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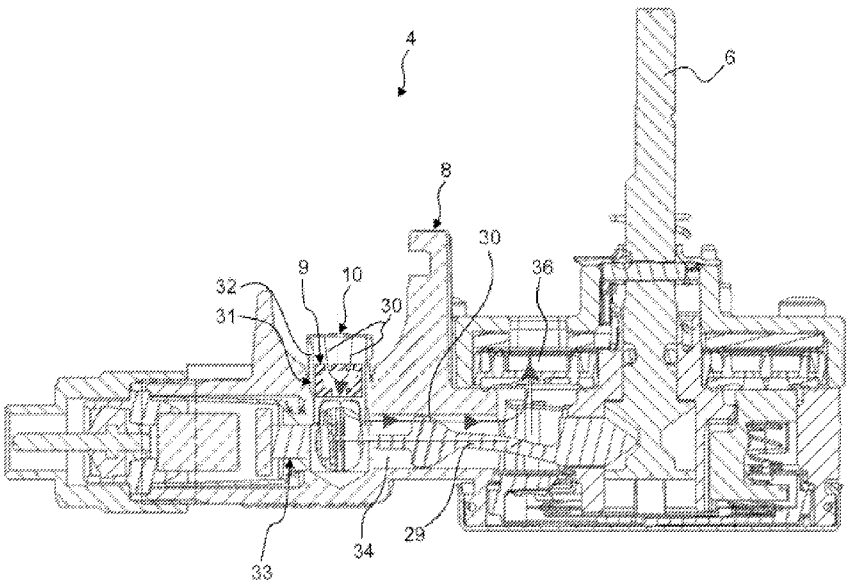

Fig. 8

(57) Abstract: Gas valve arrangement (4) for a gas stove (1), the gas valve arrangement (4) comprising: a gas valve device (8) having a gas inlet (10) for receiving a gas stream (5), a gas outlet (11) for outputting the gas stream (5), an adjustment element (29) arranged along a gas stream path (30) between the gas inlet (10) and the gas outlet (11) for adjusting the gas stream (5), and an accommodation portion (31, 39, 39') arranged along the gas stream path (30) for accommodating an insert element (9);and an insert element(9)which is configured to be inserted in the accommodating portion (31, 39, 39') and to guide the gas stream(5), and the insert element (9)comprising an inlet section (20) and an outlet section (21) for the gas stream (5), wherein the inlet section (20) has a larger cross-section than the outlet section (21).

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GAS VALVE ARRANGEMENT AND GAS STOVE

The present invention relates to a gas valve arrangement for a gas stove and a gas stove comprising such a gas valve arrangement.

Usually, gas stoves may comprise a gas burner, an adjusting knob, and a gas valve. A gas stream towards the gas burner may be adjusted by means of the adjusting knob which may be connected to the gas valve. Therefore, the gas valve may comprise an adjustment element which is configured to reduce the gas flow towards the burner. The gas for the gas burner may be provided by means of a gas source. However, due to pressure drops in the gas stream lapse of the flames at the gas burner may occur.

Furthermore, dirtiness from the gas source may stream within the gas stream towards the gas valve and the gas burner. This may affect the function of the gas valve or the flames at the gas burner.

It is one object of the present invention to provide an improved gas valve arrangement.

Accordingly, a gas valve arrangement for a gas stove is provided. The gas valve arrangement comprises a gas valve device having a gas inlet for receiving a gas stream, a gas outlet for outputting the gas stream, an adjustment element which is arranged along a gas stream path between the gas inlet and the gas outlet for adjusting the gas stream, and an accommodation portion arranged along the gas stream path for accommodating an insert element; and an insert element which is configured to be inserted in the accommodating portion and to guide the gas stream, the insert element comprising an inlet section and an outlet section for the gas stream. Preferably, the inlet section has a larger cross-section than the outlet section.

In contrast to conventional gas valve arrangements, the gas stream may be affected by means of an additional element, namely the insert element. In particular, the gas stream may be reduced by means of the insert element. For example, the gas valve device may be a standard gas valve. In particular, the insert element is adapted to the standard gas valve such that a retrofit solution is provided. Thus, a cost-efficient solution may be provided. Preferably, the gas valve device is a separate assembly group or component of the gas stove. In particular, the gas inlet is provided at an interface with another component, preferably a gas line, in particular a gas duct or a gas pipe, of the gas stove.

Preferably, the gas valve device receives gas from a gas source, in particular a gas net or a gas bottle. For example, the gas outlet is provided at an interface with another component, preferably a gas line, in particular a gas duct or a gas pipe, of the gas stove. Such a gas line may be connected to a Venturi nozzle of the gas stove. In particular, the Venturi nozzle may provide gas for the gas burner. Thus, the gas outlet may be configured to output the gas stream towards the gas burner. The gas valve device may comprise exactly one gas outlet.

Preferably, a channel for guiding or conducting the gas stream from the gas inlet towards the gas outlet is provided. In particular, this channel forms the gas stream path. For example, the adjustment element is configured to be adjusted by means of a control element, in particular a control shaft. In particular, the adjustment element may be adjusted manually or electro-mechanically. The adjustment element may comprise a moveable element which is configured to reduce a flow cross-section for the gas stream.

The gas stream is a mass flow comprising inflammable gas. The accommodation portion is a portion along the gas stream path to which the insert element is adapted. Thus, the accommodation portion may be a conventional portion of a standard gas valve. Alternatively, the accommodation portion may be specially adapted to the insert element. In particular, the accommodation portion comprises a negative form of the insert element. The accommodation portion is part of the channel. Thus, the insert element is configured to be inserted in the channel and, thus, configured to form a part of the channel.

The accommodating portion may be a seat for the insert element. In particular, the insert element is configured to be connected to the accommodation portion by means of a form fit connection. The inlet section is a flow section which forms an entrance for the gas stream into the insert element. The outlet section is a flow section which forms an outlet for the gas stream out of the insert element.

