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(54) **Hood ventilation apparatus**

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Hotte aspirante

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Description

[0001] The present invention relates to a hood ventilation apparatus, and particularly, to a hood ventilation apparatus having a walljet device for efficiently guiding air containing cooking by-products which are exhausted to an outer circumferential surface of a hood toward a hood collecting region even using a small amount of discharged air.

[0002] In general, a hood ventilation apparatus is mounted above a cooking source such as gas-ranges or electrical microwave ovens (used as a heating source) so as to exhaust air containing pollutants which are generated while cooking food at home kitchens or restaurants to an external circumference.

[0003] As shown in Fig. 1, a conventional hood ventilation apparatus includes a hood 10 installed on a support 15 such as a mounting wall so as to be positioned above cooking source 40 (e.g., gas-ranges or cook-tops) with a constant interval from the cooking source 40, a grease filter 32 mounted in an intake opening 31 which is formed at an inlet side of the hood 10 facing an upper surface of the cooking source 40, for filtering grease particles generated during cooking and particles in an aerosol state, a blowing unit 22 mounted in an upper side of the hood 10, for generating intake airstreams and an exhaust duct 21 connected to an upper portion of the hood 10, for exhausting air having passed through the hood 10 to the exterior.

[0004] The hood 10 includes an air collecting chamber 30 of a canopy shape which has large lower area and small upper area and of which inside is penetrated to thusly collect air therein and a machinery chamber 20 extending upwardly to an upper portion of the air collecting chamber 30 so as to be communicated therewith, and in which the blowing unit 22 communicated with the exhaust duct 21 is mounted.

[0005] The intake opening 31 is formed at a lower surface of the air collecting chamber 30 facing the cooking source, and the grease filter 32 is mounted to block the whole intake opening 31.

[0006] The grease fitter 32 is constructed such that air is ventilated. Accordingly, the air generated from the cooking source which is a heating source is sucked into the air collecting chamber 30 of the hood 10 via the grease filter 32. Grease which is contained in the air and cooking by-products in the aerosol state are filtered by the grease filter 32.

[0007] The blowing unit 22 includes a fan 23 connected to a motor (not shown) and a rotary shaft of the motor, for generating a flow by being rotated by a rotation force of the motor. A centrifugal fan is used as the fan 23.

[0008] An operation of such conventional hood ventilation apparatus will now be explained.

[0009] First, the hood ventilation apparatus is operated at the same time when food is cooked using the cooking source 40.

[0010] When power is supplied to the motor constructing the blowing unit 22, the motor is operated. The fan 23 is rotated by the operation of the motor and thus airstream is generated by a suction force.

[0011] At the same time, while air containing cooking by-products generated during cooking using the cooking source 40 flows upwardly by a convection, the air containing the cooking by-products is sucked into the air collecting chamber 30 via the grease filter 32 mounted in the lower surface of the air collecting chamber 30 of the hood 10 by the suction force generated by the fan 23. The air sucked into the air collecting chamber 30 is discharged to the exterior through the fan 23 and the exhaust duct 21. While the air passes through the grease filter 32, grease particles and particles in the aerosol state generated during cooking are filtered by the grease filter 32.

[0012] However, in the above conventional hood ventilation apparatus, as shown in Fig. 2, when the air containing the cooking by-products generated during cooking flows upwardly by the convection and then is sucked into the air collecting chamber 30 of the hood 10, the air is satisfactorily sucked in a suction region of the lower surface of the air collecting chamber 30 in which the grease filter 32 is mounted and then discharged to the exterior through the exhaust duct 21, but an efficiency of the air suction into the air collecting chamber 30 is drastically lowered in a region deviated from the suction region in which the grease filter 32 is mounted.

[0013] In particular, when the suction force of the fan 23 is weak, such condition is more serious. Even if the suction force of the fan 23 is increased to improve the air collecting efficiency, a suction speed for the air flowing upwardly to the region deviated from the suction region of the grease filter 32 is lowered due to a resistant factor by the grease filter 32. As a result, the air is spread toward users along an outer circumference of the lower surface of the air collecting chamber 30 of the hood 10.

[0014] Furthermore, because the suction force of the fan 23 is lowered in inverse proportion to square of a distance on the basis of the suction surface of the air collecting chamber 30 of the hood 10, even though the suction force greatly acts on the suction surface, if the suction surface is distant from the heating source (cooking source), the air generated from the heating source may not effectively be collected into the hood.

[0015] As the air containing the cooking by-products which has not been collected into the hood flows indoors so as to pollute interior air.

[0016] As a result, users feel unpleasant considerably, and it is hard to maintain a pleasant interior environment.

[0017] A hood ventilation apparatus according to the closest prior art is represented by document EP-A-0609740.

[0018] Therefore, an object of the present invention is to provide a hood ventilation apparatus capable of improving collecting efficiency and cooking pleasantness by efficiently guiding pollutants exhausted to an outer circumferential surface of a hood into a hood collecting

region even using a small amount of discharged air.

[0019] To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described herein, there is provided a hood ventilation apparatus according to claim 1.

[0020] The foregoing and other objects, features, aspects and advantages of the hood ventilation apparatus according to the present invention will become more apparent from the following detailed description of the present invention when taken in conjunction with the accompanying drawings.

[0021] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and together with the description serve to explain the principles of the invention.

[0022] In the drawings:

Fig. 1 is a sectional view showing a conventional hood ventilation apparatus;

Fig. 2 is a perspective view showing a hood ventilation apparatus according to a first embodiment of the present invention;

Fig. 3 is a lateral sectional view of Fig. 2;

Fig. 4 is an enlarged view showing main parts of Fig. 3;

Fig. 5 is a plane view of Fig. 2;

Fig. 6 is an enlarged view showing main parts of a hood ventilation apparatus according to a second embodiment of the present invention;

Fig. 7 is an enlarged view showing main parts of a hood ventilation apparatus according to a third embodiment of the present invention;

Fig. 8 is a plane view showing a hood ventilation apparatus according to a fourth embodiment of the present invention;

Figs. 9 to 11 are longitudinal sectional views showing various modification examples for a walljet guiding member according to the present invention;

Figs. 12 and 13 are photographs showing a result from an airstream visualization test of a hood ventilation apparatus according to the present invention;

Fig. 14 is a view of a fluid flow showing a result from a CED calculation for an operational state of the hood ventilation apparatus according to the present invention;

Fig. 15 is an enlarged view showing main parts of Fig. 14;

Fig. 16 is a view of a fluid flow showing a result from the CED calculation for an operational state of the conventional hood ventilation apparatus; and

Fig. 17 is an enlarged view of main parts of Fig. 16.

[0023] Reference will now be made in detail to the preferred embodiments of a hood ventilation apparatus according to the present invention, examples of which are illustrated in the accompanying drawings.

[0024] There may exist a plurality of embodiments of a hood ventilation apparatus according to the present invention, and preferred embodiments therefor will now be explained.

[0025] Hereinafter, the present invention will now be explained with reference to the attached drawings.

[0026] Figs. 2 to 5 show a hood ventilation apparatus according to a first embodiment of the present invention.

[0027] Referring to those drawings, a hood ventilation apparatus according to a first embodiment of the present invention includes a hood 350 including a main body 200 installed above a cooking source such as cook-tops or gas-ranges (refer to Fig. 1) and having a suction opening 230 at a lower portion thereof, into which air containing cooking by-products is sucked, and an exhaust duct 300 extending to an upper side of the main body 200 and through which the sucked air is exhausted; a first blower 310 mounted in the exhaust duct 300, for generating a suction force so as to suck the air into the hood 350, a walljet guiding member 430 installed at an outer circumference of the main body 200, for allowing air from the inside of the hood 350 to flow along the surface of the walljet guiding member and a second blower 500 provided in the main body 200, for supplying air into the walljet guiding member 430.

[0028] The suction opening 230 is provided with a grease filter 250 for filtering grease particles and particles in an aerosol state generated during cooking.

[0029] The walljet guiding member 430 may be installed at an entire region of the outer circumference of the main body 200, namely, over front portion, both lateral portions and rear portion of the outer circumference, or installed at the front portion and the both lateral portions or only at the front portion thereof.

