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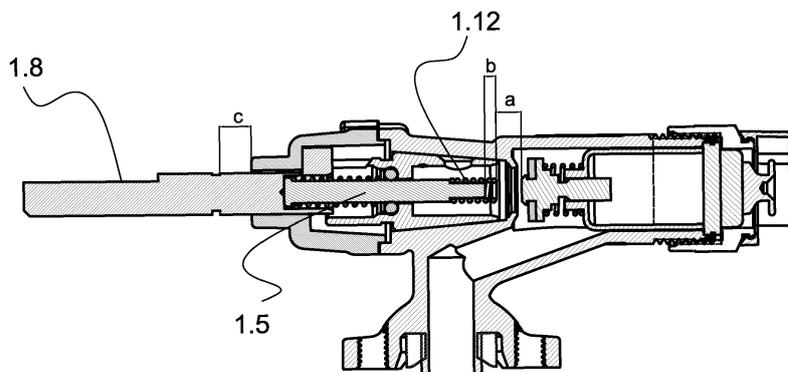
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(54) **Impact-absorbing system in taps having electromagnet**

(57) The invention relates to a spring and pin which will be used for absorbing impacts or pressures that are likely to occur in the electromagnet in case the tap shaft is fully pressed within gas taps having electromagnet which are used in domestic cooking appliances. The spring according to the invention can be located in different places within the body, wherein it is characterized by being concentric with other springs within the system, and by protecting the system by absorbing excessive loads applied from outside starting from the position when the electromagnet is fully pressed. Gas taps having a electromagnet which are used today generally consist of a body having gas passageways; a plug regulating gas passageways; a handle enabling the user to locate gas passageways; a electromagnet for opening/closing gas passageway; together with a pin transferring the movement from the handle to the electromagnet; a union

fixing the electromagnet in the housing thereof within the tap; and a cover protecting the tap against external factors. However, in these systems, pressure is applied when the user presses the handle too hard, which, in turn, creates impact effect in the electromagnet and may prevent the system from operating safely. With the present invention, a third spring, in addition to the other springs, one of which enables the o-ring inside the plug to remain in the corresponding housing and the handle to permanently remain inside the cover, and the other one of which allows the gasket to move, will be used; and thanks to this third spring, the system will be protected against excessive load. Moreover, a new handle and pin designed in a way suitable for the system are used, instead of the conventional pin and handle used in the current state, according to what place the spring will be located in the system according to the invention.



*Figure 12*

**Description****TECHNICAL FIELD**

**[0001]** The invention relates to a spring and pin which will be used for absorbing impacts or pressures that are likely to occur in the electromagnet in case the tap shaft is fully pressed within gas taps having electromagnet which are used in domestic cooking appliances. The spring according to the invention can be located in different places within the body, wherein it is characterized by being concentric with other springs within the system, and by protecting the system by absorbing excessive loads applied from outside starting from the position when the electromagnet is fully pressed. Gas taps having an electromagnet which are used today generally consist of a body having gas passageways; a plug regulating gas passageways; a handle enabling the user to locate gas passageways; an electromagnet for opening/closing gas passageway; together with a pin transferring the movement from the handle to the electromagnet; a union fixing the electromagnet in the housing thereof within the tap; and a cover protecting the tap against external factors. However, in these systems, pressure is applied when the user presses the handle too hard, which, in turn, creates impact effect in the electromagnet and may prevent the system from operating safely. With the present invention, a third spring, in addition to the other springs, one of which enables the o-ring inside the plug to remain in the corresponding housing and the handle to permanently remain inside the cover, and the other one of which allows the gasket to move, will be used; and thanks to this third spring, the system will be protected against excessive load. Moreover, a new handle and pin designed in a way suitable for the system are used, instead of the conventional pin and handle used in the current state, according to what place the spring will be located in the system according to the invention.

**STATE OF THE ART**

**[0002]** In the application No. EP 0805310 owned by the firm Copreci, dated 05.11.1997, a gas tap for domestic cookers is disclosed. In the tap mentioned in this application, an electromagnet is used; wherein a union is used for releasing said electromagnet in case it is pushed. However, although said union, referred with 7, mentioned in this application is designed as such, it is difficult to be produced; moreover, it is impossible to be mounted in gas taps. In addition, the system will cause gas leakage easily in case the union or magnet gets back in the system.

