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54 **Device and method for controlling airflow in an exhaust channel.**

57 The invention relates to a device for controlling airflow through an exhaust channel, comprising an opening for passing through of air and an exhaust valve for shutting off the opening, said valve having a cross-section that is larger than a cross-section of said opening. The device further comprises driving means for moving said exhaust valve in a substantially rectilinear way from a closed state to an open state and back. By using a valve that has a larger cross section than that of the opening, the valve shuts off the opening completely when being in the closed state. There will be no, or hardly any, leakage of air.

NL C 2004636

Dit octrooi is verleend ongeacht het bijgevoegde resultaat van het onderzoek naar de stand van de techniek en schriftelijke opinie. Het octrooischrift komt overeen met de oorspronkelijk ingediende stukken.

## Device and method for controlling airflow in an exhaust channel

The invention relates to a device and method for controlling airflow in an exhaust channel, such as a ventilation channel.

Electrical valves for application in cooker hoods for domestic purposes (kitchens) are known for years. More and more, in houses and apartment buildings, cooker hoods are mounted to a so-called Central Mechanical Ventilation system (CMV). The main function of the electric valve is to shut off this ventilation channel, so the ventilation system does not continuously extract warm air from the kitchen so as to save energy.

In the market, valves already exist in cooker hoods, which are either manually or electrically operated. Mostly these valves rotate and can not be closed completely. Due to the air pressure, the valves will deform and/or open a little, thereby creating a small slot. Air flowing through the small slot will cause an undesired high pitch whistling noise.

It is an object of the present invention to provide a device for controlling airflow through an exhaust channel that reduces the problem of the state of the art.

The object is achieved by a device for controlling airflow through an exhaust channel, comprising:

- an opening for passing through of air;
- an exhaust valve for shutting off the opening, said valve having a cross-section that is larger than a cross-section of said opening;
- driving means for moving said exhaust valve in a substantially rectilinear way from a closed state to an open state and back.

By using a valve that has a larger cross section than that of the opening, the valve shuts off the opening completely when being in the closed state. There will be no, or hardly any, leakage of air.

According to an embodiment, the driving means comprise:

- a rotatable driving axis;
- a pushing member mounted onto said driving axis, for pushing said exhaust valve into a first direction;
- a motor for rotating said driving axis and the pushing member, so as to force the pushing member against the exhaust valve, so as to move the exhaust valve.

The pushing member may comprise a cam mounted onto the driving axis, wherein an outer edge of said cam contacts the exhaust valve. In this way, the cam is used to transfer a rotational movement to a rectilinear. In this configuration a durable electric

motor can be used, instead of a non-durable (translating) thermo-actuator used in the state of the art.

5 The cam may have an oval cross section and be fixed onto the driving axis in a centred way. Alternatively, it may have a circular shape and be fixed onto the driving axis in an off-centred way. In the latter case, the cam may as well be oval. The advantage of an excenter cam is that both the force on the exhaust valve, as well as the opening speed of the exhaust valve, can be defined precisely. The excenter cam will create a force on the exhaust valve which is the strongest when the valve is closed and the highest force is needed, to overcome sticking of the exhaust valve, due to pollution  
10 with grease.

According to yet another embodiment, the pushing member comprises a push rod pivotably coupled to a driving shaft.

15 According to an embodiment, the device comprises a housing comprising a side wall, or a plurality of side walls, defining said opening. The advantage of the presence of the housing is that the device can be built-in easily in existing cooker hoods and other appliances.

In an embodiment, the device comprises a collar surrounding the opening. The collar may have a substantially conical shape. The exhaust valve may comprise an outer edge having a substantially conical shape for making contact with at least part of  
20 the collar.

The driving means may comprise at least one spring member arranged to force the exhaust valve in a second direction reverse to said first direction. The use of a spring results in a very simple and relatively cheap device, wherein the valve is pushed back by the spring. A spring is durable and easy to assemble.

25 In an embodiment, the device comprises a switch for switching off the motor, wherein the switch is activated by the motor via a flange, mounted around a rotatable axis.

The invention also relates to a method of controlling airflow through an exhaust channel, the method comprising:

- 30
- providing an opening in the exhaust channel for passing through of air;
  - providing an exhaust valve for shutting off the opening, the valve having a cross-section that is larger than a cross-section of said opening;
  - moving the exhaust valve in a substantially rectilinear way from a closed state to an open state and back.
- 35

Further details and advantages of the present invention will become clear to the reader after reading the description of the embodiments described below with reference to the accompanying drawings, in which:

5 Figure 1 shows a perspective view of a device for controlling airflow through an exhaust channel according to an embodiment of the invention;

Figure 2 shows a cut out view of the embodiment of figure 1 in which the valve is in its closed state;

10 Figure 3 shows a cut out view of the embodiment of figure 1 in which the valve is in its opened state;

Figure 4 shows a cross section of the device according to another embodiment;

Figure 5 shows a top view of the device according to the embodiment of Figure 1;

Figure 6 is a perspective view of the embodiment of figure 4 and 5;

15 Figure 7 shows a perspective view of a switch and a flange and part of the rotatable driving axis according an embodiment;

Figure 8 depicts a scheme of an electrical circuit which may be used to operate the device according to an embodiment;

Figure 9 schematically shows a cooker hood with the device according to an embodiment installed in an exhaust channel;

20 Figure 10 shows a schematic cross section of a ventilation channel in which a device according to a further embodiment is installed.

