(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 887 286 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.02.2008 Bulletin 2008/07

(51) Int Cl.:
***F24C 15/20** (2006.01)*

(21) Application number: **07113229.4**

(22) Date of filing: **26.07.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **27.07.2006 IT PN20060058**

(71) Applicant: **ELECTROLUX PROFESSIONAL S.p.A.
33170 Pordenone (IT)**

(72) Inventors:
- **Raus, Dragan
33080, Porcia (Pordenone) (IT)**
- **Puppin, Marco
30020, Noventa di Piave (Venezia) (IT)**

(74) Representative: **Giugni, Valter
PROPRIA S.r.l.
P.O. Box 365
Via della Colonna, 35
33170 Pordenone (IT)**

(54) Improvement in the ventilation arrangement of a fume extraction hood

(57) A fume extractor hood comprises a planar horizontal top member adapted to collect vapours and gases flowing up from a worktop, such as a cooktop, extending therebelow, a suction conduit that is open in the middle region thereof, first suction means associated to said suction conduit, ventilation means adapted to impart a whirling motion about a vertical axis to the mixture of air and other gases contained inside a cylindrical member, wherein said ventilation means comprise an internally hollow cylindrical member extending vertically downwards, a perpheral edge of which is placed on the outer edge of said planar horizontal top member, and a plurality of outflow channels distributed over the internal cylindrical wall of said cylindrical member, these channels being oriented vertically and provided with a plurality of respective outflow ports; such outflow ports are oriented so that the respective air flows are directed in a horizional direction and with a limited inclination relative to the tangent to the circumference of the cylindrical member.

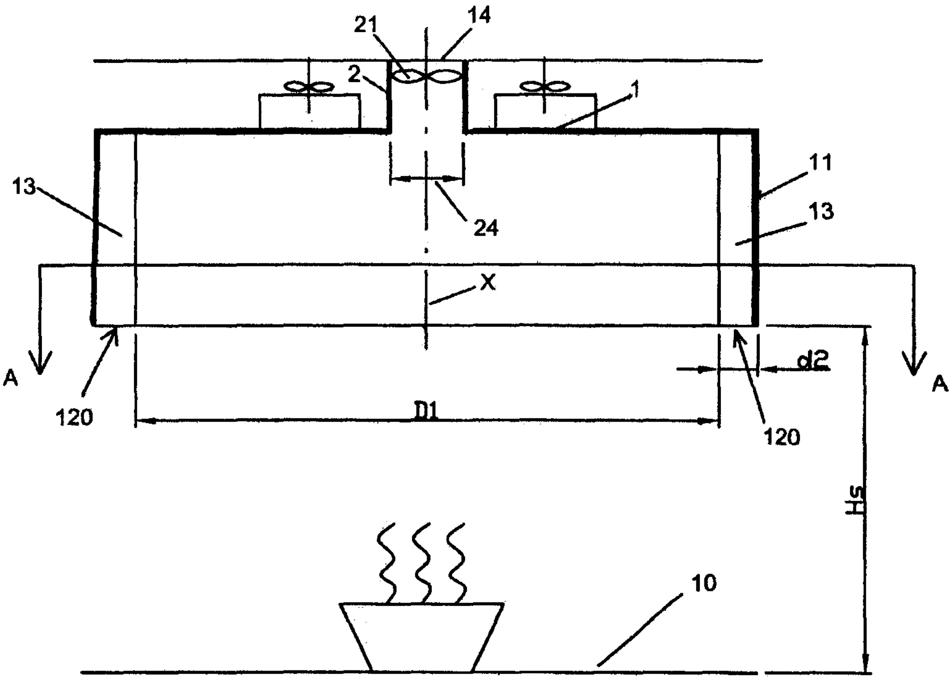

Fig. 1

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Description

[0001] The present invention refers to an improved kind of extractor hood for extracting fumes and vapours from a closed room and exhausting them outside, as provided with improved means adapted to perform the task of conveying and exhausting said fumes and vapours in a particularly quick, efficient and cost-effective manner.

[0002] Although reference will be made throughout the following description to an extractor hood intended for use in professional kitchens, in particular in the mass catering and commercial foodservice field, where fumes and vapours to be exhausted from the room and, above all, from spaces above cooking surfaces featuring a number of high-power burners or hotplates with a high heat output, are typically generated at high specific volumes (i.e. volumes per unit time), the same description and the explanations set forth hereinafter shall nevertheless be understood as equally applying to extractor hoods of the kind typically intended for household use.

[0003] Various types of extractor hoods are known in the art to in various manners take advantage and make use of the principle of creating a vortex below them in view of improving the circulation of the gases to thereby facilitating the extraction thereof by suction.

Known from the disclosure in JP 02-183750 is an extractor hood that generates a vortex, which is generally of assistance to the circulation and the exhaustion of the gases being extracted; such vortex is brought about by at least a blowing port located vertically and laterally relative to the same hood.

[0004] Such solution, however, has a drawback in that a hood of this kind must be installed on the side of, i.e. laterally to a support wall, so that it is of practically no use if the intended application calls for an extraction task to be carried out under conditions requiring full freedom from installation constraints of any kind, i.e. conditions that do not allow for any limitations to exist as far as the installation of the hood is concerned, as this is typically true in the case that fume extraction has to take place at the centre of a large and wide room.

[0005] It has to be further pointed out that the same presence of a support wall generally tends to restrain the whirling, i.e. vortex-like circulation of the gases to be extracted, thereby putting limits to the efficiency of the same hood.

[0006] Known from the disclosure in JP 01-114650 is an extractor hood that is provided on its lower side with a circular member having appropriate perforations distributed all over it, from which related air flows are ejected so as to bring about a whirling, i.e. vortex-like circulation inside them and, as a result, even in the space therebelow. Such circular member is capable of being oriented and located exactly in the preferred position above the burner or hotplate generating the fumes that are to be extracted.

[0007] Although quite flexible from a theoretical point of view, such solution has however a main drawback in that it practically proves scarcely effective due to the limited flow rate at which the air can be blown from the circular member; moreover, the hood lying thereabove is situated at a certain distance from the site where the vortex is generated and this puts further limits to the real effectiveness of the hood according to the solution described in the above-cited patent.

[0008] Known from the disclosure in JP 9042734 is a further kind of extractor hood that is adapted to generate an air vortex in the region lying therebelow. However, even this solution has the drawback of being scarcely effective owing to the fact that said air vortex is brought about by an air stream issuing obliquely downwards from the same hood and, therefore, from a certain distance from the zone where the fumes and gases to be extracted are generated, i.e. the cooking surface or hob, so that its capacity to adequately invest and affect the desired zone above the cooking surface or hob turns out as being quite modest, actually.

[0009] Described in the patent publications JP 21311542 and JP 2004332967 are again embodiments of extractor hoods that are provided with means adapted to create, in the region lying therebelow, a whirling circulation of gas and air.

[0010] Such effect, however, is obtained with the use of a double structure having cone-shaped, parallel walls into and within which there is blown a flow of air that is then directed downwards upon being deflected by a plurality of fins that impart a rotary motion component to such flow.

[0011] Although rather effective, these solutions have however a drawback in that they imply an elaborate, i.e. complex construction and, therefore, are certainly cost-intensive. A major drawback of such solutions, anyway, lies in the fact that the above-mentioned cone-shaped double structure of the hood causes the latter to be very, if not excessively high, making it difficult to install it in normal kitchen spaces.

[0012] Disclosed in JP 11-311432 is an extractor hood that is provided with means adapted to create, in the region lying therebelow, an air circulation of a rotary vortex, i.e. whirling kind. Even in this case, however, the air circulation is brought about by the action of a single suction fan that at the same time brings about also the whirling, vortex-like circulation generated from above.

[0013] As a result, the vortex-like rotation - owing to its being actually "driven" from above, and not from the side - is extremely low in its effectiveness, which is anyway limited to just a small space lying immediately below the hood.

[0014] Known from the disclosures in US 4,622,888, US 4,550,650 and JP 63-267855 is a kind of extractor hood that is provided with means adapted to enhance the suction effect to extract gases, in particular toxic gases, through the generation of a gas or air vortex brought about by a plurality of outflow ports provided along vertical, pillar-like members distributed under the same hood. Such hood, however, is closed on three sides around the working zone, so that it leaves just a single side open for access to be gained to the same working zone.

[0015] Now, such situation is scarcely acceptable in all those cases in which access to the working zone has to be capable of being gained from all sides thereof, as this usually occurs when the hood is used to extract fumes, gases and vapours from cooking surfaces, hobs and the like, both in residential and mass-catering applications in general.

[0016] It would therefore be desirable, and is actually a main object of the present invention, to provide a kind of extractor hood, particularly for use in connection to installations involving cooking on a specific cooking surface, which enables access to the cooking zone to be readily and conveniently gained from more sides thereof, is low-cost and simple in its construction and operation, and is nevertheless capable of generating a vortex that is effective in ensuring a fully adequate, consistent circulation of gas or air, as the case may be.

[0017] According to the present invention, this aim, along with further ones that will become apparent from the following disclosure, is reached in an extractor hood for both home and professional applications, which incorporates the features and characteristics as recited in the appended claims.

