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(54) **GAS VALVE COMPRISING A TACTILE FEEDBACK DEVICE, AND COOKING APPLIANCE COMPRISING SAID GAS VALVE**

(57) Gas valve comprising a tactile feedback device, a valve body (110) and an axially movable rotating shaft (120) coupled to said valve body (110), the gas flow in the valve (100) being changed by means of the rotation of the shaft (120), the tactile feedback device (200) comprising a fixed portion and a rotating portion which rotates integrally with the shaft (120) and is housed in the fixed portion, one portion comprising a follower (10) arranged radially with respect to the shaft (120), and the other portion comprising a guide section (20) which comprises a plurality of contiguous housings (21) and guides the follower (10) during rotation of the shaft (120). The fixed portion comprises an inner perimetral wall (34) comprising the guide section (20) and the rotating portion comprises the follower (10), at least one of the portions being fixed to the shaft (120).

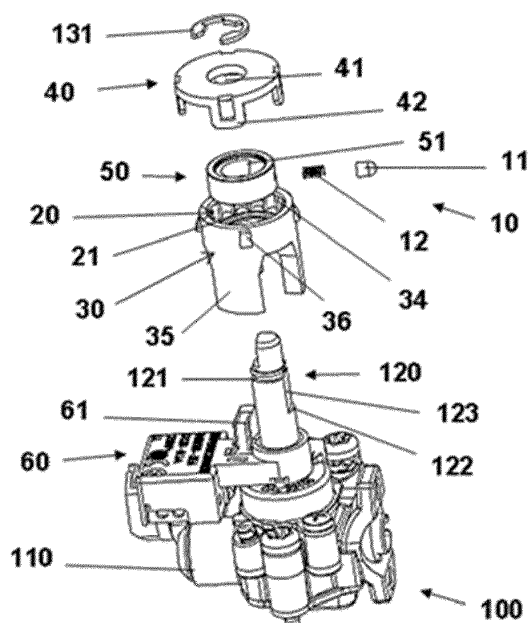


FIG. 2

Description

TECHNICAL FIELD

[0001] The present invention relates to gas valves comprising a tactile feedback device, and to cooking appliances comprising said gas valves.

PRIOR ART

[0002] Gas valves for cooking appliances comprising tactile feedback means whereby users perceive a tactile sensation when turning the knob associated with the shaft of the valve are known. To that end, the valve must comprise an element rotating integrally with the shaft of the valve and cooperating with a fixed element to generate said tactile sensation.

[0003] Gas valves with tactile feedback means inside the valve body are known. US2005/0284519A1 and EP2735795A1 describe gas valves with tactile feedback means inside the valve body. Unlike the gas valve of EP2735795A1, in the gas valve of US2005/0284519A1 the tactile sensation is not associated with angular positions corresponding to different gas adjustment levels.

[0004] WO2015097119A1 describes a cooking appliance which comprises a gas valve comprising a tactile feedback device arranged outside the valve body. This gas valve comprises an axially movable rotating shaft coupled to a gas flow regulating member arranged in the valve body, the gas flow through the valve being changed by means of rotation of the shaft. The tactile feedback device comprises a fixed portion which is formed by two covers coupled to one another defining an inner space and with the shaft going through said covers, and a rotating portion, which is a sleeve coupled to the shaft, rotating integrally with said shaft and housed in the inner space defined by the covers of the fixed portion, the shaft being axially movable with respect to the assembly formed by the fixed portion and the moving portion. The fixed portion comprises a follower, which is a spring and ball assembly arranged in the lower cover of the fixed portion, arranged radially with respect to the shaft, and the rotating portion comprises a circular guide section comprising a plurality of contiguous housings arranged in a side wall of the sleeve, and guiding the follower to provide a tactile sensation during rotation of the shaft.

DISCLOSURE OF THE INVENTION

[0005] The object of the invention is to provide a gas valve comprising a tactile feedback device and a cooking appliance comprising said gas valve, as defined in the claims.

[0006] The gas valve of the invention comprises a tactile feedback device, the valve comprising a valve body and an axially movable rotating shaft coupled to said valve body, the gas flow through the valve being changed by means of rotation of the shaft, and the tactile feedback

device comprising a fixed portion and a rotating portion rotating integrally with the shaft, the rotating portion being housed at least partially in the fixed portion, one of said portions comprising at least one follower arranged radially with respect to the shaft, and the other one of said portions comprising at least one circular guide section comprising a plurality of contiguous housings and guiding the follower to provide a tactile sensation during rotation of the shaft. The fixed portion comprises an inner perimetral wall comprising the guide section and the rotating portion comprises the follower. On the other hand, at least one of the portions (the fixed portion or the rotating portion) of the tactile feedback device is fixed to the shaft of the valve such that said portion moves integrally with said shaft in an axial manner.

[0007] In the gas valve of the invention, given that the follower is arranged in the rotating portion, that the rotating portion is at least partially housed in the fixed portion, and that the guide section is arranged in an inner perimetral wall of the fixed portion, the tactile feedback device is extremely compact due to the follower being housed entirely within the side limits established by the inner perimetral wall. In the state of the art, given that the follower is arranged in the fixed portion and the guide section is arranged in an outer perimetral wall of the rotating portion, the follower is arranged outside the perimetral wall. The fact that at least one of the portions of the tactile feedback device is furthermore fixed to the shaft of the valve contributes to the valve of the invention being more compact.

[0008] These and other advantages and features of the invention will become evident in view of the drawings and detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0009]

Figure 1 shows a perspective view of a first embodiment of the gas valve according to the invention.

Figure 2 shows an exploded perspective view of the gas valve of Figure 1.

Figure 3 shows a bottom perspective view of the cover of the fixed portion of the tactile feedback device of the gas valve of Figure 1.

Figure 4 shows a top perspective view of the guide body of the rotating portion of the tactile feedback device of the gas valve of Figure 1.