[0030] In the construction of the first embodiment shown in Figs. 2 to 5, the walljet guiding member 430 is installed at the front portion of the outer circumference of the main body 200.

[0031] The construction of the hood ventilation apparatus according to the first embodiment of the present invention will now be explained in more detail.

[0032] One side of the main body 200 is opened. One end of an upper casing 210 of the main body 200 which is visible through the opened one side is connected with an air guiding plate 411. The walljet guiding member 430 is fixedly installed between the air guiding plate 401 and one end of a lower casing 220 of the main body 200 so as to form a walljet passage 401 between the air guiding plate 411 and a surface of the walljet guiding member 430. Also, a through hole 211 is formed in the upper casing 210 of the main body 200 so as to allow the second blower 500 to suck air from the exterior into the interior of the main body 200. Here, a centrifugal fan is preferably used as the second blower 500.

[0033] In order to guide the air passing through the second blower 500 via the through hole 211 to a direction toward the walljet passage 401, a walljet guiding frame 440 is installed in the main body 200. The walljet guiding

frame 440 thus covers the second blower 500 except for the opened one side of the main body 200 at which the walljet guiding member 430 is installed. A amounting hole 442 for mounting the second blower 500 is formed in one surface of the walljet guiding frame 440. A mounting portion 460, which covers the mounting hole 442 and in which the second blower 500 is mounted, is integrally attached to the walljet guiding frame 440.

[0034] On the other hand, a first extension plate 410 having a particular length is interposed between the air guiding plate 411 and one end of the upper casing 210 of the main body 200 and a second extension plate 420 extends from one end of the lower casing 220 of the main body 200, so that the air discharged through the walljet passage 401 by the second blower 500 flows more smoothly and the walljet guiding member 430 is fixedly installed more easily.

[0035] For instance, a length L from one end of the first extension plate 410 fixedly installed at one end of the upper casing 210 of the main body 200 to the end of the air guiding plate 411 is designed by considering an overall size of the hood ventilation apparatus 350. Hood ventilation apparatuses with typical sizes which are currently being used preferably have the length L shorter than 70mm.

[0036] In addition, the first extension plate 410 and the air guiding plate 411 are formed in a shape integrally extending from the upper casing 210 of the main body 200, and the second extension plate 420 can be constructed in a shape integrally extending from the lower casing 220 of the main body 200.

[0037] The walljet guiding member 430 is formed in an annular pipe or an annular bar. The air guiding plate 411 is formed so as to have a constant curvature along the surface of the walljet guiding member 430. Here, as shown in Fig. 5, a ratio of a height h from the lower casing 220 of the main body 200 to the center of the walljet guiding member 430 with respect to a diameter D of the walljet guiding member 430 is preferably formed to be 0 to 0.25. Also, a gap d between the walljet guiding member 430 and the end of the air guiding plate 411, which is a gap d of the walljet passage 401, is formed to be between 1.5mm and 4mm, by which an optimal walljet flow can preferably be formed.

[0038] In order for the air discharged through the walljet passage 401 to flow smoothly without separation toward the suction opening 230 along the walljet guiding member 430, or in order to allow occurrence of the separation at least near the lower side of the suction opening 230, an initial angle θ of the walljet discharged through the walljet passage 401 must be between 30° and 60° in a direction that the walljet is discharged on the basis of a virtual vertical line 473 passing the center of the walljet guiding member 430. A speed of the walljet is preferably maintained by 3~5m/s. For this, it is important to appropriately adjust the radius of curvature and the length of the air guiding plate 411 according to an optimal design.

[0039] On the other hand, in order for the air discharged through the walljet passage 401 to effectively flow into the suction opening 230 formed in the lower casing 220 of the main body 200 along the surface of the walljet guiding member 430, a part of lower portion of the walljet guiding member 430 is preferably protruded downwardly lower than the lower casing 220 of the main body 20 and installed at an outer circumferential surface of the main body 200.

[0040] A hood ventilation apparatus according to other embodiments of the present invention will now be explained. Here, the construction and explanation of the first embodiment will be omitted for clarifying characteristics of the other embodiments of the present invention more obviously, and the same reference numbers are provided for the same parts as that shown in the first embodiment.

[0041] Fig. 6 shows main parts of a hood ventilation apparatus according to the second embodiment of the present invention. That is, in a hood ventilation apparatus according to the second embodiment of the present invention, as shown in Fig. 6, a through hole 462, into which the air discharged to the exterior through first blower 310 is partially sucked by a suction force of the second blower 500, is formed at a lower surface of the mounting portion 460 in which the second blower 500 is mounted.

[0042] Fig. 7 shows a hood ventilation apparatus according to the third embodiment of the present invention. That is, the walljet guiding member 430 forms a constant interval b with one end of the lower casing 220 of the main body 200, more preferably, with the second extension plate 420, and accordingly a separation condition of the walljet using a boundary layer suction effect can be prevented by the interval b. At this time, air sucked into the first blower 310 can be sucked through the through hole 211 formed in the upper casing 210 of the main body 200, as shown in the first embodiment, and also can be sucked through the through hole 462 formed in the mounting portion 462, as shown in the second embodiment.

[0043] Fig. 8, on the other side, is a plane view of a hood ventilation apparatus according to the fourth embodiment of the present invention. Here, the walljet guiding member 430 is constructed to be installed at the front portion and the both lateral portions of the outer circumference of the main body 200. A lighting lamp 450 such as a halogen lamp is installed in the walljet guiding member 430. At this time, the walljet guiding member 430 is formed of a material having a transparent or translucent property which can transmit light, so as to obtain a delightful appearance thereof when the lighting lamp 450 is operated.

[0044] Furthermore, a walljet guiding frame 570 is installed in the main body 200 so as to divide the airstream from the second blower 500 into three portions, namely, into the front portion and the both lateral portions. As a result, the air passing the second blower 500 can be easily guided toward the guiding member 430 installed at the front and the both lateral portions.

[0045] Figs. 9 to 11 show various modification examples of the walljet guiding member according to the present invention.

[0046] Fig. 9 shows a construction in which a curved guiding plate 412 is installed between the walljet guiding member 430 and the air guiding plate 411.

[0047] Fig. 10 shows a structure in which the walljet guiding member 431 is not formed in an annular shape but formed in a curved plate shape. Also, Fig. 10 shows a construction in which a middle guiding plate 413 having a curved shape is installed between the walljet guiding member 430 having the curved plate shape and the air guiding plate 411.

[0048] Fig. 11 shows a structure in which the walljet guiding member 432 is not formed in the annular shape but formed in the curved plate shape similar to Fig. 10, and also shows a construction in which a vertical portion 411 a extends from the air guiding plate 411. A middle guiding member 414, which includes a curved inner lateral surface 414a, an outer lateral surface 414b having a curved upper side and a perpendicular lower side, and a horizontal lower lateral surface 414c, is installed between the air guiding plate 411 and the walljet guiding member 432.

[0049] Hereinafter, an operation of the hood ventilation apparatus according to the present invention having such construction will now be explained.

[0050] Air containing cooking by-products generated from the cooking source 40 is discharged to the exterior through the exhaust duct 300 via the suction opening 230 by a suction force of the first blower 310 installed in the exhaust duct 300 of the hood ventilation apparatus. At the same time, as a walljet spread through the walljet passage 401 by an operation of the second blower 500 flows fast along the surface of the walljet guiding member 430, 431, or 432 by a coanda effect (a characteristic in which a fluid flows along a peripheral solid surface), a negative pressure region is artificially formed at a peripheral portion of the walljet guiding member 430. At this time, the walljet flows peripheral air having weak momentum into the negative pressure region. As a result, among air spread upwardly from the cooking source 40, the air which has not been sucked into the suction opening 230 but is rather discharged to the front side of the hood ventilation apparatus where a user who cooks positions is induced toward the suction opening 230. Here, while the walljet loses its momentum more and more and passes the lower side of the walljet guiding member 430, 431, or 432, a separation occurs. However, if the region where the separation occurs is adjacent to the suction opening 230, the walljet momentum after the separation occurrence is greater than the momentum of airstream spread from the cooking source 40. Also, the airstream from the cooking source 40 is pulled by a suction airstream generated at the peripheral portion of the suction opening 230. As a result, the air from the cooking source 40, which has not been sucked into the suction opening 230 but spread, can be effectively sucked into the suction opening 230.

