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(54) **SHOCK ABSORBING SYSTEM FOR INDUSTRIAL GAS VALVES**

(57) The invention relates to gas valve (1) which is designed for use in industrial cooking devices, and has shock absorber system (1.2) used for absorbing shocks and stresses that may occur to the safety valve (1.6) when the valve shaft (1.5) is fully pressed. Shock absorber system (1.2) that is subject of the invention is consisted

of; knockout pin (1.2.1) that transmits movement from gas valve (1) shaft (1.5) to safety valve (1.6) and spring (1.2.2) that protects the system by absorbing extra loads from outside from the point where safety valve (1.6) is fully pressed.

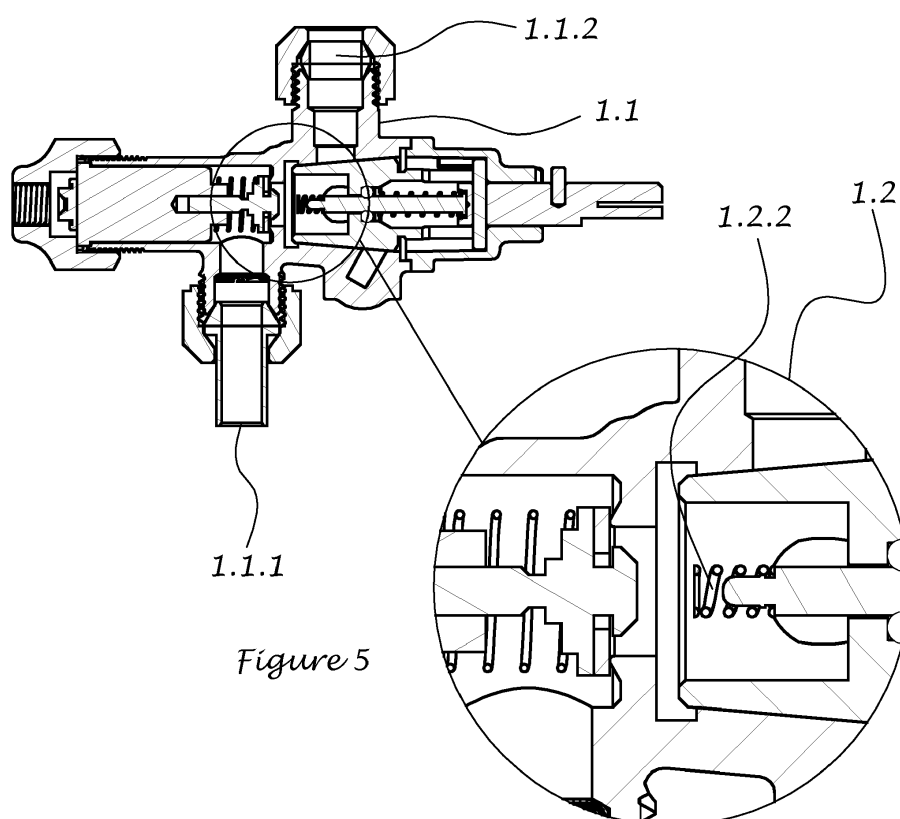


Figure 5

Description

TECHNICAL FIELD

[0001] The invention relates to gas valve which is designed for use in industrial cooking devices, and has shock absorber system used for absorbing shocks and stresses that may occur to the safety valve when the valve shaft is fully pressed. Shock absorber system that is subject of the invention is consisted of; knockout pin that transmits movement from valve's shaft to safety valve and spring that protects the system by absorbing extra loads from outside from the point where safety valve is fully pressed.

[0002] Knockout pin applies pressure to safety valve completely till the end when the user starts to push valve's shaft by turning the button in industrial gas valves which are in conventional use. There is high possibility of deformation in safety valve in case of over pushing of knockout pin. In the subject of the invention, the pin pulls back no matter how much it is pushed and the transmission of the pressure to the safety valve is avoided by means of the spring placed at the end of knockout pin. Thus, breakdown of the safety valve is prevented. Furthermore, end part of the knockout pin on which the spring in shock absorbing system is placed, is designed in a gradual manner in order to prevent the spring to move out.

PRIOR ART

[0003] It is mentioned about gas valve of the firm Copreci S. Coop with number EP0805310 and dated 05.11.1997. Electromagnet is used in gas valve in that application, wherein a coupling is used to release back the said electromagnet when it is pushed. However, it is difficult to produce aforementioned coupling as well as it is not possible to mount it on gas valves and in the case that coupling or electromagnet moves back, the system causes gas leakage easily. In addition, said invention is designed in a suitable manner for use with gas valves used in household cooker devices, not with industrial gas valves.

[0004] In another application with number ES2359975 of Copreci S. Coop., it is mentioned about a gas flow valve which is used for gas burners and consisted of a safety valve which comprises a shaft that can move axially in a first direction and a regulation component that can move in a second direction. However, said valve is designed for encastered ovens, wherein mechanical problems may occur depending on pushing force of user because of the angle between shaft and safety valve and furthermore cracks that may occur in valve cannot be prevented while there isn't any absorbing component that reduces over load made by user to the system. Overload on safety valve is prevented by means of spring that exist in shock absorber system that is subject of the invention.

[0005] Above mentioned gas valves are suitable for use with gas valves used in household cooker devices.

Shock absorbing system which is the subject of the invention has surpassed the state of the art while it solves the problems of state of the art and can be conveniently used with safety industrial gas valves in industry.

AIM OF THE INVENTION

[0006] Aim of the invention is to produce a gas valve which is used in industrial cooker devices and comprises shock absorbing system that protects safety valve against shocks and pressures and further comprises a gas output for pilot burning.

[0007] Aim of the invention is to produce a gas valve which is used in industrial cooker devices and comprises shock absorbing system that protects safety valve against shocks and pressures and further comprises a gas output for pilot burning.

[0008] Further aim of the invention is that the shock absorbing system is consisted of knockout pin and spring for absorbing impacts and pressures that may occur to safety valve.

[0009] Further aim of the invention is that knockout pin has a stage and a set on its end part in order that the spring can easily be engaged to knockout pin and for preventing the spring from coming loose.

[0010] Another aim of the invention is to provide the shaft with a pin or a retaining ring for preventing the shaft from moving too much when the shaft is pressed.

[0011] Another aim of the invention is preventing the gas valve deformations arising from overload on safety valve.

[0012] Structural and characteristic specifications and all advantages of the invention will be understood more clearly by means of following figures and detailed descriptions written by making references to these figures and therefore, assessment should be done by taking into consideration these figures and detailed description.

