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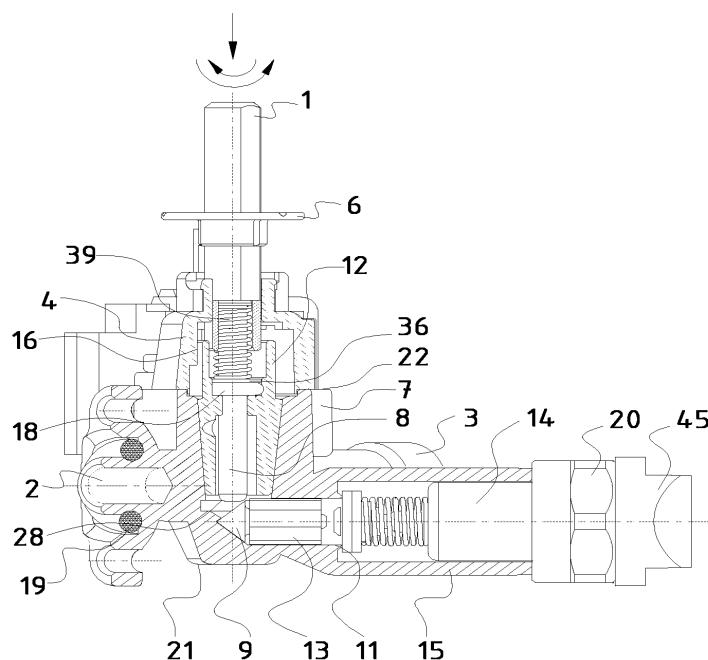
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(54) **"Y" type tap for gas furnaces or stoves with security system for shutting off the gas supply**

(57) This invention has been designed for gas burners working with flame. This tap serves the function of cutting the flow of gas automatically and prevents serious dangers in the event that the flame goes off or the flame is interrupted. The tap operates as vertical movement is transferred into horizontal movement. The System in-

cludes a thermo magnetic valve in the "Y" type body for opening and closing. The first movement of the thermo magnetic valve (14) is given with a vertical axle (1) and horizontal movement is given through the pin (8) following it vertically inside the body (7) and the pin (8) following it.



**figure 1**

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## Description

**[0001]** This invention has been designed for gas burners working with flame. This tap serves the function of cutting the flow of gas automatically and prevents serious dangers in the event that the flame goes off or the flame is interrupted. It provides additional security for furnaces or similar burning systems having a standard simple system. Basically, transforms the vertical movement given ahead to horizontal movement. During the forward movement of the axle (1), the axle (1) shall also be performing a rotational movement and the gas that is taken in with the gas tap through the entry connection (2) is given to the back pipe connection (3). This tap functions as an opening and closing valve within the burning system. When the faucet is examined from above (Figure 2) the fact that it is of "Y" type saves space.

**[0002]** The specific problems encountered during the manufacturing of gas taps with more versatile security features are the dimensions of these taps, their weight and claim for advanced manufacturing technology claims. An effort has been made to decrease the dimensions of taps as in the design of numerous security tap designs. Although each invention displays the same feature in terms of basic operating principle, they show differentiations in terms of dimensional, technological aspects as well as operating parts.

**[0003]** For the design of other gas tap designs with going out security, it is mentioned that the product is more compact and can technologically be manufactured easier. The widespread furnaces used on kitchen benches with standard height of 40 mm, has been transformed into furnaces of 30 mm and the functioning components have been arranged by 90°.

**[0004]** It is about the security tap aimed to be used in the gas burners with flame registered in the name of BURNER SYSTEMS INTERNAT BSI with patent number PL363798. In the system of this invention, the tap works with the same principle as in other furnaces used on the kitchen bench with security function. The system in this invention also functions in the same principle as in other security furnaces used on kitchen benches. In all security taps for furnaces used on the kitchen benches, the systems functions with the transformation of the movement given in a vertical manner to horizontal and in these systems transmission of a movement with 90° has been taken as a basis. In this invention that has been made, the movement of the system is quite complex and there is a difficulty of manufacturing for the components. At the same time, the tap is quite heavier and larger than others that have similar features. This also increases the weight, size and cost of the furnace.