Figure 1 shows a perspective view of a device 1 for controlling airflow through an exhaust channel according to an embodiment of the invention. The device 1 may be  
25 installed in existing exhaust channels such as an exhaust channel of a cooker hood, not shown in Figure 1. The device 1 comprises a housing having a cylindrical side wall 2 and a partition wall 3. The partition wall 3 transcends into two semi-disc shaped walls 4, only one of which is visible in Figure 1. The device 1 also comprises an exhaust valve 5 which is arranged to close off an opening in the bottom of the device 1. Attached to the  
30 valve 5 are two guiding members 6, only one of which is visible in Figure 1. In this embodiment, the guiding members 6 are angle bars sliding against an outer surface of the semi-disc shaped walls 4 and a rib 7 extending from said walls 4. Two spring members 8 are arranged between the exhaust valve 5 and extensions 9 attached to each of the semi-disc shaped walls 4.

35 Figure 1 further shows a second housing 10 for housing a motor, not shown in figure 1, which motor drives a rotatable axis 11. At the bottom of the device, a ring collar

12 is fixed to the cylindrical shaped wall 2. Near the top of the device 1 a second collar 13 is arranged for mounting the device 1 into an exhaust channel.

Figure 2 shows a cut out view of the embodiment of Figure 1. As can be seen from Figure 2, a cam 15 is mounted onto the driving axis 11. In this embodiment the cam 15 is a circular wheel that is mounted near an outer end of the driving axis 11 in an off centred way. At the other outer end of the driving axis 11, a flange 18 is arranged that makes contact with a switch 19 arranged in the second housing 10. In Figure 2, the motor is not shown for reasons of clarity. Figure 2 shows the device 1 in its closed state, wherein the valve 4 is pushed against the ring collar 12 of the housing of the device 1 by means of the spring members 8. When the driving axis 11 is rotated by 180°, the cam 15 is rotated in a state shown in Figure 3. By rotating the off centred cam 15, the valve 5 is pushed downward into an open state. Now, exhaust air can flow through the device 1.

In a preferred embodiment, the valve 5 comprises a rubber seal 20 to improve the closing of the opening in the device 1. It should be noted that the invention is not limited to the use of a seal. made of rubber or any other flexible material. The use of such a seal is preferable, since it will better close off the opening.

Figure 4 shows a cross section of the device according to a slightly different embodiment, in which the bottom of the valve 40 is flat and a sealing ring 41 is arranged at the peripheral of the valve 40 as shown in figure 4. In figure 4, the conical shape of the outer edge of the valve 40 can be seen as well as the corresponding conical shape of the ring collar 12. Using a conical shape improves the sealing, and avoids the whistling noise from the exhaust air when the valve is in its almost closed state,

Figure 4 also shows a motor 44 which may be an electric motor for driving the rotatable axis 11. The motor 44 may be a grill motor and comprises a pin 45 that sticks into a channel of the driving axis 11. The driving axis 11 comprises a connection rod 70 that is stuck into a socket 42 coupled to the cam 15. By activating the motor 44, the driving axis 11 is rotated so as to rotate the cam 15. On its turn, the cam 15 then pushes the valve 40 open. If the cam 15 is rotated further, the valve 40 will be closed again due to the pulling force of the spring 8. As will be clear to the skilled person, the valve 40 will also be closed again if the cam 15 is rotated back to its original position shown in figure 4.

In the embodiment of figure 4, the second housing 10 has a lid 10 that can be detached from the second housing 10 so as to give access to the motor 44.

Figure 5 shows a top view of the device 1 according to an embodiment. As can be seen from figure 5, the device 1 comprises two springs 8, and two guiding members 6.

The guiding members 6 make contact with the semi disc shaped walls 4 and the ribs 7. In this embodiment, the device 1 comprises four ribs 7, only two of which are in fact used. The reason for having four ribs 7 is that it makes the main part of the device more symmetric, which makes it easier to manufacture by means of a mould. In figure 5, a connecting socket 50 is shown for connecting a power cord for connecting the motor 44 to mains or other power source.