[0051] Figs. 12 to 17 show results from comparing performances of the hood ventilation apparatus according to the present invention with those of the conventional hood ventilation apparatus.

[0052] First, Fig. 12 is a photo showing a result of an airstream visualization test (discharged air volume: 300CMH) when a walljet airstream is not generated in the hood ventilation apparatus according to the present invention, and Fig. 13 is a photo showing a result of the airstream visualization test (discharged air volume: 300CMH, walljet speed: 4m/s, passage interval d: 3.0mm) when the walljet airstream is generated in the hood ventilation apparatus according to the present invention.

[0053] In addition, Figs. 14 and 15 show results of a CFD calculation (discharged air volume: 300CMH, walljet speed: 4m/s, passage interval d: 2.5mm) of the hood ventilation apparatus according to the present invention, and Figs. 16 and 17 show results of the CFD calculation (discharged air volume: 300CMH, walljet speed: 4m/s, passage interval d: 2.5mm) of the conventional hood ventilation apparatus.

[0054] As shown in those testing results, in the hood ventilation apparatus according to the present invention, the airstream at the front side of the hood which are not collected can effectively be collected.

[0055] As aforementioned, in the hood ventilation apparatus according to the present invention, by installing the walljet guiding member at the outer circumferential surface of the suction opening into which the pollutants generated from the cooking source such as cook-tops or gas-ranges are sucked, a negative pressure is formed at a peripheral portion of the walljet guiding member by the walljet flow flowing along the surface of the walljet guiding member. As a result, it is possible to collect into the suction opening the air which is spread from the cooking source, deviated from the collecting chamber, and then discharged to the outer circumference of the hood ventilation apparatus.

[0056] As a result, the pollutants can be prevented from being spread by collecting the pollutants into the collecting chamber of the hood ventilation apparatus even in the state that the discharged air volume is weak. Also, cooking pleasantness can be improved by restricting hot pollutants from being spread toward a face of user who is cooking.

[0057] As the present invention may be embodied in several forms without departing from the essential characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the metes and bounds of the claims, or equivalence of such metes and bounds are therefore intended to be embraced by the appended claims.

Claims

1. A hood ventilation apparatus comprising:

   (a) a hood (350) including a main body (200) installed above a cooking source and having a suction opening (230) at a lower surface thereof into which air containing cooking by-products is sucked, and an exhaust duct (300) extending to an upper side of the main body (200) and exhausting the sucked air;
   (b) a first blower (310) mounted in the exhaust duct (300), for generating a suction force to suck air into the hood (350);
   (c) a walljet guiding member (430, 431, 432) installed at an outer circumference of the main body (200), for allowing air from the inside of the hood (350) to flow along the surface of the walljet guiding member;
   (d) a second blower (500) provided in the main body (200), for supplying air to the walljet guiding member (430); and
   (e) a walljet guiding frame (440) installed in the main body (200) so as to cover the second blower (500) except for the opened one side of the main body at which the walljet guiding member (430) is installed;
   (f) wherein one lateral surface of the main body is opened, an air guiding plate (411) is installed at one end of an upper casing (210) of the main body at the opened one side of the main body, the walljet guiding member (430, 431, 432) is fixedly installed between the air guiding plate (411) and one end of a lower casing (210) of the main body, and a walljet passage (401) is formed between the air guiding plate (411) and a surface of the walljet guiding member (430, 431, 432); **characterized in that**

      (f1) the air guiding plate (411) has a constant radius of curvature along the surface of the walljet guiding member (430) or
      (f2) a curved middle guiding plate (412, 413, 414) is further positioned between the air guiding plate (411) and the walljet guiding member (430, 431, 432).

2. The apparatus of claim 1, wherein the lower side of the walljet guiding member is partially protruded downwardly lower than the lower casing of the main body so as to be installed at an outer circumferential surface of the main body.

3. The apparatus of claim 1 or 2, wherein a constant gap is formed between the walljet guiding member and the air guiding plate.

4. The apparatus of claim 1, 2 or 3, wherein the walljet guiding member has an annular pipe shape, and a ratio of a height from the lower casing of the main body to the center of the walljet guiding member with respect to a diagram of the walljet guiding member is 0 to 0.25.

5. The apparatus of claim 3, wherein the gap between the walljet guiding member and the end of the air guiding plate is between 1.5mm and 4mm.

6. The apparatus of any one of claims 1 to 5, wherein a mounting hole (442) for mounting the second blower is formed on one surface of the walljet guiding frame, and a mounting portion for covering the mounting hole and in which the second blower is mounted is integrally attached to the walljet guiding frame.

7. The apparatus of claim 6, wherein the mounting portion has a through hole into which air discharged to the exterior through the first blower partially flows inwardly by a suction force of the second blower.

8. The apparatus of any one of claims 1 to 7, wherein a through hole is formed in the upper casing of the main body, and thus air is sucked from the through hole by the second blower.

9. The apparatus of any one of claims 1 to 8, wherein the air sucked into the suction opening by the first blower is partially supplied to the walljet guiding member by the second blower.

10. The apparatus of any one of claims 1 to 9, wherein the walljet guiding member is an annular pipe, an initial angle of a walljet discharged to the opened one side of the main body is between 30° and 60° in a direction that the walljet is discharged on the basis of a virtual perpendicular line passing the center of the walljet guiding member, and a speed of the walljet is 3~5m/s.

11. The apparatus of any one of claims 1 to 10, wherein the walljet guiding member is positioned at a front portion of an outer circumference of the main body.

12. The apparatus of any one of claims 1 to 11, wherein the walljet guiding member is installed at the front portion and both lateral portions of the outer circumference of the main body.

13. The apparatus of any one of claims 1 to 12, wherein the walljet guiding member is formed of a material which can transmit light, and has a lighting lamp therein.

14. The apparatus of any one of claims 1 to 13, wherein a constant gap is formed between the walljet guiding

member and one end of the lower casing of the main body.

15. The apparatus of any one of claims 1 to 14, wherein the second blower is a centrifugal fan.

16. The apparatus of any one of claims 1 to 15, wherein the walljet guiding member is formed in a curved plate shape (431, 432).

Patentansprüche

1. Dunstabzugshaube mit:

(a) einer Haube (350) mit einem Hauptkörper (200), der über einer Kochquelle angebracht ist und an einer unteren Oberfläche eine Saugöffnung (230) aufweist, in die Koch-Nebenprodukte enthaltende Luft gesaugt wird, und mit einer Abluftleitung (300), die sich zu einer oberen Seite des Hauptkörpers (200) erstreckt und die angesaugte Luft ableitet;
(b) einem ersten Gebläse (310), das in der Abluftleitung (300) angeordnet ist, um eine Saugkraft zu erzeugen, um Luft in die Haube (350) zu saugen;
(c) ein Wandströmungsleitelement (430, 431, 432), das am Außenumfang des Hauptkörpers (200) angebracht ist, damit Luft vom Inneren der Haube (350) entlang der Oberfläche des Wandströmungsleitelements fließen kann;
(d) einem zweiten Gebläse (500), das im Hauptkörper (200) angeordnet ist, um dem Wandströmungsleitelement (430) Luft zuzuführen; und
(e) einem Wandströmungsleitrahmen (440), der im Hauptkörper (200) angebracht ist, um das zweite Gebläse (500) abzudecken, mit Ausnahme der einen geöffneten Seite des Hauptkörpers, an der das Wandströmungsleitelement (430) angebracht ist;
(f) wobei eine seitliche Oberfläche des Hauptkörpers geöffnet ist, eine Luftleitplatte (411) an einem Ende eines oberen Gehäuses (210) des Hauptkörpers an der einen geöffneten Seite des Hauptkörpers angebracht ist, das Wandströmungsleitelement (430, 431, 432) fest zwischen der Luftleitplatte (411) und einem Ende eines unteren Gehäuses (210) des Hauptkörpers angebracht ist, und ein Wandströmungsdurchgang (401) zwischen der Luftleitplatte (411) und einer Oberfläche des Wandströmungsleitelements (430, 431, 432) gebildet ist; **dadurch gekennzeichnet, dass**

(f1) die Luftleitplatte (411) einen konstanten Krümmungsradius entlang der Oberfläche des Wandströmungsleitelements (430) aufweist oder
(f2) eine gekrümmte mittlere Leitplatte (412, 413, 414) ferner zwischen der Luftleitplatte (411) und dem Wandströmungsleitelement (430, 431, 432) positioniert ist.