DESCRIPTION OF THE FIGURES

[0013]

Figure 1 is perspective view of the knockout pin that is subject of the invention,

Figure 2 is detailed view of the knockout pin that is subject of the invention,

Figure 3 is perspective view of the existing knockout pin,

Figure 4 is perspective view of the industrial gas valve with pilot output which has shock absorbing system that is subject of the invention,

Figure 5 is sectional view of the industrial gas valve with pilot output which has shock absorbing system that is subject of the invention,

Figure 6 is perspective view of the gas valve with alternative structure which has shock absorbing system that is subject of the invention,

Figure 7 is sectional view of the gas valve with alternative structure which has shock absorbing system that is subject of the invention,

Figure 8 is perspective view of the industrial gas valve with pilot output whose pin is pushed and which has shock absorbing system that is subject of the invention,

Figure 9 is sectional view of the industrial gas valve with pilot output whose pin is pushed and which has shock absorbing system that is subject of the invention,

Figure 10 is perspective view of the gas valve with alternative structure whose pin is pushed and which has shock absorbing system that is subject of the invention,

Figure 11 is sectional view of the gas valve with alternative structure whose pin is pushed and which has shock absorbing system that is subject of the invention,

Figure 12 is a sectional view showing that the shock absorbing system that is subject of the invention is switched on in industrial gas valve with pilot output,

Figure 13 is a sectional view showing that the shock absorbing system that is subject of the invention is switched on in gas valve with alternative structure,

Figure 14 is sectional view of the existing industrial gas valve,

Figure 15 is sectional view of the existing industrial gas valve whose pin is pushed,

REFERENCE NUMBERS

[0014]

1. Gas valve

1.1. Body

- 1.1.1. Gas input
- 1.1.2. Gas output
- 1.1.3. Pilot gas output
- 1.1.4. Gas passing groove

1.2. Shock absorbing system

1.2.1. Knockout pin

- 1.2.1.1. Diameter
- 1.2.1.2. Stage
- 1.2.1.3. Set
- 1.2.1.4. End

1.2.2. Spring

- 1.3. Male
- 1.4. Cover
- 1.5. Shaft

1.5.1. Pin

- 1.6. Safety valve
- 1.7. Coupling
- 1.8. Adjusting screw
- 1.9. Filter
- 1.10. Ball

- 2. Existing knockout pin
- 3. Gas valve with alternative structure

3.1. Retaining ring

DETAILED DESCRIPTION OF INVENTION

[0015] The subject of the invention relates to a gas valve (1) which is used in industrial cooking devices and has a shock absorbing system (1.2), wherein said gas valve (1) is commonly consisted of body (1.1), shock absorbing system (1.2), male (1.3), shaft (1.5), cover (1.4), safety valve (1.6), adjusting screw (1.8) and filter (1.9). Body (1.1) commonly has gas input (1.1.1), gas output (1.1.2), pilot gas output (1.1.3) and gas passing groove (1.1.4), wherein the filter (1.9) in the gas input (1.1.1) prevents the undesired obstacles to enter into gas valve (1) by filtering. Additionally, shock absorbing system (1.2) that is subject of the invention is consisted of knockout pin (1.2.1) which transmits the movement of shock absorbing spring (1.2.2) and shaft (1.5) of gas valve (1) to the safety valve (1.6), and has the stage (1.2.1.2) that ensures fixing the set (1.2.1.3) and the spring (1.2.2).

[0016] The general working principal of the industrial gas valve (1) is that the gas entered from gas input (1.1.1) and passed through filter (1.9) is directed to the gas output (1.1.2) by opening the safety valve (1.6). The gas filled into the housing of safety valve (1.6) through the gas input (1.1.1) reaches to gas output (1.1.2) by going through the burning holes of male (1.3) by means of turning of the male (1.3) together with turning of the shaft (1.5) after the safety valve (1.6) is opened when the valve shaft (1.5) is moved forward. When safety valve (1.6) becomes out of order, gas passing will not be performed while gas passing groove (1.1.4) will be enclosed constantly, therefore industrial gas valve (1) will be non-operational. A spring (1.2.2) having shock absorbing characteristic is placed at end (1.2.1.4) part of knockout pin (1.2.2) the diameter (1.2.1.1) of which is in the range of

1 mm to 5mm, in order that the safety valve (1.6) is not damaged when excessive force is exerted on the shaft (1.5) from outside in gas valve (1) that is subject of the invention designed for overcoming such problems. Furthermore, differently from existing knockout pins (1.2.1), it is made convenient to install the spring (1.2.2) on knockout pin (1.2.1) thanks to the structure having stage (1.2.1.2) and set (1.2.1.3) of the end (1.2.1.4) part of the knockout pin (1.2.1) that is subject of the invention and also by means of the set (1.2.1.3), the spring (1.2.2) is prevented from moving out of its place as well. Another factor that also provides easy installation of the spring (1.2.2) is that the diameter of the stage (1.2.1.2) is designed in a manner that it would be smaller than the diameter of the set (1.2.1.3 and the end (1.2.1.4) part. Thus, the spring (1.2.2) will snug fit to knockout pin (1.2.1) and won't move out. In the subject of the invention, gas passing groove (1.1.4) is also opened and the shaft (1.5) moves to its first position as the shock absorbing spring (1.2.2) pushes onto safety valve (1.6) owing to forward movement of knockout pin (1.2.1) by valve shaft (1.5). Even if overmuch pressure is exerted on the shaft (1.5), the possibility that the safety valve (1.6) takes load more than its capacity and thus becomes deformed is avoided while the knockout pin (1.2.1) cannot directly contact to the safety valve (1.6). The male (1.3), shaft (1.5), cover (1.4), safety valve (1.6), coupling (1.7), filter (1.9) used in said industrial gas valve (1) are specific to the gas valve (1) that is subject of the invention and in addition the cover (1.4) is designed in a manner that it would have a housing and a slit. There is high flow of gas passing through the gas valve (1) and it is an undesirable situation to suddenly direct the high flow of gas to the burners. The housing and the slit on the cover (1.4) are used to prevent that situation. The pin (1.5.1) on the shaft (1.5) is used to prevent the shaft (1.5) from going too much forward inside the gas valve (1) and from damaging the safety valve (1.6). The pin (1.5.1) makes a smooth transition from the housing on the cover (1.4) to the slit by turning the shaft (1.5) at a certain angle counter clockwise and pilot burn of the gas valve (1) is then provided. The pilot burn continues after it is provided once even when the gas valve (1) is on maximum or minimum burn.