Figure 6 is a perspective view of the embodiment of figure 4 and 5, in which the housing of the device is removed except for the lid 10. The motor 44 comprises two electrical connections 60, 61. The switch 19 comprises three electrical connections 62, 63, 64. In figure 7, only the switch 19, the flange 18 and part of the rotatable driving axis 11 are shown. At an outer end of the driving axis 11 the connection rod 70 is arranged which can be inserted into the socket 42 fixed to the cam 15, see also figure 4. When the motor 44 is activated, the flange 18 is rotated and will push a button 72 of the switch 19. In Figure 8 an electrical circuit is shown which may be used to operate the device 1. The circuit comprises a switch 80 which can be manually switched by means of a button. The switch 80 comprises three connection point referred to as point 81, 82 and 83. In the situation of Figure 8, the motor is activated. Now when the button 72 of switch 19 is pushed by the co-rotating flange 18, the switch 44 is switched to its other state. Starting from the situation of Figure 8, the connection point 62 will be disconnected from connection point 64 and connection point 63 will be connected to connection point 64. In this way the motor 44 is deactivated, as will be clear to the skilled person. Now the valve 5 will be in its open state or in its closed state. Once the user switches the switch 80, the motor 44 will be activated again, and will rotate the cam another 180, moving the valve into its other state (i.e. closed or open). Using the circuit of Figure 8 is advantageous because, a user only needs to push the switch 80 once, and the valve will open or close. This results in a very user friendly use of the device 1 and creates an energy-saving solution, because the motor is switched off and no power is needed.

Figure 9 shows very schematically a cooker hood 90 with the device 1 according to an embodiment installed in an exhaust channel 91. In figure 9 arrows indicate the air flow, which may result from a central mechanical ventilation system. However, it should be noted that the invention is neither limited to the combination with central mechanical ventilation systems nor to the use of it in cooker hoods. It should be clear to the skilled person that the device 1 may be used in any kind of ventilation channels. It may even be installed in front of a ventilation opening instead of inside a ventilation channel.

Figure 10 shows a schematic cross section of a ventilation channel 100 in which a device 102 for controlling airflow is installed according to an embodiment. In this

embodiment the device 102 comprises a valve 103 that is movable in a rectilinear way to open and close an opening of a wall 104. The wall 104 is closing off the ventilation channel 100 except for the opening that is closed by the valve 103. The wall 104 may be arranged inside a tubular housing, not shown, that is arranged to be installed in a tubular ventilation channel.

In the embodiment of figure 10, the device 102 comprises a driving rod 105 that is moved by means of a rotatable gear wheel 106. By activating a motor, not shown, the gear wheel 106 is rotated thereby moving the rod 105 and the valve 103.

As will be clear to the skilled reader, other embodiments of the invention are conceivable in which the exhaust valve 5; 40 is moved by way of a push rod connected to a rotatable driving shaft driven by a motor. Furthermore, the device 1 of the invention can be configured to fit into non-tubular ventilation channels, such as rectangular shape channels, or any other shape.

It is emphasized that the present invention can be varied in many ways, of which the alternative embodiments as presented are just a few examples. These different embodiments are hence non-limiting examples. The scope of the present invention, however, is only limited by the subsequently following claims.

**Conclusies:**

1. Inrichting (1) voor het reguleren van een luchtstroom door een afzuigkanaal, omvattende:

- een opening (16) voor het doorlaten van lucht;
- een afzuigklep (5) voor het afsluiten van de opening, waarbij de klep een doorsnede heeft die groter is dan een doorsnede van de opening;
- aandrijfmiddelen voor het bewegen van de afzuigklep (5) in een in hoofdzaak rechtlijnige wijze vanuit een gesloten stand naar een open stand en terug.

2. Inrichting volgens conclusie 1, waarbij de aandrijfmiddelen omvatten:

- een roteerbare aandrijfjas (11);
- een duworgaan (15) vastgemaakt aan de aandrijfjas voor het duwen van de afzuigklep in een eerste richting;
- een motor (44) voor het roteren van de aandrijfjas en het duworgaan, zodat het duworgaan tegen de afzuigklep wordt geduwd, zodat de afzuigklep wordt bewogen.

3. Inrichting volgens conclusie 2, waarbij het duworgaan een kam omvat vastgemaakt aan de aandrijfjas, en waarbij een buitenste rand van de kam contact maakt met de afzuigklep.

4. Inrichting volgens conclusie 3, waarbij de kam is vastgemaakt aan de aandrijfjas op een niet-gecentreerde wijze.

5. Inrichting volgens conclusie 3, waarbij de kam een ovalen dwarsdoorsnede heeft.

6. Inrichting volgens conclusie 2, waarbij het duworgaan een aandrijfstang omvat die scharnierbaar is gekoppeld met een krukas.

7. Inrichting volgens een of meer van de voorgaande conclusies, verder omvattend een behuizing omvattende een zijwand, of een aantal zijwanden, die de opening definiëren.

8. Inrichting volgens een of meer van de voorgaande conclusies, verder omvattend een kraag (12) die de opening omgeeft.

9. Inrichting volgens conclusie 8, waarbij de kraag een in hoofdzaak conische vorm heeft en de afzuigklep een buitenste rand omvat die een in hoofdzaak conische vorm heeft om contact te maken met ten minste een deel van de kraag.

5 10. Inrichting volgens een of meer van de conclusies 2-9, waarbij de aandrijfmiddelen ten minste een veerorgaan (8) omvatten ingericht om de afzuigklep in een tweede richting te bewegen die tegengesteld is aan de eerste richting.

10 11. Inrichting volgens een of meer van de conclusies 2-9, verder omvattend een schakelaar voor het uitschakelen van de motor, waarbij de schakelaar wordt geactiveerd door de motor via een flens die is vastgemaakt om de roteerbare aandrijf-  
fas.