Figure 5 shows a top perspective view of the base of the fixed portion of the tactile feedback device of the gas valve of Figure 1.

Figure 6 shows a top perspective view of an embodiment of the base of the tactile feedback device which

may replace the base of Figure 5 of the gas valve of Figure 1.

Figure 7 shows a top plan view of the base of Figure 6.

Figure 8 shows a perspective view of a second embodiment of the gas valve according to the invention.

Figure 9 shows an exploded perspective view of the gas valve of Figure 8.

Figure 10 shows a bottom perspective view of the cover of the fixed portion of the tactile feedback device of the gas valve of Figure 8.

Figure 11 shows a top perspective view of the guide body of the rotating portion of the tactile feedback device of the gas valve of Figure 8.

Figure 12 shows a sectional view of the guide body of Figure 11.

Figure 13 shows a top perspective view of the base of the fixed portion of the tactile feedback device of the gas valve of Figure 8.

Figure 14 shows a top perspective view of an embodiment of the base of the tactile feedback device which may replace the base of Figure 13 of the gas valve of Figure 8.

DETAILED DISCLOSURE OF THE INVENTION

[0010] Figure 1 shows a perspective view of a first embodiment of the gas valve 100 according to the invention, and Figure 2 shows an exploded perspective view of the gas valve 100 of Figure 1.

[0011] The gas valve 100 of the invention comprises a tactile feedback device 200 arranged outside said gas valve 100. Said gas valve 100 comprises a valve body 110 and an axially movable rotating shaft 120 coupled to said valve body 110. The valve body 110 comprises therein a cavity in which a frustoconical gas flow regulating member (not shown in the drawings) is arranged between a gas inlet and a gas outlet of the gas valve 100. The shaft 120 is coupled to the gas regulating member such that gas flow through the valve 100 is changed by means of the rotation of the shaft 120. The gas valve 100 further comprises a spring arranged in the cavity of the gas body 110 which allows for the shaft 120 to return to its initial position after having been pushed axially.

[0012] The tactile feedback device 200 comprises a fixed portion which does not rotate when rotation of the shaft 120 is actuated, and a rotating portion rotating integrally with the shaft 120, the rotating portion being housed at least partially in the fixed portion. The rotating portion of this embodiment of the gas valve 100 comprises

a follower 10 arranged radially with respect to the shaft 120, and the fixed portion comprises a circular guide section 20 comprising a plurality of contiguous housings 21 and guiding the follower 10 to provide a tactile sensation during rotation of the shaft 120. The fixed portion comprises an inner perimetral wall 34 comprising the guide section 20. In the gas valve 100 of the invention, at least one of the portions of the tactile feedback device 200 is fixed to the shaft 120 such that said portion moves integrally with said shaft 120 in an axial manner. In this first embodiment, the fixed portion is fixed to the shaft 120 of the gas valve 100 and coupled to the valve body 110 such that it cannot rotate when rotation of the shaft 120 is actuated. The rotating portion comprising the follower 10 rotates integrally with the shaft 120 of the valve 100.

[0013] The rotating portion of this embodiment of the tactile feedback device 200 comprises a guide body 50, shown in Figure 4, which is a partially hollow cylindrical part with the shaft 120 of the valve 100 going through same. The guide body 50 comprises an opening 51 for the fitting and coupling of the shaft 120. To that end, the shaft 120 of the valve body 110 comprises in the outer portion thereof a machined D-shaped segment 123 which is arranged below another machined segment of the shaft 120 used for assembling the knob of the gas valve 100, and the opening 51 also having a D shape, the guide body 50 being coupled to the shaft 120 when the segment 123 of the shaft 120 is introduced in the opening 51, allowing rotation of the guide body 50 and axial sliding of the shaft 120 along the guide body 50. The guide body 50 comprises an outer side wall 52 comprising a cavity 53 in a direction towards the shaft 120, the follower 10 being arranged coupled to the outer wall 52. This cavity 53 goes through the outer wall 52 and reaches the opening 51.

[0014] As shown in Figure 2, the follower 10 comprises a contact element 11 contacting the guide section 20 of the fixed portion, and an elastic element 12 coupling the contact element 11 with the guide body 50. In this embodiment of the gas valve 100, the contact element 11 is a cylinder with an end in the shape of a ball, and the elastic element 12 is a spring. The contact element and the elastic element 12 are housed in the cavity 53 arranged in the outer wall 52 of the guide body 50, the contact element 11 first being introduced in said cavity 53 through an open end on the side of the opening 51 which allows same, and the elastic element 12 is then introduced in said cavity 53, the cavity 53 comprising another end opening to the outside of the guide body 50, the contact element 11 being arranged supported on the elastic element 12, and protruding partially through said another open end of the cavity 53.

[0015] The fixed portion comprises a base 30, shown in Figure 5, which houses the rotating portion, i.e., the guide body 50, and a cover 40 shown in Figure 3, coupled to said base 30 with the shaft 120 of the gas valve 100 going through same. The base 30 comprises a cylindrical body 32 with a housing 33 therein in which the guide

body 50 is arranged. This body 32 comprises an inner side wall which is the perimetral wall 34 comprising the guide section 20, said guide section 20 being arranged at least in an angular segment of the inner face of the perimetral wall 34 equal to the angular range of actuation of the shaft 120 for regulating gas flow between an OFF position for preventing gas flow, in which the contact element 11 of the follower 10 is arranged in one of the housings 21, and an ON position for allowing gas flow between a maximum position and a minimum position, passing through an intermediate gas flow position, in which a plurality of housings 21 are arranged. Said guide section 20 guides the contact element 11 of the follower 10 to provide a tactile sensation.