[0017] Furthermore, also the alternative structured gas valves (3) used in single output industrial cookers, having no pilot gas output, has shock absorbing system (1.2) that is subject of the invention, wherein the retaining ring (3.1) can also be used instead of the pin (1.5.1) in order to prevent the shaft from going too further inside the valve (1.5)

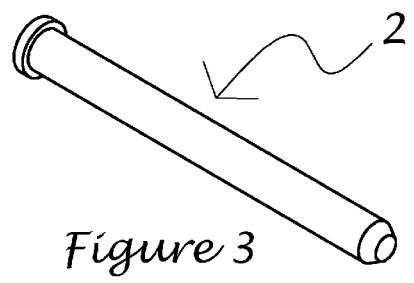
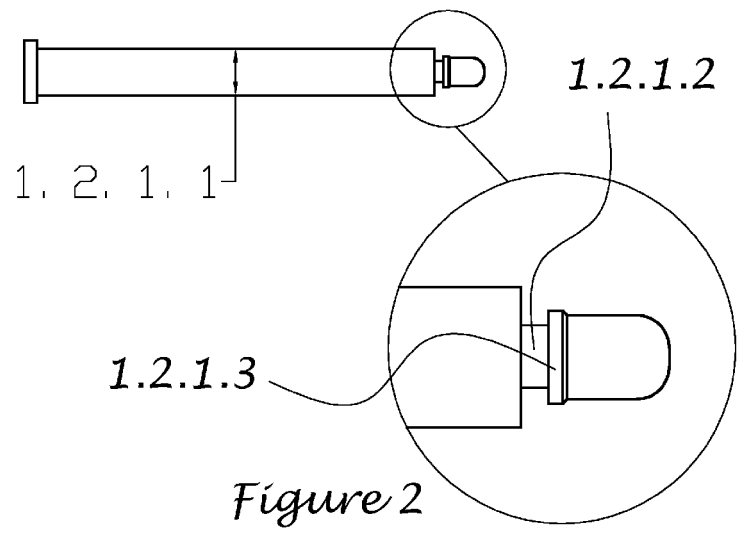
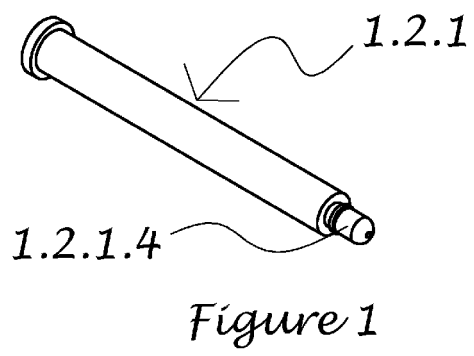
(1.8) and filter (1.9) and to alternative structured gas valve (3) having no pilot gas output, **characterized in that;**

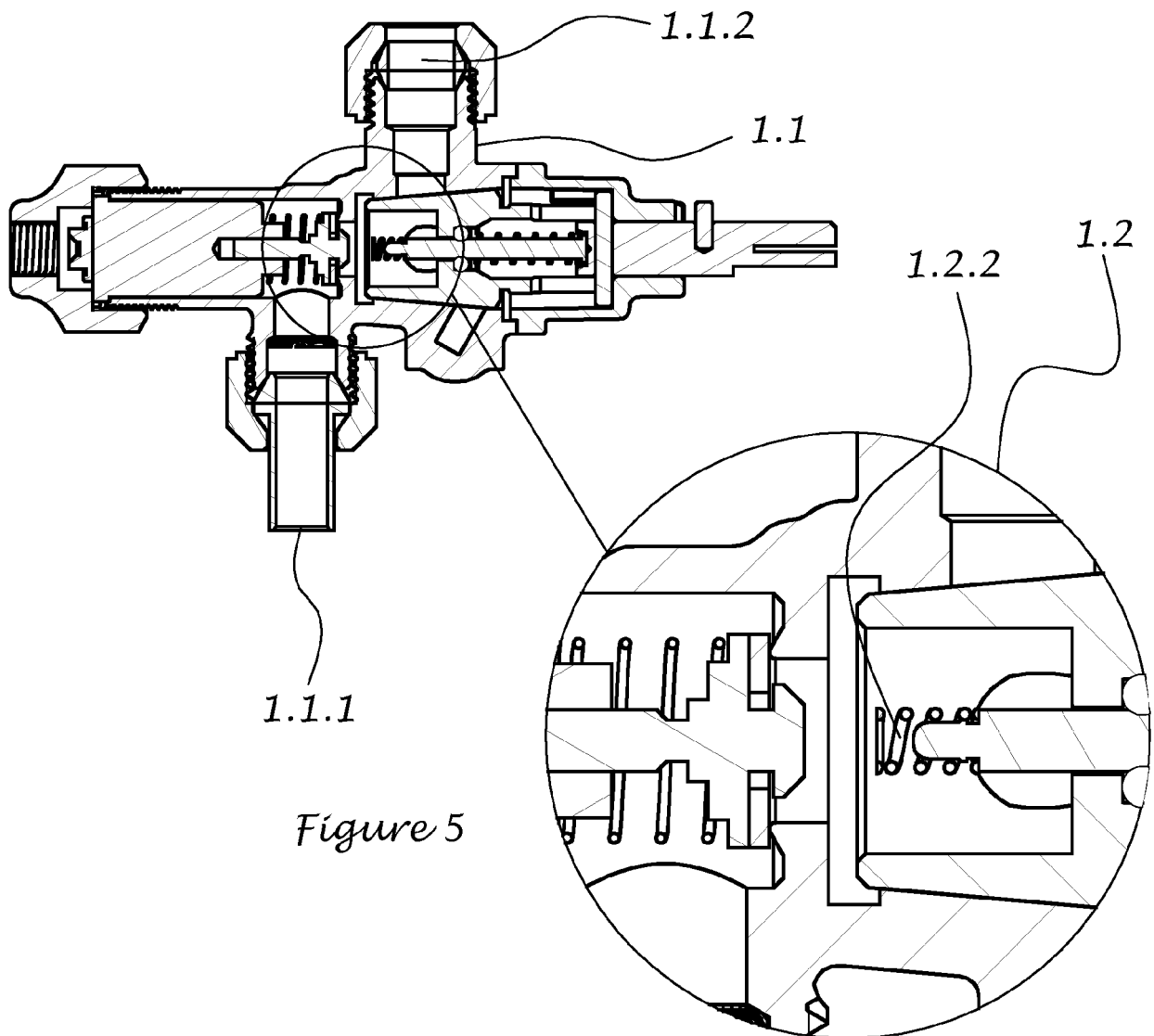
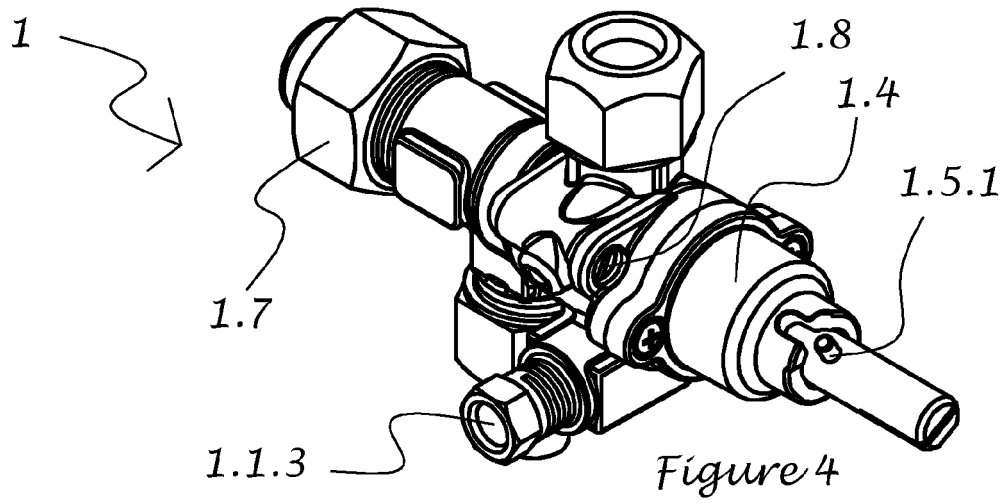
- Shock absorbing system (1.2) is consisted of knockout pin (1.2.1) that transmits the movement from the shaft (1.5) to the safety valve (1.6) and that has stage (1.2.1.2) and set (1.2.1.3) on its end (1.2.1.4) part and spring (1.2.2) that protects the system by absorbing the overmuch loads that may come from outside from the instant the safety valve (1.6) is fully pushed.

