1 which disclose various ways of how extraction effect of a kitchen hood can be improved. When thermal elements in a kitchen are arranged centrally in two parallel rows and operated from both sides, a double-sided central hood is installed above the thermal element in a way as if a wall-mounted hood at the wall 50 were added its mirror image without the rear side 25 of the hood. Here, the baffle filters are arranged in the centre of the hood in the shape of the letter V and separate one half of the hood from the other.

The flow 10 of steam-saturated exhaust air that arises during cooking and baking above the thermal elements 5 rises towards the ceiling of the hood. If the speed and the quantity of the stream 10 of exhaust air are low enough, a substantial part of this air 65 flows directly towards the filters 35. In case of larger quantities of exhaust air, the air flows so rapidly that only a smaller portion of this stream 65 flows towards the filters 35 and a majority of the exhaust air reaches the ceiling 30 of the hood and one portion, a stream 70, reflects towards the filters 35, and another portion, a stream 75, reflects towards the front side 15 of the hood. If the quantity of exhaust air from the hood is not huge enough and if the hood does not have a very large capturing space 55 of the hood it is very likely for the stream 75 of exhaust air that one portion, a stream 80, escapes the hood into the kitchen space, which reduces the extraction efficiency of the hood.

Filters 35 are typically made of metallic blades that form labyrinth for separation of grease. They must be arranged slantingly to allow the liquids trapped in filters to flow into a collecting chamber. To reach an adequate surface of slantingly arranged filters for an efficient extraction of exhaust air from below the hood, a minimum hood height is required, however, it can be too high in cases of low ceilings or for other reasons, for which it is desired to have a lower hood. If there is a need for a low height of the capturing space 55 of the hood, the typical arrangement of lamps 40 on the ceiling of the hood is disturbing as it reduces the height of the capturing space 55.

Patent application SI21627 (A) discloses a position of the extraction area different than that in a typical design of a kitchen hood with baffle filters and similar to the application of the extraction hood bottom of the invention. The existing application refers to a wall-mounted hood or a hood installed above one row of thermal elements and protects a system of extracting air through two extraction slots arranged along the entire length of the hood. A drawback of the solution with two longitudinal slots in

the application is a lower degree of air filtration compared to filtration with baffle filters, and in the shape of extraction slots that are not sufficiently impermeable to fire. The arrangement of slots at the ceiling of the hood has a poorer extraction effect compared to the arrangement of the extraction slots of the invention. In case of huge quantities of oil fumes in the exhaust air, cleaning of such extraction system consisting of long pieces of metal is more demanding than cleaning of a system of filter segments which can be washed in dish washers.

To reduce possibilities of the air 75 to escape from the hood and to increase the extraction effect there are several solutions from patent applications. Patent application US3978777 protects blowing-in of fresh air at the bottom front edge of a hood directly back towards a hood filter. This hood is characterized by a width of the blow-in mouth between 25 and 50 mm and by a considerable amount of blown-in fresh unheated air, even up to 80 % of the needed flow for ventilating a kitchen. Studies of extraction efficiencies of these hoods have shown that this principle has a rather negative extraction effect as a huge amount of air blown directly back into the hood cuts the air flow towards the capturing space of the hood such that a portion of this air escapes from the hood. Moreover, this system is a huge waste of energy due to a huge amount of blown-in fresh air. Patent application EN1250556B1 protects blowing-in of fresh air at the bottom edge of the hood with blowing nozzles directly rearwards in direction towards baffle filters of the hood and downwards towards the floor. To achieve the necessary velocity of fresh air in the nozzles, sufficient air pressure needs to be provided; to this purpose an additional fan for ventilation is needed apart from the main fan for fresh air supply. Patent application SI21627 (A) protects blowing-in of a small quantity of fresh air somewhat above the edge of the front side of the hood at the wall of the lateral side downwards. This air is then dispersed under the hood in

an uncontrolled manner and has no considerable influence on the extracting efficiency of the kitchen hood.

The present invention refers to a kitchen hood with such construction of exhaust air capturing space that reaches the hood above thermal elements in order to achieve efficient extraction of air and its efficient filtration despite low height of its capturing space. Such solution to the capturing space is therefore suited for exhaust hoods or supply-exhaust hoods with a low height designed for kitchens with a low ceiling and for exhaust hoods or supply-exhaust hoods that require additional space above the capturing space of the hood due to a certain superstructure, such as a system for the air heat recovery with plate heat exchangers. The capturing space of the hood is defined as the space below the ceiling of the hood enclosed from all four sides by sides of the hood, into which steam-laden exhaust air from above the thermal elements for cooking and baking is captured.

Unlike the existing hoods, in which, in the case of a wall-mounted hood or a hood arranged above one row of thermal elements, filters are arranged in one row at the rear side of the hood, the filters in the hood of the invention are shifted towards the front section of the hood to the central section of the hood. Rather than being arranged in one row, the filters in the hood of the invention are arranged in two rows as a front and a rear row of filters in the shape of the letter V. A basin is interposed between both rows, in which waste liquids are collected. Two rows of filters instead of one provide for an adequate surface of filters despite their low height or low height of the capturing space of the hood. The filters are arranged above an area where a mass of exhaust air arises, so a considerable part of exhaust air that reaches the filters is immediately extracted without air deflection at the ceiling of the hood as was described for the conventional existing hoods.

If the entire quantity of air that reaches the filters is not immediately extracted, the excess air is distributed between the front and the rear capturing space of the hood that are separated by the front and the rear row of filters arranged in the shape of the letter V. The excess exhaust air in the front capturing space of the hood is directed past the front row of the filters and via the ceiling of the hood downwards towards the front lower edge of the hood, where the front side of the hood is designed in a way to form together with the lamp support a narrow blowing-in slot of several mm, through which a small amount of fresh air is blown directly back into the hood. The created air curtain returns the exhaust air stream that would otherwise go past the hood back into the hood. If the rear row of filters has not extracted the entire exhaust air that was deflected towards it, the excess air travels towards the rear side of the hood, from where it returns towards the rear row of filters.

In the case of a one-sided island hood arranged above one row of centrally arranged thermal elements, where no wall is present, against which the hood would lean, the wall-mounted kitchen hood of the invention is prolonged at the rear side in a way that it extends with a suitable surface needed for efficient extraction of exhaust air over the rear edge of the thermal elements.

In case of a double-sided island hood of the invention that is arranged above two rows of centrally arranged thermal elements for cooking, the wall-mounted hood at the rear side of the hood is added its mirror part without the rear side of the hood in a way that such a hood is provided with two rows of filters in each group. The exhaust air that went past the rear row of filters in this hood now has a possibility to flow through the central capturing space of the hood with a considerably huge volume to the second group of filters at the opposite side, where the rear row of this second group of filters extracts the excess exhaust air.

The hood of the invention is provided with a filter holder between each pair of filters. The filter holder holds the filters in their position and prevents them from moving due to higher underpressure of the air above them, from uncontrolled physical contact, and ensures a tight connection between two filters. Each individual group of filters arranged in the form of the letter V can be superposed by fine particle filters. These may be wire filters, UV filters or any other shape of fine particle filters.