[0016] In this embodiment, the contact element 11 can be housed in each of the housings 21, such that each of the housings 21 defines a gas flow adjustment level. In the axial movement of the shaft 120, and therefore of the base 30, the contact element 11 always contacts a housing 21 of the guide section 20a. In other embodiments of the gas valve 100 not shown in the drawings, the guide section comprises a plurality of housings with a dimension smaller than the housings 21 of the guide section 20 shown in the embodiment described above, said guide section being configured for obtaining a tactile sensation.

[0017] The upper portion of the body 32 is not closed, and the body 32 comprises in the lower portion a wall 37 with an opening 31 going through same, the lower portion of the guide body 50 being supported on the inner face of said wall 37, with the follower 10 fitted and coupled to the guide section 20. The opening 31 allows passage of the shaft 120 of the gas valve 100 without any coupling whatsoever. The wall 37 of the body 32 comprises an outer face which is a stop 38.

[0018] The base 30 also comprises engagement means which are guide arms 35 with there being three such guide arms 35 in this embodiment of the gas valve 100. These guide arms 35 allow coupling the base 30 to the valve body 110, which allows guiding the base 30 axially, and prevents rotation of said base 30. When the shaft 120 is not pushed axially, there is a space between the lower end of the guide arms 35 and the upper portion of the valve body 110, such that when the shaft 120 has been pushed axially, the guide arms 35 do not abut the valve body 110. The guide arms 35 emerge from the lower portion of the body 32 of the base 30 and extend towards the valve body 110. Said guide arms 35 are configured such that their inner portion is adapted to the side shape of different portions of the valve body 110, comprising in the lower inner portion thereof housings, not shown in the drawings, which are coupled to different protrusions of the valve body 110 when the shaft 120 is pushed axially. Therefore, when the shaft 120 is pushed axially the guide arms 35 guided the base 30 axially, and when the shaft 120 is then rotated, the housings of the lower inner portion of the guide arms 35 prevent rotation of the base 30.

[0019] The fixed portion of the tactile feedback device

200 also comprises a cover 40. Said cover is fitted to the upper portion of the base 30 closing the upper portion of the body 32. Said cover 40 comprises a circular wall with an opening 41 going through same, the upper portion of the guide body 50 being supported on the inner face of said wall, circular concentric walls fitting with the outer side wall 52 of the guide body 50 projecting from said inner face of the wall of the cover 40. The opening 41 allows passage of the shaft 120 of the gas valve 100 without any coupling whatsoever. In this embodiment of the gas valve 100, the body 32 of the base 30 comprises four protrusions 36 on the outer face thereof, and the cover 40 comprises four hooks 42 projecting downwardly from the wall of said cover 40, the hooks 42 engaging the protrusions 36, and the cover 40 therefore closing on the base 30.

[0020] In this embodiment of the gas valve 100, the base 30, the cover 40 and the guide body 50 are plastic parts, the guide section 20 is integral with the base 30 in the inner perimetral wall 34 of the body 32.

[0021] The fixed portion of the tactile feedback device 200 is fixed to the shaft 120 by fixing means 130 of the gas valve 100. Since the cover 40 engages the base 30, said components of the fixed portion behave as a single part. The base 30 is assembled on the shaft 120 with the shaft 120 going through the opening 31, and the guide body 50 is then coupled to the shaft 120 with said shaft 120 going through the opening 51 for the fitting thereof, the guide body 50 being introduced in the housing 33 of the body 32 of the base 30. The shaft 120 then goes through the opening 41 of the cover 40, the base 30 being covered with said cover 40 and both parts engaging one another. The fixing means 130 comprise a circlip 131 or washer arranged in a perimetral groove 121 of the shaft 120 arranged below the machined segment of said shaft 120 envisaged for assembling the knob of the gas valve 100, and a milled segment 122 in the shaft 120 below the groove 121. The inner portion, close to the opening 31 of the base 30, of the stop 38 of the wall 37 of the body 32 abuts the milled segment 122 of the shaft 120, and the circlip 131 abuts the outer face of the cover 40. The fixed portion is therefore fixed to the shaft 120 such that said fixed portion moves axially together with the shaft 120.

[0022] In a preferred embodiment, when the shaft 120 moves axially towards the valve body 110 the tactile feedback device 200 is configured to push an activation push-button 61 by means of the portion of the tactile feedback device 200 moving integrally with the shaft 120 in an axial manner. Said portion therefore performs two functions, forming an element of the tactile feedback device 200 on one hand and serving for activating a pushbutton 61 when it moves axially on the other.

[0023] In this first embodiment, given that it is the fixed portion itself which is fixed to the shaft 120 such that it moves axially together with said shaft 120, said fixed portion performs the two functions. In this embodiment, the rotating portion is housed inside the fixed portion and

therefore also moves axially together with the fixed portion.

[0024] In this embodiment, a switch 60 incorporating the pushbutton 61 is therefore arranged coupled to the valve body 110. In this embodiment, this switch 60 is a switch for a spark generator which allows activating an ignition valve for igniting a gas burner (not shown in the drawings) corresponding to said gas valve 100. It is a switch that forms part of a switch harness, such that said harness allows electrically communicating the different gas valves comprised in the cooking appliance. The activation pushbutton 61 projects from the case of the switch 60 towards the shaft 120 of the gas valve 100, the activation thereof allowing the activation of the spark generator. The pushbutton 61 is arranged on a vertical plane coinciding with the axial path of the fixed portion of the tactile feedback device 200, specifically of the base 30. The base 30 is configured so that the edge, arranged away from the opening 31 of the base 30, of the stop 38 of the wall 37 of the body 32 of the base 30, pushes the activation pushbutton 61 when said base 30, and therefore the entire fixed portion, moves axially together with the shaft 120 of the gas valve 100 towards the valve body 110, when said shaft 120 is pushed axially for opening the gas valve 100 and igniting the gas burner. The activation of a switch of the harness therefore allows activating the spark generator and activating the ignition valves associated with the gas burners of the cooking appliance.