[0018] Anyway, features and advantages of the hood according to the present invention may be more readily understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a vertical cross-sectional view along a median central axis X of an extractor hood according to the present invention;
- Figure 2 is an upward view along the section plane A-A of Figure 1;
- Figure 3 is a view along the section plane B-B of Figure 2;
- Figure 4 is a similar view as the one in Figure 1, but showing a symbolical pictorial representation of the air flow being circulated according to a rotary pattern under the hood;
- Figures 5 and 6 are projection views on a plane extending orthogonally to said median central axis X and on a plane extending parallel to the same axis X, respectively, of the speed vector at a generic point K in the space under the extractor hood according to the present invention;
- Figure 7 is a graph illustrating the pattern of the tangential component of the speed at said generic point K;
- Figure 8 is a schematic, symbolical view of an improved embodiment of the extractor hood according to the present invention;
- Figures 9, 10 and 11 are a perspective bottom view, a planar projection bottom view and a partially see-through side view, respectively, of a second improved embodiment of an extractor hood according to the present invention;
- Figure 12 is a perspective, see-through bottom view of an improved embodiment of the invention;
- Figures 13 and 14 are respective cut-away views of the embodiment illustrated in Figure 12;
- Figure 15 is a simplified plan view of the embodiment illustrated in Figure 12;
- Figure 16 is an enlarged view of a portion of Figure 15;
- Figures 17A and 17B are views of the hood illustrated in Figure 15, as viewed in two different operating states thereof.

[0019] With reference to Figures 1 and 2, a hood according to the prior art and the present invention, as well, comprises:

- an upper planar member 1 adapted to intercept, i.e. capture and extract by suction the gases hovering about in the space therebelow, as generally produced by a cooking surface situated thereunder;
- one or more suction conduits 2, the suction mouth or port 24 of which opens into the central zone of said upper planar member 1 to generally branch off vertically therefrom;
- at least a suction fan 21 housed in said suction conduit 2, adapted to suck in the gases from said suction mouth 24 and blow them outside through the exhaust mouth 24B;
- ventilation means as generally described in the afore-cited prior art, capable of setting the mass of air lying under said upper planar member 1 in motion according to a rotary pattern about the vertical axis X centered in said suction mouth 24.

[0020] According to the present invention, said ventilation means comprise:

- an internally hollow cylindrical member 11, whose diameter D1 is substantially equal to the outside diameter of said upper planar member 1, and which is applied on to the outer rim 110 of the latter, so that the outer surface of said cylindrical member 11 comes to stand in a vertical position;

- a plurality of outflow channels 13, which are:

  * vertical,
  * provided in the inner wall of said cylindrical member 11 and arranged to extend therealong,
  * distributed in a substantially uniform manner all over said wall,
  * so sized as to feature a crosswise size d2, i.e. a size on the horizontal plane that is substantially smaller than the diameter D1 of said cylindrical member 11, so as to avoid interfering with or slowing down the flow of the fumes or gases that are sucked in from the bottom upwards through said suction conduit.

[0021] With reference to Figure 3, each one of said outflow channels 13 is in a generally cylindrical or prismatic shape, and is further provided with one or more outflow ports 14, which are:

- provided in the respective cylindrical surface,
- oriented on the horizontal plane,
- and further oriented (Figure 2) in a direction "a" that is substantially parallel to the horizontal tangent "t" to the surface of said cylindrical member 11 at the point P, at which the respective outflow channel is applied on to the same cylindrical member 11.

[0022] In addition, said outflow ports are arranged in a coherent manner, in the sense that the outflow ports of two contiguous channels 13 are in no case opposing each other, but are rather turned in the same direction, i.e. facing the same way relative to a single direction of rotation extending horizontally over the inner surface of said cylindrical member 11.

[0023] Furthermore, said cylindrical member 11 terminates at its bottom with a lower rim 120 that is abundantly spaced away from the cooking surface or hob 10 lying therebelow, so as to avoid interfering with the good accessibility of said cooking surface from all sides thereof or, still worse, preventing the same cooking surface from being capable of being conveniently accessed to from all sides thereof by an operator.

[0024] Briefly, therefore, the inner portion of said cylindrical member 11 is provided with the afore-described plurality of outflow ports 14 in an arrangement in which they are distributed with a certain regularity along the perimeter of such portion.

As a result, if respective air streams are blown into said outflow channels 13, the same air streams will be blown out through said outflow ports 14, thereby being converted into respective air jets "g" that are blown in a concordant manner all along the inner surface of said cylindrical member 11.

[0025] These individual air jets will then immediately turn into a single air circulation that takes the form of a vortex moving spirally as a whirlwind round the axis X of said cylindrical member 11, wherein such vortex will of course be contained within the volume being defined by said cylindrical member 11.

[0026] It has however been found - and this is the real value of the present invention - that said vortex does not remain delimited within said cylindrical member 11, actually, but tends to expand therebelow, to thereby produce a rather evident, marked entrainment effect, which will by the way be all the more marked the closer the cooking surface 10 is to the cylindrical member 11.

[0027] It has been demonstrated that, due to the effect of such vortex occurring externally, i.e. below said cylindrical member 11, the gases diffusing under said cylindrical member 11 are specifically conveyed into the roughly conical geometrical contour formed by the curved walls indicated at V in Figure 4.

[0028] The ultimate result of such entrainment effect of the fumes, i.e. gases being so whirled in the space between said cylindrical member 11 and said cooking surface 10 is a quite more efficient suction effect of said gases, which is moreover further enhanced by the improved manner in which the same gases being sucked in, i.e. extracted are practically contained within said conical configuration V, so that any possibility for the same gases to leak and diffuse into the ambient where the hood is installed is greatly reduced, if not fully prevented.

[0029] In view of further enhancing to an optimum level the general performance capabilities of the inventive extractor hood as this has been described hereinbefore, the various design, i.e. geometrical and dimensional parameters, as well as the various operating parameters that most affect and directly determine such performance capabilities of the hood have been thoroughly and systematically investigated on an experimental basis. As all those skilled in the art are well aware with, such investigating activity is usually and normally carried out in the simplest, but at the same time quite effective form thereof, by practically avoiding to go through a sequence of experiments that have been planned, i.e. designed on the basis of criteria that are characteristic of the so-called fractional factorial experiments, while performing on the contrary a set of experiments, in which a factor or parameter is varied each time within a range of values that said factor or parameter is therefore caused to take sequentially, all other factors or parameters remaining unaltered in the process.

[0030] The result obtained in each such experiment is duly measured to ultimately identify - for each parameter - a range of values, to which there correspond performance results being considered or selected as preferential or desired ones.

[0031] On the other hand, such procedure is largely known to all those being familiar with statistical analysis techniques, so that it shall not be explained any further here.

[0032] Anyway, the parameters that have been selected for experimental investigation in the particular case being considered will be indicated and described later on.

[0033] Briefly, on the basis of an adequate number of properly designed and performed experiments, there have been identified the following optimum variation ranges for the parameters indicated below, which are generally applicable to extractor hoods to be used above cooking surfaces in professional and similar kitchens:

- angle between the direction "a", in which said outflow ports are oriented, and the direction of the tangent to said cylindrical member at the point of application P of the respective outflow channel,
  >>>>>>>> smaller than 10°;

- ratio of the height (h1) of said cylindrical member 11 to the diameter D1 of said upper planar member 1,
  >>>>>>>> ranging from 3.5 to 4.0;

- ratio of the sum of the flow rates of said outflow ports 14 to the flow rate of said suction conduit 2,
  >>>>>>>> ranging from 0.6 to 1.0;

- air replacement frequency, i.e. the number of times the air contained within the cylindrical member 11 is replaced by the air blown from said outflow ports 14 per unit of time (can also be calculated if the volume of said cylindrical member and the overall flow rate of said outflow ports are known),
  >>>>>>>> ranging from 35 to 45 times per minute;

- angular velocity of the rotary, i.e. whirling circulation of the air, as measured along the outermost perimeter,
  >>>>>>>> ranging from 50 to 60 rpm;

- ratio of the distance - as calculated on the surface of said cylindrical member - of two contiguous outflow channels 13 to each other, to the height h1 of the same cylindrical member,
  >>>>>>>> ranging from 1.2 to 1.8;

- ratio of the outflow velocity of the air from said outflow ports 14 to the angular velocity of the rotary, i.e. whirling circulation of the air, as measured along the outermost perimeter,
  >>>>>>>> ranging from 4.0 to 6.0.

[0034] It should at this point be noticed that, for each point in the space below said cylindrical member 11, the air velocity at such point can be represented by a vector having three components, i.e. an ascensional or upward component, a radial component directed towards said axis X, and a third tangential component.

[0035] On the basis of the above-cited experiments, and with particular reference to Figure 5, in which the projection on a plane n extending orthogonally to said axis X of the velocity vector A of the air at a generic point K is illustrated, and to Figure 6, which shows a possible radial component V_r of the same air velocity vector on the same plane n, but as viewed from the same axis X, it has also been found that the trend or course of said tangential component V_t of the velocity of the air being sucked in, for each plane n extending orthogonally to said axis X and situated at a generic distance d from said lower rim 120 of said cylindrical member 11, follows a pattern that may be represented by the curve C in Figure 7.

[0036] Such curve can be noticed to show a descending trend towards both extremities thereof, whereas in an intermediate position thereof the same curve reaches a peak at a point M.

[0037] In the course of the above-described experiments it has also been found that a particular advantageous suction effect, i.e. extraction performance is reached if said tangential velocity component V_t and radial velocity component V_r, at said point M where the tangential velocity component V_t is at a maximum, for a generic point in the space lying below said cylindrical member 11, have such values as to ensure that the V_t/V_r ratio is greater than 0.50.