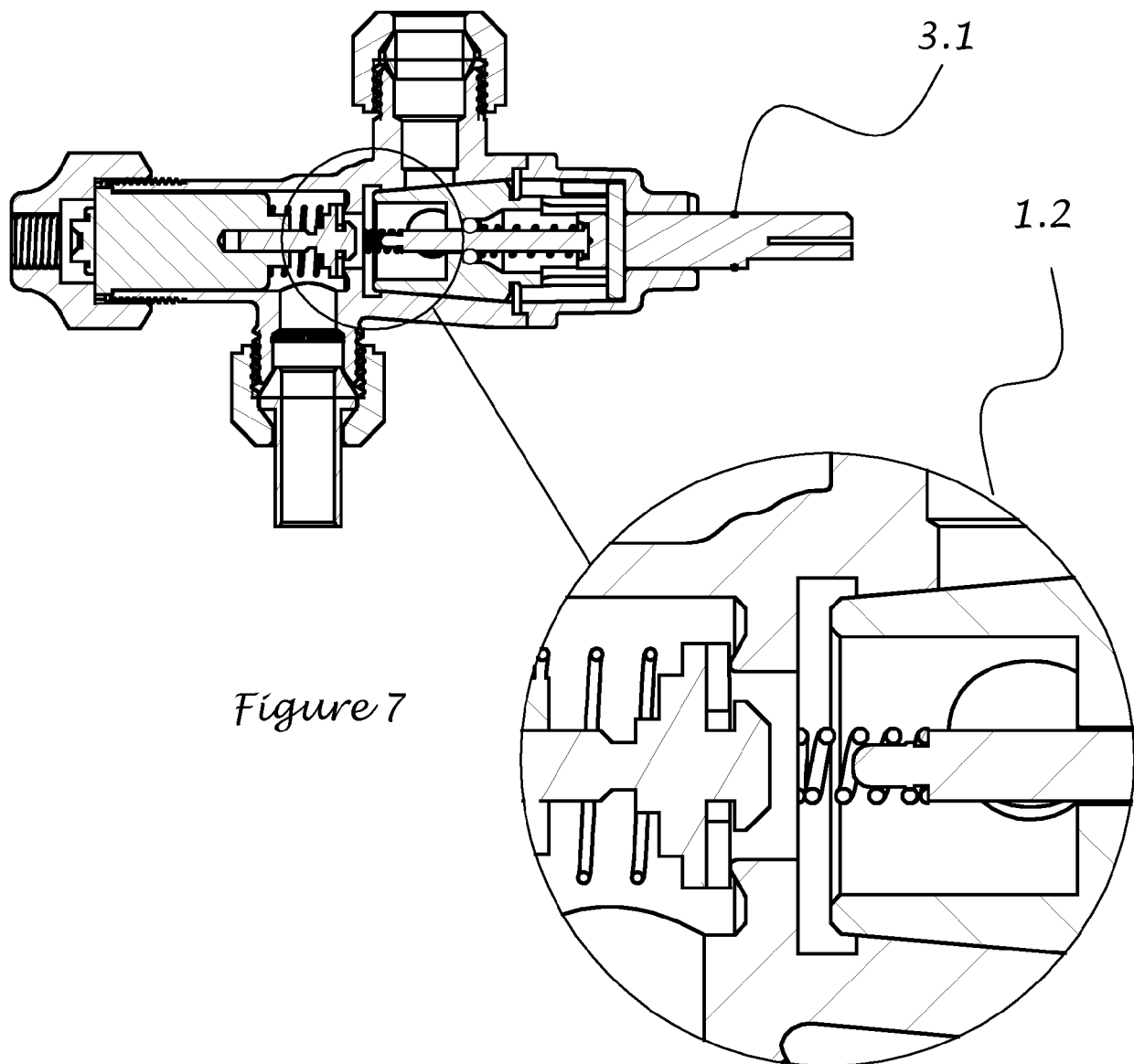
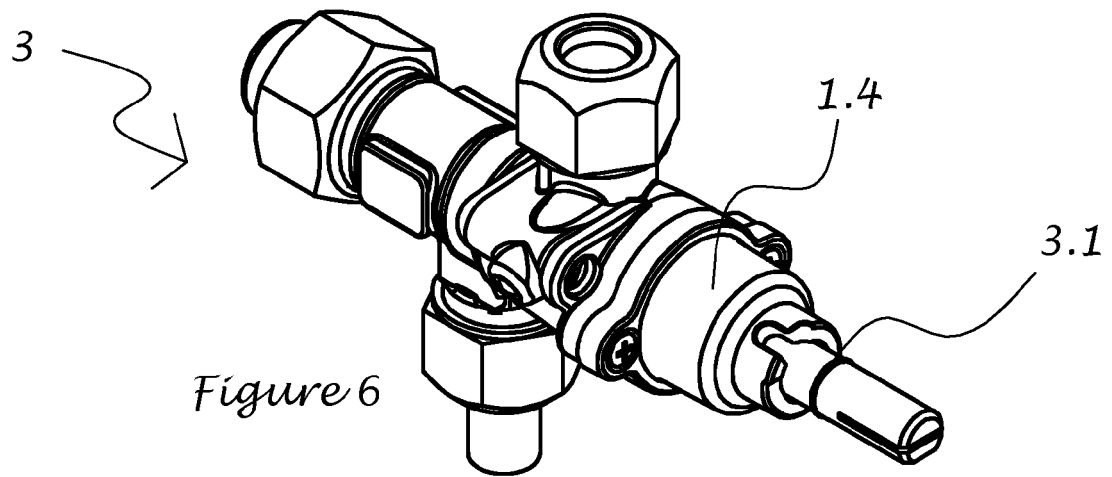
2. The invention is knockout pin (1.2.1) mentioned in claim 1, **characterized in that;** its diameter (1.2.1.1) is in the range of 1 mm to 5mm.
3. The invention is the shaft (1.5) of gas valve (1) and alternative structured gas valve (3) mentioned in claim 1, **characterized in that;** it comprises pin (1.5.1) or retaining ring (3.1) that prevents knockout pin (1.2.1) from going too further.