**[0005]** In such ancestral taps with security function, the size of the designs cannot be decreased to a significant extent and their weight cannot be changed much as well due to the security function they have and because of the thermo-magnetic valve having been incorporated in them.

**[0006]** The fundamental problem that this finding aims to solve is the size; it is much smaller, more compact and lighter than other similar taps with going out security function. For this reason, efforts have been made to work on all parts that constitute the tap and a simpler and easier manufacturing has been aimed. Such work shall provide additional advantages as they will decrease the production cost and eliminate most problems that can come up during manufacturing.

**[0007]** At the same time, during the movement of the axle (1) in these types of taps, it may be required that the axle be fired by the help of the micro-switch of the sparking plug. For this purpose, also a pushing knob (6) has been designed as an accessory, which shall be fixed to the cover of the tap (4) in order for it to complete the circuit to a micro-switch (5). When requested, also a micro-switch (5) can be inserted on this tap and it has been designed in a manner to be used in this way (Figure 2).

**[0008]** Another important point here is the fact that the tap is able to function through all angles rather than certain angles as it had been observed in certain other designs, it may also have the capacity to move the thermomagnet or electro-magnet at all working angles. This means that the system can function when it is fully open or half opened.

**[0009]** In this invention, point or surface contact has been achieved between the pin (8) inside the body (7) and the guiding pin (9) that guides it and in this manner; it is made possible that the action is transferred from horizontal to vertical during the point of press to the axle (1). The tip angle (10) of the first part of the guiding pin (9a) is between 70° and 130°. This provides an opportunity for the guiding pin (9) to move more when wanted. The axle (1) provides an opportunity to increase or decrease the movement of the (tap control handle) forward and backwards and different knobs or switch models to be used.

**[0010]** While the body weight (7) was around 100 and 90 grams in the ones that were similar, it has been decreased up to 60 grams. It may be made of aluminum material when wanted and the weight can be decreased until 20 and 30 grams. This provides an opportunity to construct thinner and lighter furnaces and stoves with security function to be used on kitchen benches.

**[0011]** Another new feature of the invention is the fact that their standard height has been decreased from 40 mm to 30 mm. In this invention, the height could be pulled even further down up to 22-27 mm. This provides an opportunity to construct thinner furnaces and stoves that can be used on kitchen benches. This height is the distance from the lowest point of the body (21) until the highest point (22).

**[0012]** Another benefit of the invention is that it is more compact as a consequence of its geometric shape. The design that resembles the letter "Y" when looked from above (Figure 2) is made of a gas entrance connection (2), a gas exit (3) and an arm (15) incorporating a thermodynamic valve (14) in itself. The fact that this shape can

be changed provides an opportunity for more different designs to be made in this product. The arm (15) incorporating the thermo-magnet in its structure can be placed in any direction in manner that it shall be  $\max \pm 90^\circ$  to the axis of A-A. Accordingly, the gas exit mouth (3) can also be located in a position that it is in harmony with the angular specifications given above. The ability to make connections in different manners in this respect shall also provide opportunities for stoves and furnaces to be made with new designs and shapes.