[0025] Figure 6 shows a top perspective view of an embodiment of the base 30 of the tactile feedback device 200 which may replace the base 30 of Figure 5 in the gas valve 100 of Figure 1, and Figure 7 shows a top plan view of the base 30 of Figure 6.

[0026] Said base 30 comprises the same features as those described for the embodiment of the base 30 shown in Figure 5. The difference lies in the fact that the guide section 20, instead of comprising a plurality of housings 21, comprises a single segment 22 projecting from the inner face of the perimetral wall 34 of the base 30. This segment 22 projects farther and has a larger dimension than the peaks defining the housings 21. This segment 22 defines an angular area B with the longitudinal axis of the shaft 120, in which the follower 10 arranged in the guide body 50 of the fixed portion cannot be positioned, i.e., the follower will not be stable in said segment 22, the shaft 120 moving out of the angular position B. Therefore, when the user rotates the shaft 120 of the gas valve 100 and wants to place the shaft 120 in the angular area B of the segment 22, this cannot be done because the contact element 11 of the follower 10 moves, sliding to one side or another out of the segment 22. This function of the segment 22 is extremely suitable for cooking appliances comprising at least one burner with more than one crown for burning gas, for example a double-crown burner, preventing the effect of unburned gas which may occur when rotating the shaft to switch the gas flow from one crown of the burner to the other,

and to angularly place said shaft in a gas outflow position arranged between the gas flow outlet of the two crowns of the gas burner. In other embodiments of the gas valve not shown in the drawings, the guide section 20 can comprise, in addition to the segment 22, a plurality of housings 21 arranged in the perimetral wall 34.

[0027] Figure 8 shows a perspective view of a second embodiment of the gas valve according to the invention. The tactile feedback device 200 of this second embodiment also comprises a fixed portion and a rotating portion rotating integrally with the shaft 120, and the fixed portion also comprises a base 30 comprising the inner perimetral wall 34 comprising the guide section 20, but in this embodiment this fixed portion is fixed to the valve body 110, and the rotating portion is fixed to the shaft 120 such that it moves integrally with said shaft 120 in an axial manner. Therefore, in this embodiment the rotating portion is the portion which activates an activation pushbutton 61 when the shaft 120 moves axially towards the valve body 110 in the preferred embodiment.

[0028] The rotating portion comprises the follower 10 arranged in the guide body 50 as described in the first embodiment of the gas valve 100, said rotating portion being fixed to the shaft 120 and housed in the base 30. The base 30 differs from the base 30 of the first embodiment of the gas valve 100 in that it comprises an arm 39 emerging from the lower portion of the body 32 of the base 30 and extending towards the valve body 110. Said arm 39 comprises at the lower end thereof a plate 80 with a hole 81 going through same. The base 30 is fixed to the valve body 110 by means of attaching with a screw 82 which goes through the hole 81 of the plate 80 of said base 30 and reaches the valve body 110 in a hole of said body. In this second embodiment of the gas valve 100, the guide section 20 of the base 30 comprises, as shown in Figure 13, a single segment 22 projecting from the inner face of the perimetral wall 34 of the base 30, instead of a plurality of housings 21, the features and functionality of which have already been described in the first embodiment of the gas valve 100.

[0029] In other embodiments of the gas valve 100 not shown in the drawings, the valve body 100 comprises a cover fixed with screws to the valve body 110, covering the inner cavity of said valve body 100. One of said screws comprises a threaded body and a head open at the outer end thereof comprising a thread therein. In order to fix the base 30 to the valve body 110, the screw 82 is attached to the inner thread of the head of the screw which attaches the cover to the valve body 110. The risks of gas leakages in the gas valve 100 thus being minimized. The base 30 is therefore fixed to the valve body 110 and movement, be it rotational or axial, is non-existent.

[0030] The cover 40 of the fixed portion of the tactile feedback device 200 is also fitted to the upper portion of the base 30 closing the upper portion of the body 32. The difference in this cover 40 is that it comprises an opening 41 having a larger diameter than the opening 41 of the

cover 40 of the first embodiment of the gas valve 100, also allowing passage of the shaft 120.

[0031] The rotating portion of this second embodiment of the gas valve 100 comprises a guide body 50 different from the guide body 50 of the first embodiment of the gas valve 100. This guide body 50 is a partially hollow part with two cylindrical bodies with the shaft 120 of the valve 100 going through same through a central opening 51 for the fitting and coupling of the shaft 120 as described in the first embodiment of the gas valve 100. The guide body 50 comprises a first cylinder 54 with an outer side wall 52 comprising a cavity 53 in a direction towards the shaft 120, the follower 10 being arranged coupled to the outer wall 52. This cavity 53 goes through the outer wall 52 and reaches the opening 51. As shown in Figure 12, the follower 10 comprises the same elements and they are arranged in the same manner as described above for the first embodiment.

[0032] The guide body 50 of this second embodiment shown in Figures 11 and 12 comprises a second cylinder 55 attached to the lower portion of the first cylinder 54, the second cylinder 55 having a smaller diameter than the first cylinder 54. The second cylinder 55 also has the opening 51 going through same, such that the shaft 120 goes through the guide body 50 in the manner coupled thereto, allowing rotation of the guide body 50 and allowing axial sliding of the shaft 120 along the guide body 50. This second cylinder 55 comprises a lower wall which is a stop 56.