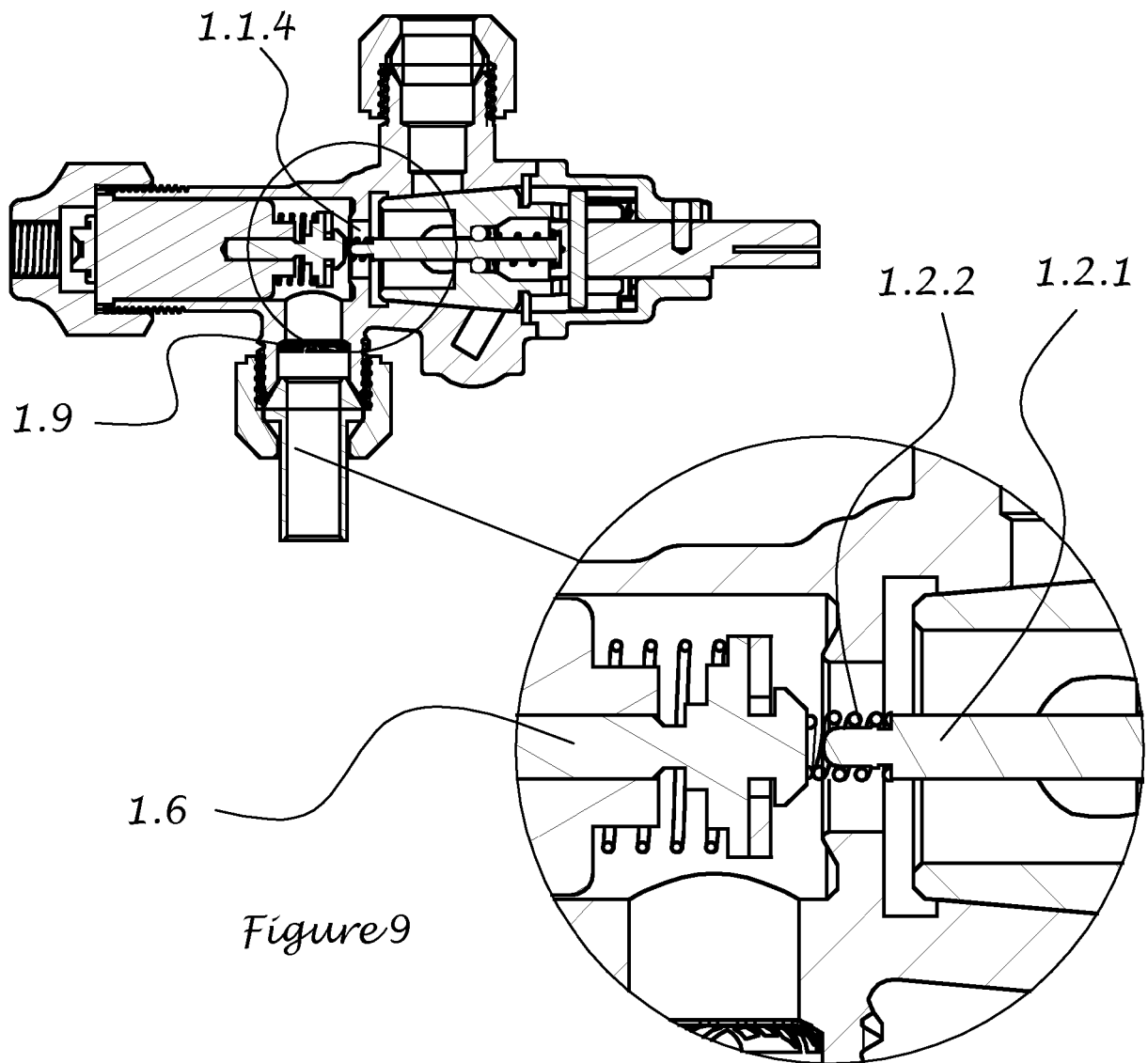
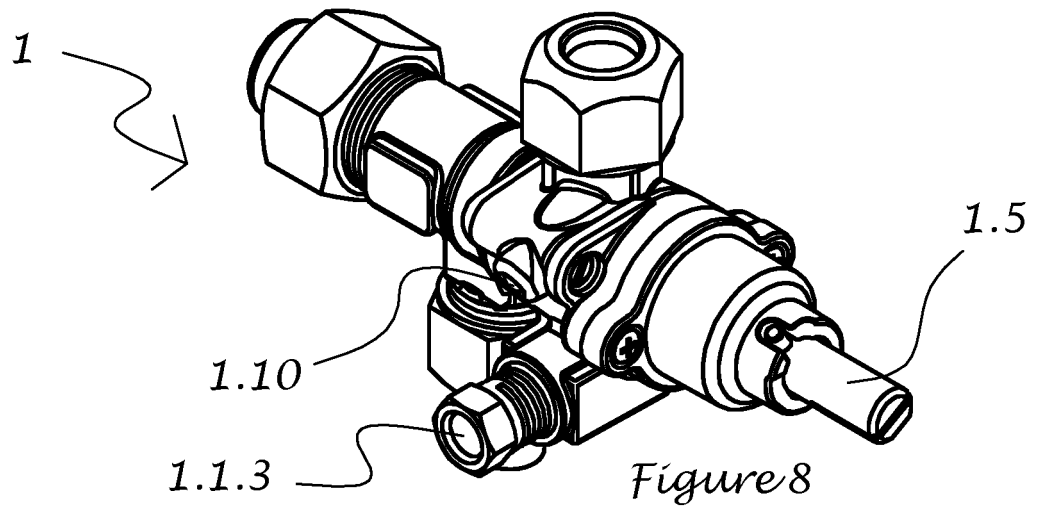
Claims