**[0003]** In another application No. ES2359975 by the firm Copreci, a gas flow tap is disclosed which is made of an electromagnet comprising a shaft moveable axially in a first direction and a regulation element moveable in a second direction, and which is used for gas burners. However, said tap is designed for built-in cookers; where-

in mechanical problems may be experienced depending on the pressing force applied by the user on the handle due to the angle between the handle and electromagnet; and also the contractions likely to occur in the tap cannot be prevented since there is no absorbing part provided therein for lowering the effect of excessive load applied by the user on the system.

**[0004]** In light of the state of the art mentioned above, using a third spring in safety gas taps used in domestic cooking appliances is an innovative approach. The present invention exceeds the state of the art since it solves the problems in the art; and it can be easily applied in gas taps having an electromagnet which are used for domestic cooking appliances in the related industry. There exist many patent applications in literature regarding gas taps having an electromagnet. It is therefore possible to give many examples in this regard. Nevertheless, it is thought that the above examples will be enough for providing an understanding of the invention.

**OBJECT OF THE INVENTION**

**[0005]** The object of the invention is to use an impact-absorbing spring for protecting the system against the excessive load by the user within gas taps having an electromagnet which are used in domestic cooking appliances.

**[0006]** Another object of the invention is that the weight of said impact-absorbing spring is more than the other springs in the system in order for the former to protect the system by being activated when there is excessive load on the system and the other springs cannot operate properly.

**[0007]** In the preferred embodiment of the invention, said impact-absorbing spring can be located at any end of the pin provided in the body or in the housing which extends to one end of the pin, or in the handle housing, such that it will be concentric to the other springs within the system; wherein the design of the pin and handle used within the system change in accordance with the location of said spring.

**[0008]** The structural and the characteristic features and all advantages of the invention will be understood more clearly with the detailed description written by referring to the following figures; therefore, the evaluation needs to be done by taking these figures and the detailed description into consideration.

**BRIEF DESCRIPTION OF THE FIGURES****[0009]**

Fig. 1 is the overall perspective view of the gas taps having an electromagnet,

Fig. 2 is the cross-sectional view of the gas tap having an electromagnet within the state of the art (open position),

Fig. 3 is another cross-sectional view of the gas tap having an electromagnet within the state of the art (closed position),

Fig. 4 is the view of the conventional handle in gas taps within the state of the art, 5

Fig. 5 is the view of the conventional pin in gas taps within the state of the art, 10

Fig. 6 is the view of the impact-absorbing spring according to the invention,

Fig. 7 is the view of the handle according to the invention, 15

Fig. 8 is the view of the pin according to the invention,

Fig. 9 is the view of the alternative pin according to the invention, 20

Fig. 10 is the view of the other alternative pin according to the invention,

Fig. 11 is the view showing the position of the impact-absorbing spring in the handle housing according to the invention, 25

Fig. 12 is the view showing the position of the impact-absorbing spring at the end of the pin according to the invention, 30

Fig. 13 is the view showing the position of the impact-absorbing spring in the alternative pin housing according to the invention, 35

Fig. 14 is the view showing the position of the impact-absorbing spring in the other alternative pin housing according to the invention. 40

## REFERENCE NUMERALS

### [0010]

- 1. Gas tap 45
  - 1.1. Body
    - 1.1.1. Gas inlet
    - 1.1.2. Gas outlet
  - 1.2. Plug
  - 1.3. Electromagnet
  - 1.4. Conventional pin
  - 1.5. Pin according to the invention 50
    - 1.5.1. End portion

1.6. Alternative pin

1.6.1. Housing

1.7. The other alternative pin

1.7.1. Housing

1.8. Conventional handle

1.9. Handle according to the invention

1.9.1. Housing

1.10. Gasket

1.10.1. Gasket (1.10) spring

1.11. O-ring

1.11.1. O-ring fixing spring

1.12. Impact-absorbing spring

1.12.1. Threads

1.12.1.1. Outer diameter

1.13. Union

1.14. Cover

1.15. Segment

## 2. Gas

a. The distance of impact-absorbing spring (1.12) which gets out from the other alternative pin housing (1.7.1) or end portion(1.5.1) of pin according to the invention, to the electromagnet (1.3); or the distance of the conventional pin (1.4) and alternative pin (1.6) to the electromagnet (1.3)

b. The distance of the impact-absorbing spring (1.12) getting out of the housing (1.9.1) of handle according to the invention or alternative pin housing (1.6.1) the other alternative pin housing (1.7.1), or end portion(1.5.1) of the pin according to the invention

c. The distance of the segment (1.15) to the cover (1.14)