[0033] In this second embodiment of the gas valve 100, the rotating portion of the tactile feedback device 200 is the portion which is fixed to the shaft 120 by fixing means 130 of the gas valve 100, as the fixed portion, i.e., the base 30 and the cover 40 in this embodiment, are fixed to the valve body 110. The base 30 is assembled on the shaft 120 with the shaft 120 going through the opening 31, and the guide body 50 is then coupled to the shaft 120 with said shaft 120 going through the opening 51 for the fitting thereof, the guide body 50 being introduced in the housing 33 of the body 32 of the base 30. The first cylinder 50 of the guide body 50 is laterally fitted in the housing 33 of the body 32, allowing the axial sliding thereof, the area of the lower wall of the first cylinder 54, projecting from the second cylinder 55, coinciding with the upper face of the wall 37 arranged in the lower portion of the body 32, but without actually contacting said wall 37 in the axial movement of the guide body 50. The second cylinder 55 of the guide body 50 goes through the opening 31 of the base 30, protruding below the body 32 of said base 30, when the guide body moves axially towards the valve body 110. Finally, the shaft 120 goes through the opening 41 of the cover 40, the base 30 being covered with said cover 40 and both parts engaging one another.

[0034] The fixing means 130 comprise a circlip 131 or washer arranged in the perimetral groove 121 of the shaft 120 arranged below the machined segment of said shaft 120 envisaged for assembling the knob of the gas valve 100, and a milled segment 122 in the shaft 120 below

the groove 121. An area of the stop 56 abuts the milled segment 122 of the shaft 120, and the circlip 131, the diameter of which is smaller than the diameter of the opening 41 of the cover 40, abuts the upper face of the first cylinder 54 of the guide body 50. The guide body 50 of the rotating portion is therefore fixed to the shaft 120 such that said rotating portion moves axially together with the shaft 120.

[0035] This second embodiment of the gas valve 100 also comprises a switch 60 coupled to the valve body 110, having the same features as the switch 60 described in the first embodiment of the gas valve 100. Said switch 60 comprises the activation pushbutton 61 which is activated by the rotating portion. Said pushbutton 61 projects from the case of the switch 60 towards the shaft 120 of the gas valve 100. The pushbutton 61 is arranged on a vertical plane coinciding with the axial path of the guide body 50, specifically of the second cylinder 55 of said guide body 50. Said second cylinder 55 is configured such that another area of the stop 56 pushes the activation pushbutton 61 when the guide body 50 moves axially together with the shaft 120 of the gas valve 100 towards the valve body 110.

[0036] Figure 14 shows a top perspective view of an embodiment of the base 30 of the tactile feedback device 200 which may replace the base 30 of Figure 13 of the gas valve 100 of Figure 8. In this embodiment of the gas valve 100, the guide section 20 of the base 30 comprises a plurality of housings 21, the features and functionality of which have already been described in the first embodiment of the gas valve 100, the other features of this embodiment of the base 30 being the same as the features of the base 30 described above. One and the same embodiment can incorporate both the housings 21 of Figure 14 and the segment 22 of Figure 13.

Claims

1. Gas valve for a cooking appliance, comprising a tactile feedback device, the valve (100) comprising a valve body (110) and an axially movable rotating shaft (120) coupled to said valve body (110), the gas flow through the valve (100) being changed by means of rotation of the shaft (120), and the tactile feedback device (200) comprising a fixed portion and a rotating portion rotating integrally with the shaft (120), the rotating portion being housed at least partially in the fixed portion, one of said portions comprising at least one follower (10) arranged radially with respect to the shaft (120) and the other one of said portions comprising at least one circular guide section (20) which comprises a plurality of contiguous housings (21) and guides the follower (10) to provide a tactile sensation during rotation of the shaft (120), **characterized in that** the fixed portion comprises an inner perimetral wall (34) comprising the guide section (20) and the rotating portion comprises

the follower (10), at least one of the portions of the tactile feedback device (200) being fixed to the shaft (120) such that said portion moves integrally with said shaft (120) in an axial manner.

2. Gas valve according to claim 1, wherein the rotating portion comprises a cylindrical guide body (50) with the shaft (120) of the valve (100) going through same, the follower (10) being arranged coupled to the outer wall (52) of the guide body (50), and the fixed portion comprises a cylindrical body (32) with a housing (33) in which the guide body (50) is arranged, said body (32) comprising the inner perimetral wall (34) comprising the guide section (20) and said housing (33) being laterally demarcated by means of said inner perimetral wall (34).
3. Gas valve according to claim 2, wherein the follower (10) comprises a contact element (11) contacting the guide section (20) and an elastic element (12) coupling the contact element (11) with the guide body (50).
4. Gas valve according to claim 3, wherein the contact element (11) is a ball or a cylinder, and the elastic element (12) is a spring, the elastic element (12) being housed in a cavity (53) arranged in the outer wall (52) of the guide body (50), the cavity (53) comprising an end opening to the outside of the guide body (50), and the contact element (11) being arranged supported on the elastic element (12).
5. Gas valve according to any of the preceding claims, wherein when the shaft (120) moves axially towards the valve body (110), the tactile feedback device (200) is configured to push an activation pushbutton (61) by means of the portion of the tactile feedback device (200) moving integrally with the shaft (120) in an axial manner.
6. Gas valve according to claim 5, wherein the fixed portion is fixed to the shaft (120) such that said fixed portion moves axially together with the shaft (120), said fixed portion comprising a stop (38) configured to push the activation pushbutton (61) when the shaft (120) moves axially towards the valve body (110).
7. Gas valve according to claim 6, wherein the fixed portion comprises a base (30) housing the rotating part and a cover (40) coupled to said base (30) with the shaft (120) going through same, the base (30) comprising the stop (38) configured to push the activation pushbutton (61).
8. Gas valve according to claim 7, wherein the base (30) comprises guide arms (35) which allow guiding said base (30) axially.

