



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**29.11.2017 Bulletin 2017/48**

(51) Int Cl.:  
**F23N 1/00 (2006.01) F24C 3/12 (2006.01)**

(21) Application number: **17172673.0**

(22) Date of filing: **24.05.2017**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
 Designated Extension States:  
**BA ME**  
 Designated Validation States:  
**MA MD**

(71) Applicant: **BSH Hausgeräte GmbH**  
**81739 München (DE)**

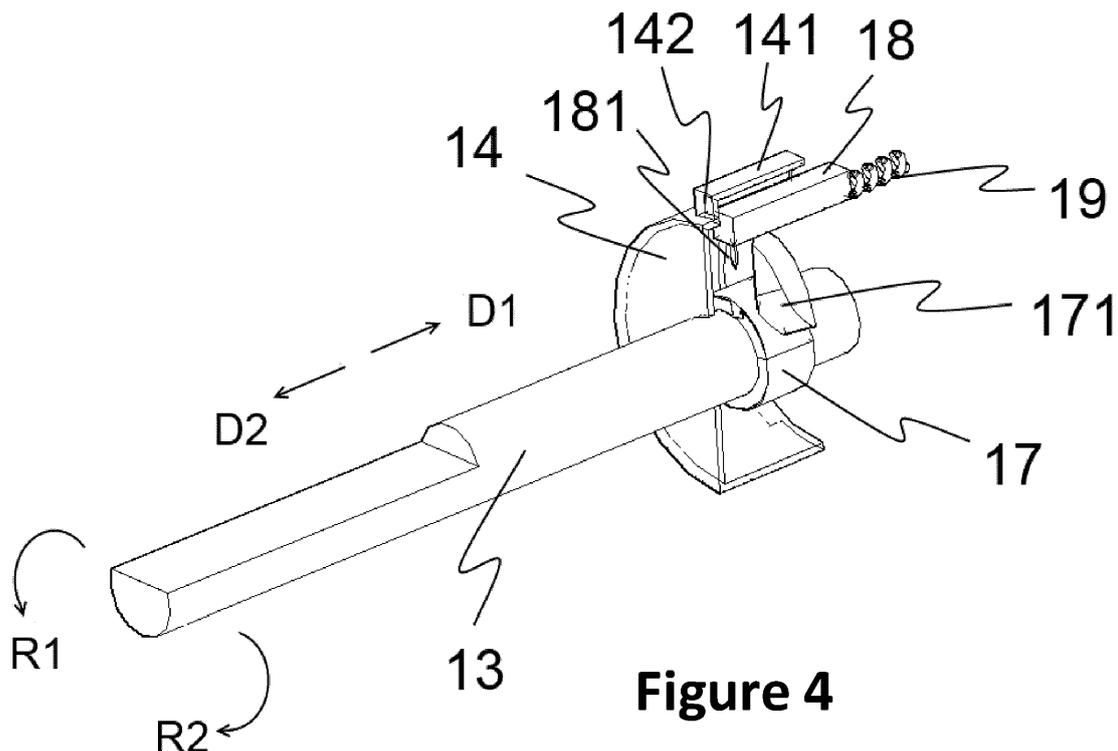
(72) Inventors:  
 • **Bagis, Ercan**  
**59510 TEKIRDAG (TR)**  
 • **Gönen, Ergin**  
**59860 TEKIRDAG (TR)**  
 • **Sengün, Hakan**  
**59500 TEKIRDAG (TR)**

(30) Priority: **26.05.2016 TR 201607058**

(54) **A COOKING DEVICE HAVING A GAS TAP**

(57) The present invention is a cooking device (1) having a gas tap (10) comprising a shaft (13) having a shaft extension (131), and a gas guidance element (12) connected to the shaft extension (131), in order to transfer the movement, which is required for gas passage, in an axial direction (D1) and in a rotation direction (R1), characterized in that the gas tap (10) comprises a movement transfer element (17) fixed on the shaft (13) and

having an extension (171) which is embodied in an angled manner thereon; and an axially movable rod (18) positioned in a parallel manner with respect to the shaft (13) and having a support protrusion (181) at an angle permitting rotational movement such that the angle of the extension (171) meets the angle of the support protrusion (181) and positioned in a manner corresponding to the extension (171).



**Figure 4**

## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to cooking devices having at least one gas tap thereon which guides gas. The present invention particularly relates to domestic ovens having pop-out knobs.

### KNOWN STATE OF THE ART

**[0002]** In the known art, different types of gas taps are used in domestic cooking devices like stove, oven. Gas taps in general comprise a body, a guidance element bedded in the body and providing gas flow with suitable flow rate, a cover covering the body in a manner preventing reaching the guidance element, and a shaft passing through the cover. On the body, there is a gas inlet section and at least one gas outlet section. The function of said guidance element is to guide the gas, entering into the tap through the gas inlet section, to the gas outlet section with suitable flow rate. Thus, gas, having flow rate which is suitable for the burning position in the burners as desired by the user, is guided to the burners. The user adjusts the burning position by means of a control element fixed to the shaft of the tap. This control element is in general a rotary control knob.

**[0003]** In rotary control knobs, first of all, the user pushes the knob and thus the tap shaft forwardly in the axial direction and afterwards, the user turns the knob in the direction of the desired burning position. Here, the user uses more power for the forward pushing movement. In the pop-out rotary control knobs, since said forward pushing movement cannot be transferred to the gas tap, difficulty is faced during the use of such knobs in gas systems.

**[0004]** In the patent application WO0206731, a device for maneuvering a cock for shutting off and regulating gas supplied to a burning apparatus, as well as for actuating an auxiliary member which controls correct operation of the burning apparatus during lighting and/or operating steps. Provided between the knob and the cock are means for transmitting movement that comprise cam surfaces having conjugated and opposed profiles to enable the cock control stem to be selectively driven in rotation or axially translated.

### BRIEF DESCRIPTION OF THE INVENTION

**[0005]** The object of the present invention is to facilitate the required action for gas passage in gas taps only by means of turning the control element by the user by exerting less force.

**[0006]** Another object of the present invention is to provide usage of gas taps with pop-out rotary control knobs besides rotary control knobs.