2. Dunstabzugshaube nach Anspruch 1, wobei die untere Seite des Wandströmungsleitelements teilweise weiter nach unten vorsteht als das untere Gehäuse des Hauptkörpers, um an einer Außenumfangsfläche des Hauptkörpers angebracht zu werden.

3. Dunstabzugshaube nach Anspruch 1 oder 2, wobei ein kontanter Spalt zwischen dem Wandströmungsleitelement und der Luftleitplatte gebildet wird.

4. Dunstabzugshaube nach Anspruch 1, 2 oder 3, wobei das Wandströmungsleitelement eine ringförmige Rohrform hat und das Verhältnis der Höhe vom unteren Gehäuse des Hauptkörpers zum Mittelpunkt des Wandströmungsleitelements bezüglich eines Diagramms des Wandströmungsleitelements 0 bis 0,25 ist.

5. Dunstabzugshaube nach Anspruch 3, wobei der Spalt zwischen dem Wandströmungsleitelement und dem Ende der Luftleitplatte zwischen 1,5 mm und 4 mm ist.

6. Dunstabzugshaube nach einem der Ansprüche 1 bis 5, wobei ein Montageloch (442) zur Montage des zweiten Gebläses an einer Oberfläche des Wandströmungsleitrahmens gebildet ist, und ein Montageabschnitt, der das Montageloch abdeckt und in dem das zweite Gebläse montiert ist, integral am Wandströmungsleitrahmen angebracht ist.

7. Dunstabzugshaube nach Anspruch 6, wobei der Montageabschnitt ein Durchgangsloch aufweist, in dem durch das erste Gebläse nach außen abgeführte Luft durch eine Saugkraft des zweiten Gebläses teilweise nach innen strömt.

8. Dunstabzugshaube nach einem der Ansprüche 1 bis 7, wobei ein Durchgangsloch im oberen Gehäuse des Hauptkörpers gebildet ist und daher vom zweiten Gebläse Luft vom zweiten Durchgangsloch angesaugt wird.

9. Dunstabzugshaube nach einem der Ansprüche 1 bis 8, wobei die vom ersten Gebläse in die Saugöffnung gesaugte Luft teilweise vom zweiten Gebläse dem Wandströmungsleitelement zugeführt wird.

10. Dunstabzugshaube nach einem der Ansprüche 1 bis 9, wobei das Wandströmungsleitelement ein ringförmiges Rohr ist, ein Anfangswinkel einer zu der einen offenen Seite des Hauptkörpers abgeführten Wand-

strömung zwischen 30° und 60° in einer Richtung beträgt, in der die Wandströmung auf Basis einer virtuellen senkrechten Linie abgeführt wird, die den Mittelpunkt des Wandströmungsleitelements durchläuft, und die Geschwindigkeit der Wandströmung 3 bis 5 m/s beträgt.

11. Dunstabzugshaube nach einem der Ansprüche 1 bis 10, wobei das Wandströmungsleitelement an einem vorderen Abschnitt des Außenumfangs des Hauptkörpers positioniert ist.

12. Dunstabzugshaube nach einem der Ansprüche 1 bis 11, wobei das Wandströmungsleitelement am vorderen Abschnitt und an beiden Seitenabschnitten des Außenumfangs des Hauptkörpers positioniert ist.

13. Dunstabzugshaube nach einem der Ansprüche 1 bis 12, wobei das Wandströmungsleitelement aus einem Material gebildet ist, das lichtdurchlässig ist, und wobei im Wandströmungsleitelement eine Lampe vorgesehen ist.

14. Dunstabzugshaube nach einem der Ansprüche 1 bis 13, wobei ein konstanter Spalt zwischen dem Wandströmungsleitelement und einem Ende des unteren Gehäuses des Hauptkörpers gebildet ist.

15. Dunstabzugshaube nach einem der Ansprüche 1 bis 14, wobei das zweite Gebläse ein Zentrifugalventilator ist.

16. Dunstabzugshaube nach einem der Ansprüche 1 bis 15, wobei das Wandströmungsleitelement in Form einer gekrümmten Platte (431, 432) ausgebildet ist.

Revendications

1. Appareil de ventilation de hotte comprenant :

(a) une hotte (350) incluant un corps principal (200) installé au-dessus d'une source de cuisson et ayant une ouverture d'aspiration (230) sur une surface inférieure de celle-ci, dans laquelle de l'air contenant des produits dérivés de cuisson est aspiré, et un conduit d'échappement (300) s'étendant jusqu'à un côté supérieur du corps principal (200) et évacuant l'air aspiré ;
(b) une première soufflante (310) montée dans le conduit d'échappement (300), pour générer une force d'aspiration pour aspirer de l'air dans la hotte (350) ;
(c) un élément de guidage de jet de paroi (430, 431, 432) installé sur une circonférence extérieure du corps principal (200), pour permettre à de l'air de l'intérieur de la hotte (350) de s'écouler le long de la surface de l'élément de guidage de jet de paroi ;
(d) une seconde soufflante (500) prévue dans le corps principal (200) pour fournir de l'air à l'élément de guidage de jet de paroi (430) ; et
(e) un cadre de guidage de jet de paroi (440) installé dans le corps principal (200) de sorte à couvrir la seconde soufflante (500) à l'exception de l'un côté ouvert du corps principal, sur lequel l'élément de guidage de jet de paroi (430) est installé ;
(f) une surface latérale du corps principal est ouverte, une plaque de guidage d'air (411) est installée sur une extrémité d'un carter supérieur (210) du corps principal sur l'un côté ouvert du corps principal, l'élément de guidage de jet de paroi (430, 431, 432) est installé de manière fixe entre la plaque de guidage d'air (411) et une extrémité d'un carter inférieur (210) du corps principal, et un passage de jet de paroi (401) est formé entre la plaque de guidage d'air (411) et une surface de l'élément de guidage de jet de paroi (430, 431, 432) ; **caractérisé en ce que**

(f1) dans lequel la plaque de guidage d'air (411) a un rayon de courbure constant le long de la surface de l'élément de guidage de jet de paroi (430) ou
(f2) dans lequel une plaque de guidage médiane courbée (412, 413, 414) est en outre positionnée entre la plaque de guidage d'air (411) et l'élément de guidage de jet de paroi (430, 431, 432).

2. Appareil selon la revendication 1, dans lequel le côté inférieur de l'élément de guidage de jet de paroi est partiellement en saillie vers le bas plus bas que le carter inférieur du corps principal de sorte à être installé sur une surface circonférentielle extérieure du corps principal.

3. Appareil selon la revendication 1 ou 2, dans lequel une fente constante est formée entre l'élément de guidage de jet de paroi et la plaque de guidage d'air.

4. Appareil selon la revendication 1, 2 ou 3, dans lequel l'élément de guidage de jet de paroi a une forme de tuyau annulaire et un rapport d'une hauteur du carter inférieur du corps principal au centre de l'élément de guidage de jet de paroi par rapport à un diagramme de l'élément de guidage de jet de paroi est de 0 à 0,25.

5. Appareil selon la revendication 3, dans lequel la fente entre l'élément de guidage de jet de paroi et l'extrémité de la plaque de guidage d'air est entre 1,5 mm et 4 mm.

6. Appareil selon l'une quelconque des revendications 1 à 5, dans lequel un trou de montage (442) pour monter la seconde soufflante est formé sur une surface du cadre de guidage de jet de paroi, et une partie de montage pour recouvrir le trou de montage et dans lequel la seconde soufflante est montée, est intégralement attachée au cadre de guidage de jet de paroi.