Instead of one group of filters with two rows of filters arranged in the shape of the letter V the hood of the invention can have a front and a rear extraction metallic bottom which forms together with the basin for capturing waste liquid three extraction slots along the entire length of the hood. The slots have the shape of a labyrinth so that, when the air flow changes direction, the exhaust air is separated from steam. Such construction of the extraction bottom is designed especially for extraction of exhaust gas saturated with a huge quantity of water steam. A solution with the extraction bottom with extraction slots is cheaper than the solution with filter segments, it is simple to clean and is very efficient in filtering exhaust air when not much oil vapours are generated during cooking. The system of extraction of the exhaust hood of the invention provided with three extraction slots is much more efficient than the known solution with two slots.

In case when fresh air is supplied to the hood, the upper side of the front side and the lateral sides can be provided with a blowing-in slot in horizontal direction and also in vertical or slanting direction towards the ceiling to achieve the most equal aeration of the space around the hood as possible thus achieving a more efficient extraction of exhaust air from below the hood. The sides of the hood of the invention can be perforated and thus serve as a blowing-in element for fresh air together or without blowing-in slots. The front side of the hood can be opened via hinges arranged at the top of the side and the bulbs of the lamp can be replaced

from the front side of the hood and the possible superstructures of the hood are also accessible, for instance panel heat transfers. When the front side is closed, the holder of the lamp with glass not only forms a fresh air blowing-in slot with the front side but also protects the front side of the hood from getting opened in an uncontrolled manner. The front side of the wall-mounted hood has slots for blowing in fresh air directly rearwards into the hood, moreover, in the case of a wall-mounted hood, similar slots are also provided on both lateral sides of the hood in order to prevent the damp laden air from escaping from the hood. Lateral slots can be simply made as fixed slots without a possibility of lateral sides of the hood being opened. In case of a double-sided island hood arranged above two rows of thermal elements, fresh air blowing-in slots of this type are arranged along the entire lower internal edge of the hood.

The invention will be described in more detail by way of an embodiment and figures, in which:

Figure 1 shows a side cross-sectional view of an existing typical known wall-mounted kitchen hood;

Figure 2 shows a side cross-sectional view of a wall-mounted kitchen hood of the invention;

Figure 3 shows a side cross-sectional view of an island double-sided kitchen hood of the invention;

Figure 4 shows a side cross-sectional view of a wall-mounted kitchen hood of the invention with details of filter holders;

Figure 5 shows a side cross-sectional view of the kitchen hood with three extraction slots;

Figure 6 shows a side cross-sectional view of a wall-mounted kitchen hood of the invention with an area for a superstructure above the capturing part of the hood;

Figure 7 shows a top view of the wall-mounted kitchen hood of the invention showing a position of fresh air blowing-in slots at the lower internal side of hood sides;

Figure 8 shows a top view of the island double-sided hood of the invention that shows a position of fresh air blowing-in slots at the lower internal side of hood sides.

A kitchen hood of the invention shown in Figure 2 as a wall-mounted hood on a wall 50 or as a hood arranged above one row of thermal elements 5 is characterized in that its capturing space for exhaust air is divided by a basin 100 for collecting and discharging condensed liquid, by a front row of filters 170 and by a rear row of filters 190 into two parts, a front capturing space 110 and a rear capturing space 205.

A stream 10 of steam-laden exhaust air lifts above the thermal elements for cooking and baking. When said stream reaches the basin 100, the stream of air splits into a front stream 105 of air and a rear stream 200 of air. The front stream 105 of air passes through the front row of filters 170 into the hood. If the front stream 105 of air is so strong that the front row of filters 170 cannot extract it completely, a remaining front stream 115 of air passes through the front capturing space 110 past a front ceiling 165 and a lamp holder 135 to the lowest point of the hood, where a stream 120 of fresh air comes from a slot 130, said stream having an air-curtain effect and an induction effect and thus accelerating return of the remaining front stream 115 of air back towards the front row of filters 170. The front stream 115 of air is thus prevented from escaping past the front side 150 of a hood from the hood into the kitchen space. On an inclined section of the lamp holder 135 a lamp glass 125 is arranged, above which there is a lamp cover 140 with a lamp 145. The arrangement of the lamp cover 140 onto the lamp holder 135 in the front part of the

hood of the invention does not lower the ceiling of the capturing space of the hood as was the case with existing hoods from Figure 1.

The rear stream 200 of air passes through the rear row of filters 190 into the hood. If the rear stream 200 of air is so strong that the rear row of filters 190 cannot extract it completely, a remaining rear stream 220 of air passes through the rear capturing space 205 past a rear ceiling 195 and a rear side 210 of the hood and the wall 50 back towards the rear row of filters 190.

Unlike the existing hoods from Figure 1 that are provided with one row of wide filters 35, the narrow segments of the filters 170 and 190 of the hood of the invention are arranged in two rows; the capturing space in the hood has a low height, however, if the filters are arranged in an inclined manner in the shape of the letter V, a sufficiently large surface of filters is obtained that efficiently extracts the exhaust air. Such hood can have a height of only about 250 mm. In the hood of the invention, the main stream 10 of exhaust air first reaches the surface of filters 170 and 190 that extract this air and only potential excesses of exhaust air flow further to the ceiling 165 and 195 of the hood and then at the rear side 210 of the hood and at the front side at the lamp holder 135 back towards the filters. In typical existing hoods of Figure 1, in which a stream 10 of exhaust air is first reflected from the hood ceiling and not immediately extracted as in the hood of the invention, a stream 75 of air that flows towards a front side 15 of the hood is substantially larger than the stream 115 of air in the hood of the invention; the existing hood therefore only reaches efficient extraction if having a considerably higher height and thus larger volume of the capturing space than is needed in the hood of the invention.

The hood of the invention from Figure 2 can be used both as a wall-mounted variant and as a one-sided island hood above one row of thermal elements that are not arranged at a wall; the rear side of the hood can be extended in a way that it projects at the rear side 210 over the edge of the

thermal elements 5 for cooking. The advantage of the hood of the invention is preserved in this case as well, namely the front row of filters 170 and the rear row of filters 190 are arranged over the heaviest source of steam-laden air that is extracted from below the hood.

The hood of the invention is provided in a capturing space 175 above the front row of filters 170 and the rear row of filters 190 with a second degree of filters 185 for fine filtration of air. Directly above the second degree of filtration 185 a duct connector 180 for the extraction of the air from the hood can be arranged. The second degree of filtration can be carried out with wire filters, UV filters or any other adequate technology of fine filtration. A separate installation of both filters can optimize the surface of the first degree of filters 170 and 190 and the surface of the second degree of fine filters 185 separately and independently from each other. In existing conventional filters baffle filters of various structures are most often used in the first degree of filtration, whereas the second degree is carried out by wire filters, wherein both filters are joined one above the other with the same functional surface.