**[0007]** In order to realize the abovementioned object, the present invention is a cooking device having a gas

tap comprising a shaft having a shaft extension, and a gas guidance element connected to the shaft extension, in order to transfer the movement, which is required for gas passage, in an axial direction and in a rotation direction. Said gas tap comprises a movement transfer element fixed on the shaft and having an extension embodied in an angled manner thereon; and an axially movable rod positioned in a parallel manner with respect to the shaft and having a support protrusion at an angle permitting rotational movement such that the angle of the extension meets the angle of the support protrusion and positioned in a manner corresponding to the extension. Thus, as the user only rotates the control element, the burner is ignited by providing axial movement of the shaft without the need to apply pressure. Moreover, meanwhile as the shaft is turned in the rotation direction and as it advances in the axial direction, in order to provide the required movement to be transferred to the guidance element for gas passage, a solution is provided which is simple and easy-to-produce and which has similar dimensions to the dimensions of the gas tap and thus, which does not lead to extra space occupation.

**[0008]** In a possible embodiment, the faces of the extension and of the support protrusion, corresponding to and contacting each other, are radially angled. Thus, in the gas tap, during the axial and rotation movements of the shaft, the corresponding faces of the extension and of the support protrusion contact each other and they easily grab each other.

**[0009]** In another possible embodiment, as the shaft is turned in the rotation direction, an extension upper face of the extension and a protrusion lower face of the support protrusion contact in a manner providing advancing of the shaft in the axial direction. Thus, the displacement distance of the shaft in the axial direction for gas passage and ignition is provided.

**[0010]** In another possible embodiment, a contact pair of an ignition switch connected to the shaft contact to each other with the shaft advancing in the axial direction during the shaft is turned in the rotation direction. Thus, the igniter becomes functional and burning is realized in the burner.

**[0011]** In another possible embodiment, the rod advances in an axial manner as an extension lower face of the extension and a protrusion upper face of the support protrusion contact in a manner providing returning of the movement transfer element to the initial position thereof as the shaft is turned in a rotation reverse direction. Thus, in order to stop gas passage, the shaft is returned to the initial position, in other words, the shaft is returned to the reference position.

**[0012]** In another possible embodiment, the gas tap comprises a first flexible element providing fixation of the rod and connected to the rod in the positions where the extension and the support protrusion do not contact. Thus, during pushing the rod axially, energy is stored by means of the compression of the first flexible element, and the rod advances in the axially reverse direction and

the rod returns to the initial position by means of said energy.

**[0013]** In another possible embodiment, the gas tap comprises a housing wherein the rod and the first flexible element are positioned and having a stop wall which delimits the axial movement of the rod. Thus, at a first position where the tap shaft is turned in the rotation direction, a stop face is provided for the ceiling of the rod. After a second position where the tap shaft is turned in a reverse rotation direction, during the advance of the rod in the advance reverse direction, a stop wall is provided which returns the support protrusion embodied on the rod to the initial position and which prevents said support protrusion from diverging from the extension and which delimits the movement of the support protrusion.

**[0014]** In another possible embodiment, the rod and the first flexible element are positioned inside a cover of the gas tap. Thus, besides the rod and the first flexible element, the movement transfer element is positioned inside the cover, and they are prevented from occupying excessive space outside of the tap.

**[0015]** In another possible embodiment, the housing is embodied on a periphery of the cover. Thus, a housing is embodied on the periphery of the cover in order to position the rod and the first flexible element.

**[0016]** In another possible embodiment, the movement transfer element is positioned on the section of the shaft remaining inside the cover. Thus, the movement transfer element is prevented from occupying excessive transverse space outside of the tap.

**[0017]** In another possible embodiment, the housing is embodied on a chassis of the cooking device facing the gas tap. Thus, housing embodiment is provided on the chassis of the cooking device.

**[0018]** In another possible embodiment, a pop-out control element is fixed to a free end of the shaft. Thus, pop-out control knobs are used for the control of a gas tap.

**[0019]** In an alternative embodiment of the present invention, said movement transfer element can be positioned at any section on the tap shaft.

**[0020]** In another alternative embodiment of the present invention, the extension provided on the movement transfer element can be embodied in the form of an additional extension on the shaft like a shaft tab.

**[0021]** In another alternative embodiment of the present invention, said movement transfer element can be produced in a one-piece manner with the tap shaft.

**[0022]** In another alternative embodiment of the present invention, said movement transfer element, said rod and said first flexible element can be positioned at the external section of the tap.

**[0023]** In another alternative embodiment of the present invention, in case the movement transfer element, the rod and the first flexible element are positioned at the external section of the tap, a housing, where the first flexible element and the rod are positioned, can be embodied at the external section of the tap.

**[0024]** In another alternative embodiment of the

present invention, in case the movement transfer element, the rod and the first flexible element are positioned at the external section of the tap, a stop wall can be embodied for the rod by using a sheet material.

**[0025]** In another alternative embodiment of the present invention, the rod can be produced in a similar manner to different geometrical shapes like rectangular prism, square prism, cylinder having a base and a ceiling.

**[0026]** In another alternative embodiment of the present invention, said first and second flexible element can primarily be a spring or a different item with the same function and which can be compressed and tensioned in a similar manner.

**[0027]** In another alternative embodiment of the present invention, said rod, said movement transfer element, said shaft and cover can be made of a plastic material or a metal material.

**[0028]** In another alternative embodiment of the present invention, the present invention can be used in all gas taps having a gas inlet section and at least one gas outlet section.

#### BRIEF DESCRIPTION OF THE FIGURES

**[0029]**

Figure 1 is the general perspective view of the subject matter gas tap is illustrated.

Figure 2 is the exploded view of the subject matter gas tap.

Figure 3 is the perspective view of the guidance element provided in the subject matter gas tap.

Figure 4 is the perspective view illustrating only the inner section of the shaft, the cover and the inner section of the cover provided in the subject matter gas tap.

Figure 5 is the perspective view illustrating the shaft, the movement transfer element and the rod provided in the subject matter gas tap.

Figure 6 is the frontal view of the movement transfer element provided in the subject matter gas tap.