[0038] This basically represents the fact that the air must circulate, i.e. flow with a rotary or spiral-like, i.e. whirling motion that is at least comparable with the radial motion directed towards the centre; and such condition is specifically achieved with a hood according to the present invention, rather than with a hood according to the prior art.

[0039] However, since such ratio is an effect of each and any possible combination of the mechanical and operational features of the present invention, further to the distance of the extractor hood from the cooking surface or hob lying therebelow, and since such features and parameters may vary to even quite remarkable an extent, the present teaching suggests that such features and parameters should be combined, actually, which will result in an air circulation being generated altogether that best complies with such constraint.

[0040] With reference to Figure 8, this can be noticed to symbolically illustrate a schematical representation of the means used to generate both the suction air flow and the whirling air circulation; in view of avoiding a needless duplication of the motors used to drive the suction fan 21 and the blower or fan 22 used to circulate the air being blown into and through said outflow channels, such fans are associated to and driven by a single motor 23; this solution is particularly advantageous considering the fact that the extractor hood generally operates under substantially constant, steady working conditions, so that there is no practical need for two different motors to be used in view of generating two different air flows at variable velocities or rates.

[0041] With reference to Figures 9 to 11, it has also been found that it may be quite advantageous for the inventive extractor hood to be provided with a filtering member 25, which - for it to be conveniently accessible and, at the same time, be prevented from interfering with the rotary, i.e. whirling circulation of the air under the hood - is preferably provided in the shape of a frustum of a cone and is applied immediately under said suction mouth 24.

[0042] It has further been experimentally confirmed that the performance capabilities of the above-described extractor hood are conditional to the distance of such hood from the cooking surface or hob 10 lying therebelow; in particular, it has been experimentally found that an improvement in the overall suction, i.e. extraction efficiency is obtained when the inventive extractor hood is installed and located in such manner relative to said cooking surface or hob 10 (see Figure 1) as to ensure that the ratio of the largest horizontal size D_1 of said cylindrical member 11 to the distance H_s of said lower rim 120 to the same cooking surface 10 lies within 0.75 and 1.0.

[0043] With reference to Figures 12 through to 16, a further advantageous embodiment of the present invention calls for said outflow ports to be provided in the form of a sequence of slots 33 opening onto the inner perimeter 30 of a horizontal channel 31 provided inside said cylindrical member 11 immediately underneath said upper planar member 1.

[0044] Such horizontal channel 31 is delimited internally by an alternate sequence of closed vertical surfaces 34, which are spaced from each other by said slots 33, and which determine said inner perimeter 30; it is further delimited externally by a box-like casing 40 substantially coinciding with said cylindrical member 11, and at the bottom by a planar member 41 that is substantially similar and parallel to said upper planar member 1.

[0045] Each one of said closed vertical surfaces 34 is provided at the sides with two respective edges 34A and 34B, wherein said edges are arranged in an alternate manner relative to the complete sequence of the leading and trailing edges of all said surfaces 34; on one 34A of said edges of each such closed surface 34 there is provided a respective airflow-deflecting fin or baffle 37 oriented inwardly, i.e. towards the interior of said channel 31, in a manner that is consistent relative to a single direction of circulation of the air inside said ring-like channel.

[0046] In practice, each one of said air-flow deflecting fins 37 forms a member adapted to divert, i.e. deflect the flow of air circulating within said ring-like channel 31.

[0047] As a result, when an airflow is blown into said channel 31, such flow will of course escape outside through said slots 33; however, before being able to leak through such slots, said flow is clearly deflected and properly channelled by said fins 37, with the ultimate result that, when said flow eventually blows into said cylindrical member 11, i.e. practically into the hood, it is almost tangential - on the horizontal plane - to the vertical closed surface 34 whose fin has deflected it, actually.

[0048] Obtained in the above-described manner is practically a kind of extractor hood which, while operating in a manner that is fully in keeping with the principles of the present invention as described hereinbefore, has the advantage of a greater simplicity in construction.

[0049] On the other hand, even this particular embodiment of the present invention may be further improved: in fact, with reference to Figure 16, said airflow-deflecting fins are not firmly joined to the respective vertical surfaces 34. Quite on the contrary, each such fin 37 is rather hinged with a connection edge 34A thereof on to the respective surface 34.

[0050] In this manner, the inclination of the fins in general can be easily modified and on the so defined inclination of the fins there depends not only the width of the respective slot, but also the rate and - to a certain extent - also the prevailing inclination of the airflow being blown into said cylindrical member 11 from such slot.

[0051] For such condition to be able to be more readily and clearly understood, reference should be made to the illustrations in Figures 17A and 17B, which symbolically represent respective horizontal plan views of the above-described embodiment of the inventive hood, wherein the fins or baffles 37 have two distinct and different inclinations A and B relative to the respective surface 34, onto which they are hinged.

[0052] In particular, if all such fins or baffles are connected by means of appropriate mechanical means that are adapted to control in a synchronous and similar manner the inclination of such fins or baffles, e.g. by means of an adjusting ring 38, it can be most readily appreciated that, by acting on such mechanical means, which can be provided in any of a number of manners that are largely known to and well within the ability of all those skilled in the art, so that they shall not be described or explained any further here, the basic characteristics in terms of both flow rate and orientation of the air being blown from said slots are most readily and easily varied in any desired manner.

Claims

1. Fume extractor hood, preferably of the type intended for use above cooking surfaces or the like in professional kitchens, comprising:

   - an upper planar horizontal member (1) adapted to capture and collect vapours and gases flowing up from a cooktop (10) lying therebelow, where the vapours and fumes to be extracted are generated,
   - a suction conduit (2) that is open in the middle region of said upper planar horizontal member (1),
   - first suction means associated to said suction conduit and adapted to suck in the fumes and vapours therefrom and blow them outside, wherein such means comprise a suction fan (21) associated to said conduit (2),
   - ventilation means adapted to impart a whirling

motion about a vertical axis (X) to the mixture of air and other gases contained in the volume below said upper planar horizontal member (1),

characterized in that said ventilation means comprise:

- an internally hollow cylindrical member (11), a peripheral edge of which is placed onto the outer edge (12) of said upper planar horizontal member (1), and which extends vertically downwards from said upper planar horizontal member (1) without reaching the level of the cooktop or simuilar surface (10) lying therebelow,
- a plurality of outflow channels (13) distributed over the internal cylindrical wall of said cylindrical member (11), these outflow channels being oriented vertically and being each provided with a respective plurality of outflow ports (14).

2. Extractor hood according to the preamble of claim 1, **characterized in that** said ventilation means comprise an internally hollow cylindrical member (11), a peripheral edge of which is placed onto the outer edge (12) of said upper planar horizontal member (1), and which extends vertically downwards from said upper planar horizontal member (1) without reaching the level of the cooktop or simuilar surface (10) lying therebelow, **and in that** inside said cylindrical member (11) there is defined an internally hollow horizontal channel (31) that is delimited inwardly by an inner perimeter (30) comprising an alternate sequence of substantially vertical, closed surfaces (34) intercalating with a corresponding alternate sequence of respective slots (33), and delimited downwardly by a planar member (41).

3. Extractor hood according to claim 2, **characterized in that** said closed surfaces are provided with respective fins or baffles (37) placed on a respective vertical edge (34A) thereof and oriented so that the alternating sequence of said slots (33) and said baffles (37) associated to said closed surfaces (34) determines said plurality of outflow ports.

4. Extractor hood according to claim 3, **characterized in that** said fins or baffles (37) are provided with control means adapted to enable the angle of rotation of each such fin or baffle (37) about the respective vertical edge (34A) to be adjusted.

5. Extractor hood according to any of the preceding claims, **characterized in that** said outflow ports (14) or said slots (33) are oriented so that the respective airflows issuing therefrom are blown in a horizontal direction (a) with an inclination that is substantially smaller than 10° relative to the tangent (t) to the circumference of said cylindrical member (11) at the point of application (P) with the respective outflow channel.

6. Extractor hood according to claim 1 or 2, **characterized in that** the ratio of the height (h1) of said cylindrical member (11) to the diameter, or largest dimension (D1), of said upper planar member (1) is situated anywhere between 3.25 and 4.0.

7. Extractor hood according to claim 1 or 2, **characterized in that** the ratio of the sum of the flow rates of said outflow ports (14) or said slots (33) to the flow rate of said suction conduit (2) is situated anywhere between 0.6 and 1.0.

8. Extractor hood according to any of the preceding claims, **characterized in that** the air replacement frequency, i.e. the number of times the air contained within said cylindrical member (11) is replaced by the air blown from said outflow ports (14) per unit of time, is situated anywhere between 35 and 45 times per minute.

9. Extractor hood according to any of the preceding claims, **characterized in that** the angular velocity of the rotary, i.e. whirling circulation of said air and fumes, as generated by said ventilation means and measured along the outermost path within said cylindrical member (11), is situated anywhere between 50 and 60 rpm.

10. Extractor hood according to any of the preceding claims, **characterized in that** the number of said outflow channels (13) is such that the ratio of the distance (D2) of two contiguous outflow channels (13) from each other, as measured along the perimeter of said cylindrical member (11), to the height (h1) of the same cylindrical member (11) is situated anywhere between 1.2 and 1.8.

11. Extractor hood according to claim 5, **characterized in that** the ratio of the average outermost tangential velocity (V1) of said rotary or whirling air circulation to the air outflow velocity from said outflow ports (14) or said slots (33) is situated anywhere between 4.0 to 6.0.