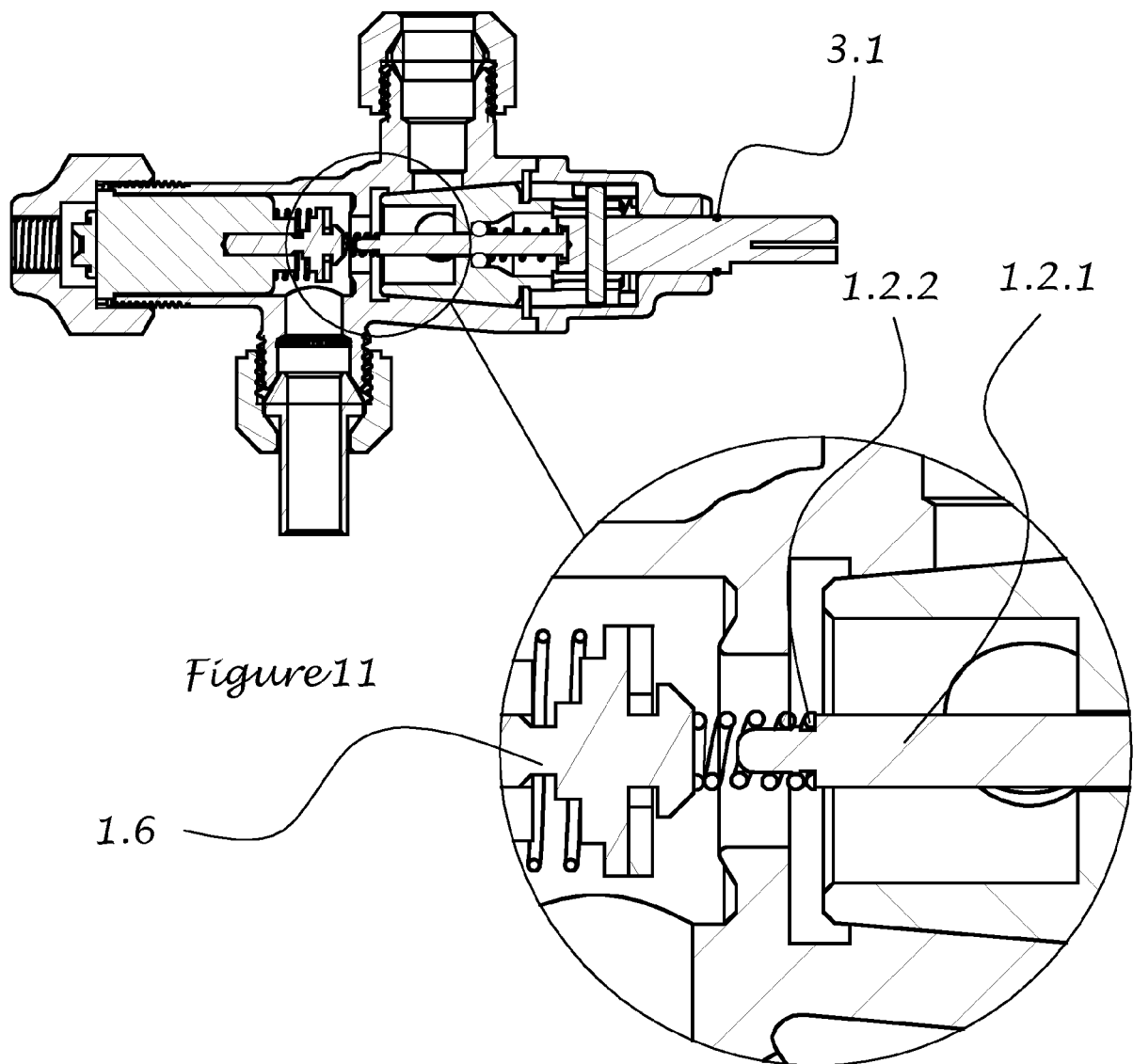
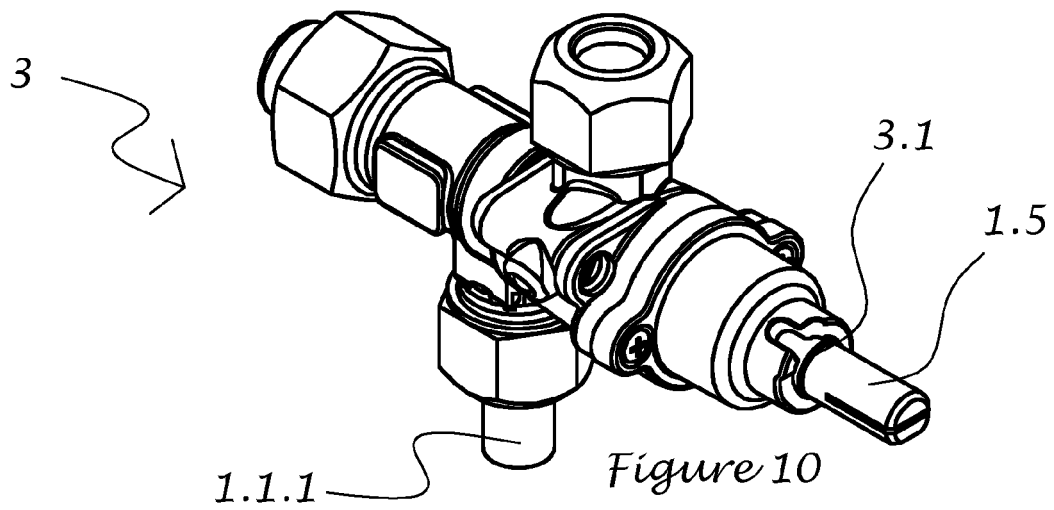
1. The invention is in relation to gas valve (1) with pilot output used in industrial cookers, consisted of body (1.1), shock absorbing system (1.2), male (1.3), shaft (1.4), cover (1.5), safety valve (1.6), adjusting screw