Based on the wall-mounted kitchen hood of the invention from Figure 2 a double-sided island kitchen hood of the invention from Figure 3 can be made for two rows of thermal elements 5 and 255 arranged centrally above the hood. The double-sided island hood of the invention is identical in its right half with the wall-mounted hood of the invention with the exception that the rear side 210 is not present and the left half of the hood is a mirror image of the right half of the hood with identical functions as the right half of the hood. In this way a larger volume of a capturing space 280 of the hood is created under a ceiling 275 which allows co-operation of the right rear row of filters 190 and the left rear row of filters 270 in extracting the steam-laden air from the central capturing space 280 of the hood. When a higher number of thermal elements are used while cooking, not all elements under the hood function at full capacity, so there is always a

certain simultaneity factor of operation. If a stream 285 of air is more intense than a stream 290 of air and the rear row of filters 190 cannot extract the entire stream 285 of air, the excess air, a stream 286, passes through the central capturing space 280 of the hood towards the rear row of filters 270 in the left part of the hood, wherewith efficient functioning of the entire hood is achieved. The same is valid in an opposite case when the stream 290 of air is more intense than the stream 285 of air. In the conventional existing double-sided hood consisting of a right half from Figure 1 and a left half as its mirror image, a barrier is made between both halves of the hood by centrally arranged filters in the shape of the letter V, which barrier prevents the steam-laden air from passing from one half into the other. Since the rows of filters 190 and 270 mutually co-operate, the hood of the invention reaches high efficiency of exhaust air extraction in the capturing space 280 with a relatively small quantity of discharged air. A considerable higher portion of exhaust air can get discharged through the front rows of filters 170 and 265, which increases the overall extraction efficiency of the hood of the invention.

A front side 150 of the hood according to Figure 2 opens by way of upper two lateral hinges 155 upwards, such that the bulb 145 of the lamp can be reached through the cover 140 of the lamp and replaced. The front side 150 is stuck behind a lower edge 136 of the lamp holder 135 with short segments of an edge 151 bent upwards and thus cannot open in an uncontrolled manner. The lamp holder 135 is softly mounted in its slanting section with the glass 125, in a way that, when the front side 150 is open in direction of an arrow 153, the slanting section of the lamp holder 135 is slightly lifted at the contact with the upwards bent lower edge 151 of the front side 150 and allows opening of the side. When the front side 150 is closed, its upwards bent lower edge 151, when coming in contact with the slanting section 136 of the holder 135, displaces the slanting section 136 with the lamp holder 135 upwards, so that the front side 150 sticks with its

upwards bent lower edge 51 behind the slanting section of the lamp holder 135.

The front side 150 is provided with the upwards bent edge 151 only in the shorter segment at the left and right sides of the front side 150, whereas the remaining length of the front side 150 is provided with an edge 151 bent inwards by 180 degrees, which edge 152 forms together with the slanting edge 136 and with the slanting section of the holder 135 the blowing-in slot 130 for blowing in the stream 120 of fresh air towards the filters 170. With its air curtain and air induction effect this blown-in air causes that the remaining stream 115 of the steam-laden air that could flow past the lower edge of the front side 150 outside the hood returns towards the filters 170 of the hood. A solution to a blowing-in slot with a considerably higher height of the slot is known in order to achieve its maximum range with a sufficient quantity of air. A solution with a higher number of blowing-in slots arranged on the lower inner circumference of the hood where higher air pressure is needed is also known, which higher pressure is normally reached by a special fan in order to achieve that the air from the nozzles has sufficient velocity that creates adequate range and induction effect. The hood of the invention has a narrow blowing-in slot of a height ranging from 2 to 10 mm, in which less than 10 % of fresh air is consumed when blowing in fresh air on the internal circumference of the hood than is the necessary quantity of fresh air for the aeration of a kitchen. The blown-in air from the slot 130 does not need a long range, since the front row of filters 170 is arranged, unlike in existing conventional kitchen hoods, relatively close to the blowing-in slot 130. The air thus reaches the slot directly from the main fan for air supply for kitchen aeration and no special fan is required to create higher air pressure.

Fresh air enters the hood of the invention via supply fan and duct through a supply duct connection 160. The kitchen hood of the invention can only receive the quantity of fresh air for the stream 120 of blown-in air

that passes through the slot 130 and both lateral slots. This quantity of air can be increased by the quantity of air needed for kitchen ventilation. The latter can be blown in horizontal direction through the slot above the front side 150 of the hood as an air stream 225 or through the perforated front side 150 of the hood as an air stream 226. The lateral sides can also be perforated or a blowing-in slot can be arranged above them. The horizontally blown-in air in the room can be supplemented on the top of the hood near regulating flaps 227 by an air stream 228 directed towards the ceiling of the kitchen. The regulating flaps 227 can also be arranged above the lateral sides of the hood. The angle of blowing-in of the air stream 228 can be changed by changing the inclination of the regulating flaps 227. The air stream 228 ventailates the space above the hood and simultaneously contributes to better stream laminarity of the blown-in air around the hood, wherewith a more efficient extraction of the exhaust air from below the hood is provided.

Figure 4 shows a detail of installation of filter holders 300 for the front row of filters 170 and filter holders 310 for the rear row of filters 190 of the hood of the invention. As shown by view B, a filter holder 300 or 310 is arranged between each pair of baffle filters. The filter holders hold the filters in their position with right 311 and left 312 upper edges and simultaneously overlap with the filter edges, such that possible condensed drops above the filters do not drop between them and towards the thermal elements. If not a complete possible number of filters need to be present in each individual row of filters, the space designed for a filter at the holder can be fully closed by a metallic insert or this insert is represented by an extended filter holder.

Each individual row of filters 170 and 190 is arranged in the lower part in a seat 101 of filters or a seat 102 of the basin 100. The seats 101 and 102 of filters are provided with outlet openings for discharge of a liquid from the filters 170 and 190 into the basin 100. The filter holders 300 and

310 are stuck in the upper part with their backwards bent edge 313 behind a backwards bent edge 330 of the carrier metal, whereas they lie in the lower part in a slanting groove of the seats 101 and 102 of the basin and secure the filter holders against moving. Each individual filter holder may be provided with a grip 305 for an easier removal from the seat.

For the thermal elements where predominantly water vapour is created a front extraction bottom 435 and a rear extraction bottom 410 from Figure 5 can be used as extraction elements instead of segments of filters 170 and 190 from Figure 2 at a basin 420 for collecting and discharging condensed liquid. The basin 420 creates together with the front extraction bottom 435 a front lower extraction slot 475 and with the rear extraction bottom 410 a rear lower extraction slot 476. The front extraction bottom 435 creates together with a front guide metal 450 of air a front upper extraction slot 490 that extracts a possible excess exhaust air that went past the front lower extraction slot 475. Extraction of water steam laden exhaust air is described in a solution of extracting exhaust air through three extraction slots of Figure 5; this solution is simpler for cleaning and less expensive than the solution with filters 170 and 190 of Figure 5. A solution with two extraction slots is known: a front slot is arranged in a similar place as the front upper slot 490, whereas the rear slot is arranged at the same height at the opposite side. The solution of the hood of the invention with the extraction slots 475 and 476 in the lower part of the hood allows for immediate extraction of exhaust air without the latter first having to deflect towards the ceiling of the hood, which is the case in the already known solution. A slot similar to the front upper extraction slot 390 could be provided at the upper side of the rear extraction bottom 410, but it is not necessary, since there are tiny possibilities for the air to escape from the hood in the rear part of the hood.