## 50 DETAILED DESCRIPTION OF THE INVENTION

[0011] In Fig. 1, the overall perspective view of the gas taps having an electromagnet of the state of the art is given. In Figs. 2 and 3, on the other hand, the cross-sectional views of said gas taps of the state of the art are given. Accordingly, the gas (2) getting in the system from the gas inlet (1.1.1) way in the body (1.1) first reaches to the area where the electromagnet (1.3) is provided, and

upon rotation of the conventional handle (1.8) by the user, the conventional pin (1.4) located inside the plug (1.2) moves and the electromagnet (1.3) is pushed, and thus enabling the gas (2) to reach to the burner. However, in the state of the art, the electromagnet (1.3) cannot be protected against the excessive pressure applied by the user and the system cannot operate safely. The impact-absorbing spring (1.12) used in the system according to the invention, on the other hand, is suitable for all gas tap types having said electromagnet; and in case of excessive load, said spring stretches and protects the electromagnet (1.3) against the impact and pressure applied by the user, thereby making the service life of gas taps longer. The views of conventional handle (1.8) and conventional pin (1.4) used in the gas taps having electromagnet are given in Figs. 4 and 5, while the views of the handle according to the invention (1.9) and the pin according to the invention (1.5), alternative pin (1.6) the other alternative pin (1.7) according to the invention are shown in Figs. 7, 8, 9, and 10, respectively. As seen in Figs. 11, 12, 13, and 14, on the other hand, the impact-absorbing spring (1.12) can be located in four different ways inside the body (1.1); i.e. in housing (1.9.1) of handle according to the invention, in end portion (1.5.1) of the pin according to the invention (1.5) according to the invention, in alternative pin housing (1.6.1), and in the other alternative pin housing (1.7.1); wherein the object is achieved in all of these four states. Said impact-absorbing spring (1.12) according to the invention is heavier than the gasket spring (1.10.1) and O-ring fixing spring (1.11.1) in the tap, wherein it is about 1500 g. The reason for that is to allow it to stretch easily in case of pressure or excessive load. Further, the length of said the impact-absorbing spring (1.12), shown in Fig. 6, is adjusted where will be placed of outside 1-3 mm from the housing (1.9.1) of the handle according to the invention or alternative pin housing (1.6.1) and the other alternative pin housing (1.7.1), where it will be located, according to the invention. Accordingly, the impact-absorbing spring thread (1.12.1) number of said the impact-absorbing spring (1.12) is at least 3, while the outer diameter (1.12.1.1) thereof is between 1.5 and 4 mm. Again, no matter what position said the impact-absorbing spring (1.12) assumes inside the body (1.1), it is concentric with the gasket springs (1.10.1) and O-ring fixing spring (1.11.1) in the system and it is fitted into the corresponding housing in a proper and rigid manner. Moreover, the distance (c) of the segment (1.15) provided on the conventional handle (1.8) handle according to the invention (1.9) to the cover (1.14) is smaller than the sum of the distance (a) of the impact-absorbing spring (1.12) which will be placed of outside from the other alternative pin housing (1.7.1) or end portion of pin according to the invention (1.5.1), to the electromagnet (1.3); or the distance of the conventional pin (1.4) alternative pin (1.6) to the electromagnet (1.3), and of distance (b) of the impact-absorbing spring (1.12) will be placed of outside housing (1.9.1) of the handle according to the invention or alter-

native pin housing (1.6.1) the other alternative pin housing (1.7.1), or end portion of the pin according to the invention (1.5.1).

**[0012]** The invention is suitable for being used in all taps having electromagnet which are used in domestic cooking appliances.