12. Werkwijze voor het reguleren van een luchtstroom door een afzuigkanaal, de werkwijze omvattend:

- 15 - het verschaffen van een opening in het afzuigkanaal voor het doorlaten van lucht;
- het verschaffen van een afzuigklep voor het afsluiten van de opening, waarbij de klep een doorsnede heeft die groter is dan een doorsnede van de opening;
- 20 - het bewegen van de afzuigklep in een in hoofdzaak rechtlijnige wijze vanuit een gesloten stand naar een open stand en terug.

FIG. 1

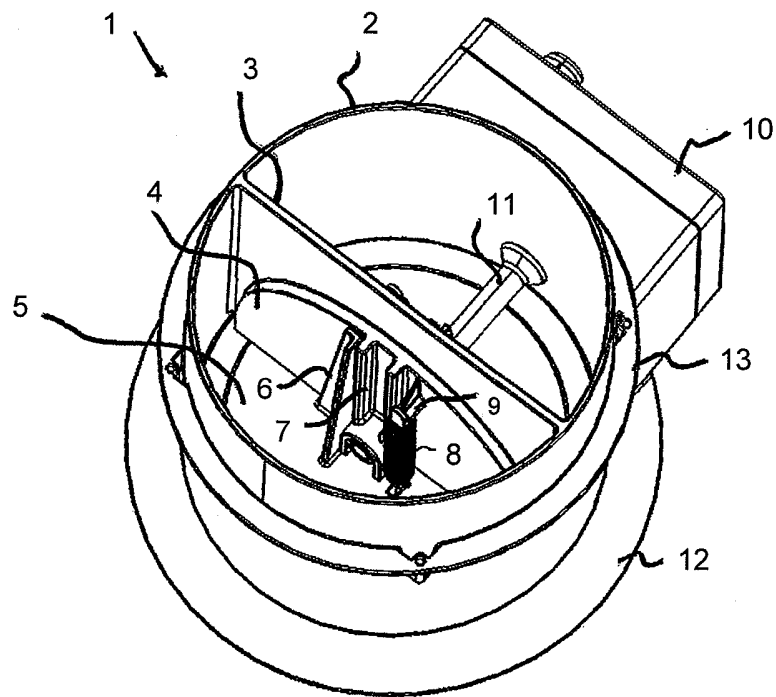


FIG. 2

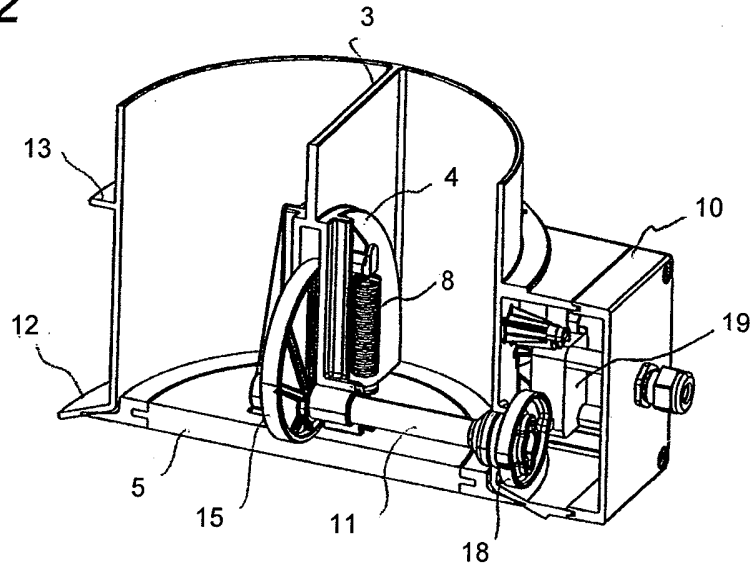


FIG. 3

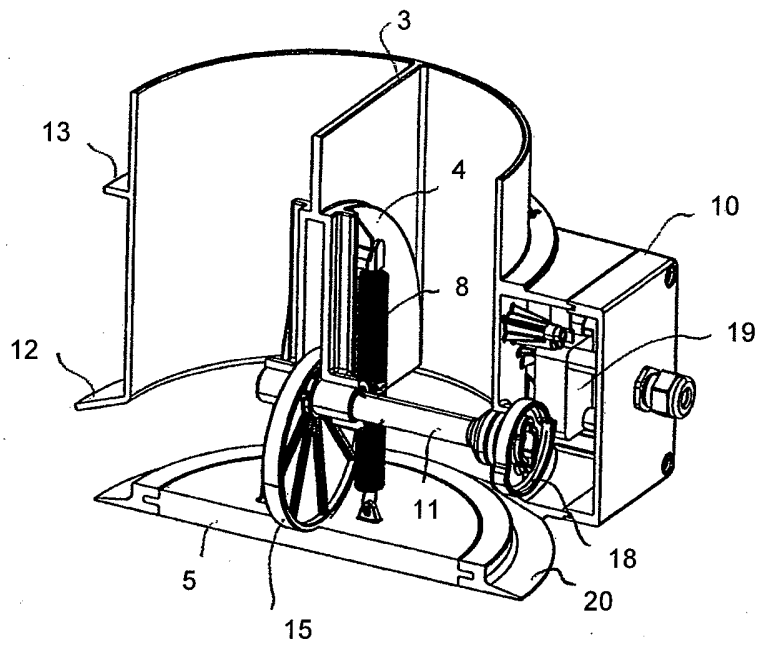


FIG. 4

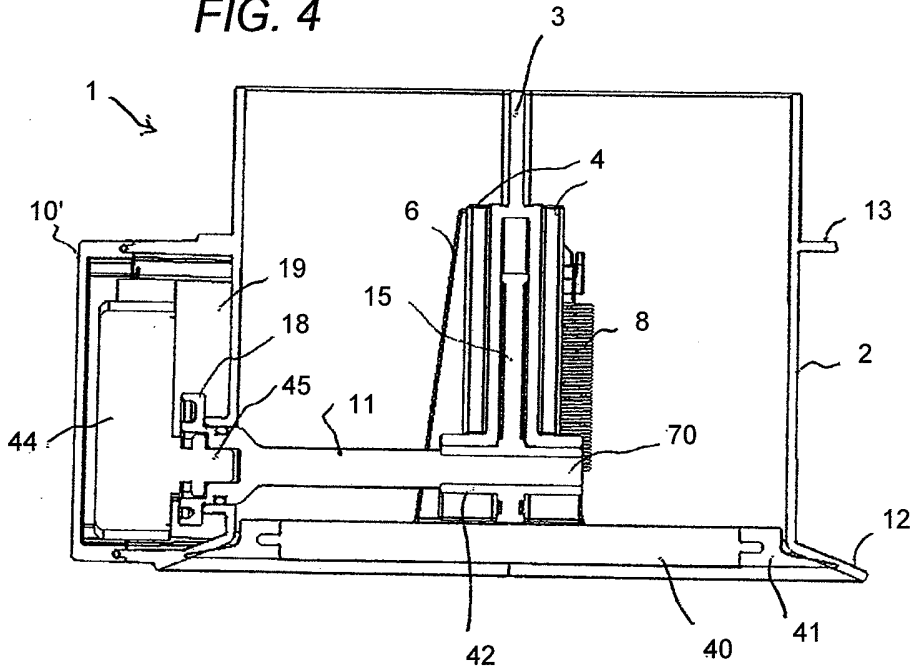


FIG. 5

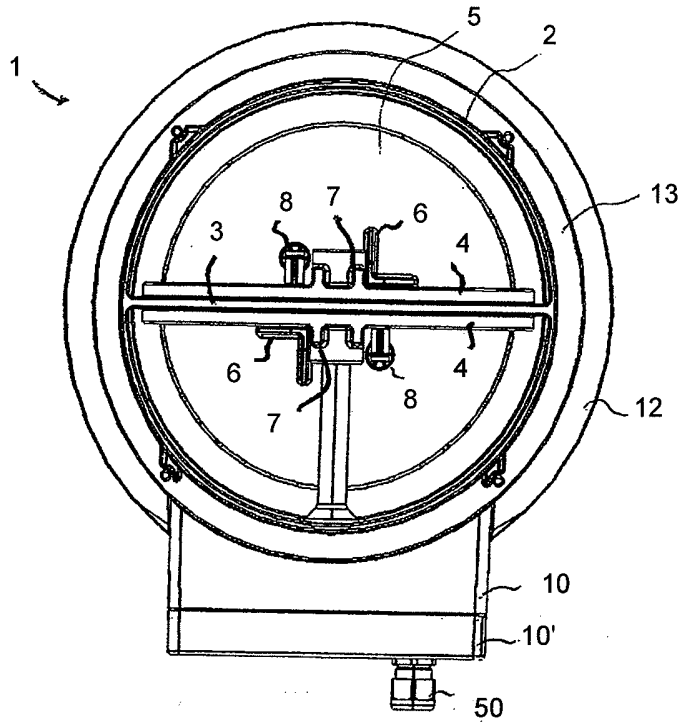
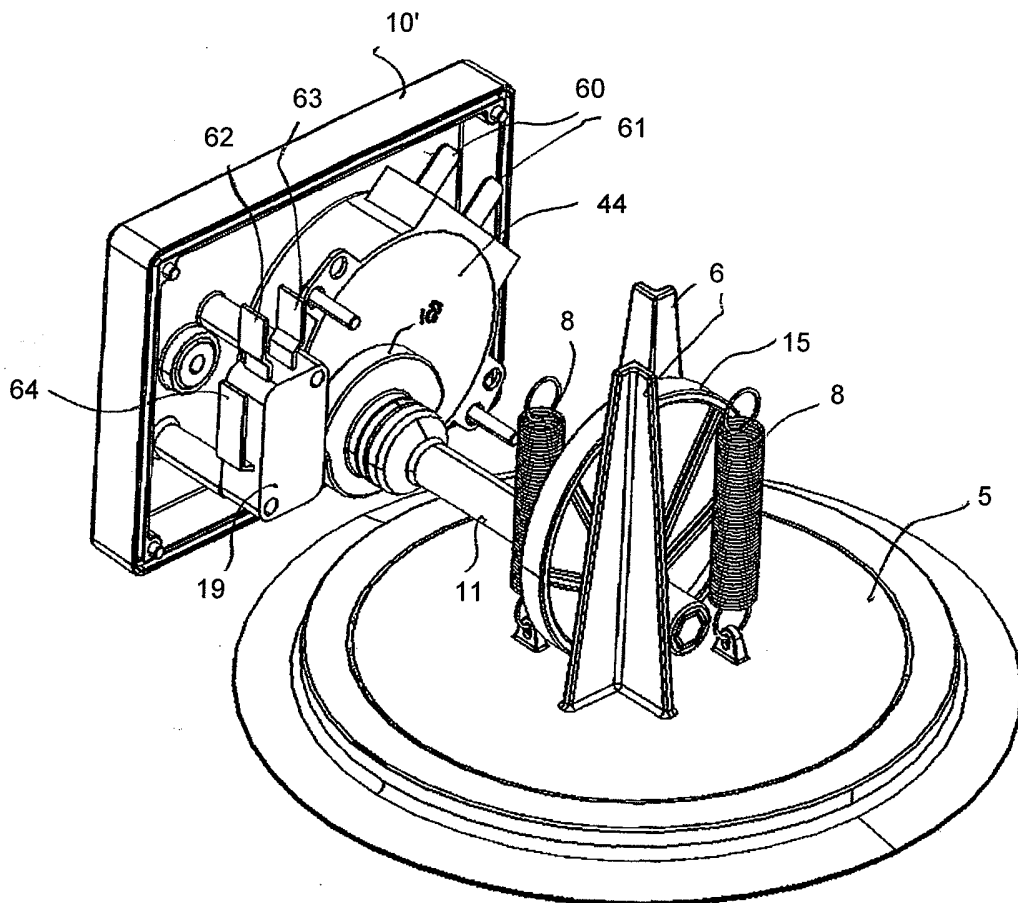