According to an embodiment, the insert element is inserted in the accommodation portion.

Thus, the insert element may effectively affect the gas stream. In this state, the gas stream is guided through the insert element when passing the gas stream path.

According to a further embodiment, the insert element is configured to buffer pressure drops in the gas stream at the gas outlet of the gas valve device.

This has the advantage that lapse of the flames at the gas burner may be avoided.

According to a further embodiment, the insert element comprises a filter device which is configured remove particles from the gas stream.

Preferably, the filter device is a dirtiness filter, in particular an anti-particulate filter. The filter device may be a reducer filter. For example, the filter device may comprise a grid.

According to a further embodiment, the insert element has a cylindric outer geometry.

This has the advantage that the insert element may be produced with a low effort. In particular, the accommodation portion comprises a cylindric seat for the insert element. Thus, an uncomplicated insertion of the insert element may be performed.

According to a further embodiment, the insert element comprises at least two, in particular exactly four, inlet openings and at least one, in particular exactly one, outlet opening.

The inlet openings form the inlet section and the outlet opening forms the outlet section. This has the advantage that the flow section for the gas stream may be reduced by means of the insert element.

According to a further embodiment, the insert element comprises an inner volume. Further, the insert element is configured such that the gas stream expands in the inner volume when passing the insert element.

For example, the inner volume may be a chamber for stabilizing the gas stream. This has the advantage that pressure drops may be avoided. Preferably, the filter device is arranged inside the inner volume. In particular, the inner volume is formed by a cylindric volume and a truncated cone volume.

According to a further embodiment, the insert element comprises at least two inlet through-holes extending from the inlet section towards the inner volume.

Thus, expansion of the gas stream is possible due to a volume increase at the transition between the at least two inlet through-holes and the inner volume. In particular, each inlet through-hole has an arc-shaped or a kidney-shaped cross-section. For example, each inlet through-hole has a rounded outer cross-section geometry.

According to a further embodiment, the at least two inlet through-holes are arranged around a longitudinal axis of the insert element.

Thus, the inlet through-holes are arranged eccentrically. Preferably, the inlet trough-holes extend, in particular constant, in a longitudinal direction which is parallel to the longitudinal axis.

According to a further embodiment, the insert element comprises at least one, preferably exactly one, outlet through-hole extending from the inner volume towards the outlet section.

Preferably, the at least one outlet through-hole has a rotational symmetry regarding the longitudinal axis of the insert element. Thus, the outlet through-hole may be cost-efficiently produced. In particular, the at least one outlet opening corresponds to or is comprised by the at least one outlet trough-hole.

According to a further embodiment, the accommodation portion for the insert element is arranged along the gas stream path between the gas inlet and the adjustment element of the gas valve device.

For example, dirtiness streaming together with the gas stream may be filtered before affecting the adjustment element. Preferably, exactly one insert element is arranged along the gas stream path, wherein the insert element is arranged along the gas stream path between the gas inlet and the adjustment element of the gas valve device.

According to a further embodiment, the insert element is configured to be inserted in the accommodation portion through gas inlet of the gas valve device.

This means that the insert element is put through the gas inlet during insertion into the accommodation portion. Preferably, the accommodating portion is arranged at an inlet zone of the gas valve device. In particular, the inlet zone comprises a manifold connection of the gas valve device. Preferably, the insert element is configured to be inserted in the manifold connection. This has the advantage that the insert element can be inserted in an assembled gas valve device. Thus, the gas valve device can be retrofitted with low effort.

According to a further embodiment, the accommodation portion for the insert element is arranged along the gas stream path between the adjustment element and the gas outlet of the gas valve device.

Preferably, the accommodating portion is arranged at a gas outlet zone of the gas valve device. Alternatively, the accommodating portion is arranged ahead of the gas outlet zone of the gas valve device. Preferably, the insert element may be inserted into the gas valve device during assembly of the gas valve device. Thus, the insert element is inserted in the gas valve device previously to its final assembly. Hence, the filter device may be provided behind the adjustment element along the gas stream path. Thus, dirtiness leaving the gas valve device may be avoided. Hence, also dirtiness at subsequent elements, in particular the burner, may be avoided. Preferably, exactly one insert element is arranged along the gas stream path at the accommodation portion, wherein the insert element is arranged along the gas stream path between the adjustment element and the gas outlet of the gas valve device.

According to a further embodiment, the gas valve device comprises a further accommodation portion for a further insert element, wherein the accommodation portion is arranged along the gas stream path between the gas inlet and the adjustment element of the gas valve device, and wherein the further accommodation portion is arranged along the gas stream path between the adjustment element and the gas outlet of the gas valve device.

Preferably, the gas valve arrangement comprises the further insert element. In particular, the insert element is inserted in the accommodation portion and the further insert element is inserted in the further accommodation portion. This has the advantage that dirtiness reaching the adjustment element and dirtiness leaving the gas outlet of the gas valve device may be avoided. In particular, the gas valve device can comprise exactly two insert elements. These insert elements may have an identical geometry or different geometries. Preferably, the gas valve device may comprise exactly two gas outlets. In case of two gas outlets, an insert element may be provided at both gas outlets or gas outlet zones.

Further, a gas stove having such a gas valve arrangement is provided.

Preferably, the gas stove comprises at least one cooking zone, in particular two, three, four or five cooking zones. Preferably, the gas stove comprises a gas nozzle which is connected to the gas valve device by means of a gas line, in particular a gas duct or gas pipe. The gas stove may further comprise a gas burner which is supplied with a gas mixture being a mixture of the gas stream and primary air provided at the gas nozzle. The gas valve device may comprise a control shaft to which a control knob of the gas stove may be connected.

The embodiments and features described with reference to the gas valve arrangement of the present invention apply *mutatis mutandis* through the gas stove of the present invention.