7. Appareil selon la revendication 6, dans lequel la partie de montage a un trou débouchant, dans lequel de l'air évacué vers l'extérieur à travers la première soufflante s'écoule en partie vers l'intérieur par une force d'aspiration de la seconde soufflante.

8. Appareil selon l'une quelconque des revendications 1 à 7, dans lequel un trou débouchant est formé dans le carter supérieur du corps principal, et ainsi de l'air est aspiré du trou débouchant par la seconde soufflante.

9. Appareil selon l'une quelconque des revendications 1 à 8, dans lequel l'air aspiré dans l'ouverture d'aspiration par la première soufflante est en partie fourni à l'élément de guidage de jet de paroi par la seconde soufflante.

10. Appareil selon l'une quelconque des revendications 1 à 9, dans lequel l'élément de guidage de jet de paroi est un tuyau annulaire, un angle initial d'un jet de paroi évacué à l'un côté ouvert du corps principal est entre 30° et 60° dans une direction dans laquelle le jet de paroi est évacué sur la base d'une ligne perpendiculaire virtuelle passant le centre de l'élément de guidage de jet de paroi, et une vitesse du jet de paroi est entre environ 3 et 5 m/s.

11. Appareil selon l'une quelconque des revendications 1 à 10, dans lequel l'élément de guidage de jet de paroi est positionné sur une partie avant d'une circonférence extérieure du corps principal.

12. Appareil selon l'une quelconque des revendications 1 à 11, dans lequel l'élément de guidage de jet de paroi est installé sur la partie avant et les deux parties latérales de la circonférence extérieure du corps principal.

13. Appareil selon l'une quelconque des revendications 1 à 12, dans lequel l'élément de guidage de jet de paroi est formé d'un matériau qui peut transmettre de la lumière et a une lampe s'allumant à l'intérieur de celui-ci.

14. Appareil selon l'une quelconque des revendications 1 à 13, dans lequel une fente constante est formée entre l'élément de guidage de jet de paroi et une extrémité du carter inférieur du corps principal.

15. Appareil selon l'une quelconque des revendications 1 à 14, dans lequel la seconde soufflante est un ventilateur centrifuge.

16. Appareil selon l'une quelconque des revendications 1 à 15, dans lequel l'élément de guidage de jet de paroi est formé en une forme de plaque courbée (431, 432).