FIG. 6



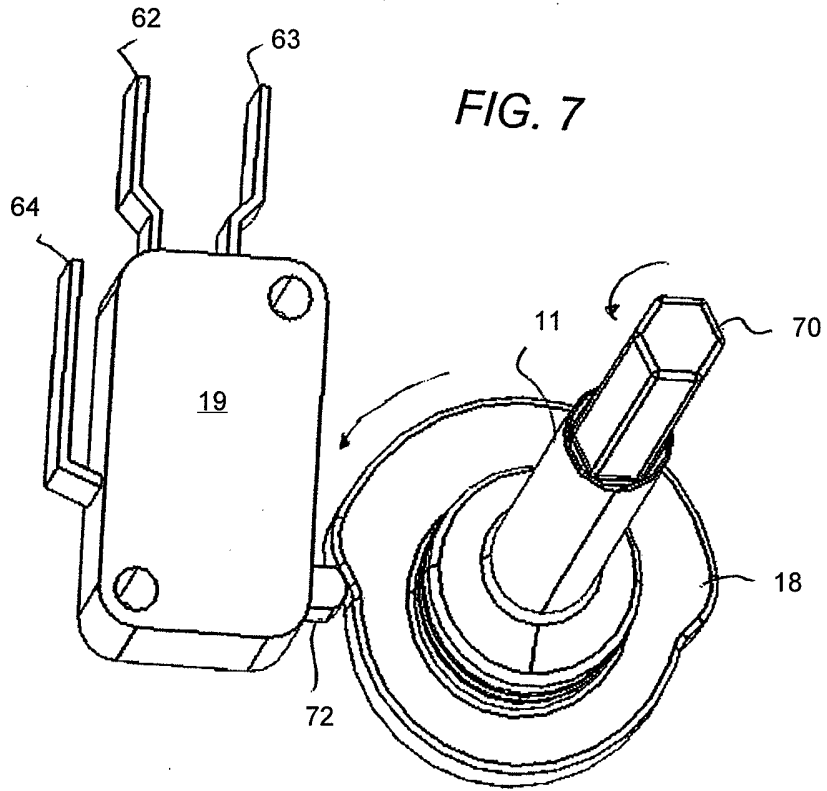
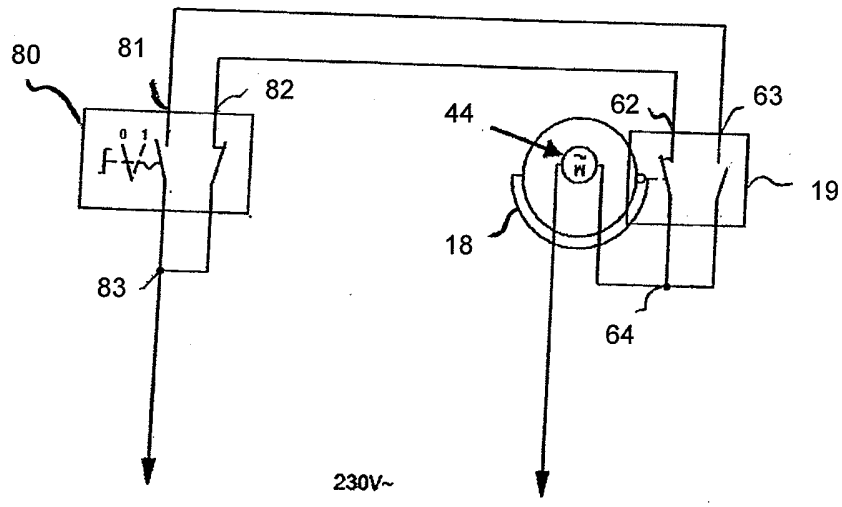