9. Gas valve according to claim 5, wherein the fixed portion is fixed to the valve body (110) and the rotating portion is fixed to the shaft (120) such that said rotating portion moves axially together with the shaft (120), the rotating portion comprising a stop (56) configured to push the activation pushbutton (61) when the shaft (120) moves axially towards the valve body (110).
10. Gas valve according to claim 9, wherein the fixed portion comprises a base (30) housing the rotating part, said base (30) comprising an arm (39) through which the base (30) is fixed to the valve body (110).
11. Gas valve according to claim 10, wherein the stop (56) of the rotating part projects below the base (30) when the shaft (120) moves axially towards the valve body (110).
12. Gas valve according to any of claims 5 to 11, comprising a harness with a switch (60) comprising the activation pushbutton (61).
13. Gas valve according to any of the preceding claims, wherein the guide section (20) comprises a projecting segment (22), said segment (22) defining an angular area (B) in which the follower (10) cannot be positioned, the shaft (120) moving out of said angular area (B).
14. Gas valve according to any of the preceding claims, wherein the guide section (20) guides the follower (10) to provide a tactile sensation in a plurality of gas adjustment levels which correspond with the housings (21) of said guide section (20).
15. Cooking appliance **characterized in that** it comprises at least one gas valve (100) according to any of the preceding claims.