12. Extractor hood according to any of the preceding claims, **characterized in that** said first suction means and said ventilation means for generating said whirling air circulation comprise respective fans (21, 22), wherein both these fans are mechanically connected to a single and same drive motor (23).

13. Extractor hood according to any of the preceding claims, **characterized in that** close to or at the suction mouth (24) of said suction conduit (12) there is housed a filtering member (25), which at least partially extends into the volume enclosed by said cylindrical member (11) in the shape of a frustum of a cone.

14. Installation for extracting fumes and vapours from a cooking surface or hob (10), comprising an extractor hood according to any of the preceding claims, **characterized in that** the ratio of the maximum horizontal dimension of said cylindrical member (11) to the distance of the lower rim (11A) thereof from said cooking surface or hob (10) lying therebelow is situated anywhere between 0.75 and 1.0.

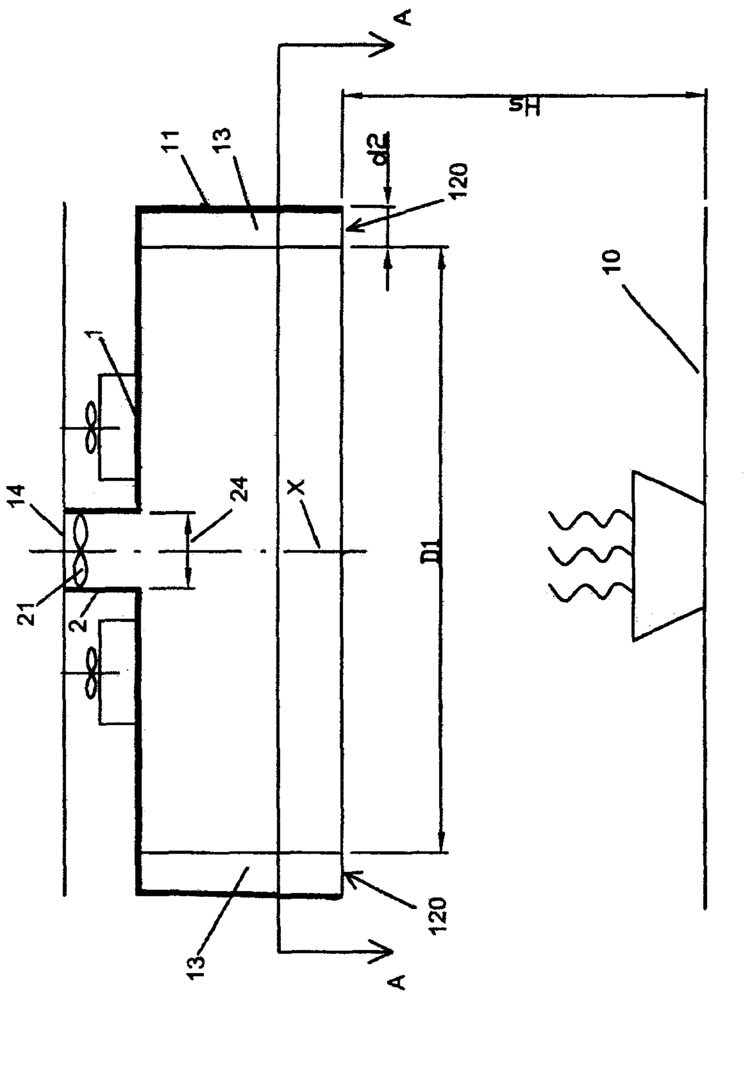


Fig. 1

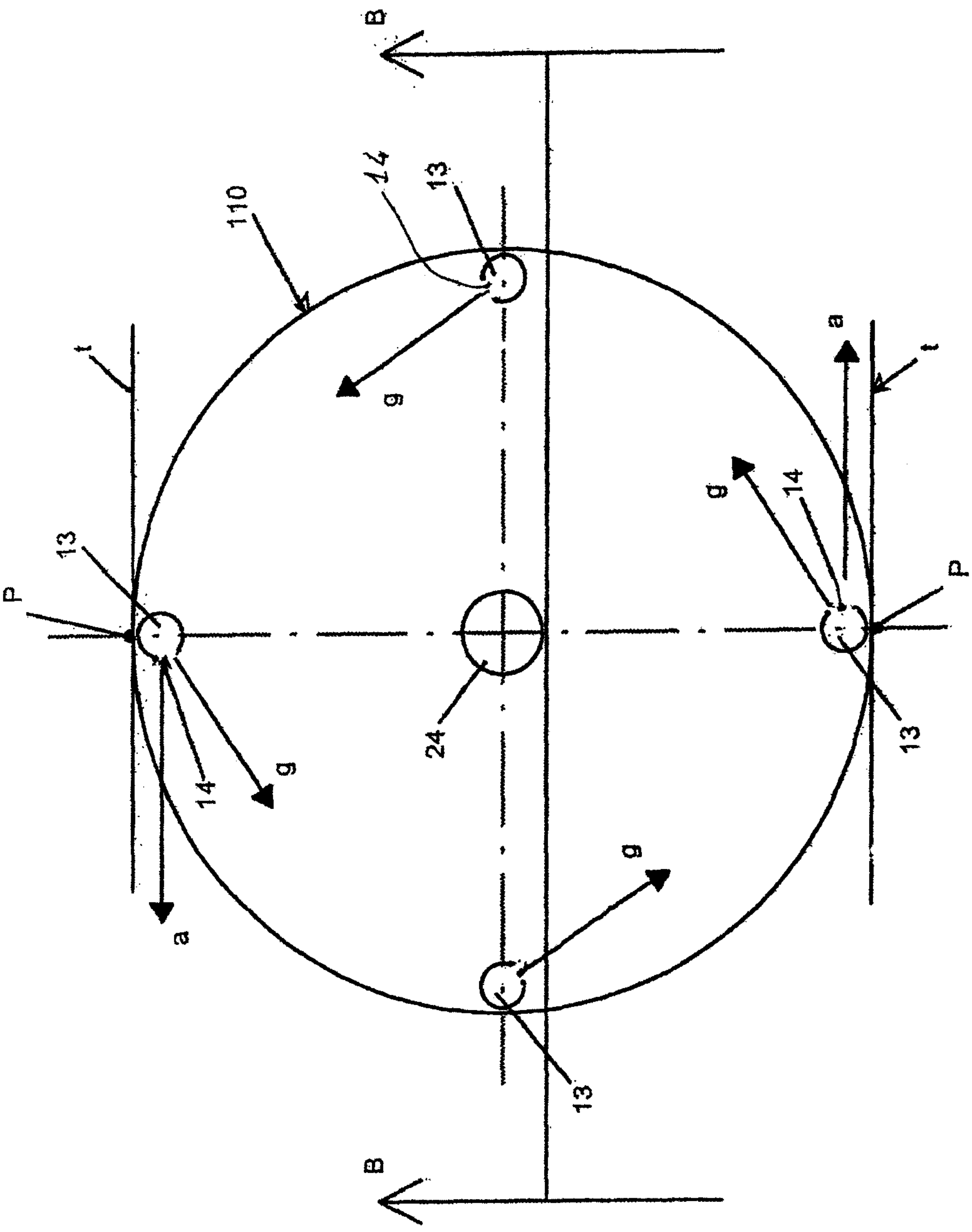


Fig. 2

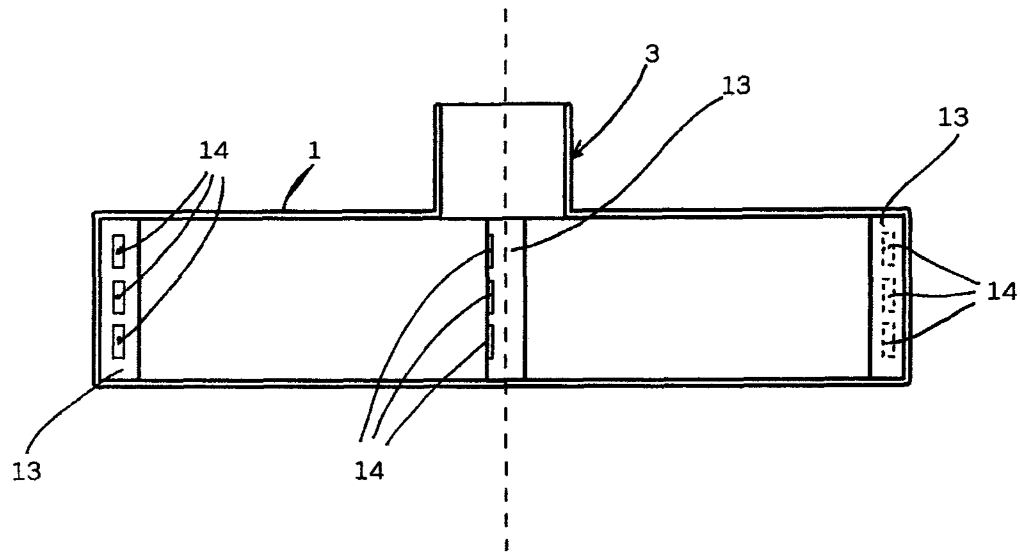


FIG. 3

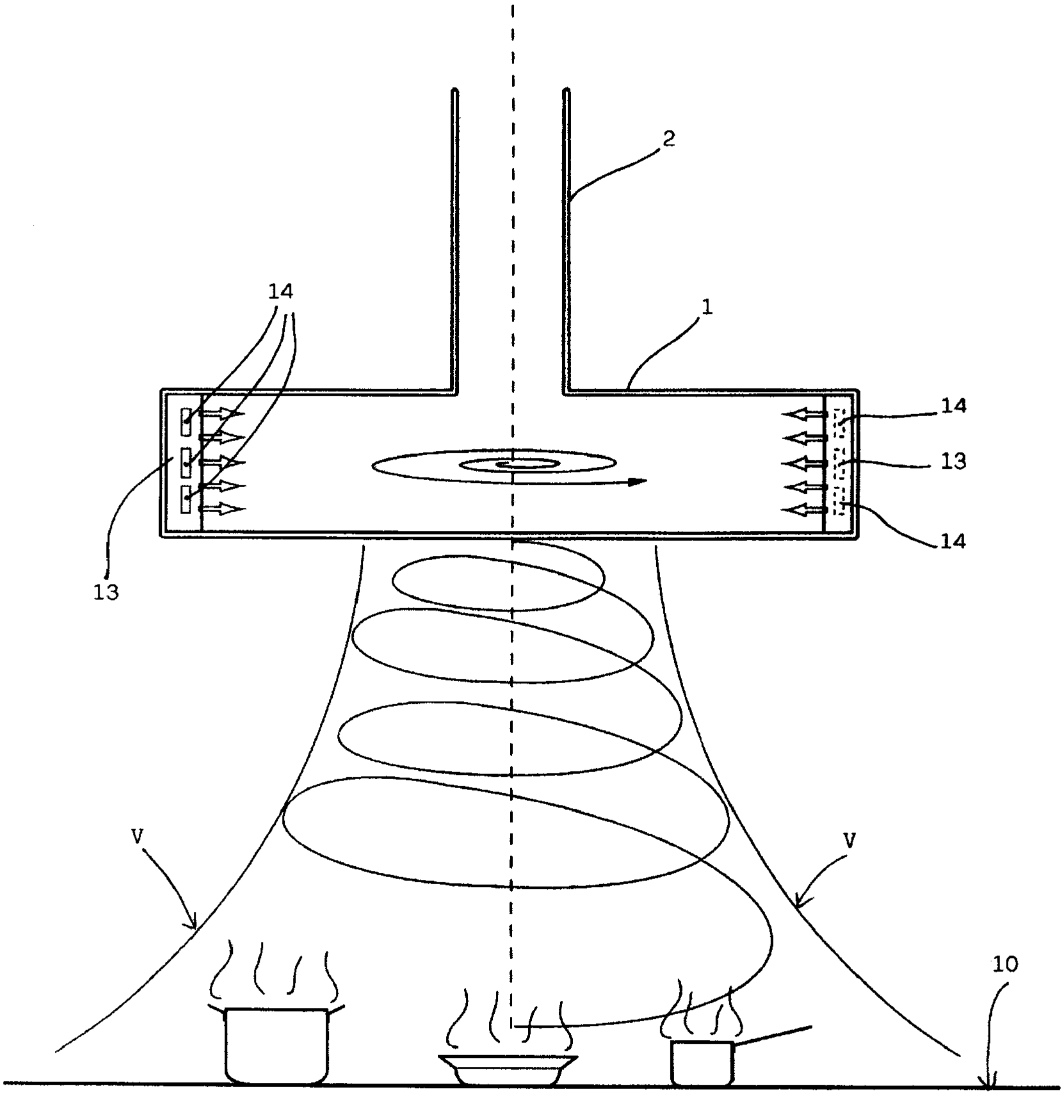


FIG.4

Fig. 5

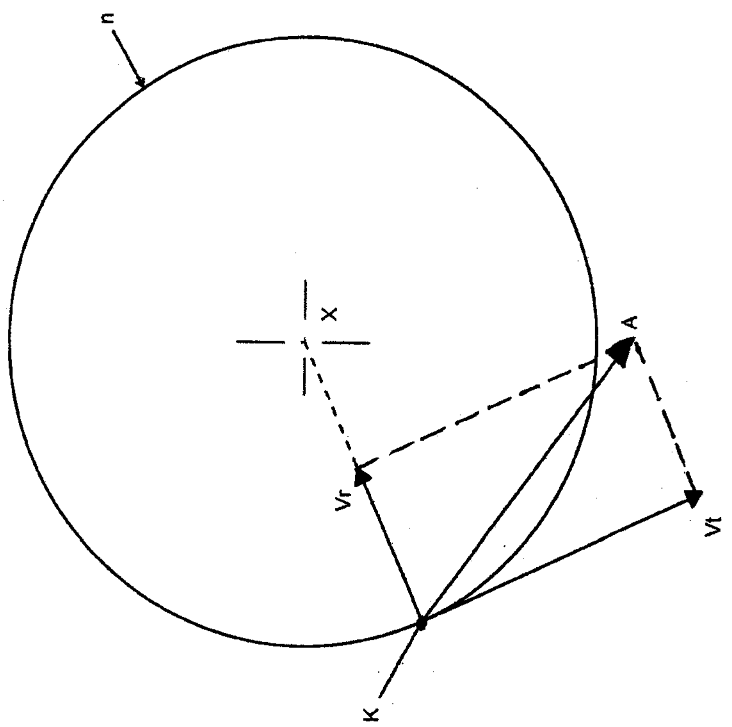


Fig.6

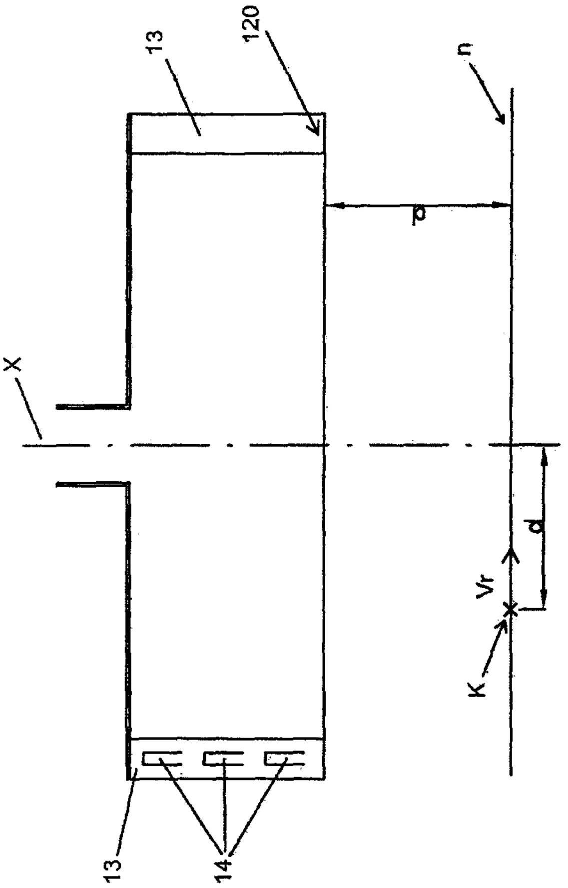
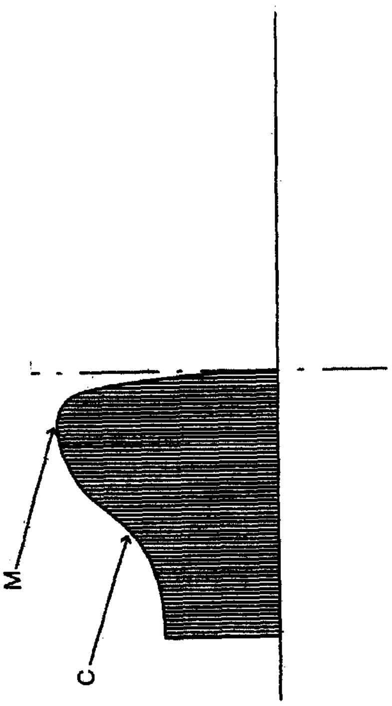