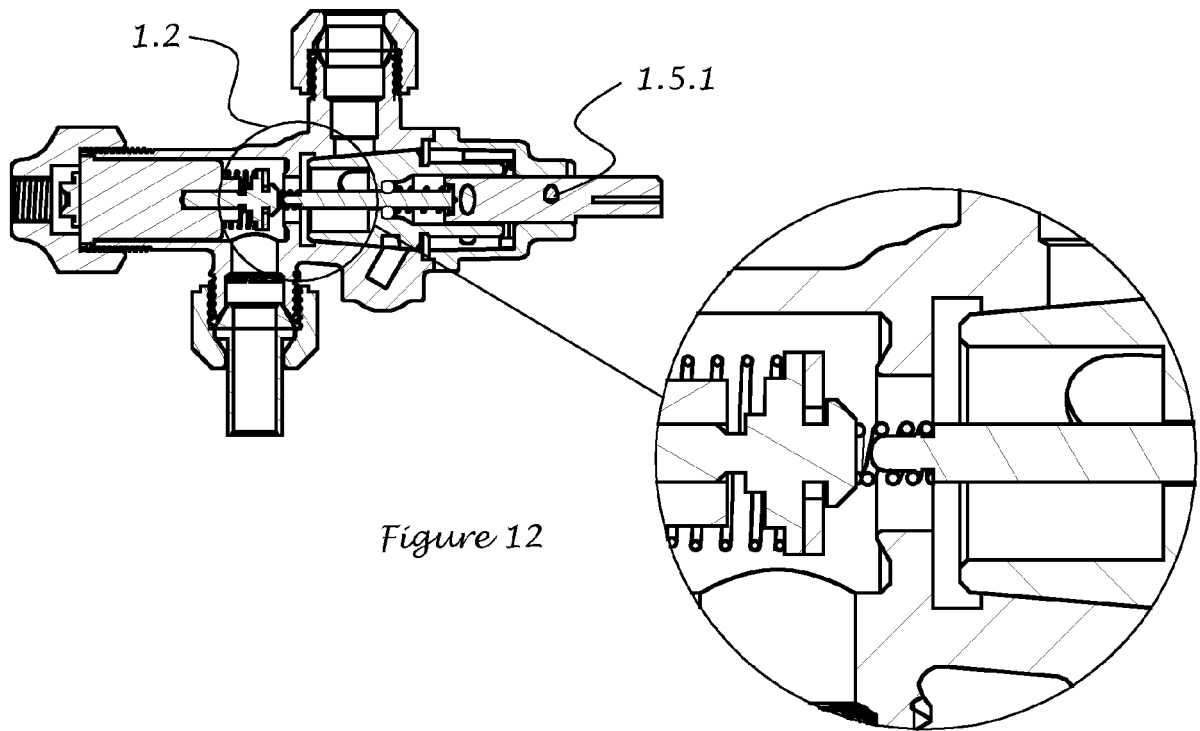


Figure 12

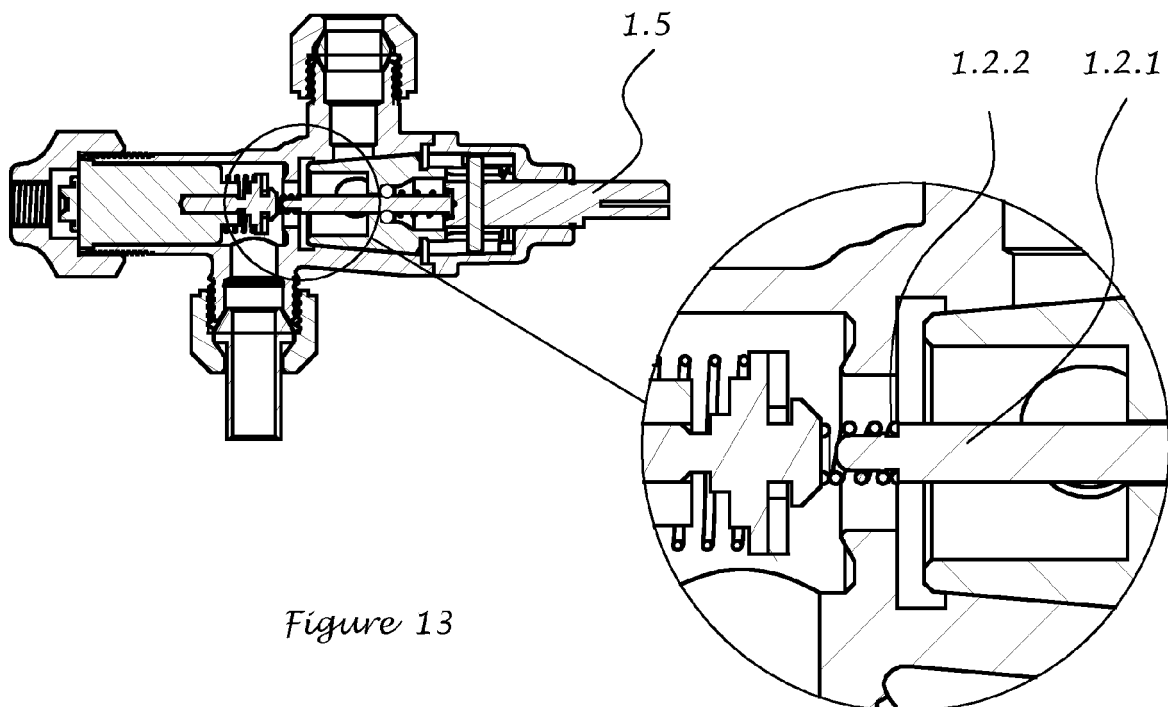
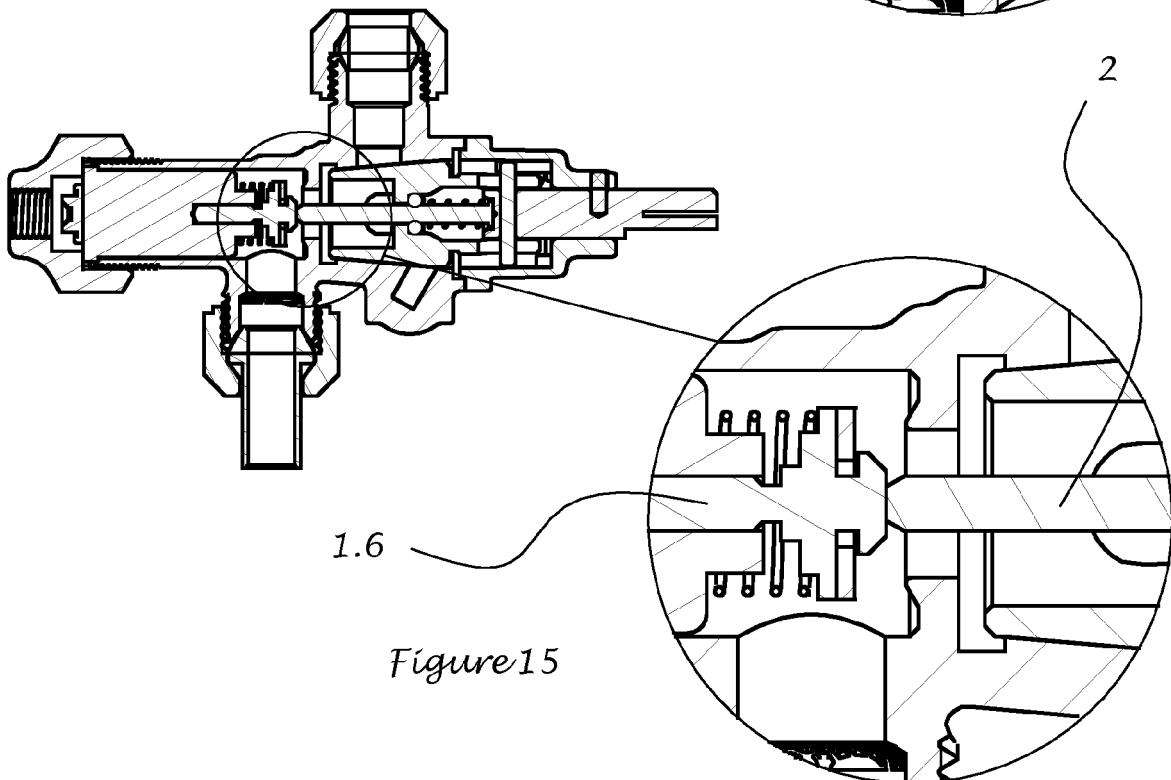
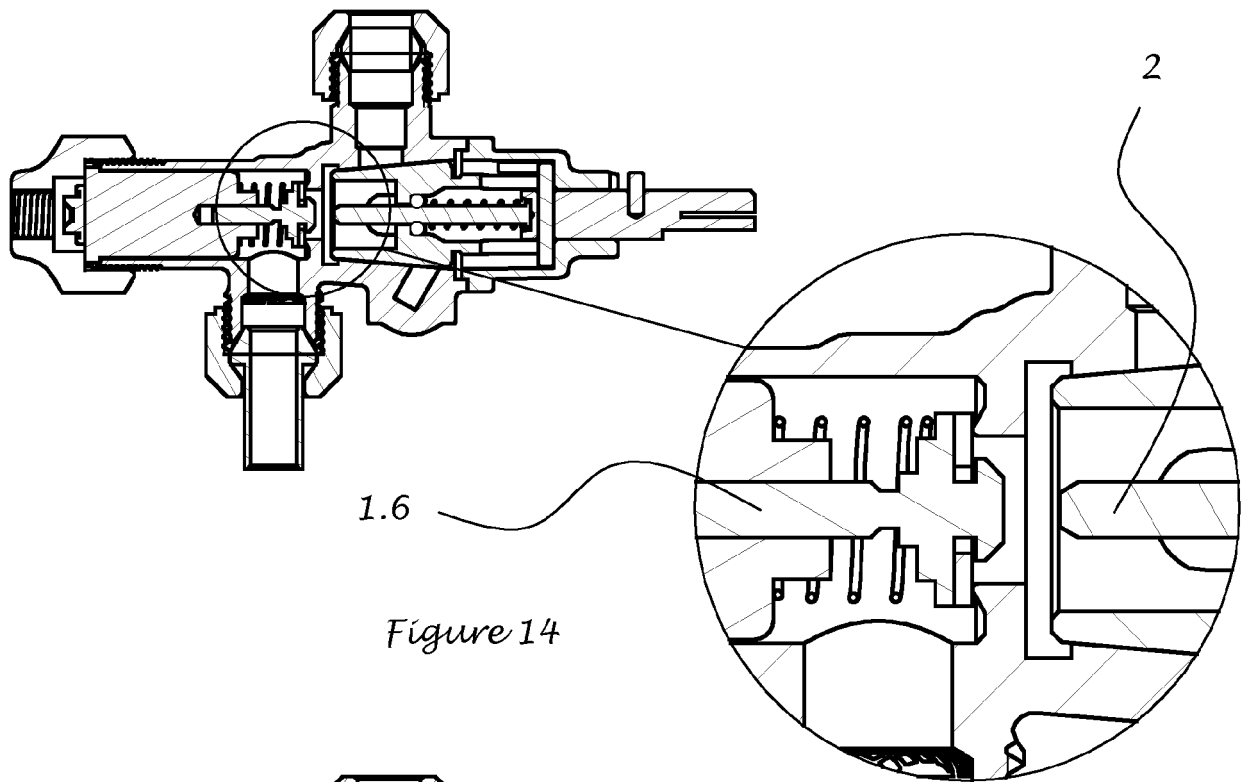


Figure 13





EUROPEAN SEARCH REPORT

Application Number
EP 17 17 4521

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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 2 873 918 A1 (TURAS GAZ ARMATÜRLERİ SANAYİ VE TİCARET A.Ş. [TR]) 20 May 2015 (2015-05-20) * paragraph [0010] - paragraph [0012]; claims 1-5; figures 1-12 *	1-3	INV. F23N5/26 F23K5/00
X	WO 2013/144789 A1 (BERTELLI & PARTNERS S.R.L. [IT]) 3 October 2013 (2013-10-03) * abstract; figure 1 *	1-3	
A,D	EP 0 805 310 A1 (FAGOR S.COOP [ES]) 5 November 1997 (1997-11-05) * the whole document *	1	
A	EP 2 878 891 A1 (TURAS GAZ ARMATÜRLERİ SANAYİ VE TİCARET A.Ş. [TR]) 3 June 2015 (2015-06-03) * the whole document *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			F23K F23N
Place of search		Date of completion of the search	Examiner
The Hague		30 November 2017	Munteh, Louis
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 03/82 (P04C01)

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

EP 17 17 4521

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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30-11-2017

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