FIG. 1

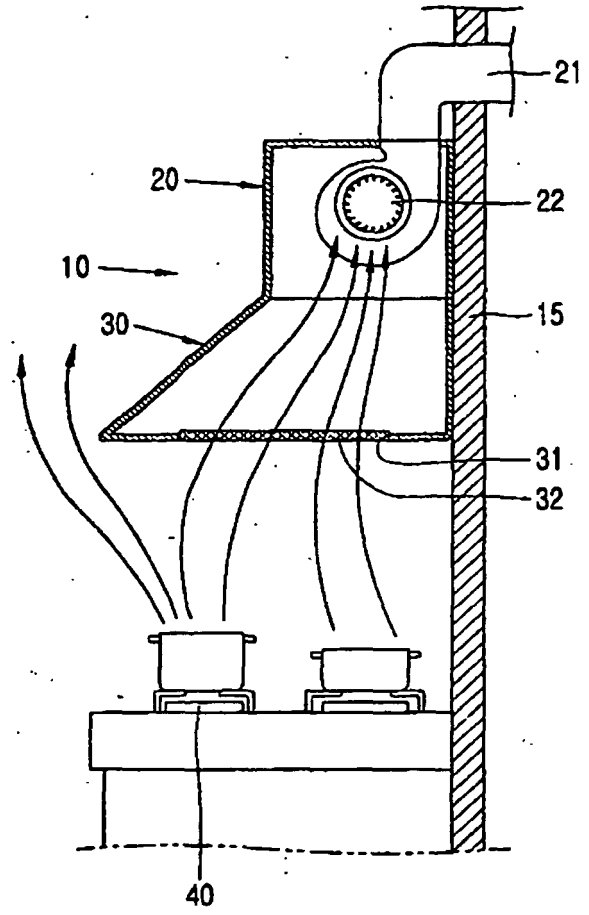


FIG. 2

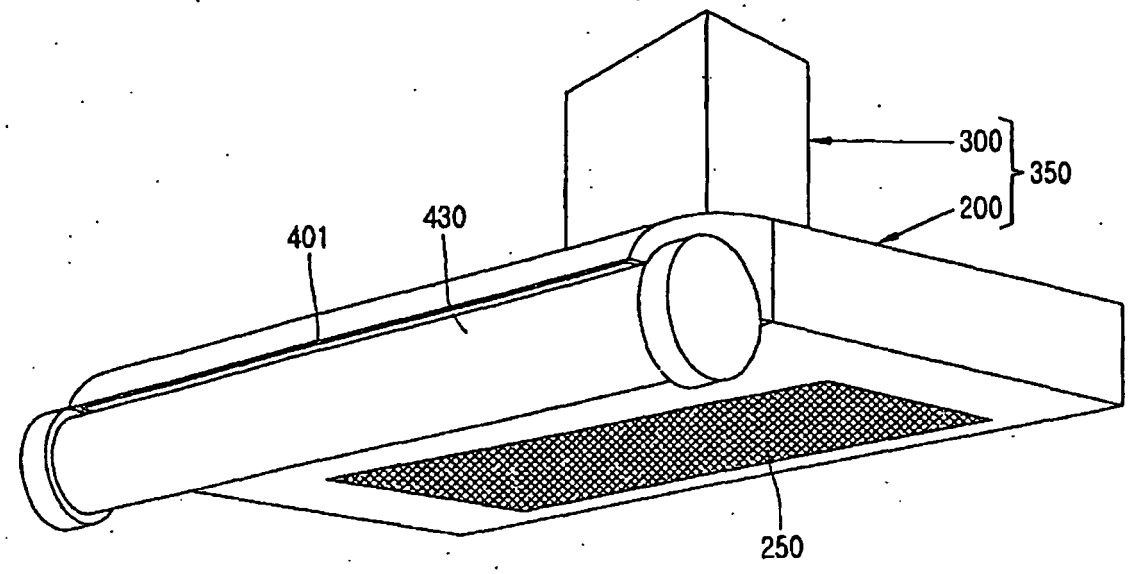


FIG. 3

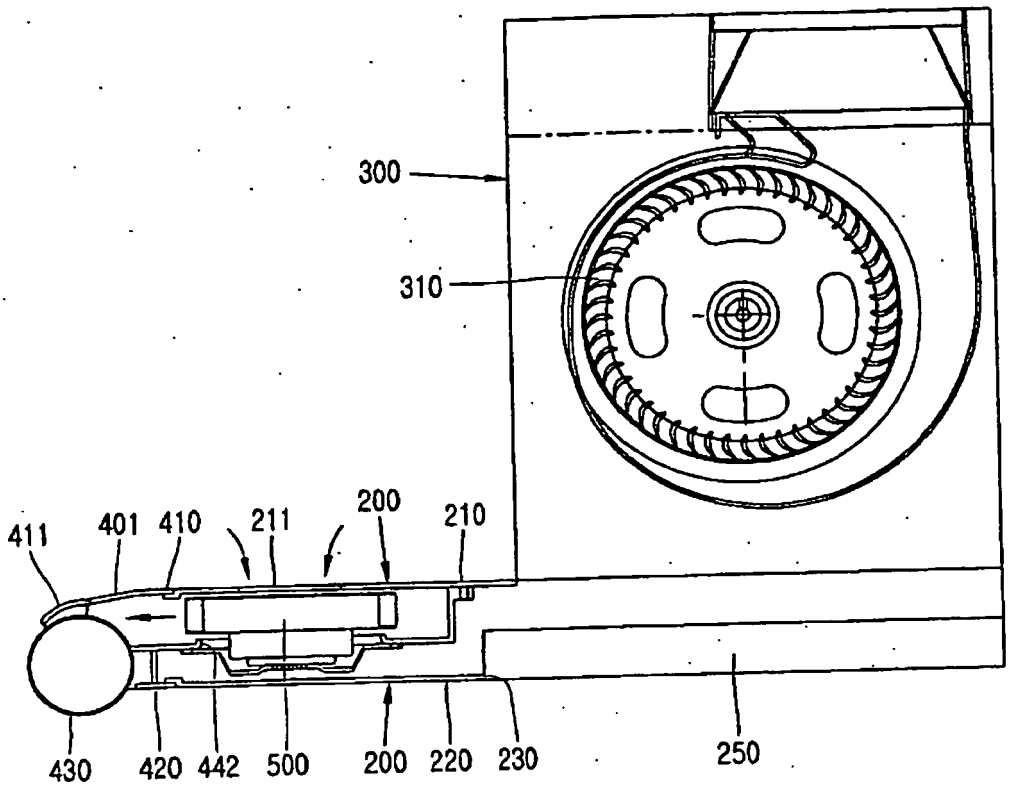

300
310
411
401
410
211
200
210
430
420
442
500
200
220
230
250

FIG. 4

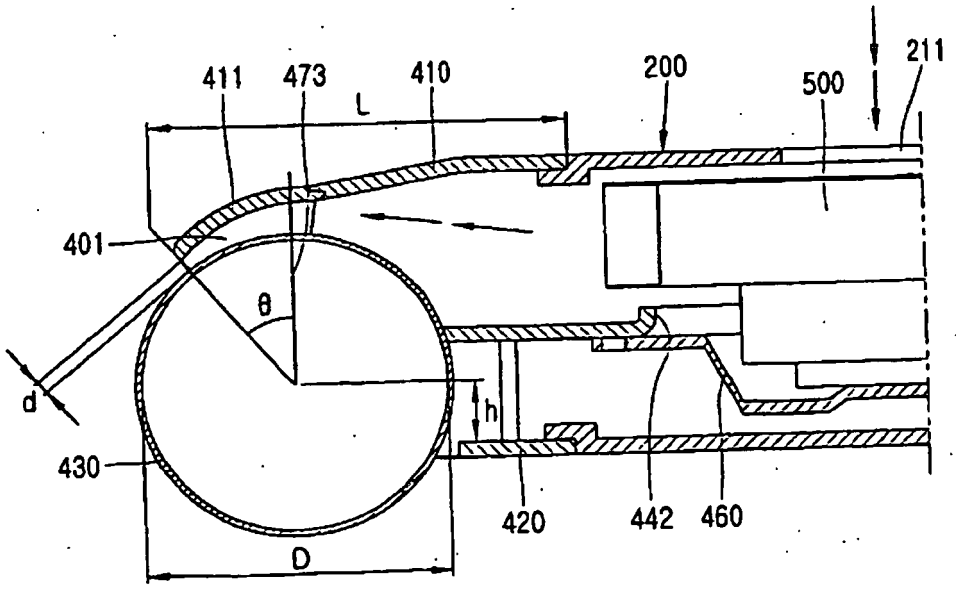

411
473
410
L
200
500
211
401
θ
d
h
430
420
442
460
D

FIG. 5

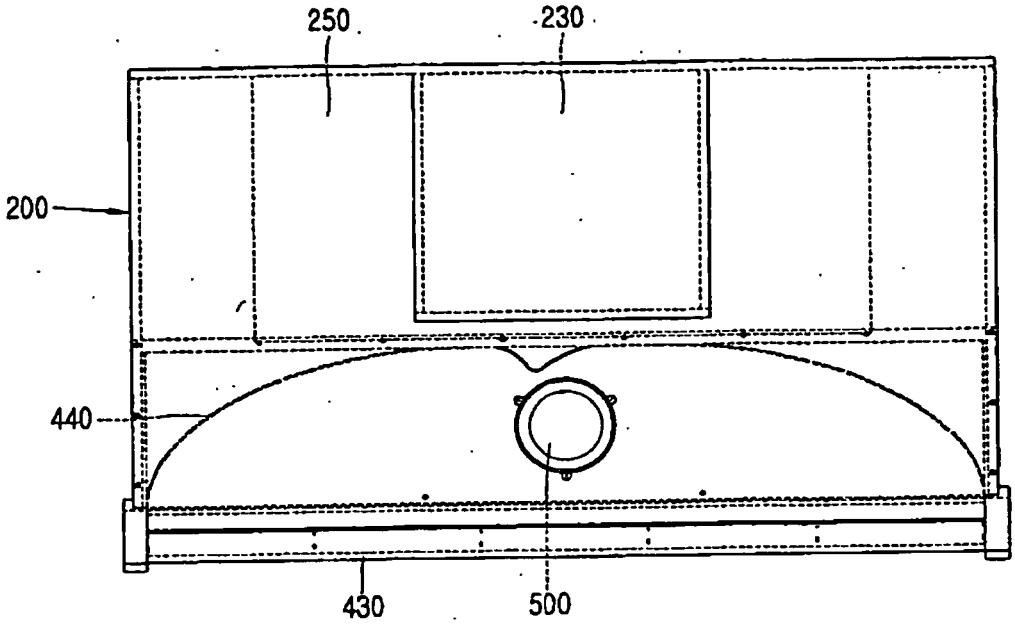

250
230
200
440
430
500

FIG. 6