Further possible implementations or alternative solutions of the invention also encompass combinations – that are not explicitly mentioned herein – of features described above or below with regard to the embodiments. The person skilled in the art may also add individual or isolated aspects and features to the most basic form of the invention.

Further embodiments, features and advantages of the present invention will become apparent from the subsequent description and dependent claims, taken in conjunction with the accompanying drawings, in which:

Fig. 1 shows schematically a perspective view of a gas stove;

Fig. 2 shows a perspective view of a gas valve arrangement for the gas stove according to Fig. 1;

Fig. 3 shows a perspective view of an insert element for the gas valve arrangement according to Fig. 2;

Fig. 4 shows a further perspective view of the insert element from Fig. 3;

Fig. 5 shows a cross-sectional view V-V from Fig. 3;

Fig. 6 shows a front view from the insert element having a filter device;

Fig. 7 shows a rear view of the insert element according to Fig. 6;

Fig. 8 shows a cross-sectional view VIII-VIII from Fig. 2; and

Fig. 9 shows a cross-sectional view IX-IX from Fig. 2.

In the figures, like reference numerals designate like or functionally equivalent elements, unless otherwise indicated.

Fig. 1 shows a gas stove 1. The gas stove 1 comprises at least one cooking zone 2 having a gas burner 3. Further, a gas valve arrangement 4 (see broken lines) is provided for

controlling a gas stream 5 towards the gas burner 3. In particular, the gas stream 5 can be adjusted by means of a control element 6, in particular a control shaft, of the gas valve arrangement 4. The gas stove 1 further comprises an operating element 7 for operating the control element 6. The operating element 7 can be a control knob. An operation of the gas valve arrangement 4 may be performed manually or electromechanically.

The gas burner 3 provides flames (not shown) for heating a cookware (not shown) arranged at the cooking zone 2. The gas stove 1 can be provided as stove top. For example, the gas stove 1 can be provided with an oven (not shown) or without an oven. The gas stove 1 may also comprise or not comprise cooking zones providing heat by means of electricity.

Fig. 2 shows a perspective view of the gas valve arrangement 4. The gas valve arrangement 4 comprises a gas valve device 8 and an insert element 9. The insert element 9 is configured to be inserted into the gas valve device 8. Thus, the gas stream 5 can be positively affected by means of the insert element 9. The gas valve device 8 comprises an inlet 10 and an outlet 11. The inlet 10 is configured to receive the gas stream 5 and the outlet 11 is configured to output the gas stream 5. The inlet 10 and/or the outlet 11 can be provided at an interface with other components (not shown) of the gas stove 1. For example, such other components may be a gas line, in particular a gas duct, a gas pipe and the like.

Fig. 3 shows a perspective view of the insert element 9. The insert element 9 has a cylindric outer geometry. A front face 13 of the insert element 9 comprises four inlet openings 14. The inlet openings 14 are arc-shaped having a rounded outer contour 15. Preferably, the inlet openings 14 or the outer contours 15 are kidney-shaped.

Fig. 4 shows another perspective view of the insert element 9. A rear face 16 of the insert element 9 comprises exactly one outlet opening 17. The outlet opening 17 has a circular outer contour 18. Thus, the four inlet openings 14 (see Fig. 3) merge into one outlet opening 17.

Fig. 5 shows a cross-sectional view V-V from Fig. 3. Each inlet opening 14 forms one part 19 of an inlet section 20 of the insert element 9. The outlet opening 17 forms an outlet section 21. The inlet section 20 and the outlet section 21 are provided as flow sections for the gas stream 5. Preferably, the inlet section 20 has a larger cross-section than the outlet section 21. Further, the insert element 9 comprises an inner volume 22, wherein the insert element 9 is configured such that the gas stream 5 expands (see arrows) in the inner volume 22 when passing the insert element 9.

The inner volume 22 comprises a cylindric portion 23 and a truncated cone portion 24. The inner volume 22 stabilizes the gas stream 5 and, thus, avoids pressure drops at the outlet opening 17 and/or the outlet 11 (see Fig. 2). Further, the insert element 9 comprises inlet through-holes 25 extending from the inlet section 20 or inlet openings 14 towards the inner volume 22. Each inlet through-hole 25 corresponds to one of the inlet openings 14. The inlet through-holes 25 are arranged around a longitudinal axis L of the insert element 9. A section 26 of the inner volume 22, in particular of the cylindric portion 23, has a larger cross-section than the inlet section 20. Thus, the flow section or volume for the gas stream 5 increases at a transition between the inlet through-holes 25 and the inner volume 22, in particular the cylindric portion 23. Further, the insert element 9 comprises at least one outlet through-hole 27 extending from the inner volume 22, in particular the truncated cone portion 24, towards the outlet section 21. For example, a pressure drop is fixed by a reduction of the section when the gas stream 5 enters the inlet section 20 and passes the inner volume 22.

The truncated cone portion 24 tapers towards the outlet through-hole 27. The inner volume 22 and the outlet through-hole 27 have a rotational symmetry regarding the longitudinal axis L. The inner volume 22 forms a transition volume between the inlet through-holes 25 and the outlet through-hole 27. Thus, inlet section 20 and outlet section 21 are fluidly connected. The gas stream 5 enters the insert element 9 through inlet openings 14 and leaves the insert element 9 through outlet opening 17. The longitudinal axis L can be construed as a middle axis of the insert element 9. The outer geometry of the insert element 9 has a rotational symmetry regarding the longitudinal axis L. For example, the insert element 9 may be a one-piece element. The insert element 9 may be made of metal, plastic, in particular polybutylene terephthalate (PBT) or polyamide (for example PA 66), ceramics or a composite material.