Figure 7 is the frontal view of the rod provided in the subject matter gas tap.

Figure 8 is the general perspective view of a cooking device having the subject matter gas tap.

#### THE DETAILED DESCRIPTION OF THE INVENTION

**[0030]** In Figure 1 and Figure 2, a general and an exploded view of the subject matter gas tap (10) are given. In the gas tap (10), in general, there is a body (11), a

cover (14) fixed onto the body (11), a shaft (13) passing through the cover (14) and an ignition switch (21) fixed to the shaft (13). In the section of the gas tap (10) remaining inside the cover (14), a movement transfer element (17), a rod (18) and a first flexible element (19) are positioned. On the body (11) of the subject matter gas tap (10), there is a gas inlet section (15) and at least one gas outlet section (16). At the inner section of the body (11), a guidance element (12), having conical form, is bedded. The gas inlet section (15) is connected to a gas line (50) for the input of the gas into the tap body (11). In Figure 3, the perspective view of the guidance element (12) which helps guiding the gas to the gas outlet section (16). On the guidance element (12), an opening (121) and at least one gas guidance hole (122) are embodied. As the guidance element (12) rotates and reaches the desired position, the gas is guided from the gas inlet section (15) to the gas outlet section (16) through the guidance holes (12) with the desired flow rate. The guidance element (12) reaches the desired position for gas passage when the tap shaft (13) is turned. In more details, as the shaft (13) is turned in a rotation direction (R1) and as the shaft (13) advances in an axial direction (D1), a shaft extension (131) engages to the opening (121) provided on the guidance element (12), and the rotation movement is transferred to the guidance element (12). Also a contact pair (22) of the ignition switch (21) contacted to each other during the shaft (13) is turned in a rotation direction (R1) and as the shaft (13) advances in an axial direction (D1).

**[0031]** In Figure 4, the cover (14) of the gas tap (10) is illustrated in cut form in order for the inner section thereof to be seen. As seen here, the movement transfer element (17) is embodied on the section of the shaft (13) remaining inside the cover (14). Moreover, there is a rod (18) and a first flexible element (19) positioned inside the cover (14) and at a periphery of the cover (14). The rod (18) extends along the cover (14) and in a parallel manner with respect to the shaft (13), and the rod (18) is positioned in a manner placing to a housing (141) embodied on a periphery of the cover (14). The housing (141), which at least partially encircles the rod (18) in a manner permitting the axial movement of the rod (18), has a stop wall (142). The first flexible element (19) is positioned between a base (185) of the rod and the body (11). In the probable embodiment of the invention, this first flexible element (19) is a spring. In Figure 5, another perspective view is given where the shaft (13), the movement transfer element (17), the rod (18) and the first flexible element (19) are illustrated. Here, it is seen that an extension (171) embodied on the movement transfer element (17) and a support protrusion (181) embodied on the rod (18) are positioned in a manner corresponding to each other. A lateral face section, where the extension (171) is positioned on the movement transfer element (17), and a lateral face, where the support protrusion (181) is positioned on the rod (18), face each other. At the frontal view of the movement transfer element (17)

in Figure 6, it is seen that the movement transfer element (17) has a cylindrical geometrical shape and there is a channel (174) at the center thereof extending along the movement transfer element (17). The shaft (13) passes through said channel (174), and the movement transfer element (17) at least partially wraps the shaft (13), and it is positioned on the shaft (13) in a manner moving together with the shaft (13). The movement transfer element (17) is placed on the shaft (13) in a cold-fit manner, and it is fixed by means of a connection element (not illustrated in the figure). In a probable embodiment of the invention, said connection element is a pin. Moreover, the extension (171) is embodied on the movement transfer element (17). Said extension (171) is embodied in a radially angled manner in order to provide movement transfer on the lateral face section of the movement transfer element (17). In more details, the angled extension (171) has an inclined extension upper face (172) and an extension lower face (173). The extension upper face (172) has an inclination in a manner providing said advancing distance of the shaft (13). In Figure 7, the frontal view of the rod (18) is given. The rod (18) has a geometric shape which is similar to rectangular prism having a base (185) and a ceiling (184). On the lateral face of said rod (18), radially angled support protrusion (181) is embodied. In more details, the support protrusion (181) has an angled protrusion upperface (183) and a protrusion lower face (182).

**[0032]** In Figure 8, the general perspective view of a gas cooking device (1) is given. Said cooking device (1) can be an oven or a stove used for the cooking process. At least one control element (30) is provided on the control panel provided on the cooking device (1). Said control element (30) is in general a control knob, and it is connected to a free end (132) of the shaft (13) of the subject matter gas tap (10). As the user turns the control knob, the gas tap (10) guides the gas, having specific flow rate, for transferring the gas to at least one burner (40), and burning occurs in the burner (40) by means of ignition. In the probable embodiment of the present invention, the control element (30), which will be fixed to a free end of the shaft (13) of the gas tap (10), will be the pop-out control knob.

**[0033]** The operation of the subject matter gas tap (10) is as follows. At a first position in the gas tap (10), in order to provide gas passage and burning in the burner (40), the movement transfer element (17) and the rod (18) overlap as the control element (30), fixed to an end of the shaft (13), is turned in the rotation direction (R1). In this case, the extension upper face (172) contacts the protrusion lower face (182) and grabbing occurs, and a force is applied to the rod (18) in an axial reverse direction (D2). As the shaft (13) rotates and/or advances, the angled faces of the extension (171) and of the support protrusion (181) corresponding to each other contact and catch each other. As the ceiling (184) of the rod (18) stops and applies pressure to the stop wall (142) provided at the cover (14), and as the shaft (13) continues to be