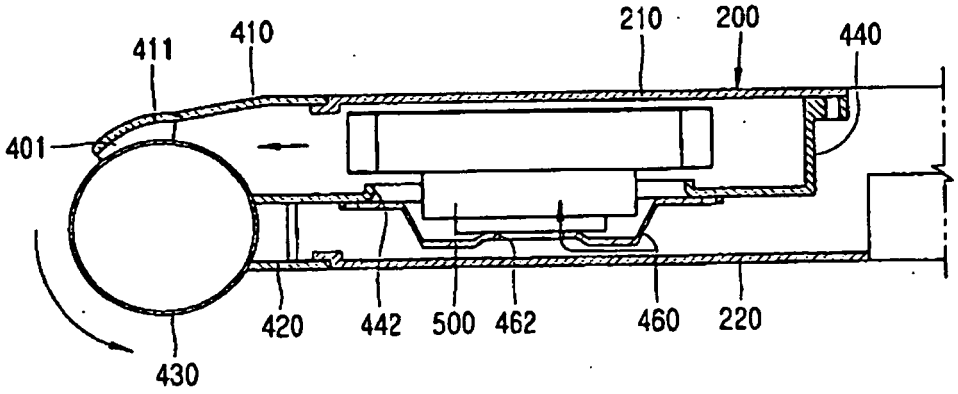

411
410
210
200
440
401
420
442
500
462
460
220
430

FIG. 7

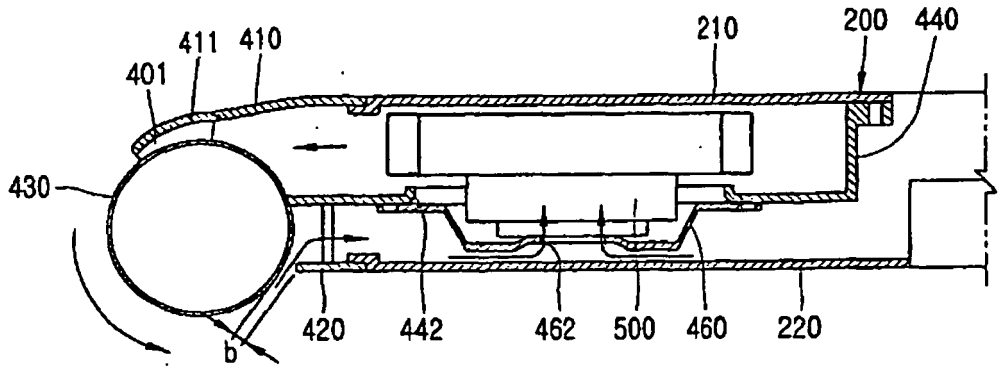

411
410
401
210
200
440
430
420
442
462
500
460
220
b

FIG. 8

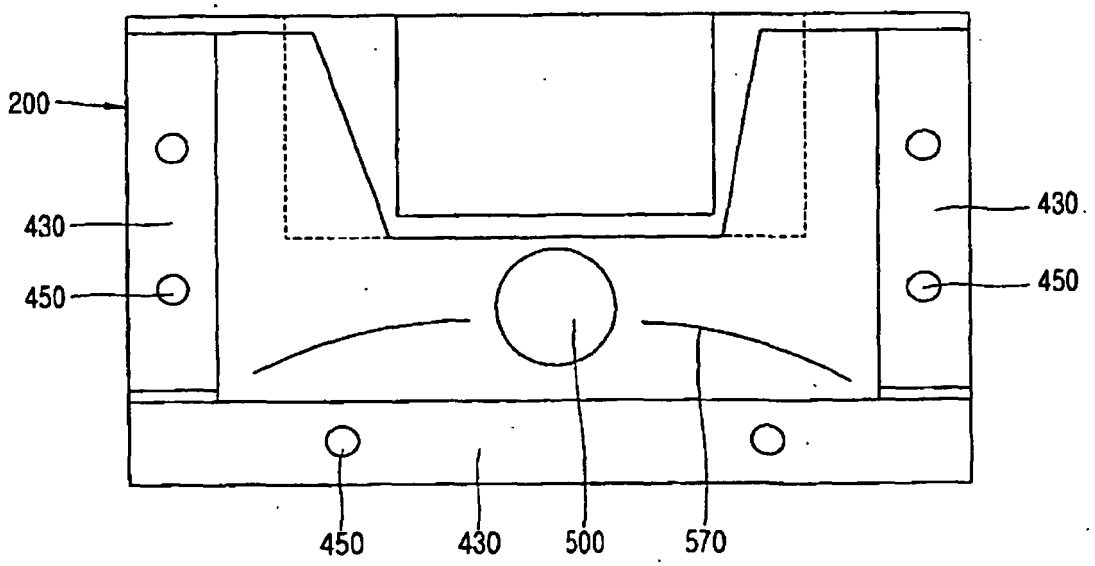

200
430
450
430
450
450
430
500
570

FIG. 9

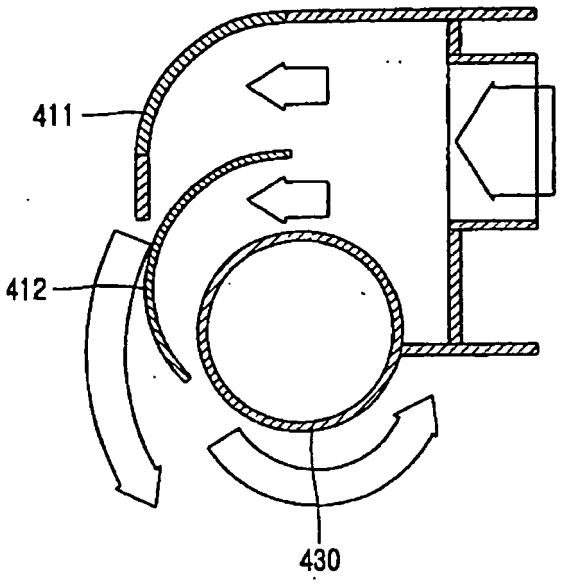


FIG. 10

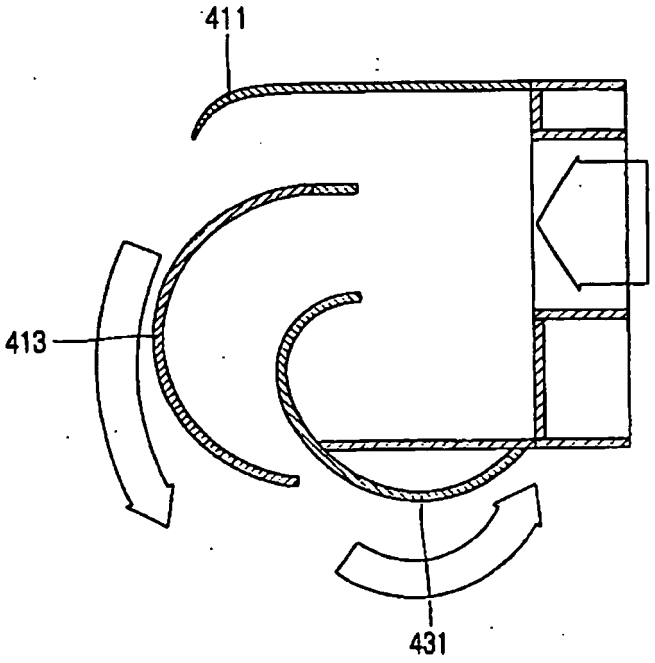


FIG. 11

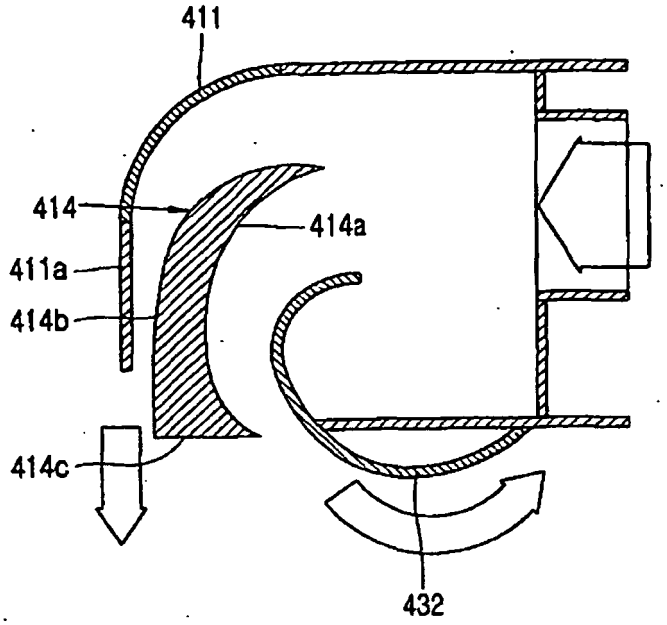