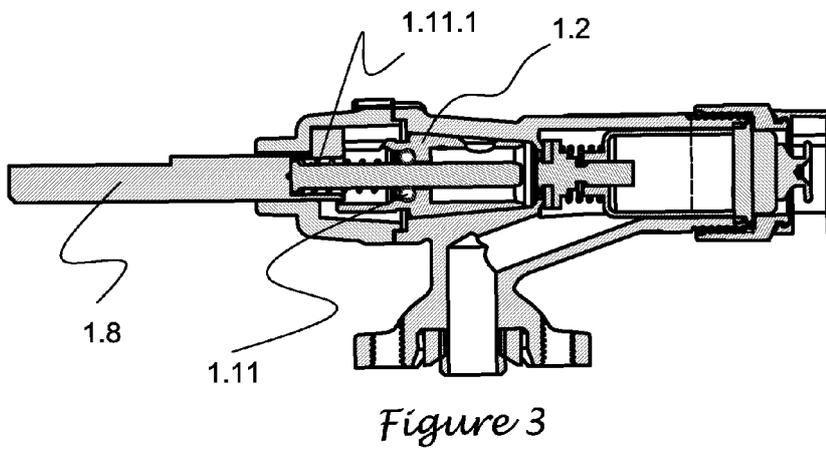
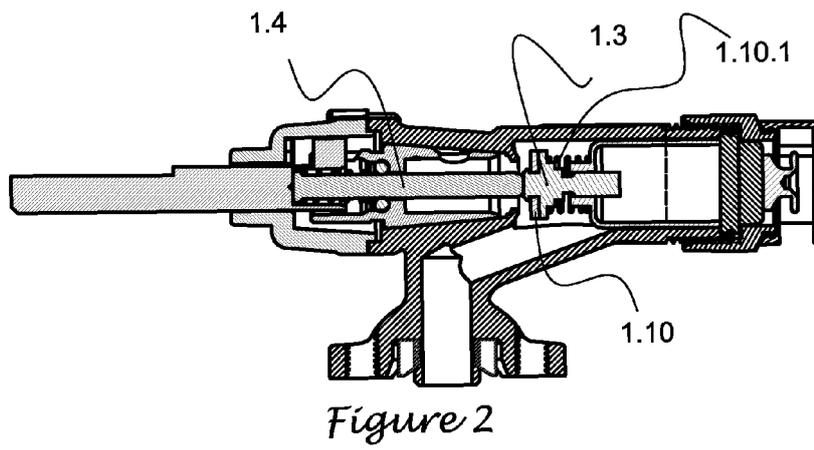
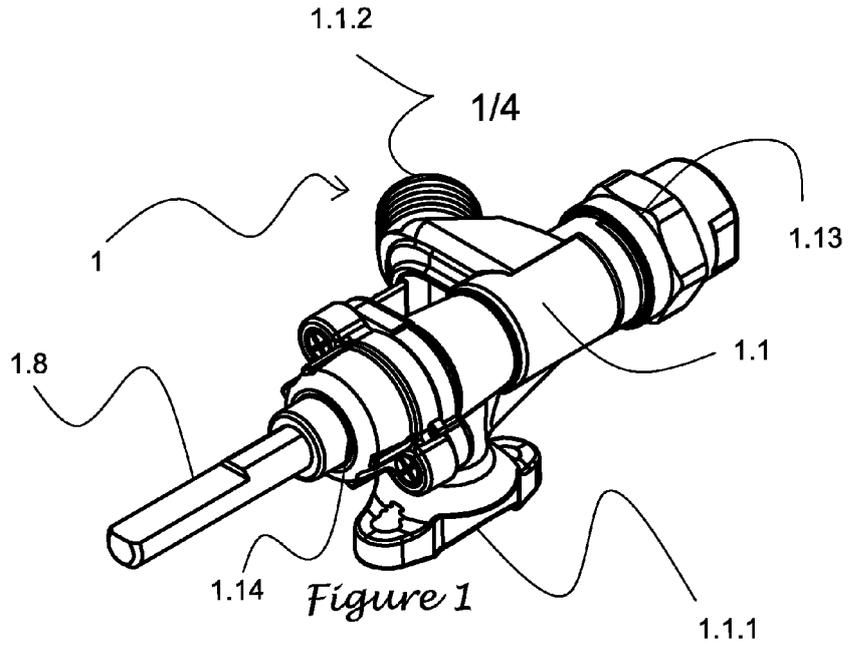
**[0013]** The protection scope of this application is stated under the claims and cannot be restricted to the descriptions given only for illustrative purposes because it is clear that any person skilled in the art can produce the novelty provided by the invention, without drifting apart from the main subject of the invention and/or s/he can apply this novelty to other fields used in the related technique with similar purposes. Therefore, it is obvious that such embodiments will lack novelty, and especially will lack the criteria of exceeding the prior art, i.e. comprising inventive step.