Fig.7



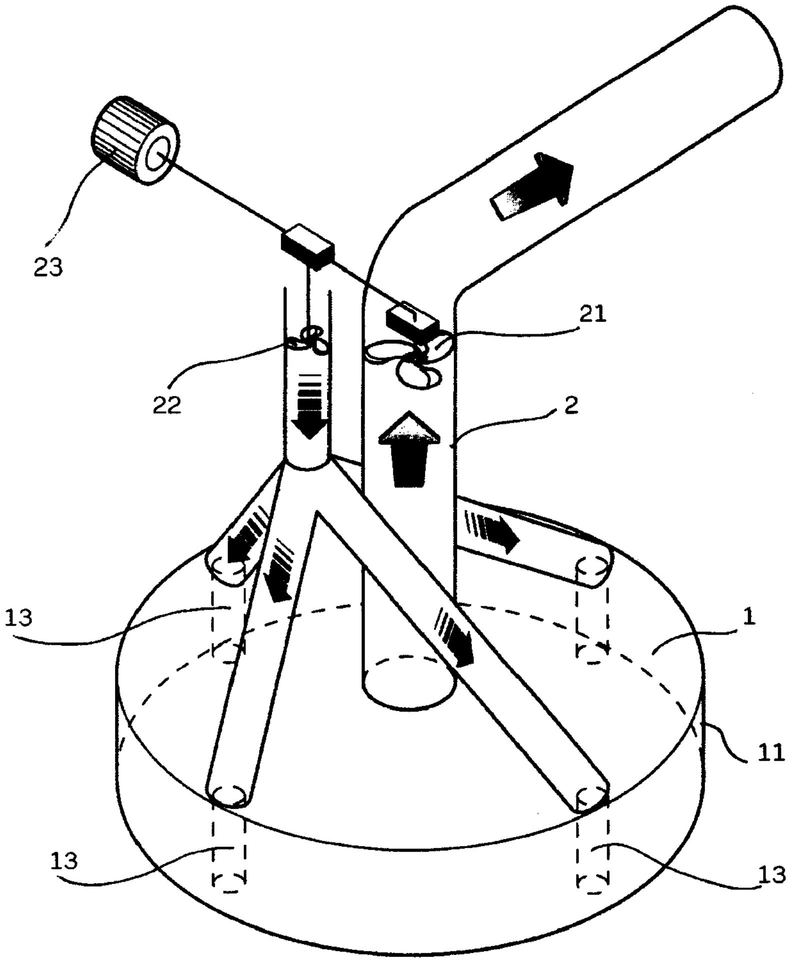


FIG. 8

Fig. 9

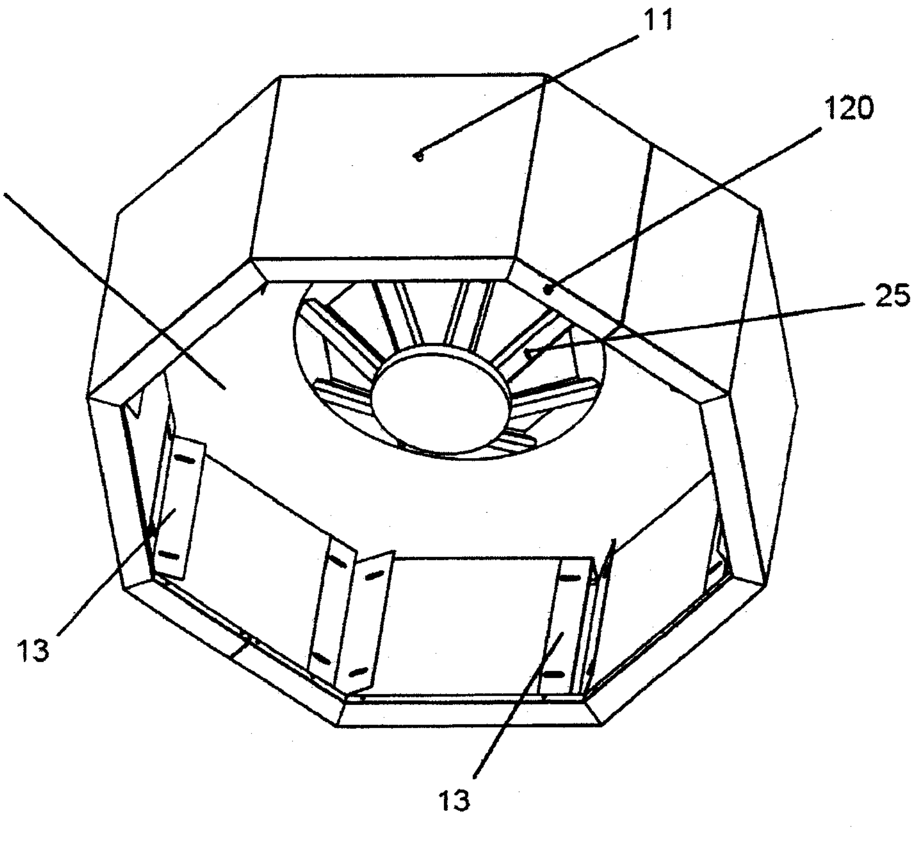


Fig. 10

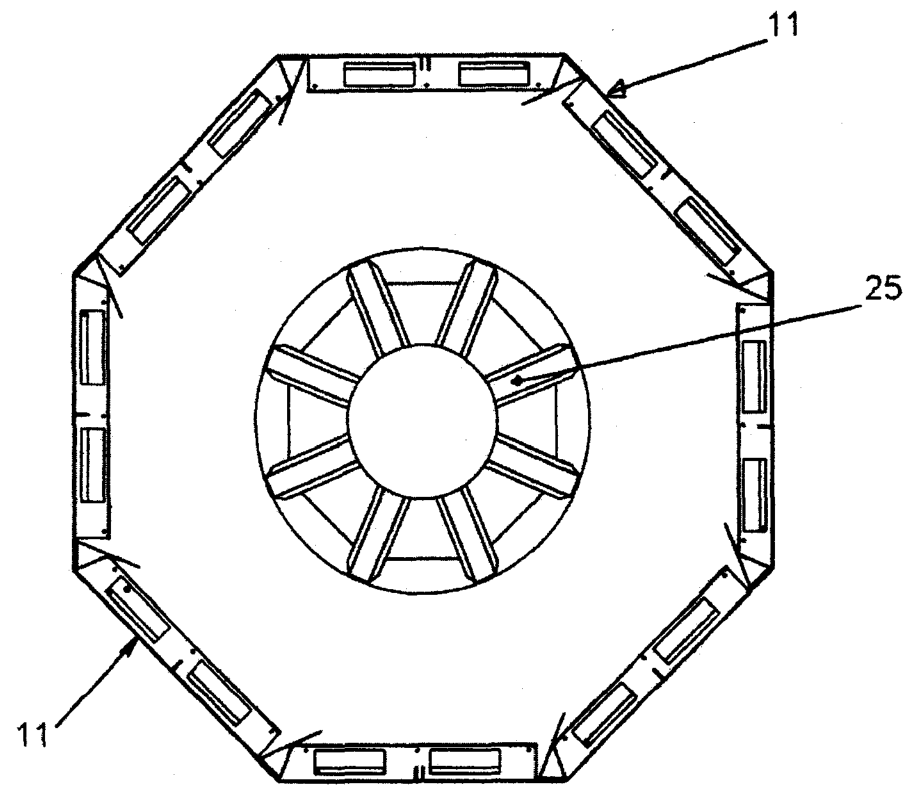
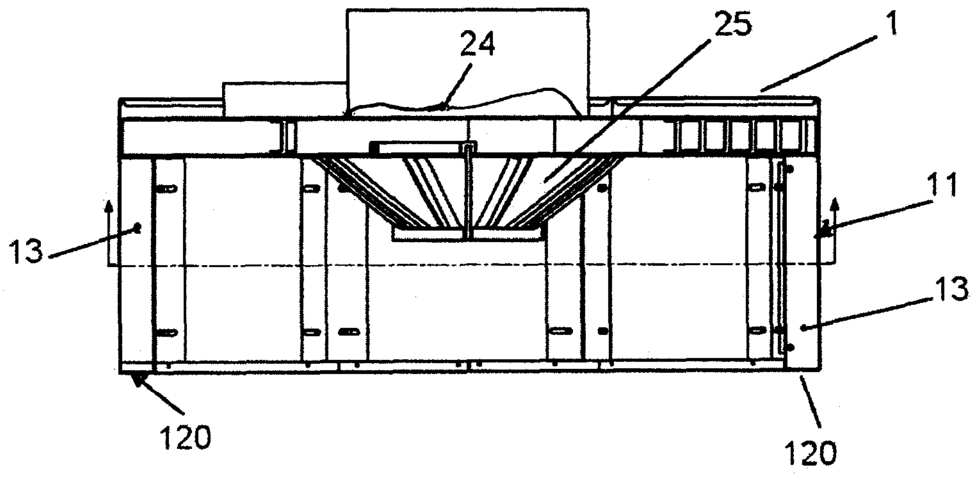