All three extraction slots 475, 476 and 490 are shaped in a way that the exhaust air while flowing changes the direction of the air so that water

vapour is separated from the air. Above both extraction bottoms 410 and 435 fine filters 185 are provided the same as above the filters 170 and 190.

The front extraction bottom 435 is inserted at the back side into two pins 470 fixed on each lateral side of the hood of the invention, whereas on the front side it stands on lateral support panels 455 fixed to each lateral side of the hood and to a central angle section 460. Under the central angle section 460, a threaded nut is impressed into the front extraction bottom 435, through which nut a screw 445 secures the front extraction bottom 435 from movement by pressing on the front guide metal 450 of the air. On each side of the hood two pins 465 are fastened that guide the front extraction bottom 435 when fastened into the pins 470. If the screw 445 is partly loosened, the extraction bottom 435 can move towards the front side of the hood and then be suspended on the pins 465, so that fine filters 185 can be removed from the hood of the invention for washing. The rear extraction bottom 410 is fastened from the front on each side by a screw 480 on the lateral side of the hood and it is fastened at the rear side to the ceiling of the hood.

The basin 420 is suspended at the rear side on two lateral supports 415 fastened on the lateral side of the hood, and at the front side fastened with two screws 430 on two side supports 425 with the impressed threaded nut.

Rather than with a front side 150 with a low height, with which an efficient kitchen hood can be achieved with a hood height of merely 250 mm, the kitchen hood of the invention can have a front side 350 of the hood with a higher height (Figure 6). In this way and by increasing the height of the remaining sides of the hood a space 360 for various types of upgrades of the hood is created above the capturing space for the extraction of the exhaust air of the hood of the invention. One of possible upgrades can be a system of elements for air heat recovery. A low height

of the capturing space of the hood of the invention allows for fabrication of various hoods with a superstructure that still preserve an adequate total height of the device between 500 and 600 mm. The front side 350 of the hood opens in the same way as the front side 150 of the hood via two wall-mounted hinges 355 on the top of the side and can be equally provided with a blowing-in slot for fresh air.

The wall-mounted kitchen hood of the invention arranged at the wall 50 or the hood of the invention arranged above one row of thermal elements 5 is provided, according to Figure 7, with lateral slots 128 and 129 and with the front slot 130 for blowing fresh air back into the hood in the bottom inner sides in order to increase the extraction efficiency of the hood. The blowing-in of air is interrupted in the front left and right corner in order to avoid too much turbulence when two air streams meet. The manner of blowing-in fresh air along all three sides of the hood directly back into the hood is known with blowing-in nozzles and not with a slot having a height from 2 to 10 mm.

The double-sided island kitchen hood of the invention arranged above two centrally arranged rows of thermal elements 5 and 255 is, according to Figure 8, provided with slots 130, 131, 132 and 133 for blowing-in fresh air back into the hood along the entire inner bottom circumference of the hood. The blowing-in of air is interrupted in corners of the hood, in order to avoid too much turbulence when two air streams meet. The manner of blowing fresh air along all four sides of the hood directly back into the hood is known with blowing-in nozzles and not with a slot having a height from 2 to 10 mm.

CLAIMS

1. A kitchen hood with a housing made of four lateral sides and an upper side of the hood, which hood is arranged above at least one row of thermal elements (5, 255)

characterized in that

when arranged above at least one row of thermal elements (5) it has one group of filters (170, 190) arranged in two rows in the shape of the letter V in the central section of the hood approximately above the greatest stream (10) of exhaust air, wherein the group of filters (170, 190) together with a basin (100) separates the lower section of the hood to a front capturing space (110) and a rear capturing space (205), and when arranged above two rows of thermal elements (5, 255) it has in a mirror image along the rear side of the hood (210) arranged at the other side of the hood a left side of the hood above a second row of thermal elements (255) without the rear side of the hood (210) with a second group of filters arranged in two rows (265) and (270) arranged in the shape of the letter V approximately above the largest origin of exhaust air (260), where both groups of filters together with the basins separate the lower part of the hood into two front capturing spaces (110) and (111) and a central capturing part of the hood (280).

2. Kitchen hood with a housing made of four lateral sides and an upper side of the hood, which hood is arranged above at least one row of thermal elements (5, 255)

characterized in that

a blowing-in slot (130) is arranged on the front side of the hood on the lower innter edge, or two blowing-in slots (128, 129) are arranged on lateral sides of the hood on the lower inner edge or two blowing-in slots

(130, 133) are arranged on the front sides of the hood on the lower inner edge or two blowing-in slots (131) and (132) are arranged on the lateral sides of the hood on the lower inner edge.

3. Kitchen hood according to Claim 2

characterized in that

the blowing-in slot (128,129,130,131,132,133) has a slot height ranging from 2 mm to 10 mm.

4. Kitchen hood according to any preceding claim

characterized in that

the front side of the wall (150, 350) is provided in its predominant central part along the length of the side on the lower inner edge with an inwards bent edge (152) that forms together with an edge (136) of a lamp holder (135) a blowing-in slot (130, 133).

5. Kitchen hood according to any preceding claim

characterized in that

the front side (150, 350), to be able to get opened, is provided at the top of the side on the left and the right side of the hood with a hinge (155, 355), around which the front side (150, 350) opens in upwards direction.

6. Kitchen hood according to any preceding claim

characterized in that

the front side (150, 350) is stuck at the lower left and right side with short segments of the upwards bent lower edge (151) behind the slanting part of the lamp holder (135) with a glass (125) and that the lamp support (135) is softly fastened in the slanting part of the lamp with the glass (125).

7. Kitchen hood according to any preceding claim

characterized in that

it is provided with air regulating flaps (227) above the front side and above lateral sides of the hood.

8. Kitchen hood according to any preceding claim

characterized in that

the front side (350) and the remaining three sides are higher than the capturing space of the hood, wherewith a space (360) opens above the capturing space of the hood for a superstructure of the hood for various purposes.

9. Kitchen hood according to any preceding claim

characterized in that

fine filters (185) are arranged in two rows in the space above each individual group of filters (170,190) separated from the latter.

10. Kitchen hood according to any preceding claim

characterized in that

between two filters or a metallic filter instead of a filter, filter (300, 310) holders are arranged in the shape of the letter U with a right leg (311) and a left leg (312).

11. Kitchen hood according to Claim 10

characterized in that

the filter holder (300, 310) is stuck at the upper side with a backwards bent metal (313) into a groove of the support metal (330) and that the position of the filters (300, 310) is secured in the lower part against displacing with a slanting edge (314) of the metal.