## 20 Claims

1. A impact-absorbing spring (1.12), conventional pin (1.4) pin according to the invention (1.5) alternative pin (1.6) the other alternative pin (1.7), and handle according to the invention (1.9) which protect the electromagnet (1.3) against the excessive pressure and impacts applied by the user, in addition to the body (1.1) having the gas passageways, the plug (1.2) regulating gas passageways, the electromagnet (1.3) for opening/closing gas pathway, the union (1.13) which fixes the electromagnet in the corresponding housing inside the tap, and the cover (1.14) protecting the tap against external factors, within the gas taps having electromagnet which are used in domestic cooking appliances, **characterized in that** said the impact-absorbing spring (1.12) can be positioned in the pin according to the invention end portion (1.5.1) according to the invention, in the handle housing (1.9.1) according to the invention, in the alternative pin housing (1.6.1), or in the other alternative pin housing (1.7.1); and that this positioning is 1 to 3 mm out of the handle according to the invention (1.9) and the conventional pin (1.4) pin according to the invention (1.5) alternative pin (1.6) the other alternative pin (1.7).
2. The impact-absorbing spring (1.12) according to Claim 1, **characterized in that** the force weight of said the impact-absorbing spring (1.12) is at least 1500 gr.
3. The impact-absorbing spring (1.12) according to Claims 1 or 2, **characterized in that** it is located concentric with the impact-absorbing springs (1.10.1) and O-ring fixing spring (1.11.1) within the system.
4. The impact-absorbing spring (1.12) according to

Claims 1, 2, or 3, **characterized in** the impact-absorbing number (1.12.1.1) of threads is at least three.

5. The impact-absorbing spring (1.12) according to Claims 1, 2, 3, or 4, **characterized in that** the impact-absorbing thread outer diameter (1.12.1.2) is between 1.5 and 4 mm. 5
6. The conventional handle(1.8) and handle according to the invention(1.9) according to Claim 1, **characterized in that** the distance (c) of the segment (1.15) to the cover (1.14) is smaller than the sum of the distance (a) of the impact-absorbing spring (1.12) which gets out from the other alternative pin housing (1.7.1) or pin according to the invention end portion (1.5.1), to the electromagnet (1.3); or the distance of the conventional pin(1.4) and alternative pin(1.6) to the electromagnet (1.3), and of distance (b) of the impact-absorbing spring (1.12) getting out of the handle according to the invention housing (1.9.1) or pin alternative housing (1.6.1) the other alternative pin housing (1.7.1, or the pin according to the invention end portion (1.5.1). 10 15 20 25 30 35 40 45 50 55