Fig. 6 shows a front view of the insert element 9. In contrast to Fig. 3 and 4, the insert element 9 comprises a filter device 28 which is configured to filter the gas stream 5. The filter device 28 in particular comprises a grid. For example, the filter device 28 is a dirtiness filter and/or an anti-particulate filter. The filter device 28 is arranged inside the inner volume 22. In particular, the filter device 28 is not arranged inside the through-holes 25, 27. Alternatively, the filter device 28 may be arranged at least partially inside the through-hole 27 and/or the through-holes 25. The inlet openings 14 are arranged radially in relation to longitudinal axis L. The arc-shaped or kidney-shaped inlet openings 14 are bended around or towards the longitudinal axis L.

Fig. 7 shows a front view of the insert element 9 from Fig. 6. Inlet openings 14 are radially on the same level as the outer contour 18 of the outlet opening 17.

Fig. 8 shows cross-sectional view VIII-VIII from Fig. 2. This cross-section is a vertical section which runs through control shaft 6 and the inlet 10. The gas valve device 8 comprises an adjustment element 29. The adjustment element 29 is configured to adjust a flow or flow rate of the gas stream 5. Further, the adjustment element 29 can be operated by means of control element 6, in particular the control shaft. A gas stream path 30 for the gas stream 5 runs from the inlet 10 towards the outlet 11 (see Fig. 2). The gas stream path 30 is formed by a channel 34, 35, 36 (see Fig. 8 and 9) guiding or conducting the gas stream 5. The adjustment element 29 is arranged along the gas stream path 30 between the gas inlet 10 and the gas outlet 11 for adjusting the gas stream 5. Preferably, the adjustment element 29 is configured to move, in particular to rotate, for adjusting the gas stream 5.

Further, an accommodation portion 31 is arranged along the gas stream path 30 for accommodating the insert element 9. The insert element 9 is inserted into the accommodation portion 31. Optionally, the accommodation portion 31 for the insert element 9 is arranged along the gas stream path 30 between the gas inlet 10 and the adjustment element 29 of the gas valve device 8 (as shown in Fig. 8). Thus, dirtiness reaching the adjustment element 29 may be avoided since the filter device 28 may be provided inside inner volume 22 (see Fig. 6) of the insert element 9. Hence, dirtiness inside the gas valve device 8 that can affect the function of the internal components can be avoided. Additionally, pressure drops may be avoided past the outlet opening 17 of the insert element 9.

As shown in Fig. 8, the insert element 9 is configured to be inserted in the accommodation portion 31 through the gas inlet 10 of the gas valve device 8. This allows pushing of the insert element 9 into the accommodation portion 31 through the gas inlet 10 with minimal effort. In this case, the gas valve device 8 may be completely assembled when inserting the insert element 9 into the accommodation portion 31.

For example, the accommodation portion 31 comprises a seat for the insert element 9, in particular negative form of the insert element 9. In particular, the accommodation portion 31 comprises a cylindric shape which corresponds to the outer geometry of the insert element 9. As shown in Fig. 8, the accommodation portion 31 may be arranged at an inlet zone 32 having the inlet 10. The inlet zone 32 extends downwards.

Moreover, a safety valve 33 can be provided which is configured to lock the gas stream path 30. The safety valve 33 can be arranged along the gas stream path 30 between the gas inlet zone 32 and the adjustment element 29. In the cross-sectional view of Fig. 8, a first channel part 34 for guiding the gas stream 5 is shown. Fig. 9 shows a second channel part 35 which is fluidly connected to the first channel part 34 by means of an at least partially horizontally extending intermediate channel 36 (see Fig. 8 and 9). In particular, the first channel part 34 is U-shaped, C-shaped, and/or L-shaped. The gas stream path 30 is formed by the first channel part 34, the intermediate channel 36, and the second channel part 35.

Fig. 9 shows a cross-sectional view IX-IX from Fig. 2. This cross-section is a vertical section which runs through the outlet 11 and which is in particular parallel to the cross-section shown in Fig. 8. The gas stream path 30 runs from the intermediate cannel 36 downwards through a vertical portion 37 of the second channel part 35 and subsequently sidewards through a horizontal portion 38 of the second channel part 35. The outlet 11 is arranged at the end of the horizontal portion 38.

Optionally, an accommodation portion 39 for the insert element 9 is arranged along the gas stream path 30 between the adjustment element 29 (see Fig. 8) and the gas outlet 11 of the gas valve device 8. Arranging the insert element 9 at such a position has the advantage that the gas stream 5 leaving the outlet 11 is filtered immediately before leaving the gas valve device 8 by means of the filter device 28 (see Fig. 6). Thus, dirtiness inside a gas burner circuit that can affect that gas stream 5 in a burner nozzle or injector may be avoided. As shown in Fig. 9, the insert element 9 can be arranged at a gas outlet zone 40 which is the end portion of horizontal portion 38. For example, such a position for the accommodation portion 39 has the advantage that the insert element 9 may be inserted through outlet 11 after the gas valve device 8 has been completely assembled.

Alternatively, an accommodation portion 39' for the insert element 9 can be provided at vertical portion 37 instead of accommodation portion 39. In this case, the gas stream 5 runs immediately from the intermediate channel 36 through the insert element 9 and subsequently through horizontal portion 38. In particular, the insert element 9 has to be inserted into the accommodation portion 39' during assembly of the gas valve device 8.

For example, the gas valve arrangement 4 may comprise only one insert element 9 which is inserted into accommodation portion 31, 39 or 39' (see Fig. 8 and 9). Alternatively, the gas valve arrangement 4 can comprise one insert element 9 which is inserted into

accommodation portion 31 and a further insert element 9 which is inserted into a further accommodation portion 39, 39'.

Although the present invention has been described in accordance with preferred embodiments, it is obvious for the person skilled in the art that modifications are possible in all embodiments. For example, the insert element 9 and the further insert element 9 may be provided identically, having different geometries, or having a filter device 28 and without the filter device 28. The gas valve device 8 may be operated exactly mechanically or at least partially elector-mechanically.