FIG. 7

FIG. 8



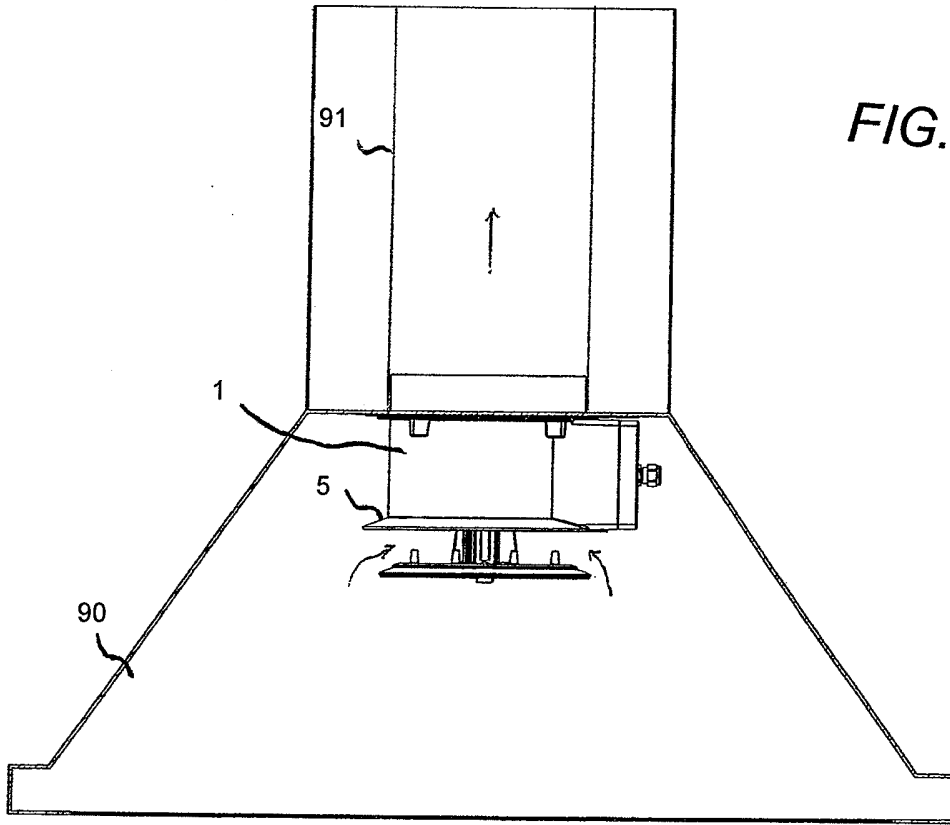


FIG. 9

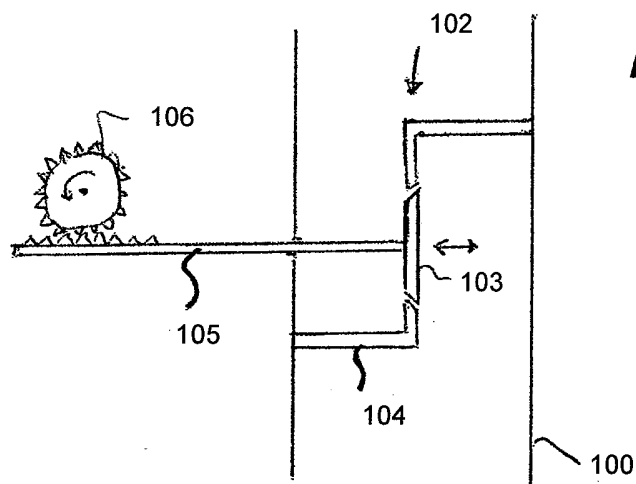


FIG. 10

# SAMENWERKINGSVERDRAG (PCT)

## RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE <b>P21000111NL00</b>		
Nederlands aanvraag nr. <b>2004636</b>	Indieningsdatum <b>29-04-2010</b>		
	Ingeroepen voorrangdatum		
Aanvrager (Naam) <b>Intell Properties B.V.</b>			
Datum van het verzoek voor een onderzoek van internationaal type <b>26-06-2010</b>	Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. <b>SN 54475</b>		
<b>I. CLASSIFICATIE VAN HET ONDERWERP</b> (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)			
Volgens de internationale classificatie (IPC) <b>F24F13/062</b> <b>F24C15/20</b>			
<b>II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK</b>			
Onderzochte minimumdocumentatie			
Classificatiesysteem	Classificatiesymbolen		
<b>IPC</b>	<b>F24F</b>	<b>F24C</b>	<b>B08B</b>
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen			
III.	<b>GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES</b> (opmerkingen op aanvullingsblad)		
IV.	<b>GEBREK AAN EENHEID VAN UITVINDING</b> (opmerkingen op aanvullingsblad)		