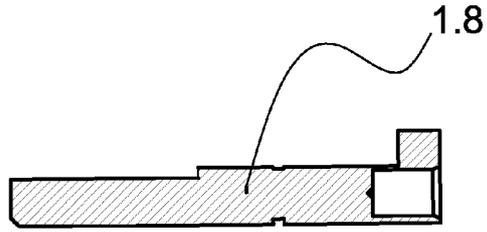


Figure 4

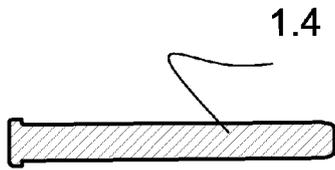


Figure 5

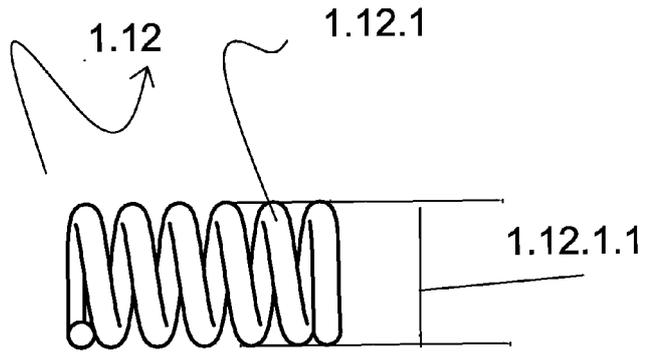


Figure 6

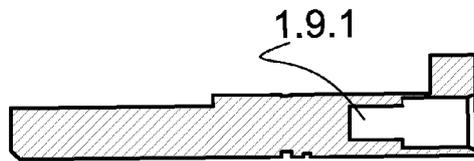


Figure 7



Figure 8



Figure 9



Figure 10

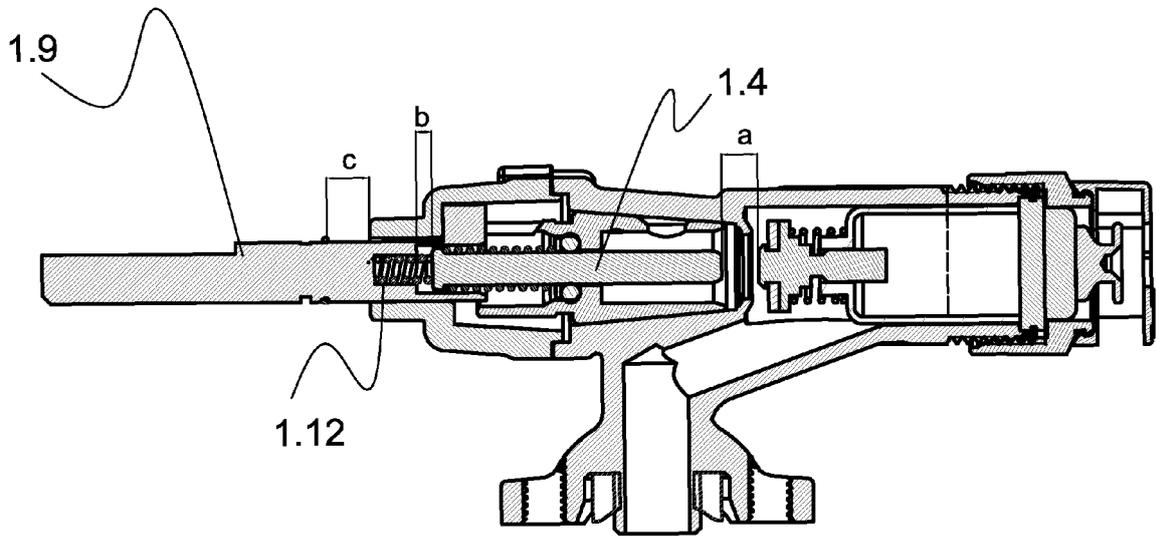


Figure 11

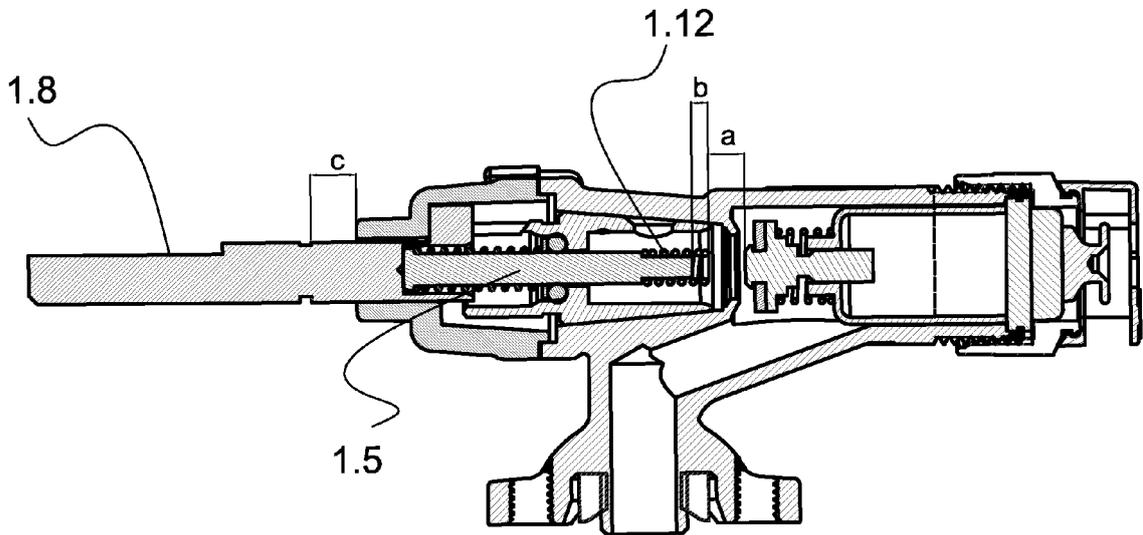


Figure 12

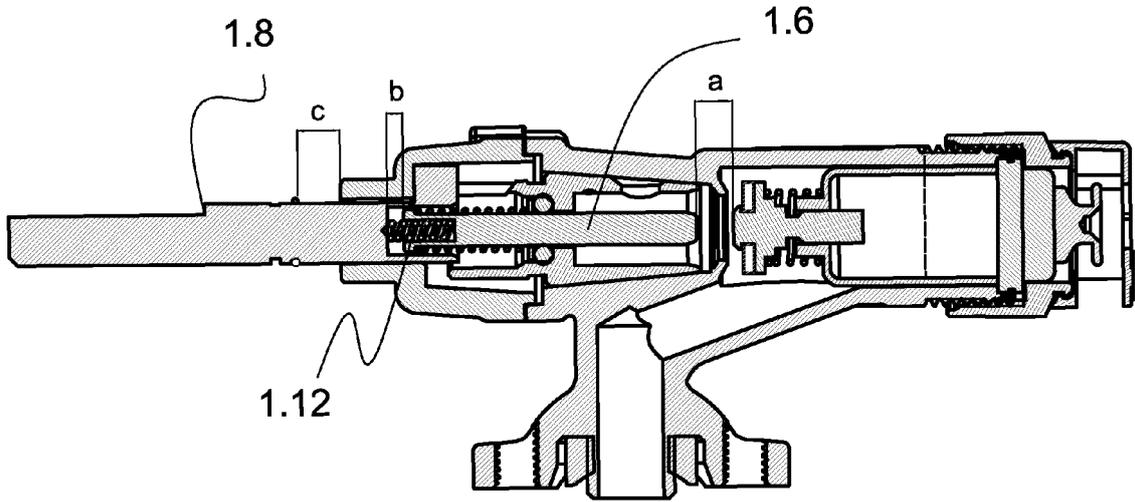