Fig. 11



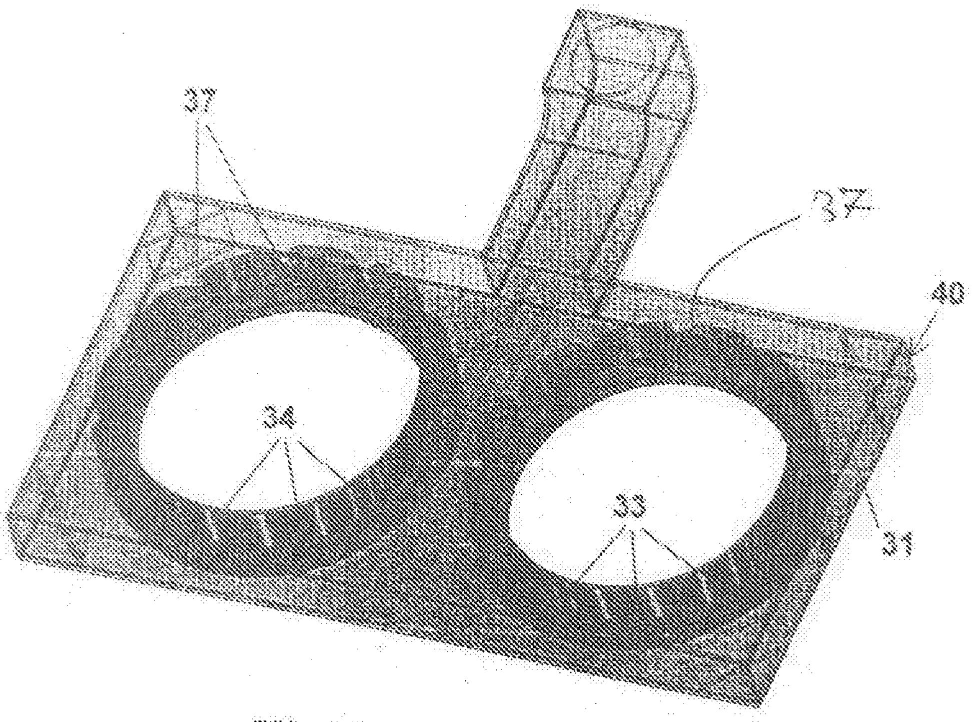


FIG. 12

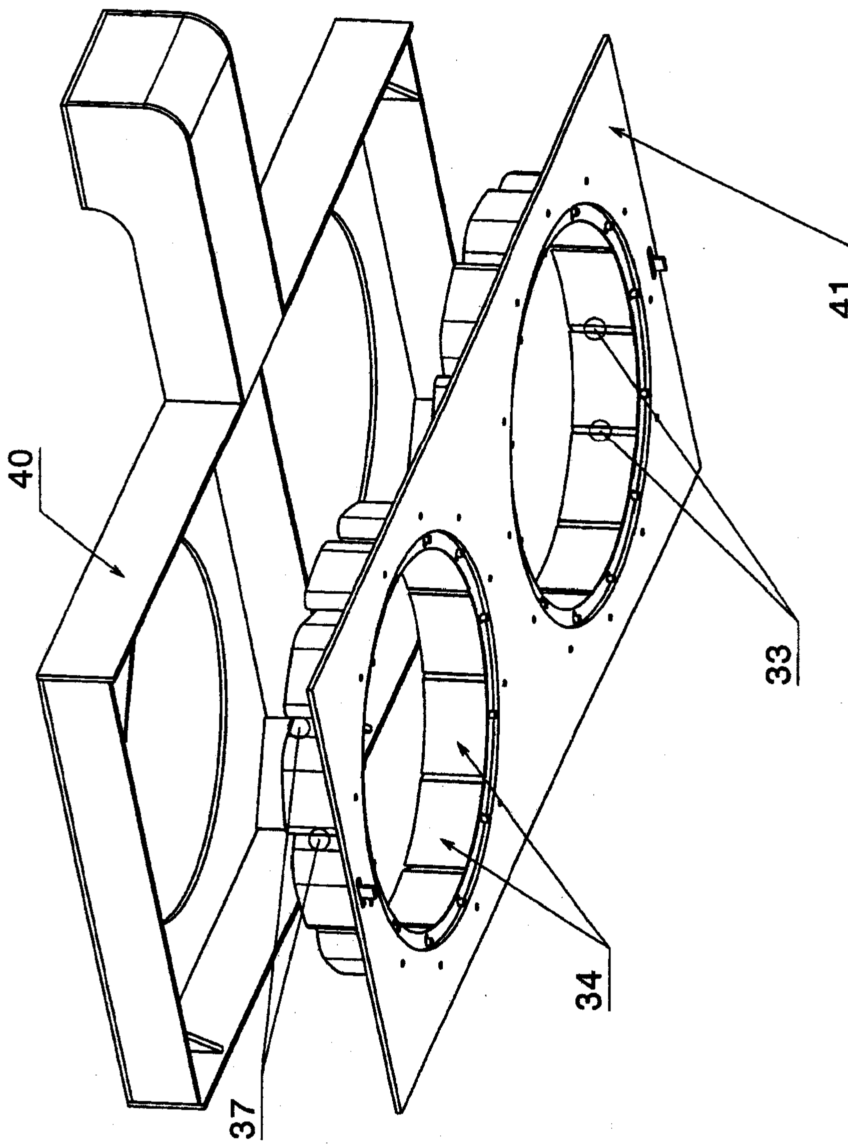


FIG. 13

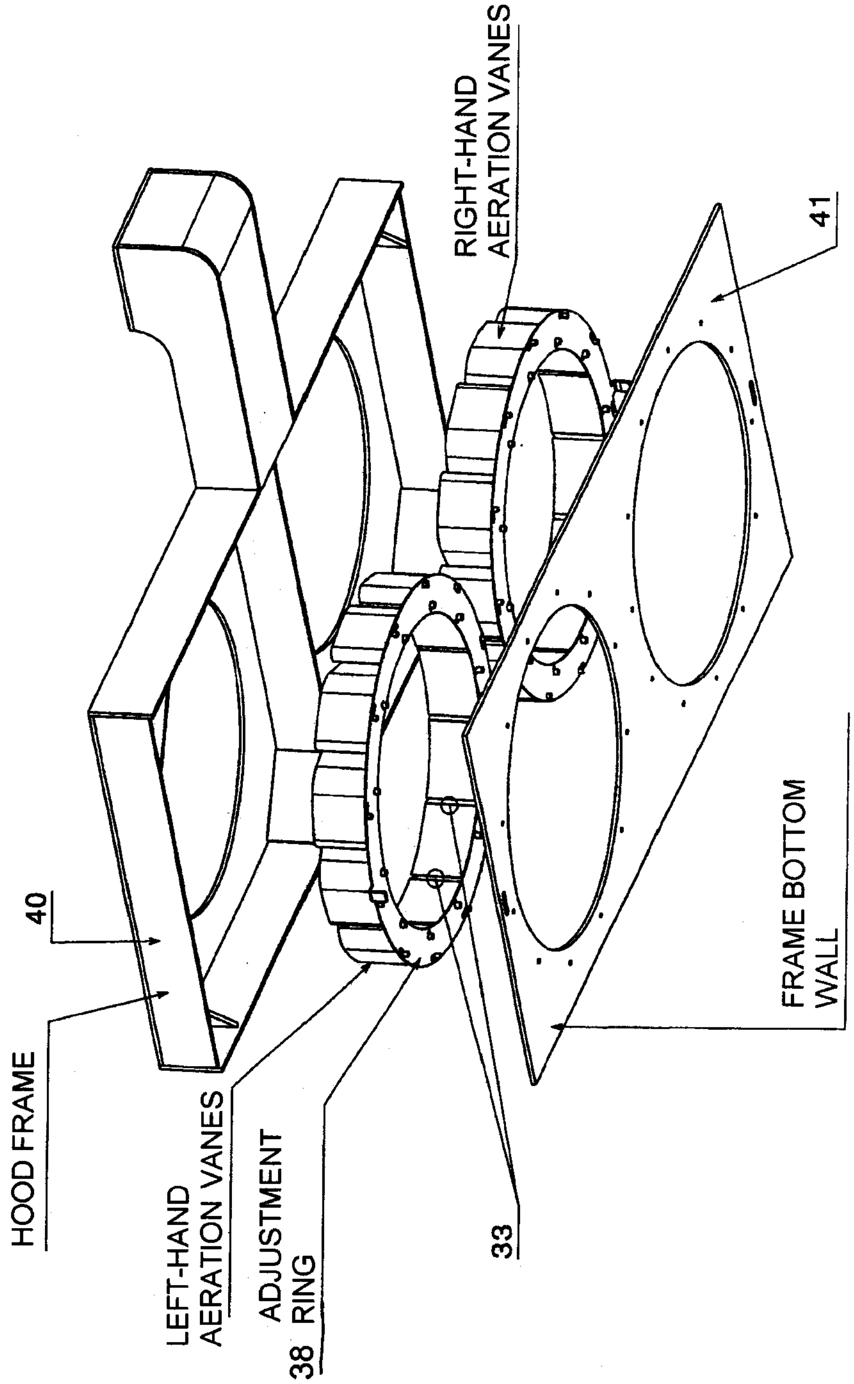

RIGHT-HAND
AERATION VANES
41
40
HOOD FRAME
LEFT-HAND
AERATION VANES
ADJUSTMENT
RING
38
33
FRAME BOTTOM
WALL

FIG. 14

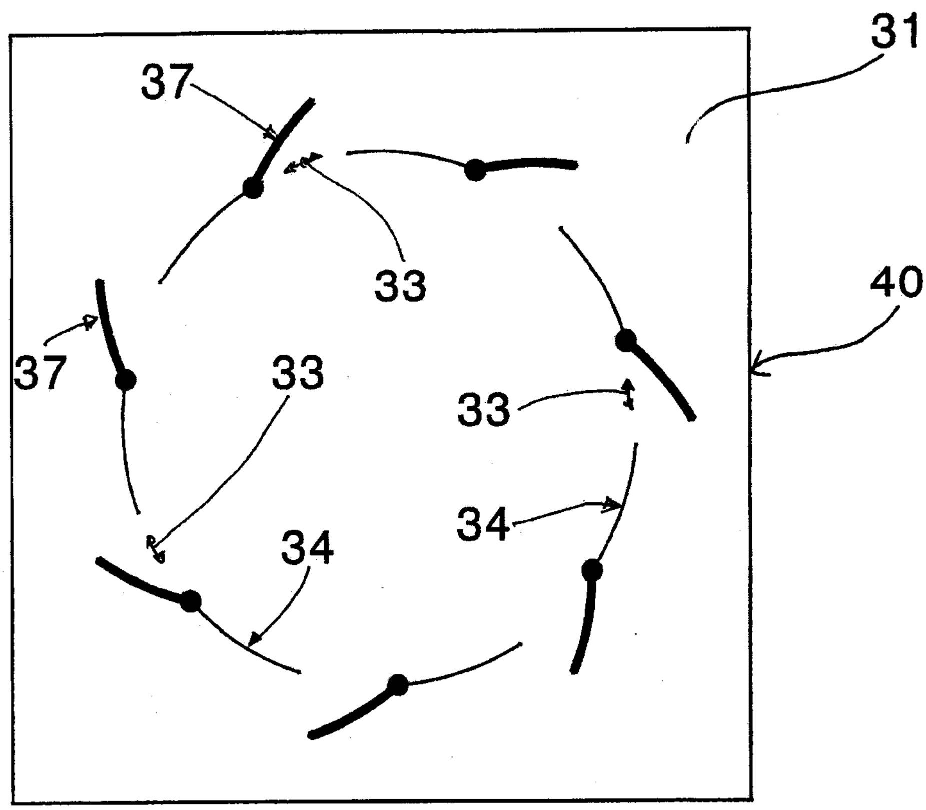


FIG. 15

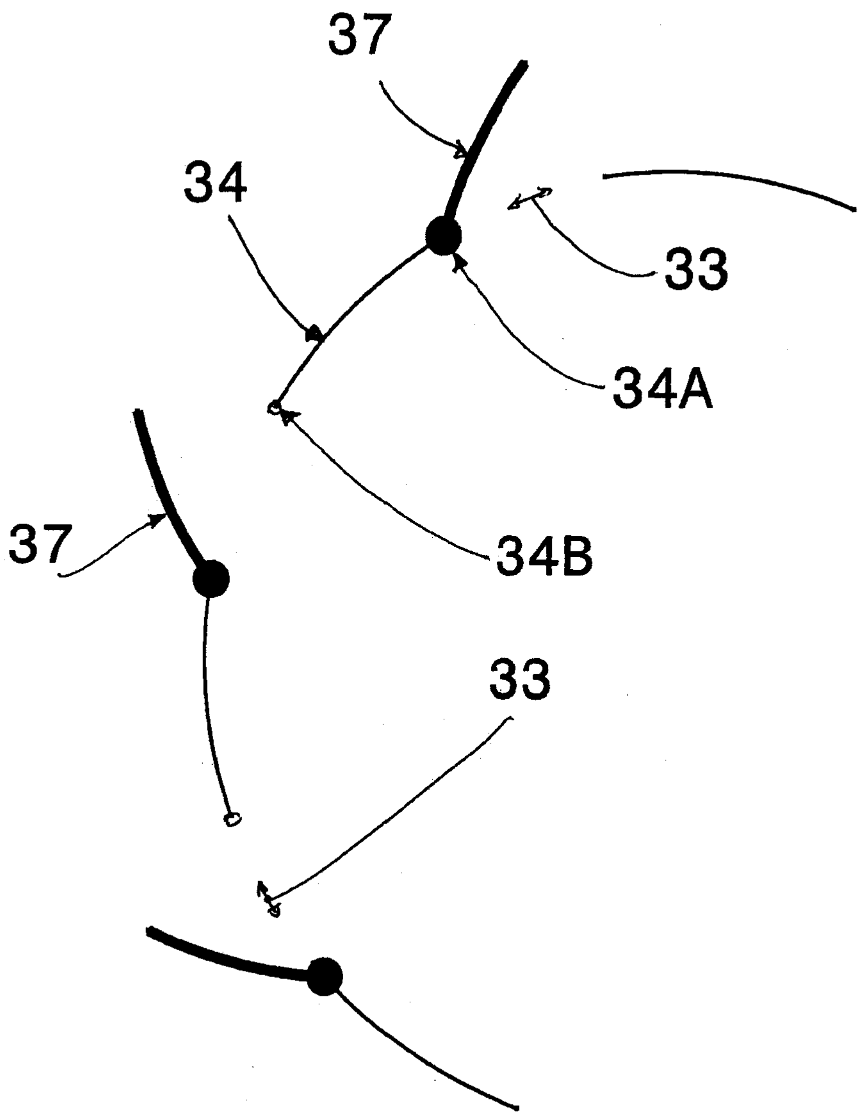