turned, the shaft (13) advances in the axial direction (D1). As the shaft (13) advances in the advancement displacement an igniter becomes functional with the contact pair (22) of the ignition switch (21) contacts to the each other. Also an second flexible element (20) that placed inside the guidance element (12) presses and stores energy. Moreover, as a shaft extension (131), provided at another end of the advancing shaft (13), engages to the opening (121) provided on the guidance element (12), the rotation movement is transferred to the guidance element (12). Thus, the guidance element (12) arrives at a suitable position according to the rotation angle of the shaft (13), and the gas is guided to the gas outlet section (16) with suitable flow rate. Thus, the gas is transferred to the burner (40), and burning is realized in the burner (40) with at least one spark exit from the igniter. Thus, as the user only rotates the control element (30), the burner (40) is ignited without the need to push the control element (30) forwardly in the axial direction (D1) and without the need to apply pressure. After burning is realized, as the contact between the extension upper face (172) and the protrusion lower face (182) is broken, the shaft (13) advances in the axial reverse direction (D2) with effect of the compressed second flexible element (20), and it returns to the first displacement position. However, gas passage through the guidance element (12) continues as the rotation position of the shaft (13) remains the same. At a second position of the gas tap (10), in order to stop gas passage, in other words, in order to stop burning in the burner (40), the movement transfer element (17) and the rod (18) overlap as the shaft (13) is turned in a reverse rotation direction (R2). In this case, the extension lower face (173) of the extension (171) begins contacting the protrusion upper face (183) of the support protrusion (181), and it pushes the rod (18) in the axial direction (D1). As the first flexible element (19) is compressed by means of said pushing, energy is stored. When the contact between the extension lower face (173) and the protrusion upper face (183) is broken, the rod (18) advances in the axial reverse direction (D2) by means of tensioning the compressed first flexible element (19) and until the ceiling (184) of the rod (18) contacts the stop wall (142). In more details, by means of the stop wall (142) of the housing (141), the advance of the rod (18) in the axial reverse direction (D2) is delimited. By means of the shaft extension (131) provided at the end of the tap shaft (13), the turning movement in the rotation reverse direction (R2) is transferred to the guidance element (12). In other words, the gas, guided from the gas inlet section (15) to the gas outlet section (16) by means of the guidance element (12) is interrupted. During the shaft (13) is turning in the rotation reverse direction (R2) the contact pair (22) does not contact to each other. Thus, the tap shaft (13) returns to the initial position, in other words, it returns to the reference position where the gas passage is blocked. Thus, the burning in the burner (40) is stopped.

**[0034]** The shaft (13), the cover (14), the movement transfer element (17) and the rod (18), provided in the

subject matter gas tap, can be made of a metal material like aluminum, brass, or they can be made of a plastic material.

## 5 REFERENCE NUMBERS

### [0035]

- |    |      |                            |
|----|------|----------------------------|
|    | 1.   | Cooking device             |
| 10 | 10.  | Gas tap                    |
|    | 11.  | Body                       |
|    | 12.  | Guidance element           |
|    | 121. | Opening                    |
|    | 122. | Guidance hole              |
| 15 | 13.  | Shaft                      |
|    | 131. | Shaft extension            |
|    | 132. | Free end                   |
|    | 14.  | Cover                      |
|    | 141. | Housing                    |
| 20 | 142. | Stop wall                  |
|    | 15.  | Gas inlet section          |
|    | 16.  | Gas outlet section         |
|    | 17.  | Movement transfer element  |
|    | 171. | Extension                  |
| 25 | 172. | Extension upper face       |
|    | 173. | Extension lower face       |
|    | 174. | Channel                    |
|    | 18.  | Rod                        |
|    | 181. | Support protrusion         |
| 30 | 182. | Protrusion lower face      |
|    | 183. | Protrusion upper face      |
|    | 184. | Ceiling                    |
|    | 185. | Base                       |
|    | 19.  | First flexible element     |
| 35 | 20.  | Second flexible element    |
|    | 21.  | Ignition switch            |
|    | 22.  | Contact pair               |
|    | 30.  | Control element            |
|    | 40.  | Burner                     |
| 40 | 50.  | Gas line                   |
|    | D1.  | Axial direction            |
|    | D2.  | Axial reverse direction    |
|    | R1.  | Rotation direction         |
| 45 | R2.  | Rotation reverse direction |

## Claims

1. A cooking device (1) having a gas tap (10) comprising a shaft (13) having a shaft extension (131), and a gas guidance element (12) connected to the shaft extension (131), in order to transfer the movement, which is required for gas passage, in an axial direction (D1) and in a rotation direction (R1), **characterized in that** the gas tap (10) comprises a movement transfer element (17) fixed on the shaft (13) and having an extension (171) which is embodied in an angled manner thereon; and an axially movable rod

- (18) positioned in a parallel manner with respect to the shaft (13) and having a support protrusion (181) at an angle permitting rotational movement such that the angle of the extension (171) meets the angle of the support protrusion (181) and positioned in a manner corresponding to the extension (171). 5
2. A cooking device (1) according to Claim 1, wherein the faces of the extension (171) and of the support protrusion (181), corresponding to and contacting each other, are radially angled. 10
  3. A cooking device (1) according to Claim 1 and 2, wherein as the shaft (13) is turned in the rotation direction (R1), an extension upper face (172) of the extension (171) and a protrusion lower face (182) of the support protrusion (181) contact in a manner providing advancing of the shaft (13) in the axial direction D1). 15
  4. A cooking device (1) according to any one of the preceding claims, wherein a contact pair (22) of an ignition switch (21) connected to the shaft (13) contact to each other with the shaft (13) advancing in the axial direction (D1) during the shaft (13) is turned in the rotation direction (R1), 20
  5. A cooking device (1) according to any one of the preceding claims, wherein the rod (18) advances in an axial manner as an extension lower face (173) of the extension (171) and a protrusion upper face (183) of the support protrusion (181) contact in a manner providing returning of the movement transfer element (17) to the initial position thereof as the shaft (13) is turned in a rotation reverse direction (R2). 25
  6. A cooking device (1) according to any one of the preceding claims, wherein the gas tap (10) comprises a first flexible element (19) providing fixation of the rod (18) and connected to the rod (18) in the positions where the extension (171) and the support protrusion (181) do not contact. 30
  7. A cooking device (1) according to any one of the preceding claims, wherein the gas tap (10) comprises a housing (141) wherein the rod (18) and the first flexible element (19) are positioned and having a stop wall (142) which delimits the axial movement of the rod (18). 35
  8. A cooking device (1) according to Claim 6 and 7, wherein the rod (18) and the first flexible element (19) are positioned inside a cover (14) of the gas tap (10). 40
  9. A cooking device (1) according to Claim 8, wherein the housing (141) is embodied on a periphery of the cover (14). 45
  10. A cooking device (1) according to Claim 8 and 9, wherein the movement transfer element (17) is positioned on the section of the shaft (13) remaining inside the cover (14). 50
  11. A cooking device (1) according to Claim 7, wherein the housing (141) is embodied on a chassis of the cooking device (1) facing the gas tap (10). 55
  12. A cooking device (1) according to Claim 1, wherein a pop-out control element (30) is fixed to a free end (132) of the shaft (13).