Figure 13

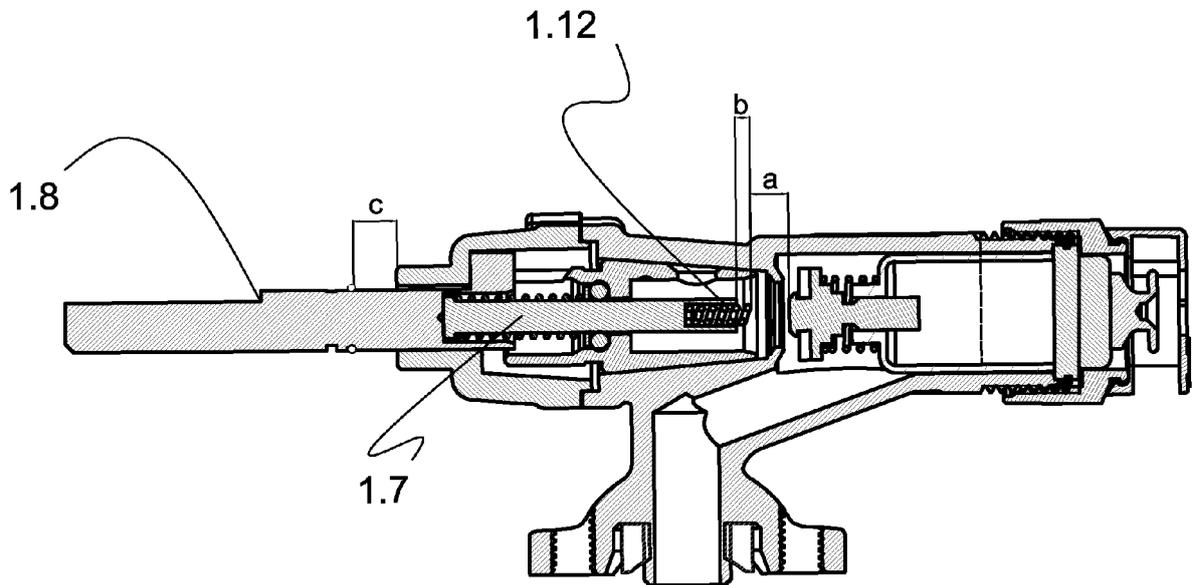


Figure 14



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Application Number  
EP 14 16 4322

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Place of search		Date of completion of the search	Examiner
The Hague		1 April 2015	Munteh, Louis
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