12. Kitchen hood according to Claims 1 to 9

characterized in that

the filters (170,190) are replaced by a front extraction bottom (435) and a rear extraction bottom (410) which form together with a front guiding metal (450), a rear guiding metal (485) and a basin (420) three labirynth shaped extraction slots (475, 476, 490).

13. Kitchen hood according to Claim 12

characterized in that

the front extraction bottom (435) is guided at the rear part of the bottom at each side with a pin (465) and stuck at each side into a pin (470), and that the front extraction bottom (435) is put at the front part on each side onto a plate (455) and in the centre onto a central angle section (460) and fastened with a screw (445) on the front guiding metal (450).

14. Kitchen hood according to Claim 12

characterized in that

the rear extraction bottom (410) is fastened at the front side at each side with a screw (480) to each side of the hood and fastened at the rear side to the ceiling of the hood.

15. Kitchen hood according to Claim 12

characterized in that

the basin (420) is suspended at the rear side at each side of the basin onto a lateral holder (415) and fastened at the front side at each side of the basin with a screw (430) to the lateral holder with a threaded nut (425).

16. Kitchen hood according to Claim 12

characterized in that

edges (420) of the basin and edges (335) of the front extraction bottom and of the rear extraction bottom (310) are shaped at the basin (420) such that they form a labirynth for separating steam from the discharged air.

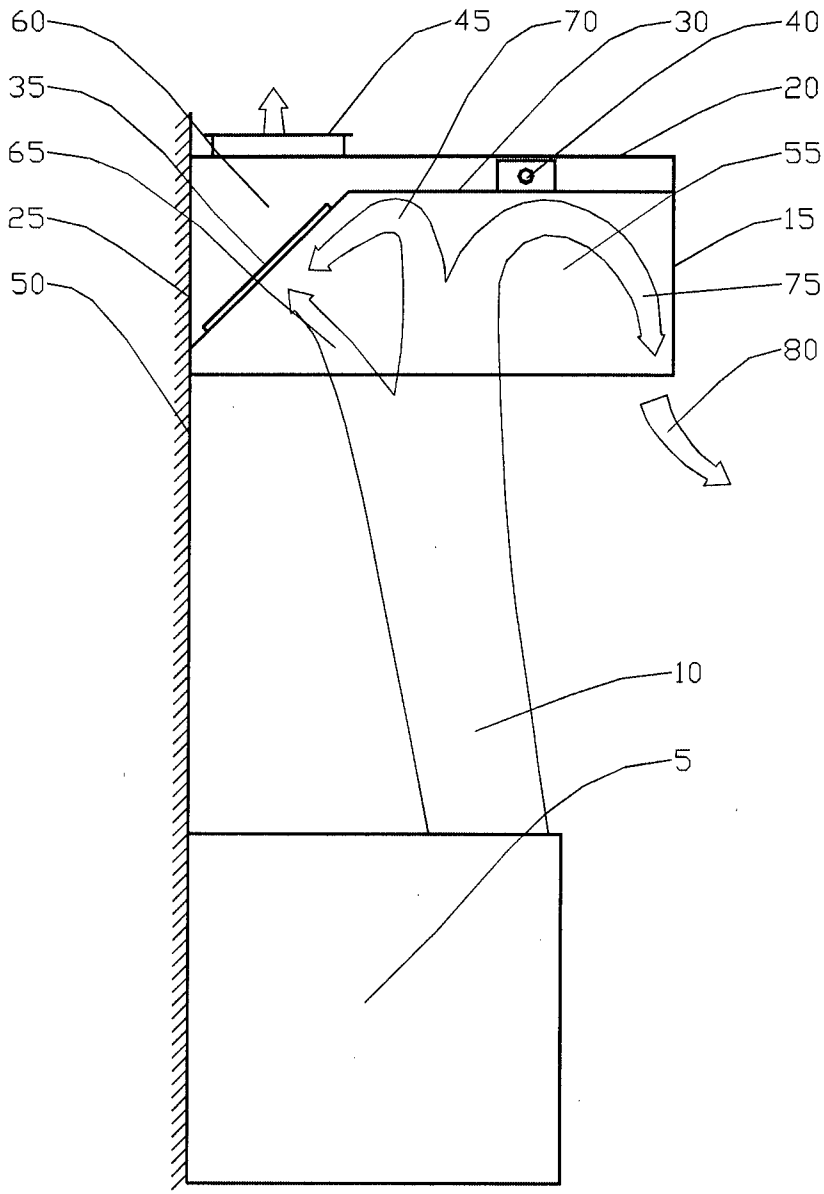
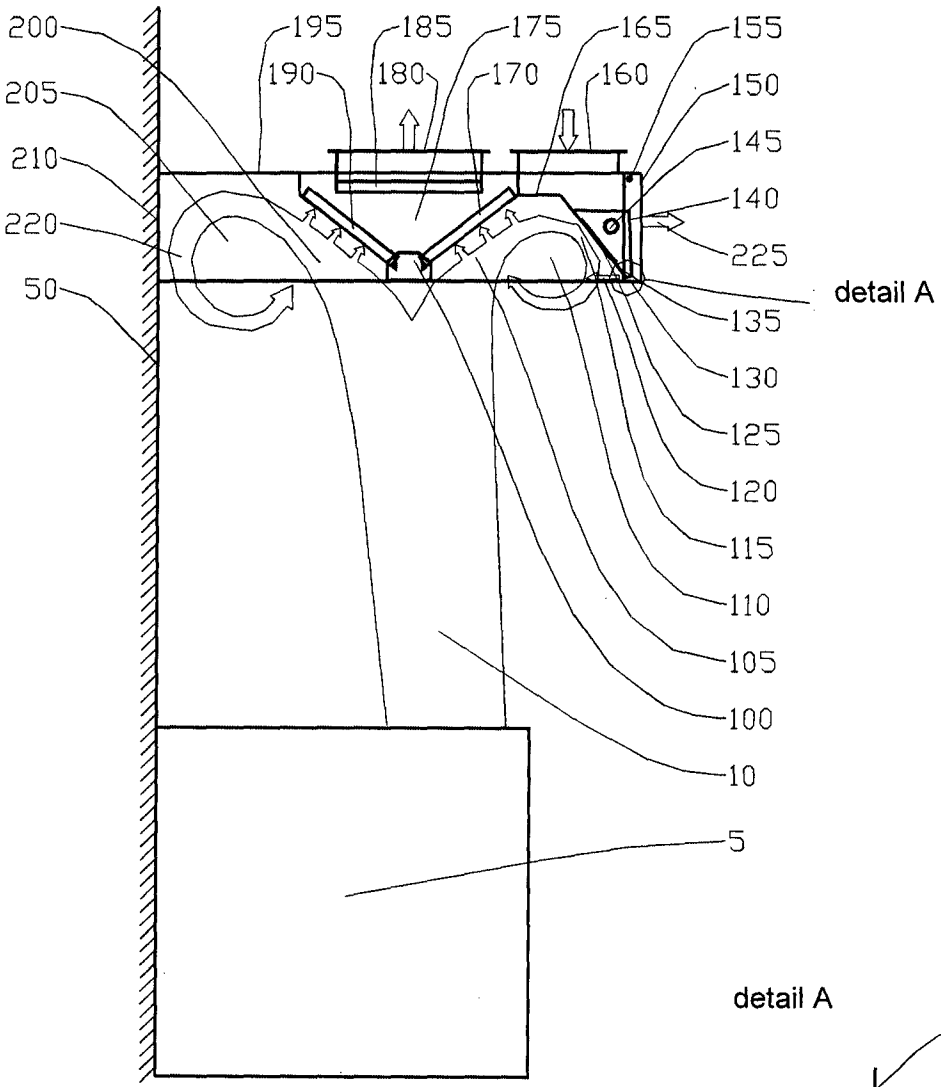