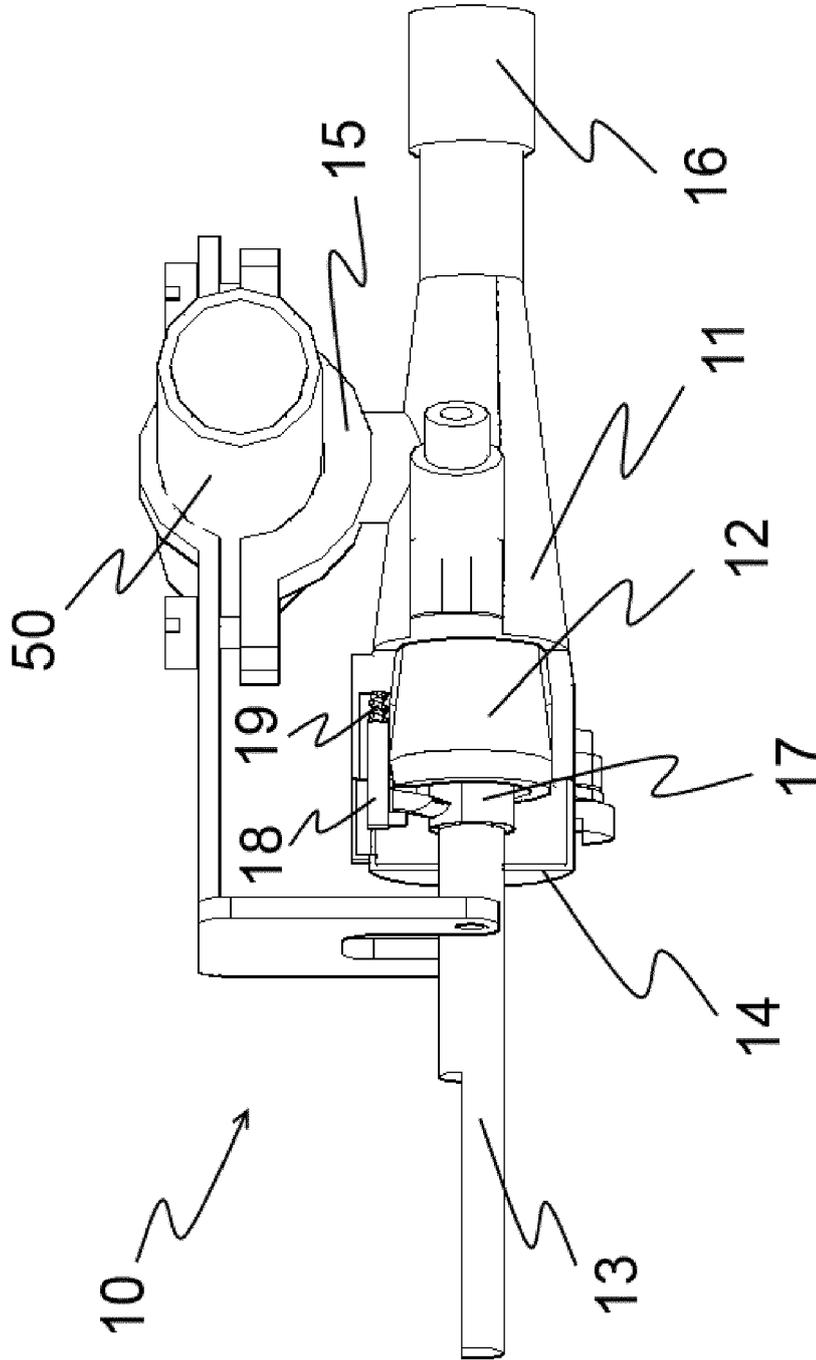


Figure 1