**[0013]** The way of operation of the going out security tap of the invention is in this manner; the axle (1) is moved forward and a vertical movement is achieved in the pushing pin (8) along with the axle. During the vertical movement, the pushing pin hits the guiding pin (9) and forces the guiding pin to horizontal movement. Since the system is a closed circuit the guiding pin (9), presses the thermo magnetic (14) valve and provides an opportunity for the gas transfer channel (11) to be opened. While the axle is in the front position, it makes the conic male (12) assembled inside the body (7) revolve along with the axle. During the revolving movement, the gas guiding pin that passes through the gas transfer channel (11) passed through the clover shaped wings (13) fixed firmly on the guiding pin and fills inside the male (12) and the gas is transferred into the gas exit along with a revolving movement (3). The gas sent from the exit to the burning system starts burning with the electricity signal sent to the sparking plug in the back system from the switch. As a consequence of the heat caused by burning, the low electrical voltage produced by the thermo element connected to the system as a consequence of the heat produced by burning causes the thermo magnet to be pulled off and the system to operate. When a problem is encountered in the burning of the system, the electrical current coming to the thermo magnet will be interrupted and hence the gas shall be shut off and the system will turn itself off. Following burning and the operation of the thermo magnet, the guiding pin shall be set free.

**[0014]** The forward movement of the guiding pin (9) shall be through the help of the pin (8) and its backward movement shall be with the own spring of the thermo magnet. There is no need to direct the movement with additional parts or systems. The shape of clover does not impose any restriction. Shapes that shall provide an opportunity for sufficient amount of gas may be used. The important thing is to provide the function of bedding (11) and sufficient gas passage at the same time.

**[0015]** If the tap of the manufacturing company is using a micro-switch (5), the pushing knob designed specifically during pressing the axle when the micro-switch is pushed, and the burning process shall take place. On order for the micro-switch to be inserted, the micro-switch (5) can be assembled easily through the claws (34) on the cover that has been designed and thanks to the design of the cover, it does not allow any false assembling, coming out or turning.

**[0016]** In such taps the direction for opening gas is

counter clockwise and the direction of closing the gas is clockwise. This revolving angle can be adjusted for a value between  $0^\circ$  and  $260^\circ$ . The angles that are used as a standard are  $0^\circ$ - $160^\circ$  and  $0^\circ$ - $210^\circ$ . Checking the flame will be easier for higher revolving angles. When turned clockwise, the tap shall be closed at  $0^\circ$ . The direction of turning is provided through the help of the claws (16) inside the cover (4). When the cover is placed in a reversed manner, it shall prevent the axle from turning and shall not allow the gas to pass. This has been taken into consideration during the design of the cover and the cover has been designed in such a manner that assembling it wrong is impossible. There are two holes (17) on both sides cover (4) in order for it to be assembled to the body on both sides. These holes are not on the same central axis I-I. This prevents the cover from being assembled wrong. This also minimizes any manufacturing faults that may be come across.

**[0017]** The invention will now be explained in more detail by referring to the Pictures enclosed; these Pictures are not restrictive but aim to provide explanations;

Picture 1, partial cross-sectional appearance of the "Y" type security tap with a going out feature.

Picture 2, appearance of the "Y" type security tap with a going out feature from above.

Picture 3, appearance of the cover (4) of the "Y" type security tap with a going out feature.

Picture 4, partial cross-sectional appearance of the "Y" type security tap with a going out feature, at the end of pushing of axle (1).

Picture 5, perspective appearance of the "Y" type security tap with a going out feature to the pushing button (6) to the micro-switch.

Picture 6, disassembled appearance of the guiding pin of the "Y" type security tap with a going out feature.

Picture 7, the appearance of the second part (9b) of the guiding pin (9) of the "Y" type security tap with a going out feature.

Picture 8, Axle (1) of the "Y" type security tap with a going out feature.

Picture 9, "Perspective appearance of the "Y" type security tap with a going out feature.

Picture 10, appearance of the enlarged condition of the pushing knob of the "Y" type security tap with a going out feature. It is an image of large scale providing an opportunity for the details to be seen.