FIG. 16

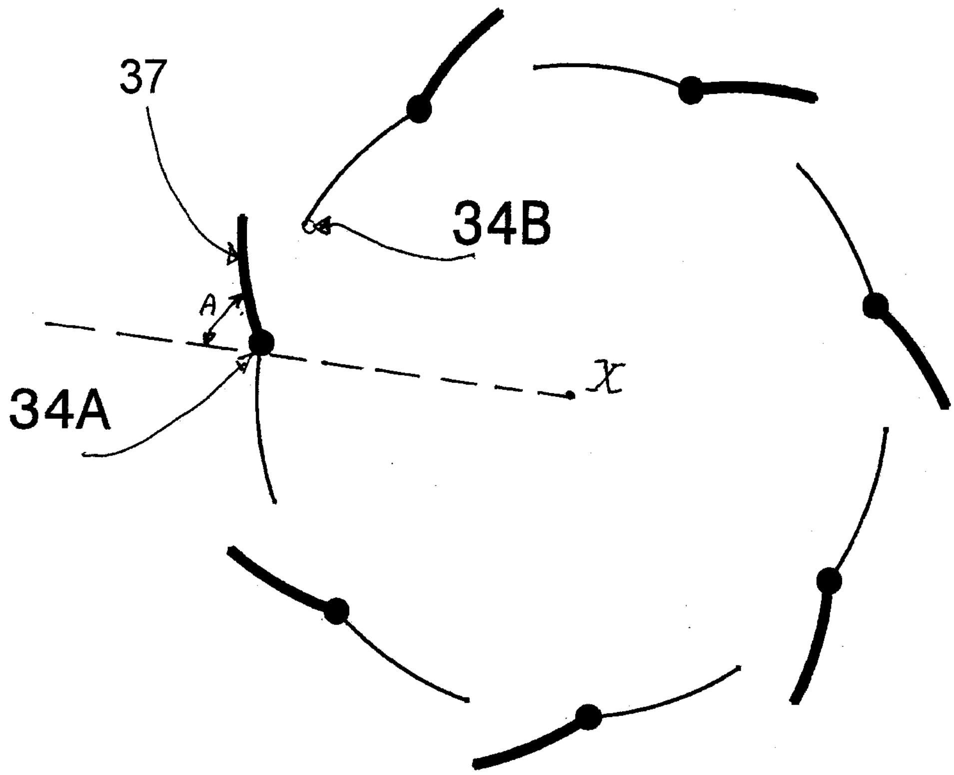


FIG. 17A

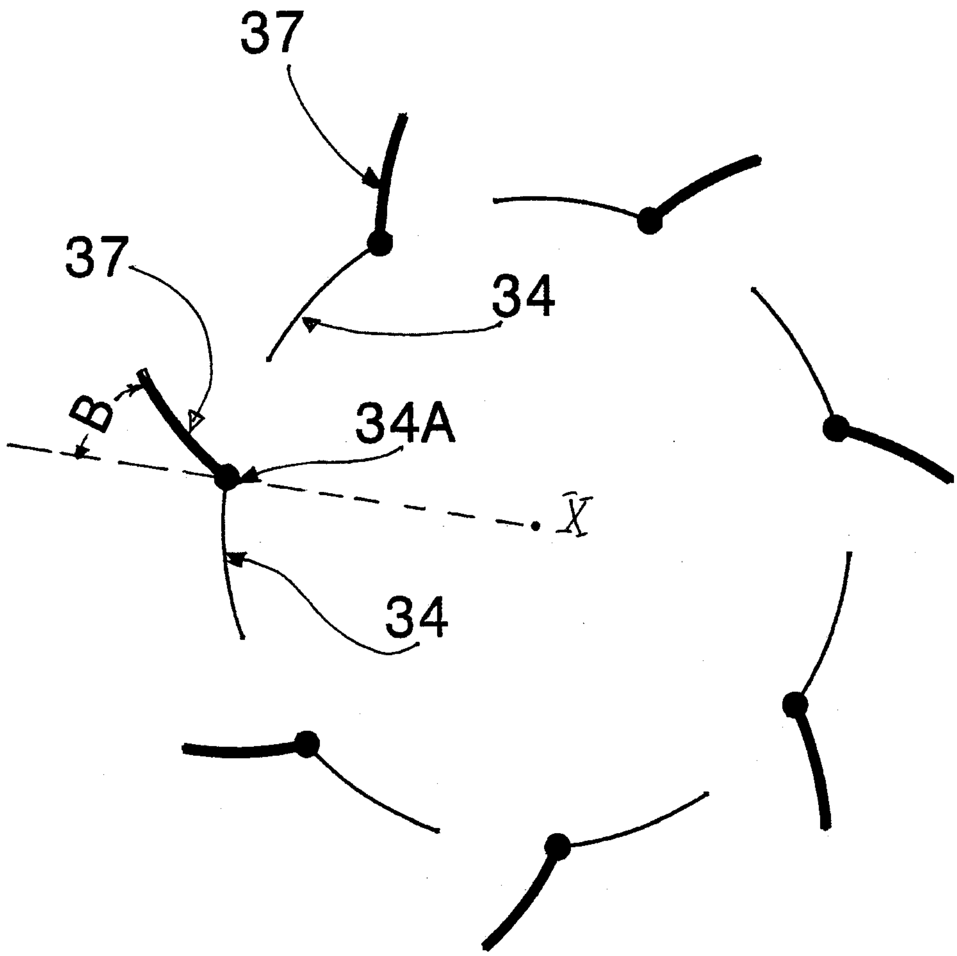


FIG. 17B

REFERENCES CITED IN THE DESCRIPTION

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- JP 21311542 B **[0009]**
- JP 2004332967 B **[0009]**
- JP 11311432 A **[0012]**
- US 4622888 A **[0014]**
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