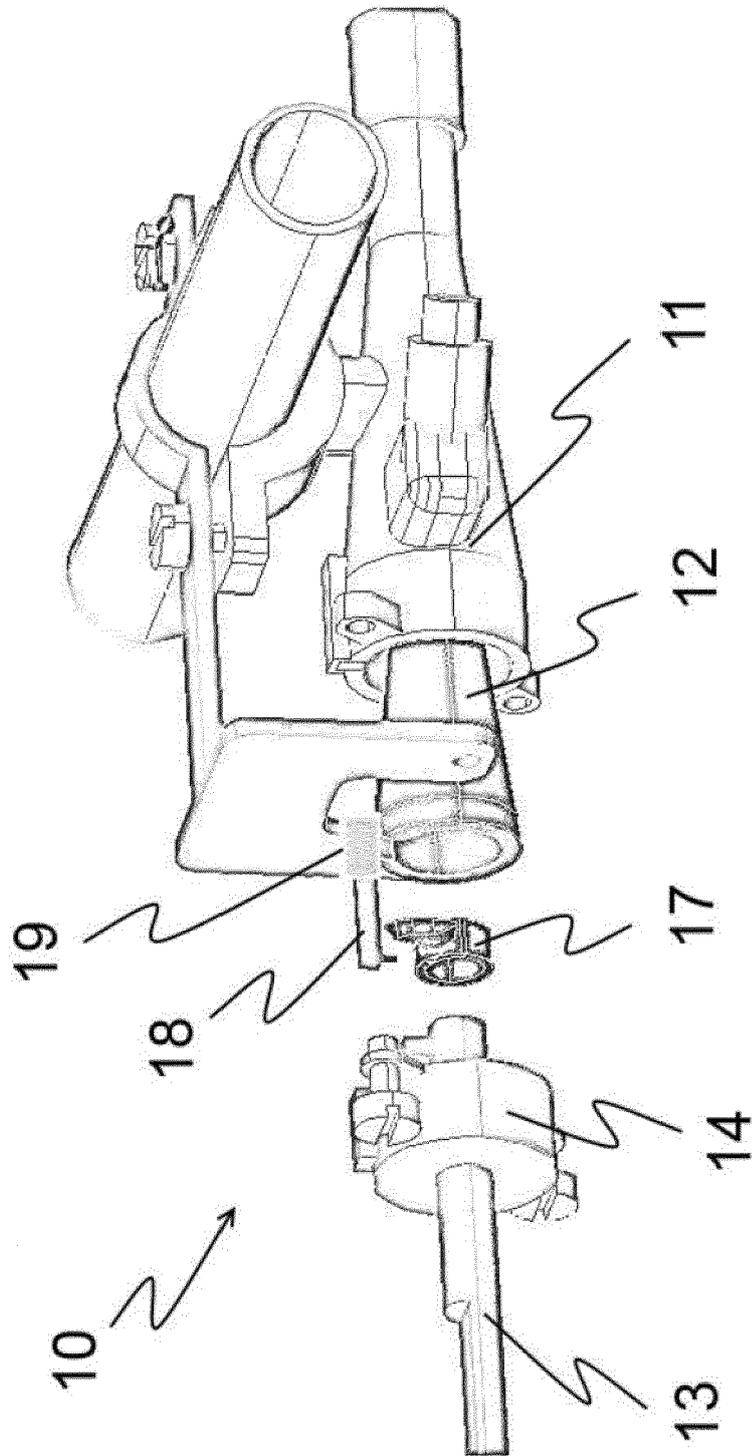
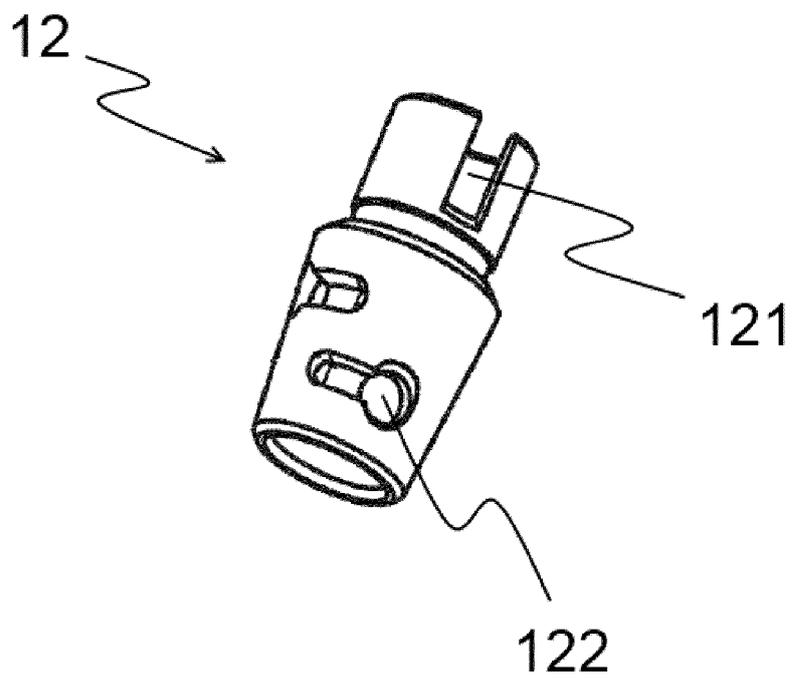