Reference Numerals:

1	gas stove
2	cooking zone
3	gas burner
4	gas valve arrangement
5	gas stream
6	control element
7	operating element
8	gas valve device
9	insert element
10	inlet
11	outlet
13	front face
14	inlet opening
15	outer contour
16	rear face
17	outlet opening
18	outer contour
19	part
20	inlet section
21	outlet section
22	inner volume
23	portion
24	portion
25	inlet through-hole
26	section
27	outlet through-hole
28	filter device
29	adjustment element
30	gas stream path
31	accommodation portion
32	inlet zone
33	safety valve
34	channel part
35	channel part
36	intermediate channel
37	vertical portion

38 horizontal portion
39 accommodation portion
39' accommodation portion
40 outlet zone

L longitudinal axis

CLAIMS

1. A gas valve arrangement (4) for a gas stove (1), the gas valve arrangement (4) comprising:

a gas valve device (8) having

a gas inlet (10) for receiving a gas stream (5),

a gas outlet (11) for outputting a gas stream (5),

an adjustment element (29) arranged along a gas stream path (30) between the gas inlet (10) and the gas outlet (11) for adjusting the gas stream (5), and

an accommodation portion (31, 39, 39') arranged along the gas stream path (30) for accommodating an insert element (9); and

an insert element (9) which is configured to be inserted in the accommodating portion (31, 39, 39') and to guide the gas stream (5), the insert element (9) comprising an inlet section (20) and an outlet section (21) for the gas stream (5), wherein the inlet section (20) has a larger cross-section than the outlet section (21).

2. The gas valve arrangement according to claim 1, wherein the insert element (9) is inserted in the accommodation portion (31, 39, 39').

3. The gas valve arrangement according to claim 1 or 2, wherein the insert element (9) is configured to buffer pressure drops in the gas stream (5) at the gas outlet (11) of the gas valve device (8).

4. The gas valve arrangement according to one of claims 1 - 3, wherein the insert element (9) comprises a filter device (28) which is configured to remove particles from the gas stream (5).

5. The gas valve arrangement according to one of claims 1 - 4, wherein the insert element (9) has a cylindric outer geometry.

6. The gas valve arrangement according to one of claims 1 - 5, wherein the insert element (9) comprises at least two, in particular exactly four, inlet openings (14) and at least one, in particular exactly one, outlet opening (17).

7. The gas valve arrangement according to one of claims 1 - 6, wherein the insert element (9) comprises an inner volume (22) and is configured such that the gas stream (5) expands in the inner volume (22) when passing the insert element (9).

8. The gas valve arrangement according to claim 7, wherein the insert element (9) comprises at least two inlet through-holes (25) extending from the inlet section (20) towards the inner volume (22).

9. The gas valve arrangement according to claim 8, wherein the at least two inlet through-holes (25) are arranged around a longitudinal axis (L) of the insert element (9).

10. The gas valve arrangement according to one of claims 7 - 9, wherein the insert element (9) comprises at least one outlet through-hole (27) extending from the inner volume (22) towards the outlet section (21).

11. The gas valve arrangement according to one of claims 1 - 10, wherein the accommodation portion (31) for the insert element (9) is arranged along the gas stream path (30) between the gas inlet (10) and the adjustment element (29) of the gas valve device (8).

12. The gas valve arrangement according to claim 11, wherein the insert element (9) is configured to be inserted in the accommodation portion (31) through the gas inlet (10) of the gas valve device (8).

13. The gas valve arrangement according to one of claims 1 - 10, wherein the accommodation portion (39, 39') for the insert element (9) is arranged along the gas stream path (30) between the adjustment element (29) and the gas outlet (11) of the gas valve device (8).

14. The gas valve arrangement according to one of claims 1 - 13, wherein the gas valve device (8) comprises a further accommodation portion (39, 39') for a further insert element (9), wherein the accommodation portion (31) is arranged along the gas stream path (30) between the gas inlet (10) and the adjustment element (29) of the gas valve device (8), and wherein the further accommodation portion (39, 39') is arranged along the gas stream path (30) between the adjustment element (29) and the gas outlet (11) of the gas valve device (8).