Fig. 1


200
205
210
220
50
195
190
185
180
175
170
165
160
155
150
145
140
225
detail A
135
130
125
120
115
110
105
100
10
5

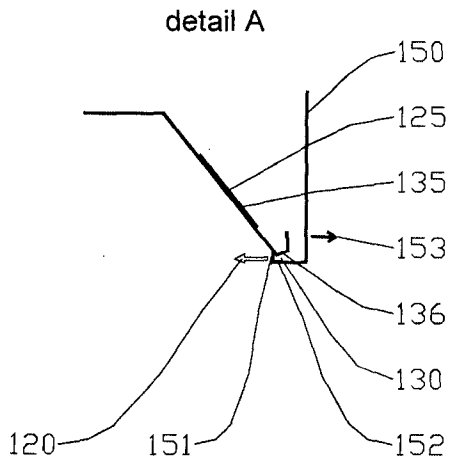

detail A
150
125
135
153
136
130
152
151
120

Fig. 2

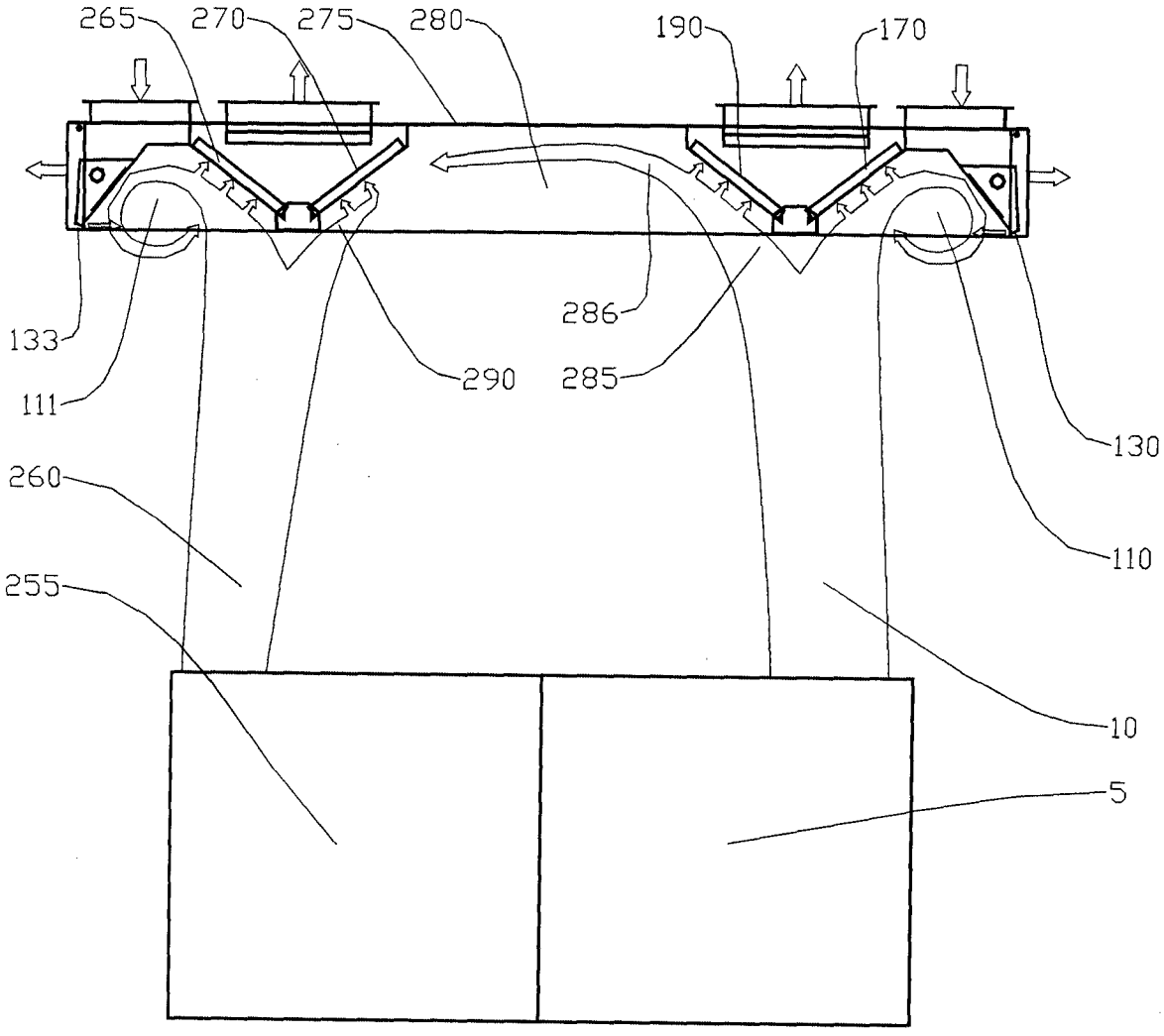


Fig. 3

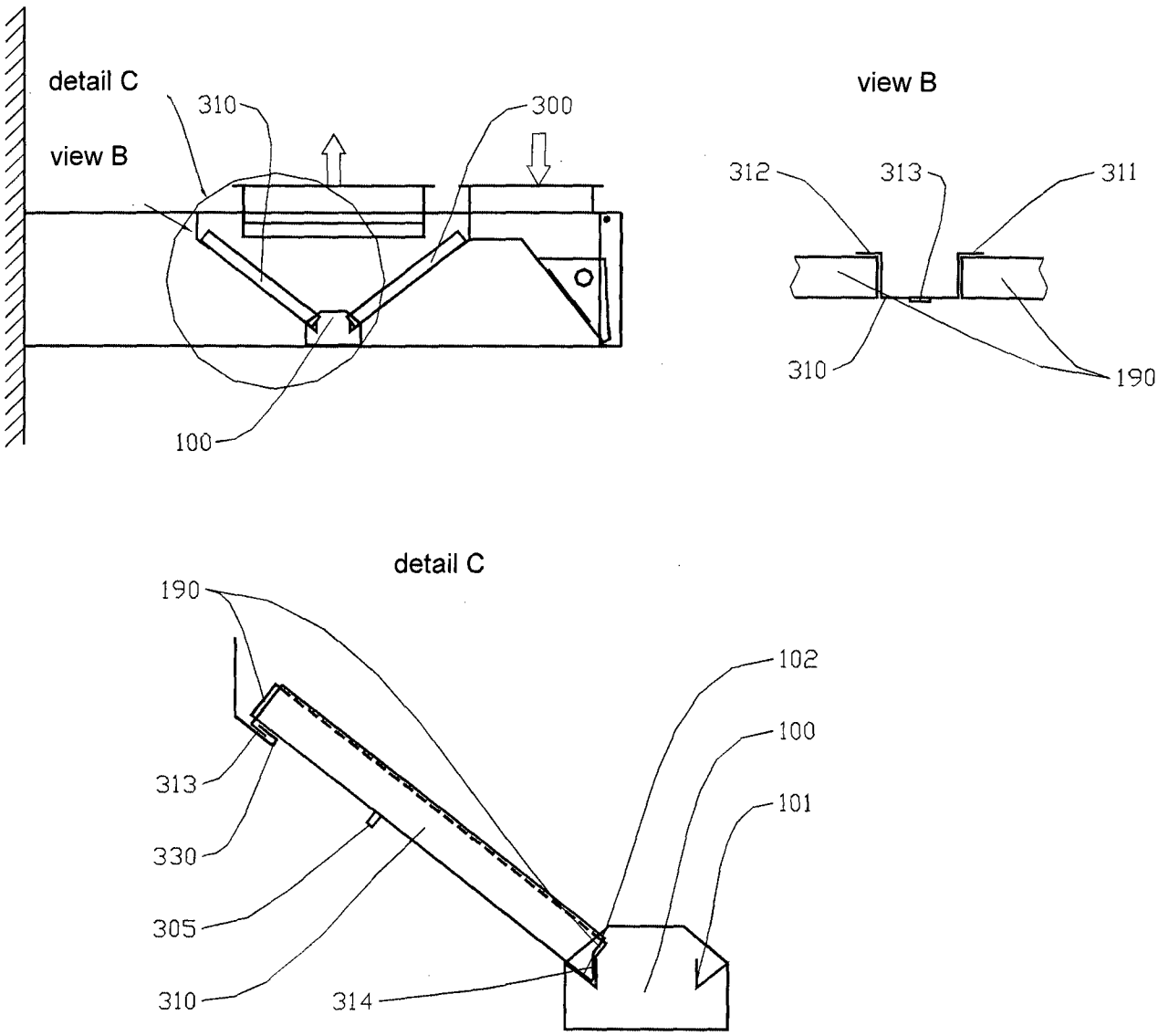

detail C
view B
310
300
100
view B
312
313
311
310
190
detail C
190
102
100
313
101
330
305
310
314