**ONDERZOEKSRAPPORT BETREFFENDE HET  
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND  
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar  
de stand van de techniek  
**NL 2004636**

A. CLASSIFICATIE VAN HET ONDERWERP  
INV. F24F13/062 F24C15/20  
ADD.

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

**B. ONDERZOCHETE GEBIEDEN VAN DE TECHNIEK**

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)  
**F24F F24C B08B**

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)  
**EPO-Internal**

**C. VAN BELANG GEACHTE DOCUMENTEN**

Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	US 5 133 693 A (BLOMSTER RANIER T [US]) 28 juli 1992 (1992-07-28) * kolom 2, regel 18 - kolom 3; figuren 1-3,6a,6b *	1,8,9
A	US 2006/052049 A1 (CALDWELL ROBERT C [ZA] ET AL CALDWELL ROBERT CRICHTON [ZA] ET AL) 9 maart 2006 (2006-03-09) * samenvatting; figuren 1-4 *	1-6
A	EP 1 291 590 A2 (FLAEKT OY [FI] FLAEKT WOODS AB [SE]) 12 maart 2003 (2003-03-12) * samenvatting; figuren *	1,2
A	EP 0 575 681 A1 (DIETRICH EUROP ELECTROMENAGER [FR]) 29 december 1993 (1993-12-29) * samenvatting; figuren 1-6 *	1-6

Verdere documenten worden vermeld in het vervolg van vak C.

Leden van dezelfde octroofamilie zijn vermeld in een bijlage

° Speciale categorieën van aangehaalde documenten

\*A\* niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

\*D\* in de octrooiaanvraag vermeld

\*E\* eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

\*L\* om andere redenen vermelde literatuur

\*O\* niet-schriftelijke stand van de techniek

\*P\* tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

\*T\* na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

\*X\* de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

\*Y\* de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

\*Z\* lid van dezelfde octroofamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

**4 november 2010**

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040,  
Fax: (+31-70) 340-3016

De bevoegde ambtenaar

**González-Granda, C**

**ONDERZOEKSRAPPORT BETREFFENDE HET  
 RESULTAAT VAN HET ONDERZOEK NAAR DE STAND  
 VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar  
 de stand van de techniek

NL 2004636

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
US 5133693	A	28-07-1992 CA 2071748 C	23-05-1995
US 2006052049	A1	09-03-2006 AU 2005205768 A1	23-03-2006
EP 1291590	A2	12-03-2003 NO 20023822 A	07-03-2003
EP 0575681	A1	29-12-1993 FR 2692823 A1	31-12-1993



File No. SN54475	Filing date ( <i>day/month/year</i> ) 29.04.2010	Priority date ( <i>day/month/year</i> )	Application No. NL2004636
International Patent Classification (IPC) INV. F24F13/062 F24C15/20			
Applicant Intell Properties B.V.			

This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the application
- Box No. VIII Certain observations on the application

	Examiner González-Granda, C
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## WRITTEN OPINION

Application number

NL2004636

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### Box No. I Basis of this opinion

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1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material:
    - on paper
    - in electronic form
  - c. time of filing/furnishing:
    - contained in the application as filed.
    - filed together with the application in electronic form.
    - furnished subsequently for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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### Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

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#### 1. Statement

Novelty	Yes: Claims	2-7, 10-12
	No: Claims	1, 8, 9
Inventive step	Yes: Claims	2-7, 10-12
	No: Claims	1, 8, 9
Industrial applicability	Yes: Claims	1-12
	No: Claims	

#### 2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1 Reference is made to the following document:

D1 US 5 133 693 A (BLOMSTER RANIER T [US]) 28 juli 1992  
(1992-07-28)

2 The present application does not meet the criteria of patentability, because the subject-matter of claims 1,12, is not new.

2.1 The document D1 discloses in column 2, line 18-column 3, line 44 and in figures 1-3,6A,6B (the references in parentheses applying to this document):

Device (10) for controlling airflow through an exhaust channel, comprising:

- an opening (B) for passing through of air;
- an exhaust valve (44,46) for shutting off the opening (B), said valve having a cross-section that is larger than a cross-section of said opening;
- driving means (26,28,48,50,52) for moving said exhaust valve in a substantially rectilinear way from a closed state to an open state and back.

The subject-matter of claim 1 is therefore not new (Article 54(1) and (2) EPC).

2.2 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 12, which therefore is also considered not new.

3 Dependent claims 2-11 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of novelty and/or inventive step.

3.1 The additional features of the dependent claims 8,9 have also been disclosed in document D1, see figure 6B. The subject-matter of these claims is therefore not new.

- 3.2 Dependent claims 2-7,10-11 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to inventive step since they refer to simple amendments which would lie within the normal considerations of the skilled man.