15. A gas stove (1) having a gas valve arrangement (4) according to one of claims 1 - 14.

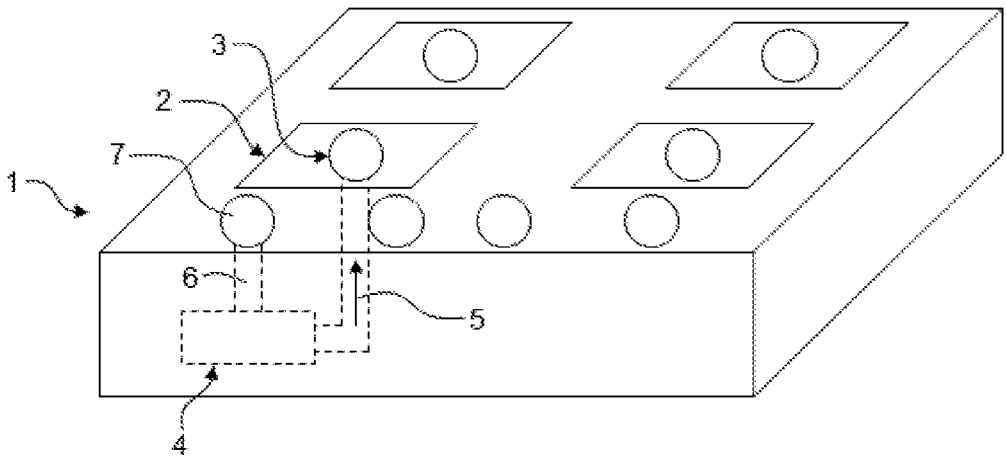

Fig. 1

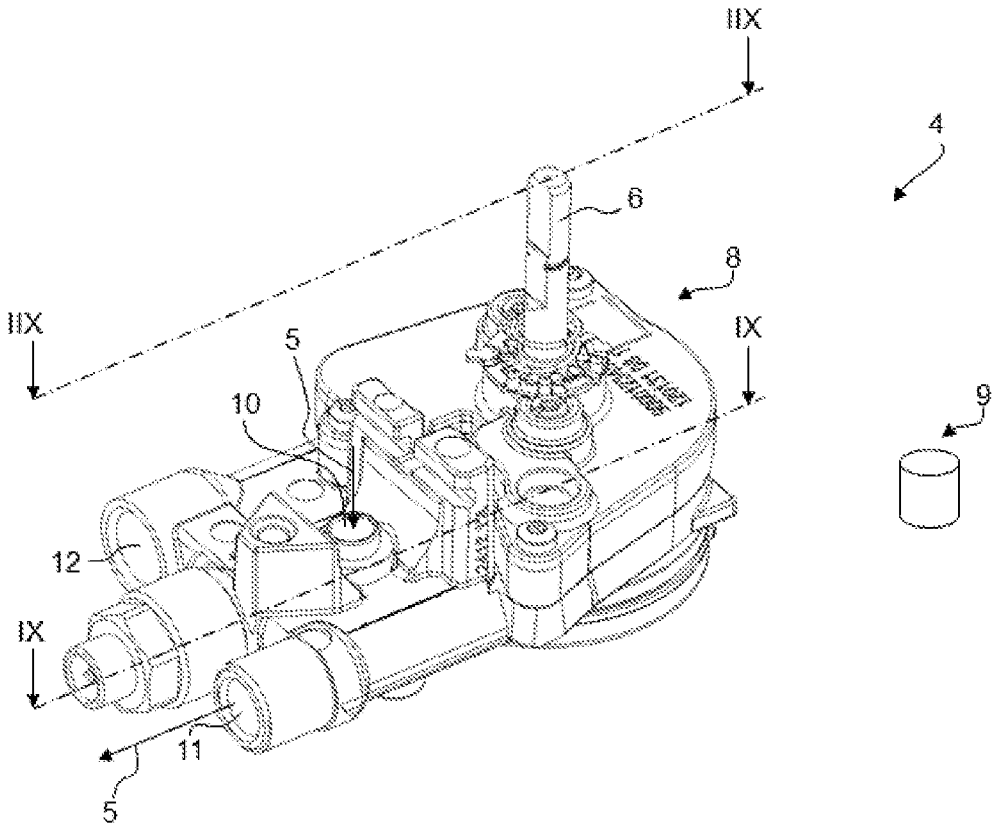

Fig. 2

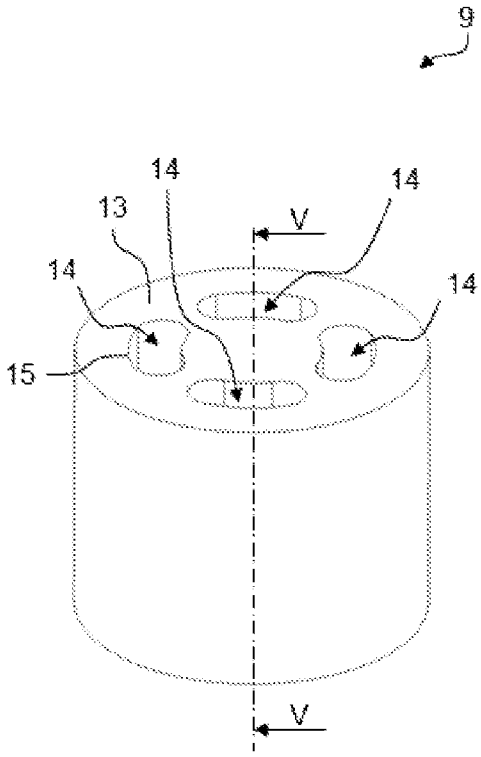

Fig. 3

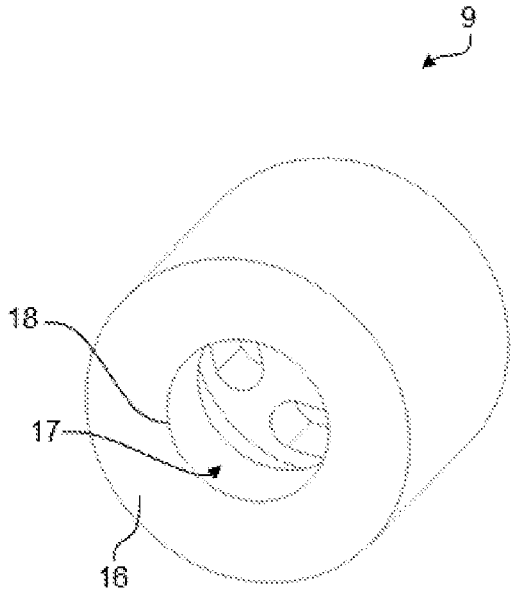

Fig. 4

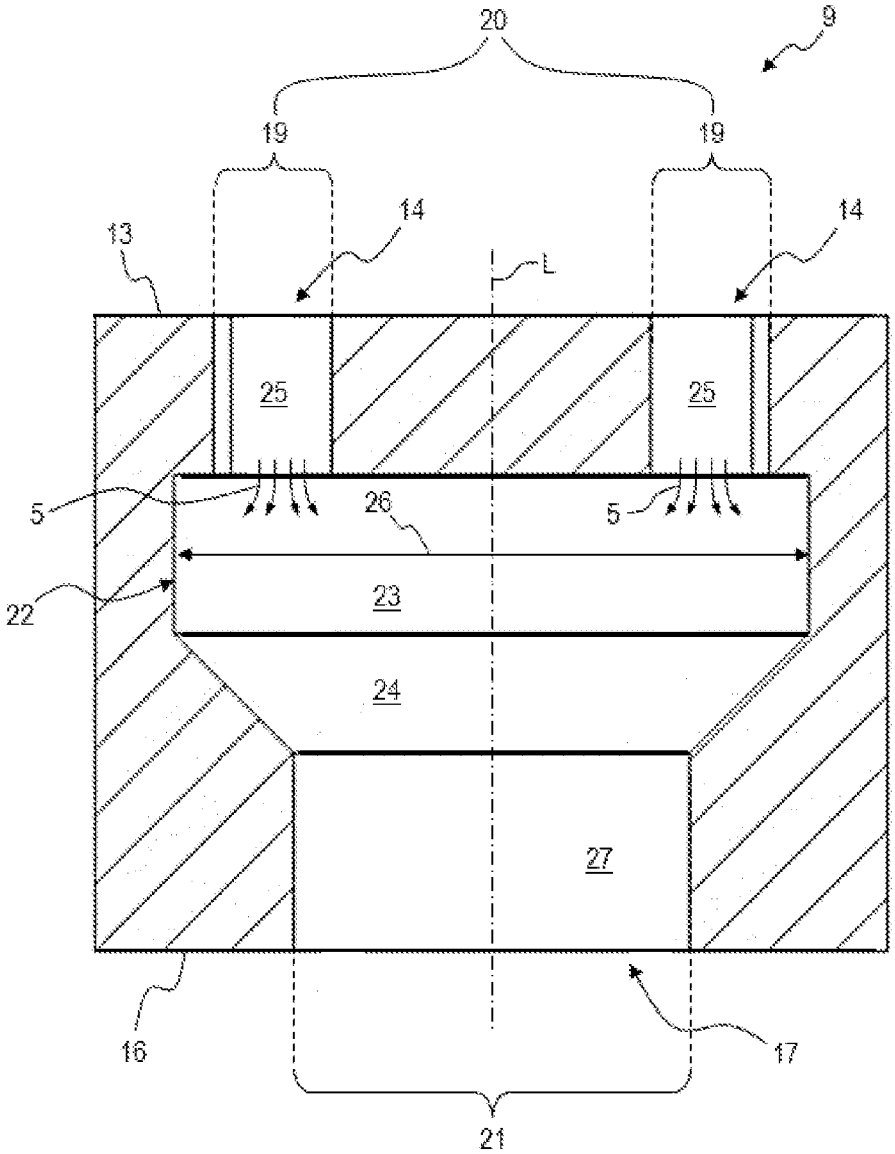

Fig. 5

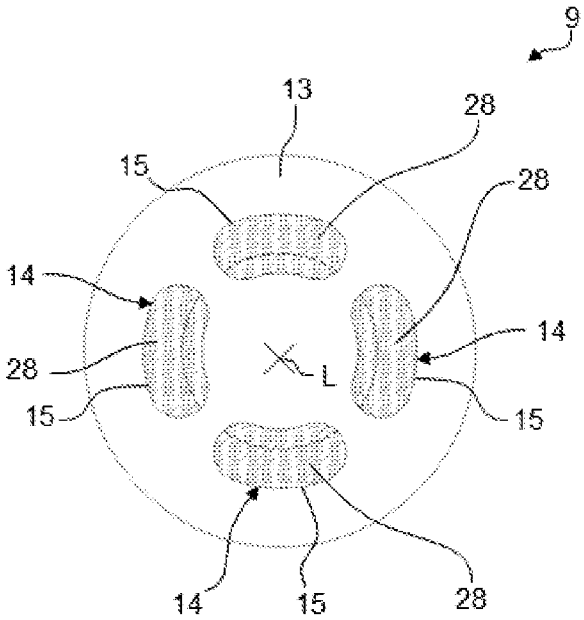

Fig. 6

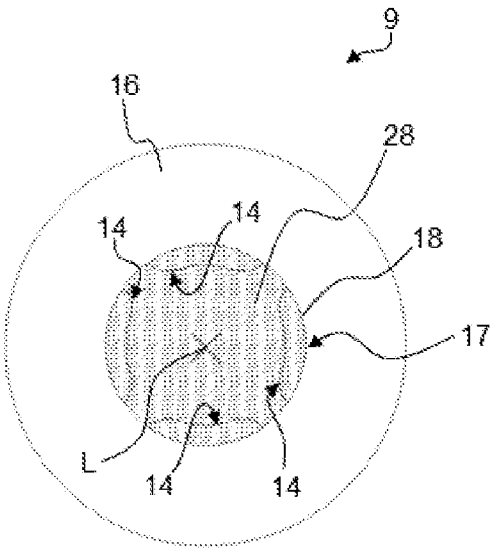

Fig. 7

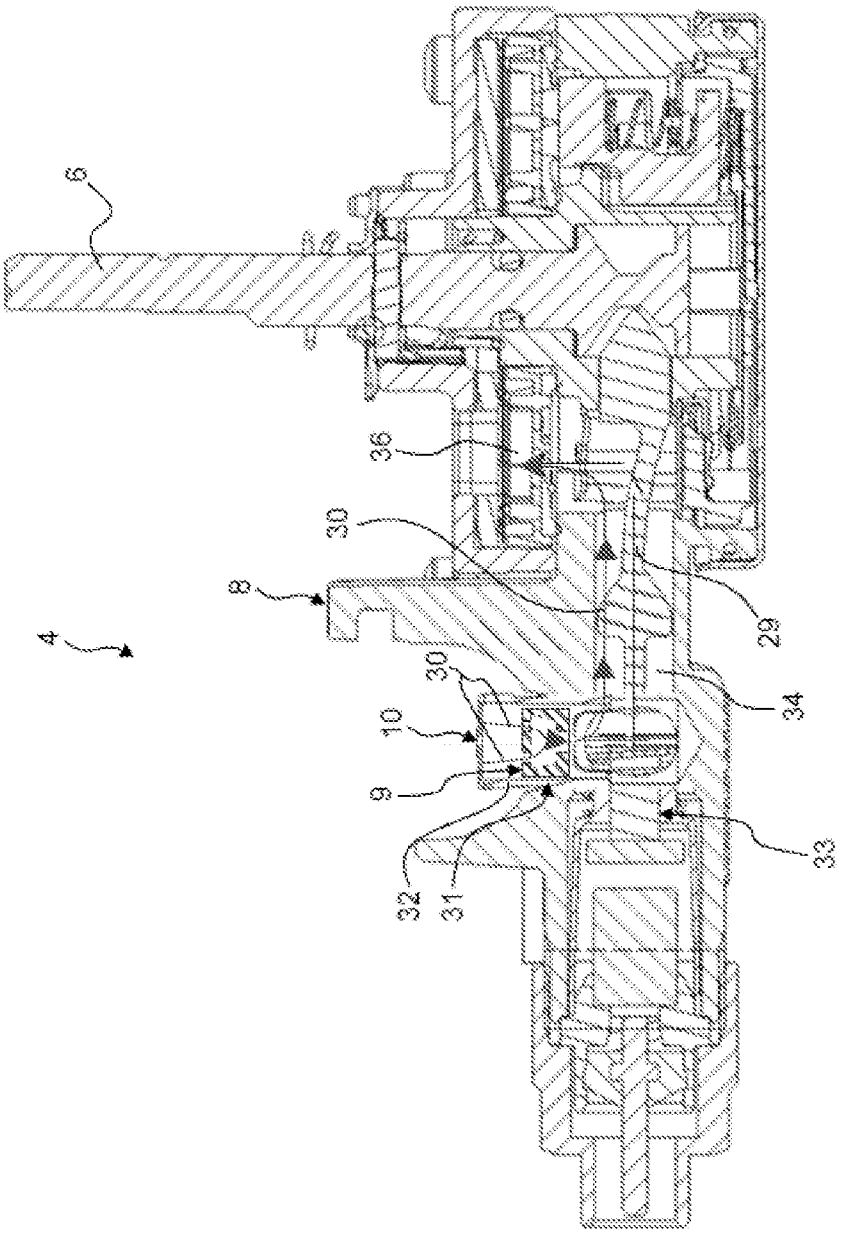

Fig. 8

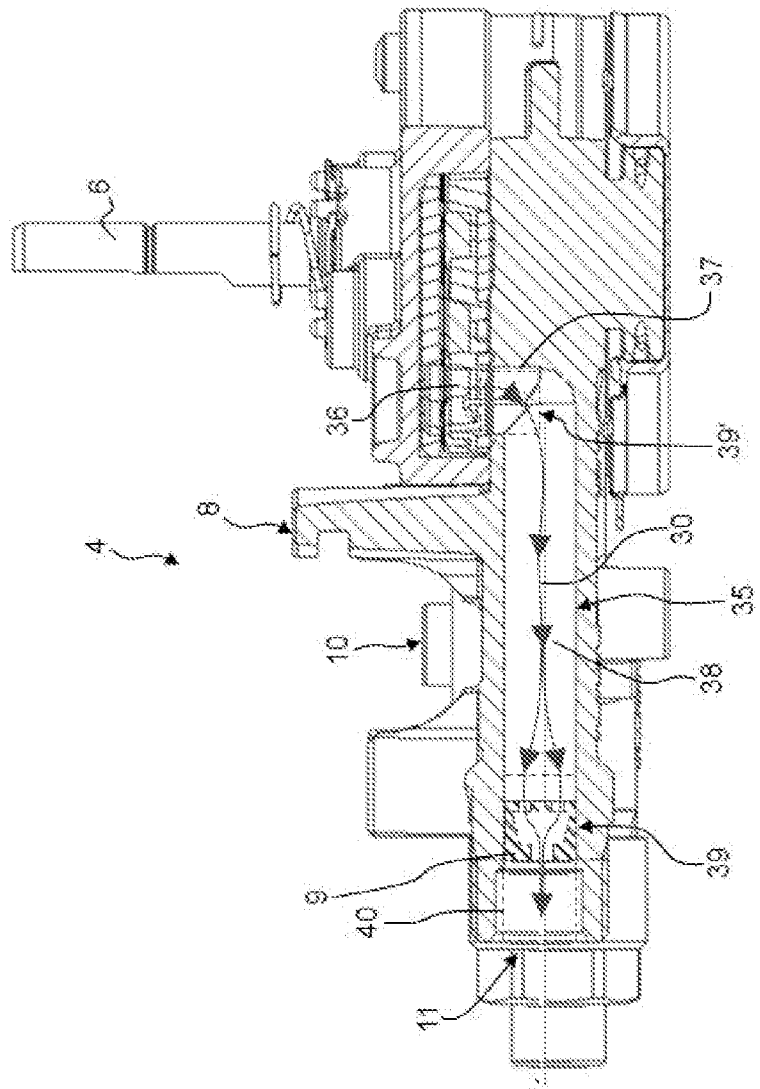

Fig. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/054700

A. CLASSIFICATION OF SUBJECT MATTER
INV. F23N1/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F23N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2016/230987 A1 (NAGATA SADATSUGU [JP]) 11 August 2016 (2016-08-11) page 2, paragraph 26 - page 3, paragraph 37 figure 1	1-4, 7-12,14
X	EP 1 848 928 B1 (EGO ELEKTRO GERAETEBAU GMBH [DE]) 6 June 2012 (2012-06-06) column 3, paragraph 22 - column 4, paragraph 39 figures 1-3	1-3,5,6, 13,15
X	US 4 832 070 A (JAMES ROBERT [GB] ET AL) 23 May 1989 (1989-05-23) column 1, line 59 - column 2, paragraph 26 figure 1	1-3,5, 11,12

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 August 2019	19/08/2019

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Gavriliu, Costin

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/054700

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2013/080116 A2 (BSH BOSCH & SIEMENS HAUSGERAETE GMBH) 6 June 2013 (2013-06-06) page 1, line 5 - line 8 page 8, line 15 - line 24 page 12, line 21 - page 13, line 3 figures 1,2,4 -----	1-3,5, 13,15

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