Fig. 4

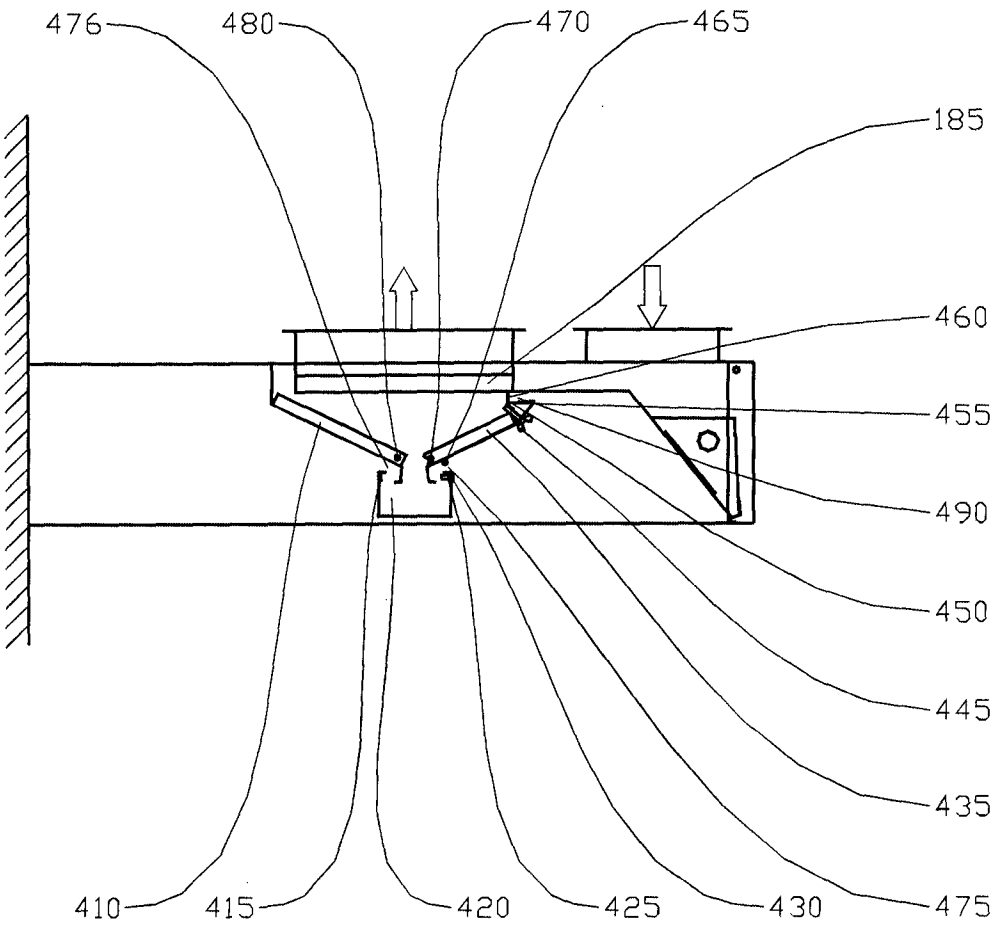

476
480
470
465
185
460
455
490
450
445
435
475
410
415
420
425
430

Fig. 5