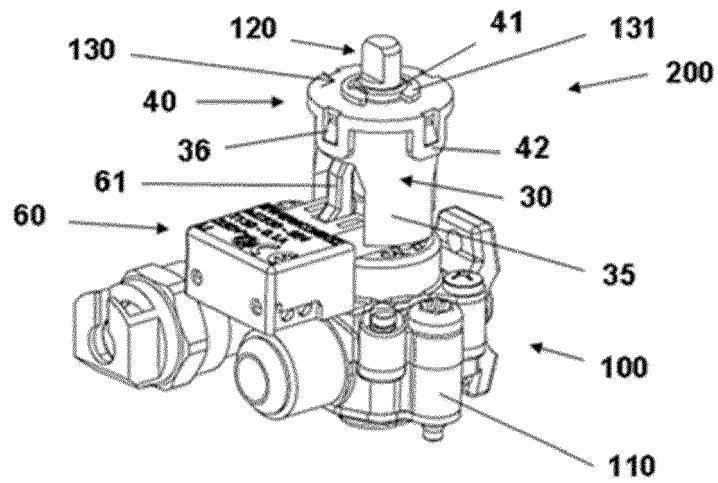


FIG. 1

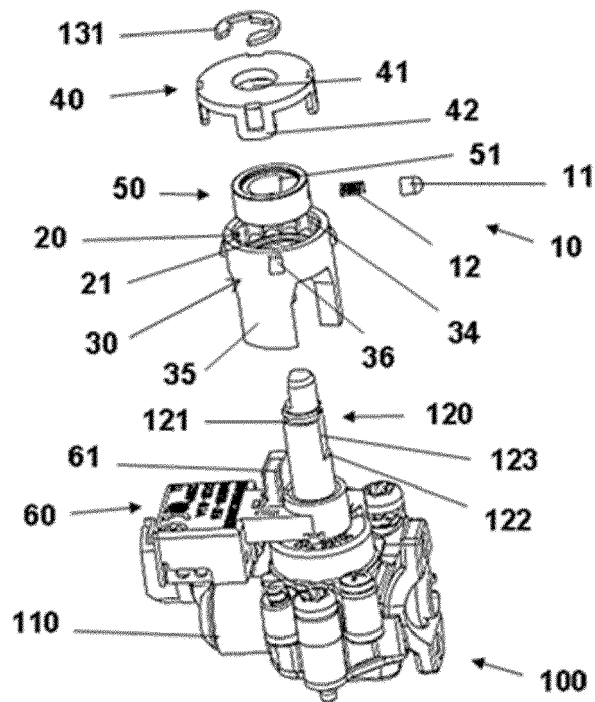


FIG. 2

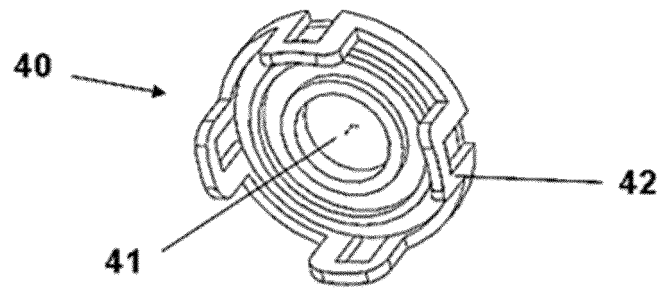


FIG. 3

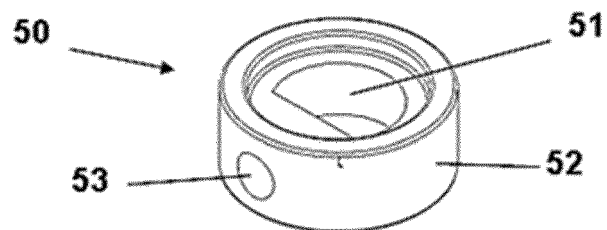


FIG. 4

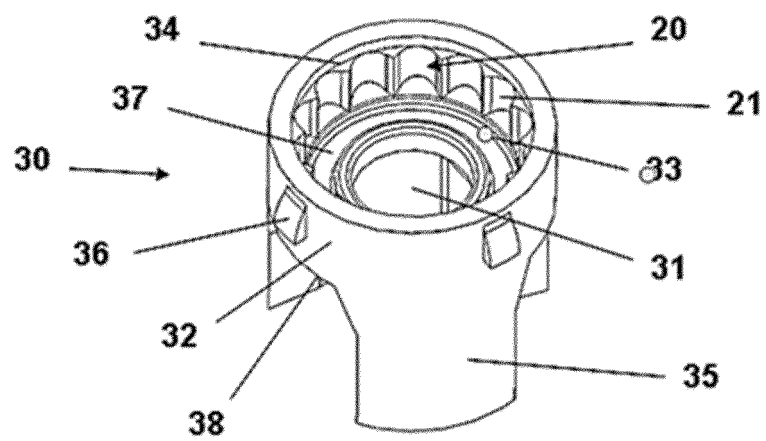


FIG. 5

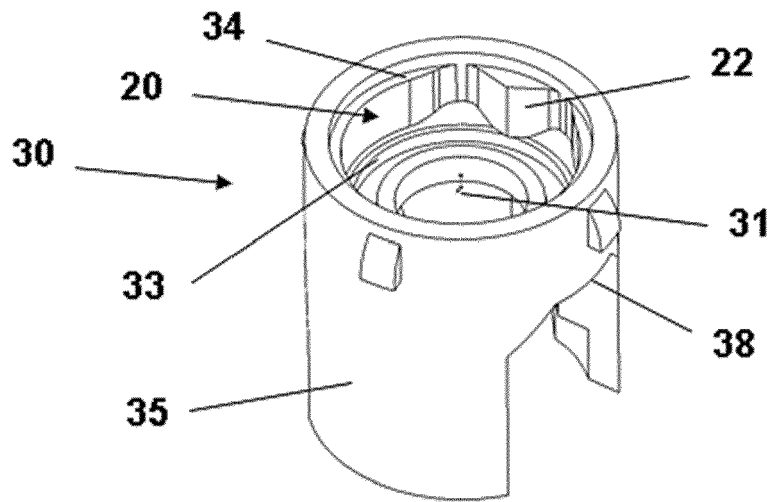


FIG. 6

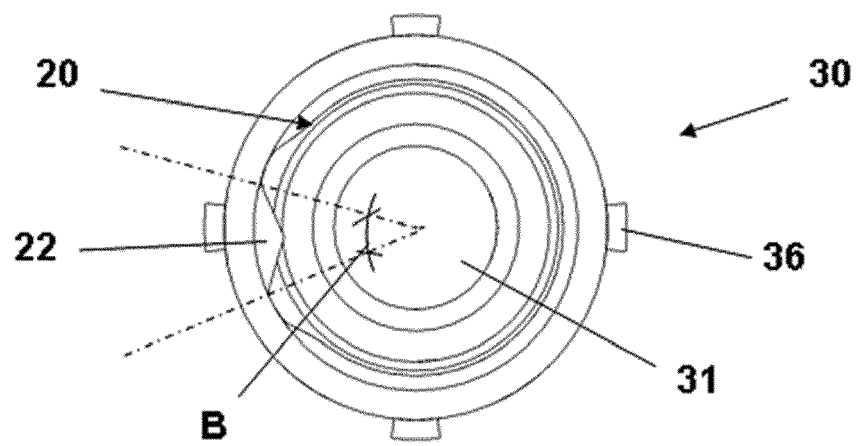


FIG. 7

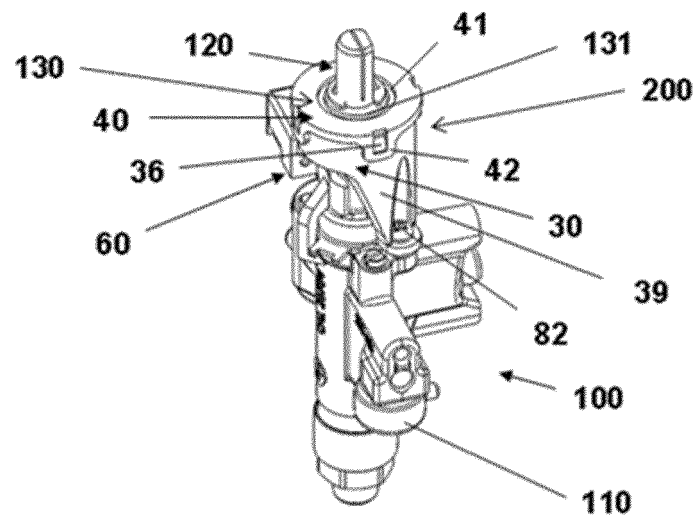


FIG. 8

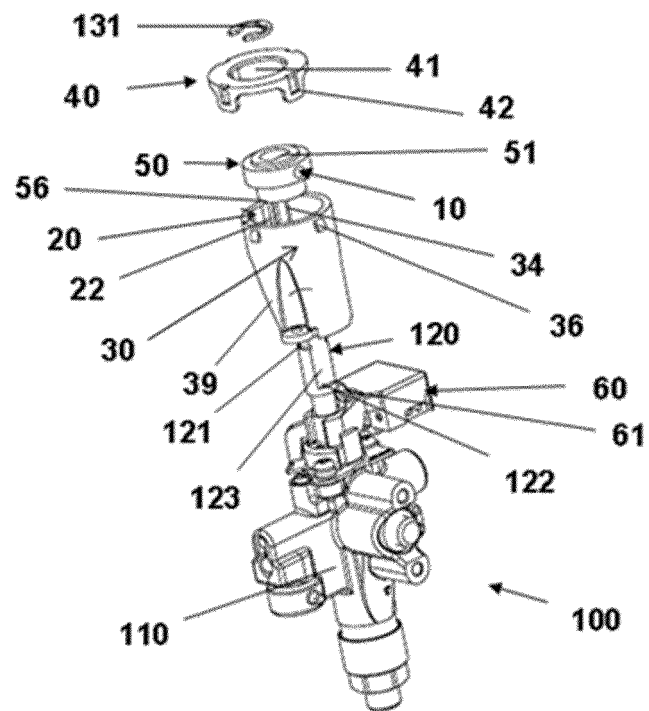


FIG. 9

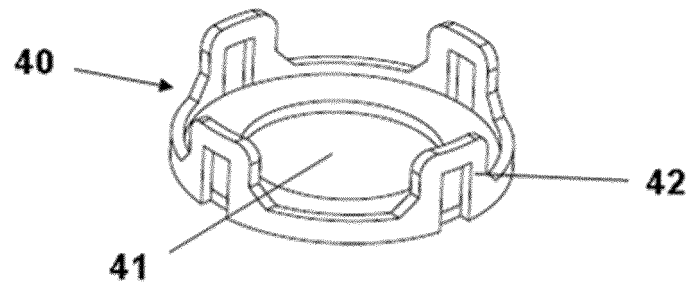


FIG. 10

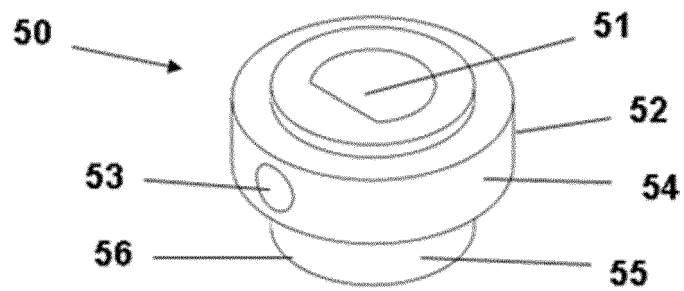


FIG. 11

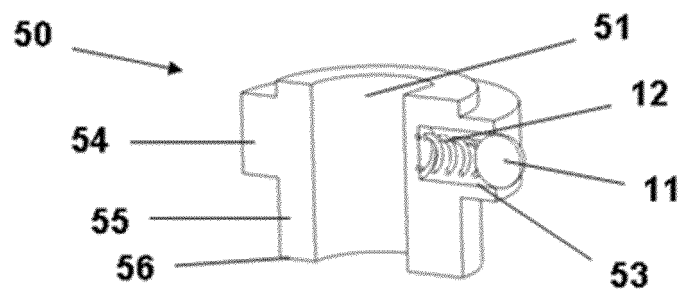


FIG. 12

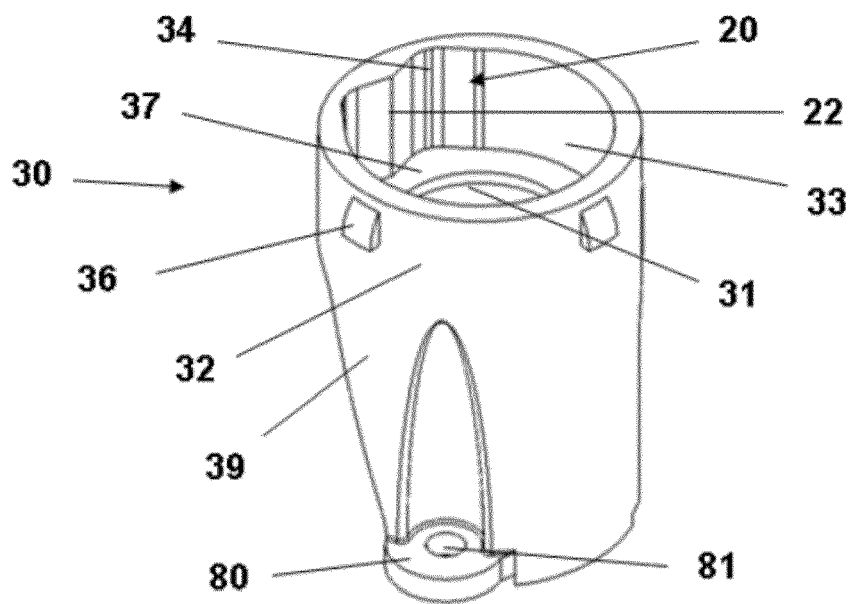


FIG. 13

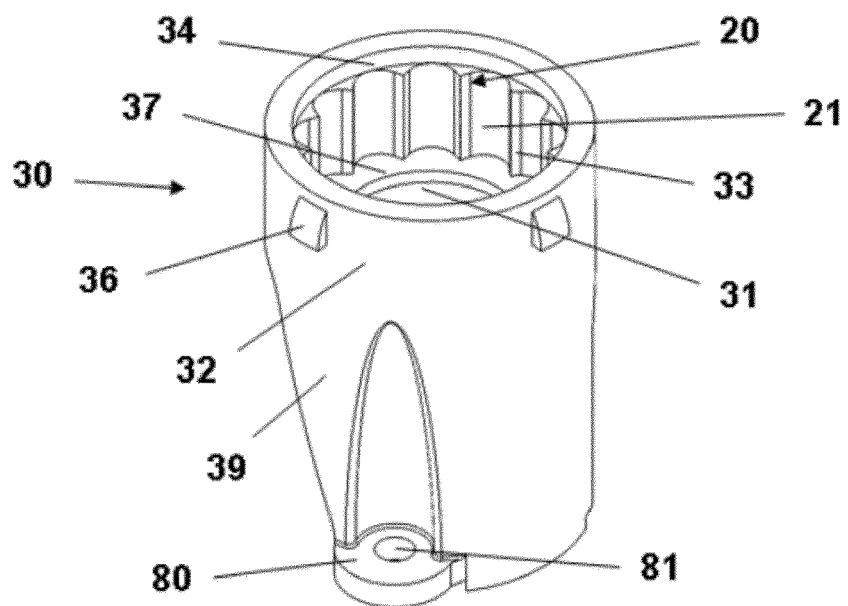


FIG. 14



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 805 310 A1 (FAGOR S COOP [ES]) 5 November 1997 (1997-11-05) * column 2, line 48 - column 4, line 2 * * figures 1, 3 *	1,13-15	INV. F23N1/00
X	ES 2 152 774 A1 (FAGOR S COOP [ES]) 1 February 2001 (2001-02-01) * column 2, line 41 - column 4, line 33 * * figures 1, 3 *	1,13-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			F23N
2 The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		25 January 2018	Vogl, Paul
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-4, 13-15

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-4, 13-15

Cylindrical guide body

2. claims: 5-12

Means for pushing an activation push-button

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 38 2538

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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