When Picture 1 is reviewed it is observed that inside the main body (7) of the invention there is the male portion (12) carrying the gas from the gas entrance to the exit and the pin (8) passing through this male part and the guiding pin (9) that guides it, the spring (39), the plastic gasket (18) preventing leakage and the stamp (36). At the same time, there is also a thermo-magnetic valve inside the body (7). The Axle (1), the cover (4), the micro-switch (5), the micro-switch pushing stamp (6), gas entry

gasket preventing leakage (19) and the record (20) as well as the plastic magnet record cover (45) are assembled to the body afterwards and the system is set as a closed circuit. The magnet record cover (45) and the record (20) may show differentiations depending on the magnet choice of the user. The system also provides an opportunity for the use of the electro magnet as well depending on technological developments. During the use of the electro-magnet with number EP1045206 registered in the name of FAGOR, S. Coop. the channel (43) inside the male (12) can be closed and an opportunity can be provided for the tap to have a security going out feature by taking out the pin (8), guiding pin (9), plastic gasket (18) and the stamp (36).

**[0018]** The body (7) may be made of brass or any other material or an alloy of metals of equivalent value that is resistant to heat and gas. The weight of the body (7) has been designed to be much lighter than its equivalents. The equivalents are on the average 100 grams and this weight has been decreased to 60 grams in this design. The tap body (7) with a security going out feature for stoves or furnaces used on the kitchen benches is 90° in all other models. However, in this invention referred to, this angle has been characterized to be between 70° and 110°. When this arm is around 70° and 110°, the angle of the pin with number (9) shall change and hence, the angle of the pin should also be changed depending on the position of the angle of the arm.

**[0019]** The inner part of the body has been designed in a hollow manner and has been manufactured in a single piece. It comprises of the gas entry of the body (2) and the gas exit (3) in the same plane with it, the arm (40) with the axle and other components tied to it which is 90° perpendicular to these two entries and exits that realizes the pushing-revolving-gas passage functions as well as the arms that are 45° to the gas entry and gas exit and also incorporating a thermo-magnetic (14) valve (15). The angle of 45° has been chosen in a manner that shall allow the system to be in the most compact form possible. With this angle, it has become quite smaller than its equivalents. The fact that the body is small has made the system lighter. Furthermore, the body that is small also provides ease of manufacturing. Due to the simplicity of the system, all the parts that form the product can be easily assembled and detailed parts for completing the product are not needed. In order for the body (7) to be connected to the pipe from which gas comes, there are wholes (24) on both sides of the gas entry. The rap can be connected to the system through these holes. There is a projecting part (23) on the gas exit connection to adjust the passage of the gas and this projecting part resembles an adjustment screw (23). The adjustment screw (37) is assembled on this projecting part, which adjusts the speed of passing of the gas. These adjustment screws are assembled inside the body or in different axis in many designs, however, in our design, the adjustment screw has been taken out and the user has been provided with the opportunity to adjust the speed of flow

of gas much easier.

**[0020]** In these types of taps, there is a micro-switch (5) that can be assembled on the tap as an accessory for automatic ignition. In order for the micro-switch to be able to perform its ignition function, there is a pushing knob (25) located on the micro-switch during the forward movement of the axle in order for the circuit to be closed. There is a pushing stamp (6) placed on the axle to connect the circuit and perform the pushing transaction. The pushing stamp is designed specifically for the axle. These channels (27) cause stretching and in this manner, fixing becomes easier. The number and shape of channels may be variable and channels may be of different depth and structure. The channels are made on the reverse side of the micro-switch and in this manner, the getting caught of the micro-switch to these channels during operation is prevented and problems are eliminated before they arise. In the stamp having been designed by the ITW Industrial Components S.r.L with patent number EP1500881, this risk catches attention in a very serious manner and there is a possibility for parts to get out of there and to be twisted in long term operation. With this invention that has been designed, the integrity of the part has not been distorted and attention has been given to keep leaning at the highest possible level. There is no need to use any additional part, stamp, segment etc during the assembly of this part to the axle (1). The pushing stamp (6) having been designed in this system is a plastic part that has a circular cross-section (Figure 5) and does not move backwards when fixed to the axle. There are claws in this part (26) and channels (27) have been opened around the top surface (41) to provide ease of stretching when affixing the part to the axle. The number of claw (26) inserted in this design is three, as can be seen in Picture 10. The number of claws may vary. The channels are positioned equally on the upper surface (41). The number of channels may be increased or decreased. The channels have been opened on the surface with number (42) in the same manner. The number of channels here is also 3 and they have also been positioned equally. The number (41) and (42) of these channels (27) may be positioned in different angles and in different quantities. These channels (27) also provide an opportunity for the pushing stamp (6) to be removed easily by using a simple tool (screw driver, rave hook). In the cross-section (33) of the pushing stamp (6) seen in figure 9, has a surface wide enough from the micro-switch to the pushing stamp to conduct the pushing transaction and it is adjacent to the pushing point. The distance has been specifically designed and with the micro-switch being kept in operation at all times, probabilities or continuous operation or not operating has been eliminated. This feature is not found in equivalent taps and this problems has been solved in this invention.