FIG. 12

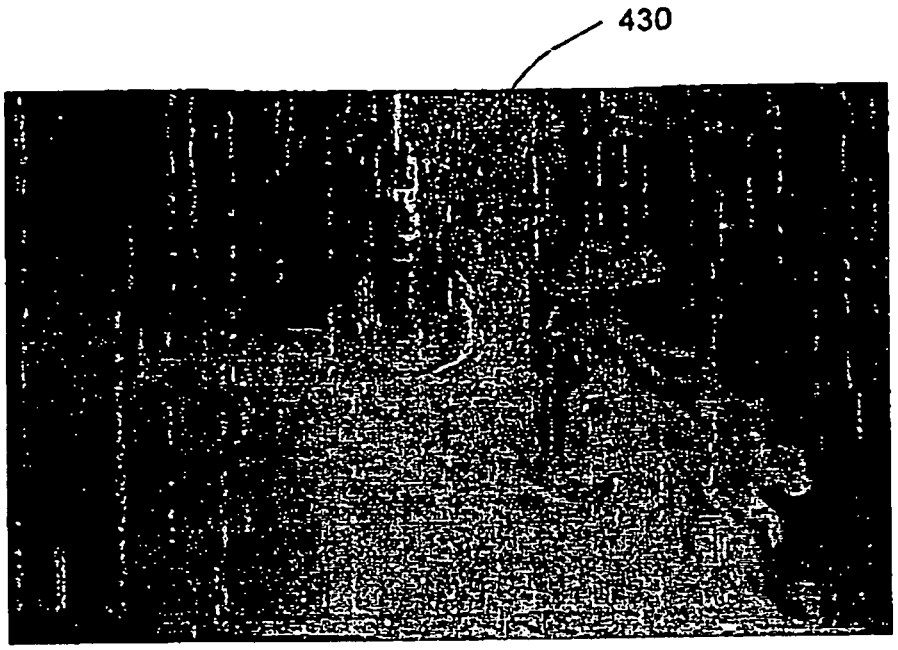


FIG. 13

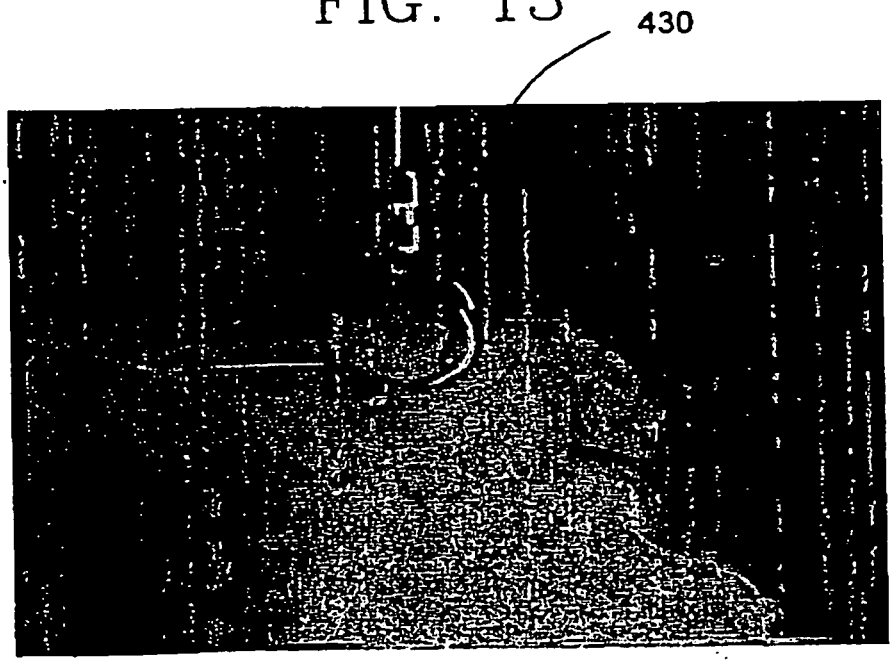


FIG. 14

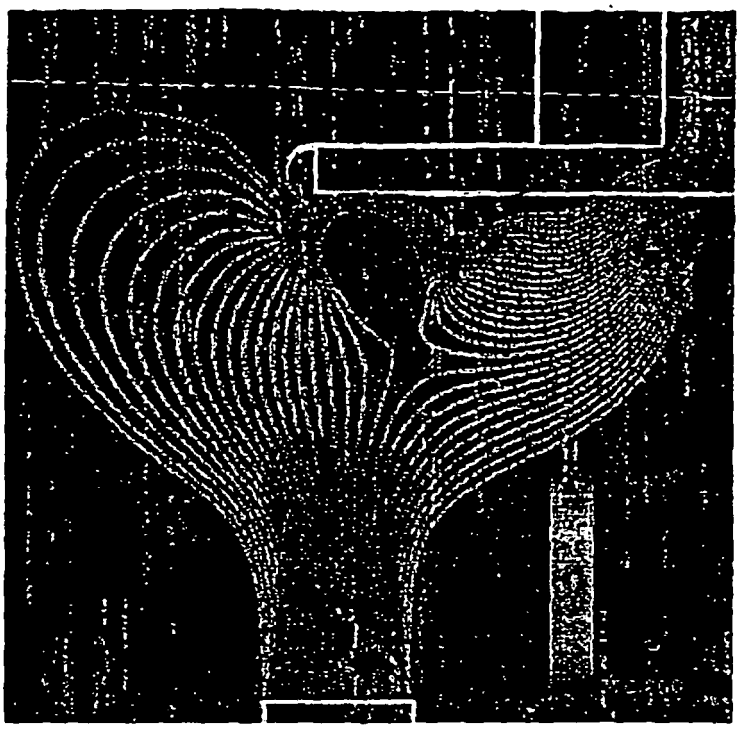


FIG. 15

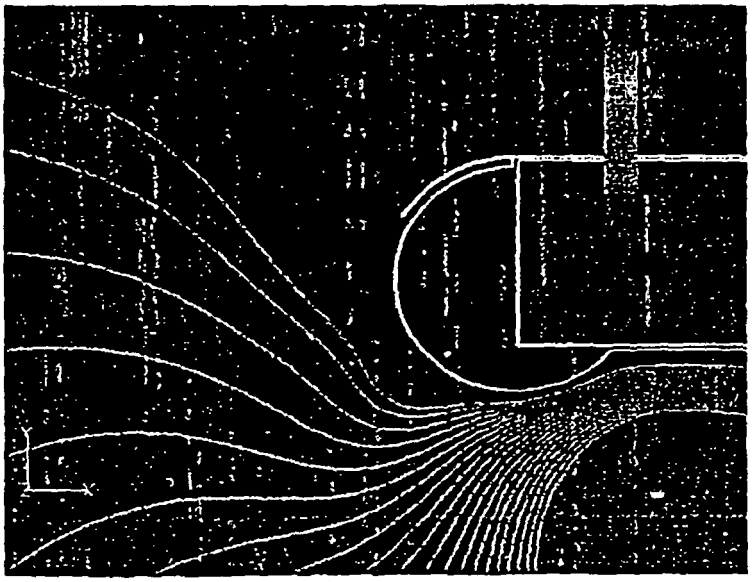


FIG. 16

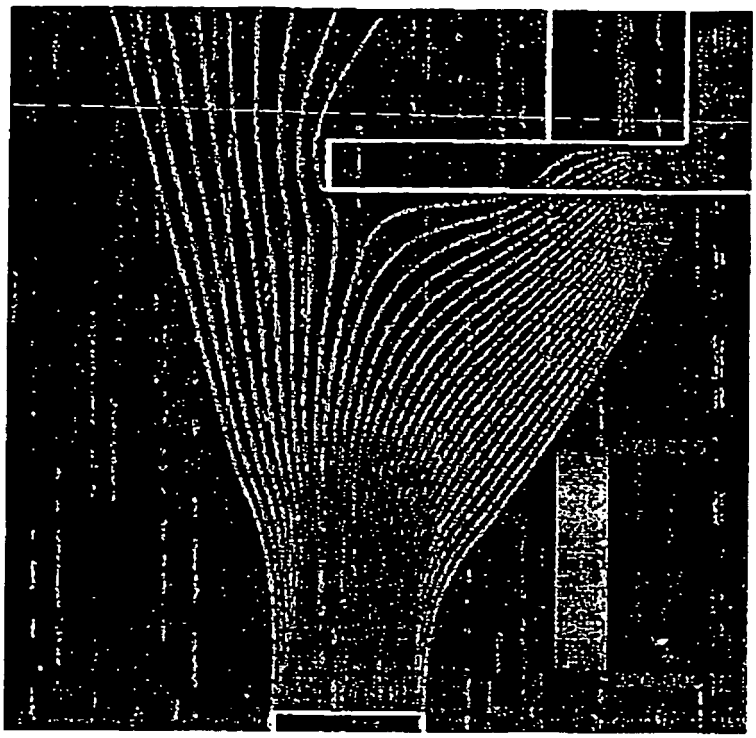
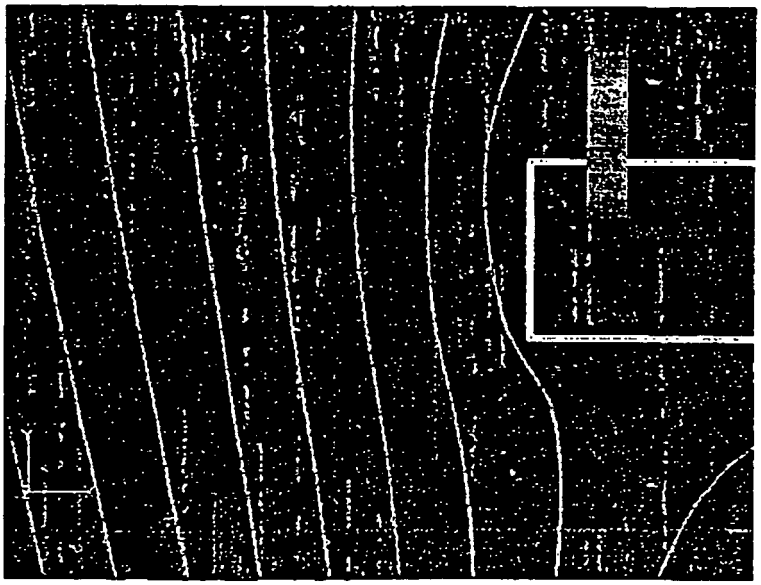


FIG. 17



REFERENCES CITED IN THE DESCRIPTION

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