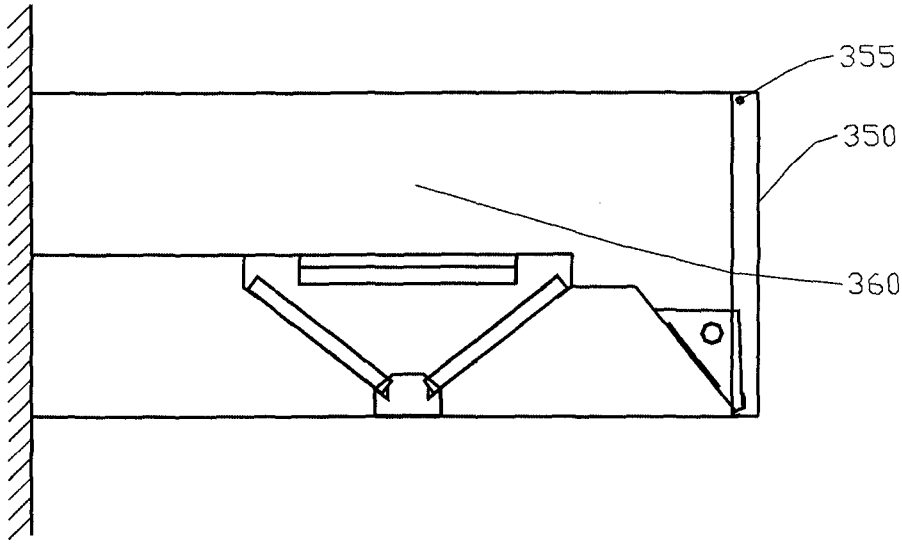


Fig. 6

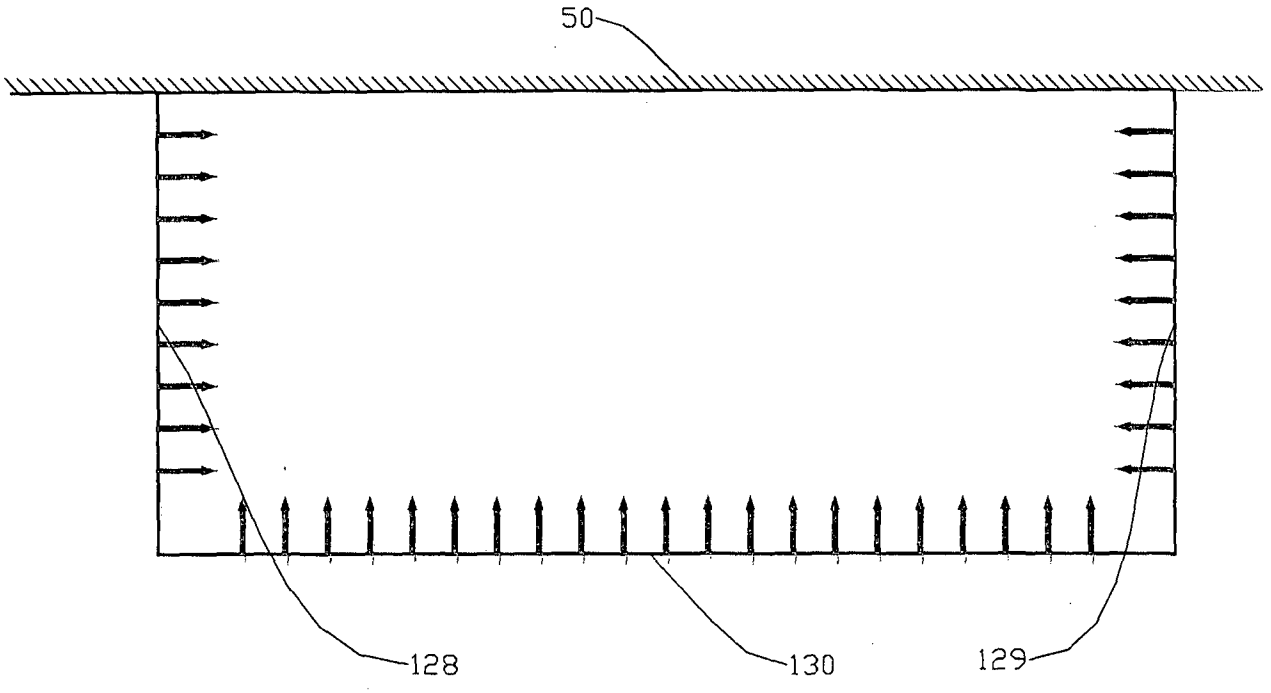


Fig. 7

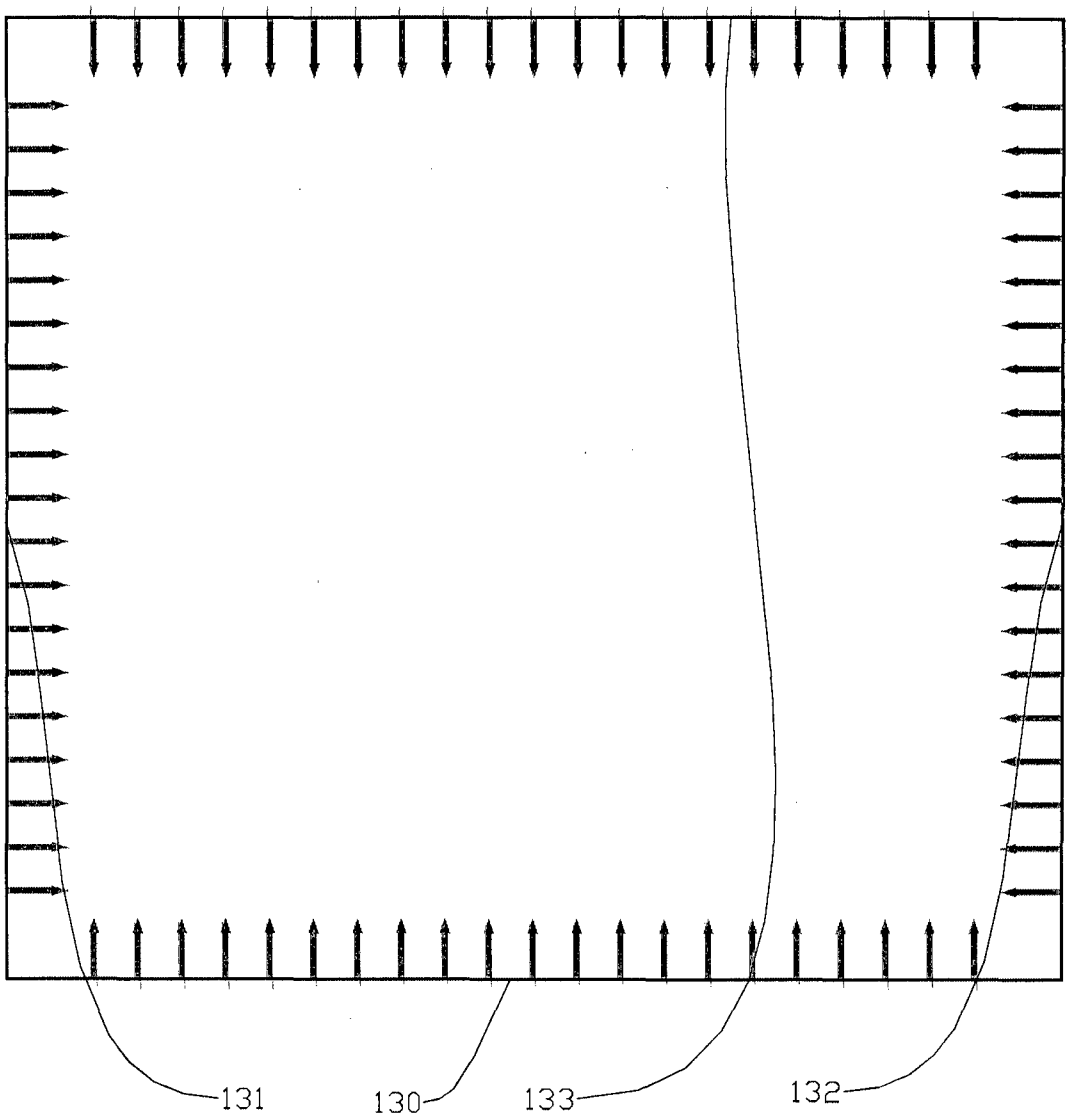


Fig. 8