Figure 2



**Figure 3**

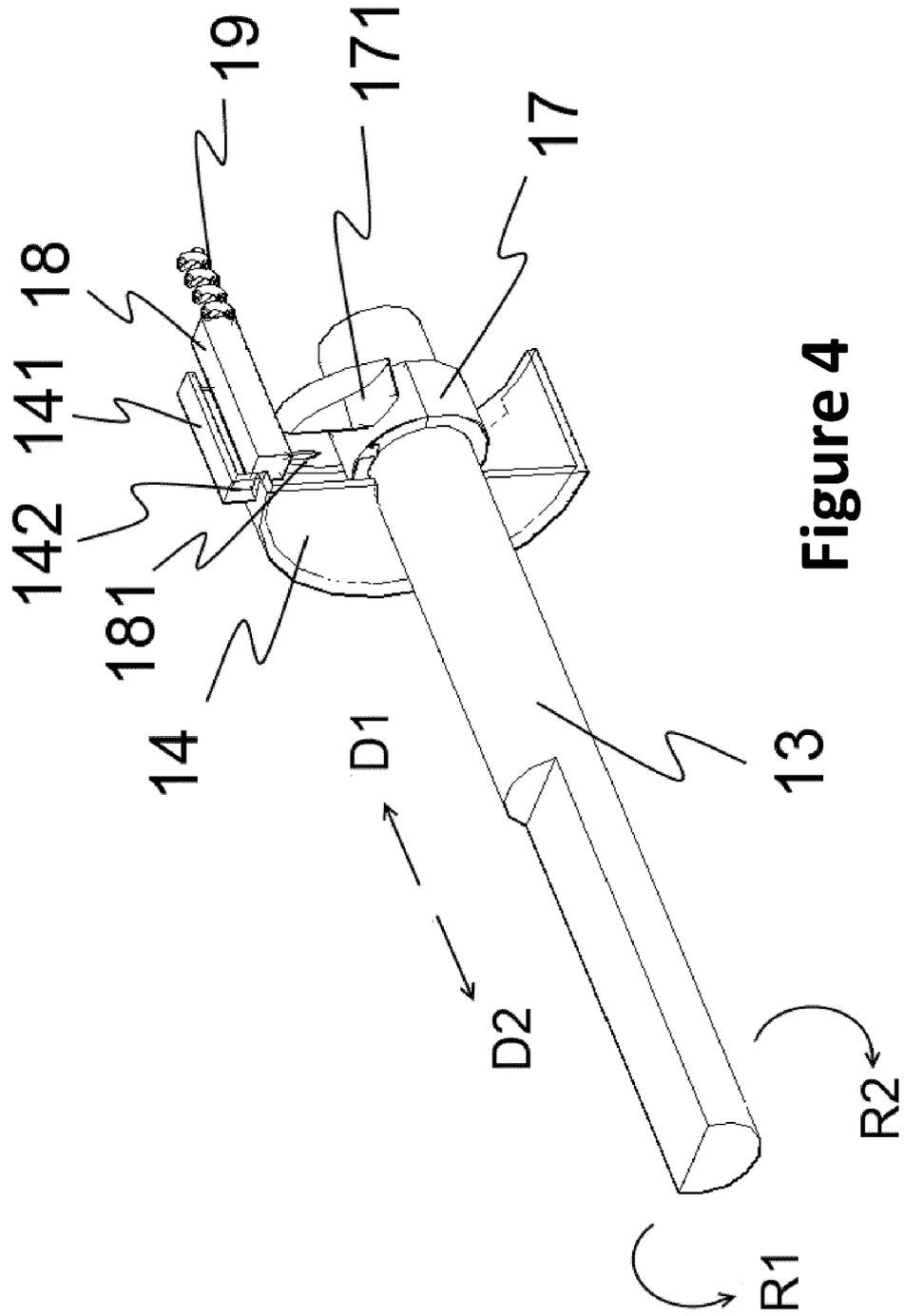


Figure 4

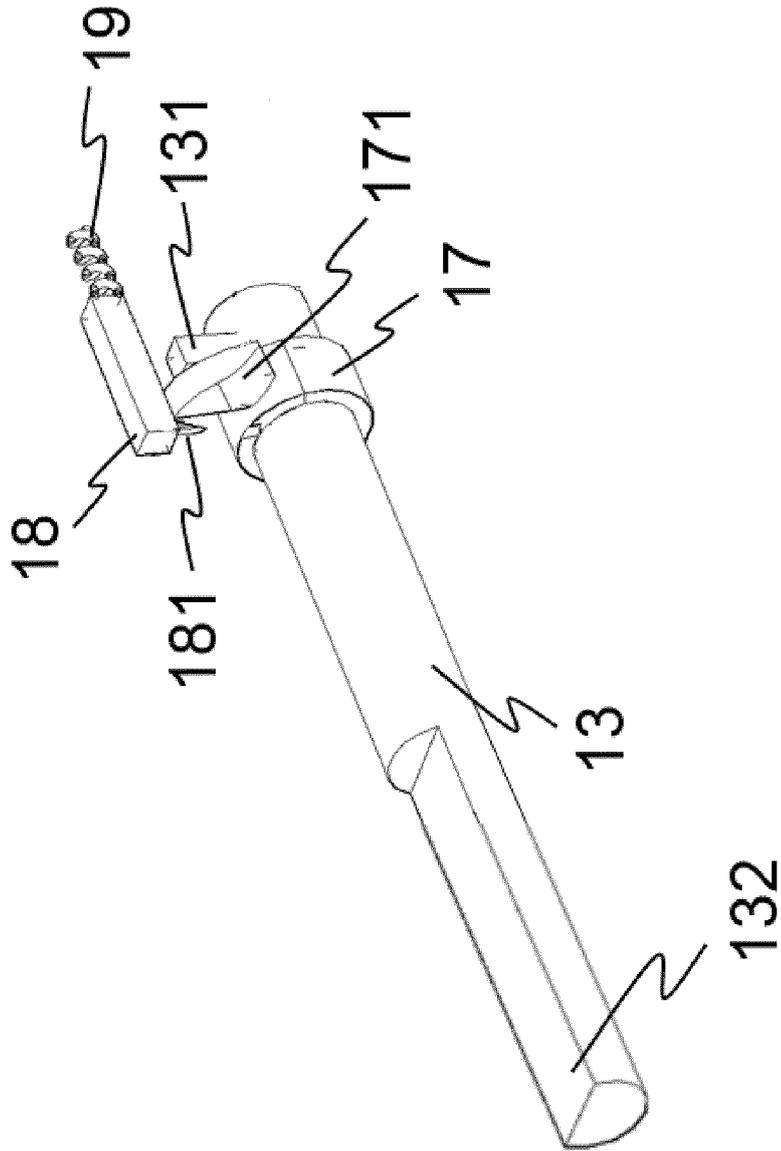
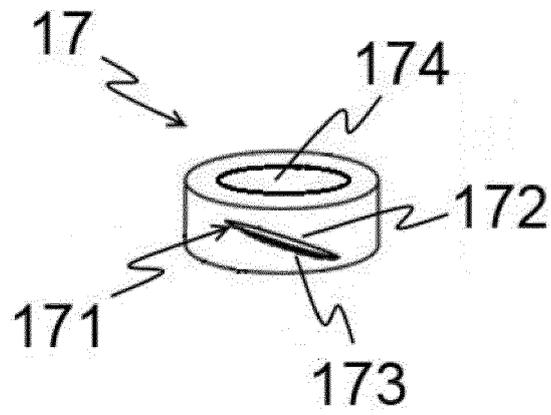
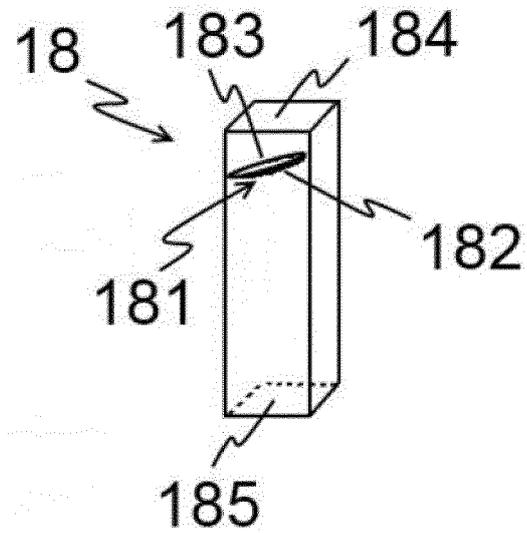


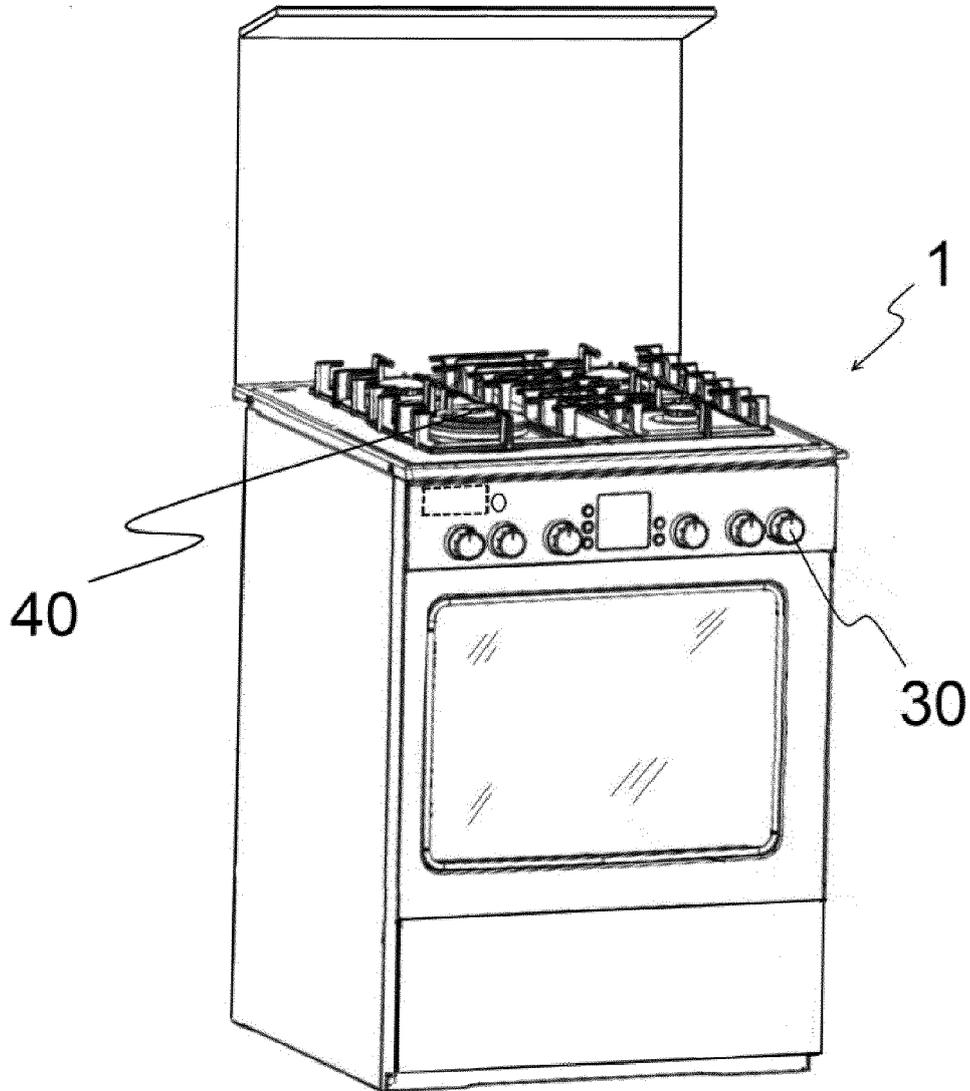
Figure 5



**Figure 6**



**Figure 7**



**Figure 8**



EUROPEAN SEARCH REPORT

Application Number  
EP 17 17 2673

5

10

15

20

25

30

35

40

45

50

55

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	DE 29 43 996 A1 (ELEKTRO GAS ARMATUREN [DE]) 14 May 1981 (1981-05-14)	1-3,6-12	INV. F23N1/00 F24C3/12
Y	* page 9, paragraph 3 - page 10, paragraph 1 * * page 11, paragraph 3 * * figures 1-4 *	4,5	
Y,D	WO 02/06731 A1 (SABAF SPA [IT]; BETTINZOLI ANGELO [IT]) 24 January 2002 (2002-01-24)	4	TECHNICAL FIELDS SEARCHED (IPC) F23N F24C
A	* page 8, line 22 - page 9, line 26; figures 2,3 *	1	
X	US 6 234 189 B1 (KOCH JUERGEN [DE]) 22 May 2001 (2001-05-22)	1,2,12	
Y	* column 3, line 3 - line 26 * * column 3, line 47 - column 4, line 22; figures 1-5 *	5	
A	EP 0 908 260 A1 (AGT GAS TECHNOLOGY GMBH [DE]) 14 April 1999 (1999-04-14)	1,4,12	
A	EP 0 805 310 A1 (FAGOR S COOP [ES]) 5 November 1997 (1997-11-05)	1,3,4	
The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>22 September 2017</b>	Examiner <b>Mougey, Maurice</b>
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	

EPO FORM 1503 03.02 (P04C01)

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

EP 17 17 2673

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  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-09-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 2943996 A1	14-05-1981	NONE	
-----	-----	-----	-----
WO 0206731 A1	24-01-2002	AT 308720 T	15-11-2005
		AU 4453401 A	30-01-2002
		DE 60114621 D1	08-12-2005
		DE 60114621 T2	27-07-2006
		EP 1299675 A1	09-04-2003
		ES 2250367 T3	16-04-2006
		WO 0206731 A1	24-01-2002
-----	-----	-----	-----
US 6234189 B1	22-05-2001	DE 19852128 A1	18-05-2000
		EP 1001219 A1	17-05-2000
		US 6234189 B1	22-05-2001
-----	-----	-----	-----
EP 0908260 A1	14-04-1999	AU 8837498 A	29-04-1999
		DE 19744770 A1	15-04-1999
		EP 0908260 A1	14-04-1999
		PL 329064 A1	12-04-1999
-----	-----	-----	-----
EP 0805310 A1	05-11-1997	DE 69712403 D1	13-06-2002
		DE 69712403 T2	07-11-2002
		EP 0805310 A1	05-11-1997
		ES 2140997 A1	01-03-2000
-----	-----	-----	-----

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- WO 0206731 A [0004]