**[0021]** There is a pin (8) having been designed in the invention, which can move with the axle (1). In terms of production and cost, the pin (8) may be made of brass, iron, aluminum or different materials. The pin has been

designed in a cylindrical manner with an arch. The tip with the arc (28) makes a point contact (9) to the guiding pin and provides the guiding pin (9) to move horizontally. With the help of the tip with an arc (28), the system gains a wide area of move. The tip with the arc (28) may also be designed with an angle or surface contact may be achieved to the surface. Designing the pin in an angular shall be possible in a manner that it shall form 90° with the tip angle of the guiding pin.

**[0022]** The guiding pin (9) referred to above comprises of two parts (Figure 6). The first main part (9a) can be made of brass, iron or any equivalent material resistant to heat and gas, steel or an aluminum alloy. The first part is a cylindrical part having a certain cross-section. The second part (9b) may be made of plastic, iron or an equivalent material. The shaft part (29) of the first part (9a) passes the hole (30) of the second plastic part (9b) in a fixed manner. In this invention, the assembled part of the two shall be referred to with number 9. These two parts are affixed to each other outside before being inserted into the body and then it is placed inside the body. The second part (9b) of the guiding pin (9) has been designed in the shape of a clover (Picture 7). Its clover shape is not restricting. Any shape that shall allow the passage of the gas may be used. The channels (31) in the second part (9b) are designed in such a manner that it provides the passage of sufficient level of gas after pushing (Picture 4). The external diameter of the second part (9b) is smaller than the diameter of the body (7). In this system, the second part also serves as bedding to the guiding pin (9).

**[0023]** The cover (4) that has been designed specifically for this invention can be made of aluminum, brass, sheet iron or similar material. The cover has a cylindrical structure and there are ears (32) on both sides. The ears (32) have been pierced from their middle in order for the cover to be amounted on the body (7). These holes (17) provide an opportunity for fixing the cover (4) to the body (7) with a fixing element. The cover has been designed in such a manner that it cannot be affixed in a false manner. This is due to the fact that the holes of the cover are not on the same axis. In this manner any manufacturing faults are eliminated and prevented from beginning. There are also cloves (34) on the cover in order for the micro-switch (5) to be assembled. With these cloves, the movement of the micro-switch on the cover is prevented. There are also cloves (44) on the cover that prevent the micro-switch to come out. These cloves (44) are smaller than other cloves (34) on the cover and have a single direction. When wanted, the micro-switch can be easily pulled out with the help of the device. This provides ease of service to the user.

**[0024]** In the invention mentioned, the axle (1) is processed with a certain rod of cylindrical shape 06 mm. The axle may be made of brass, aluminum, iron or any similar material. There is a clove (35) providing the opportunity to turn on the axle. This clove passes inside the male and provides an opportunity for the male to revolve along

with the axle. On the axle, there is a channel (38) that the pushing stamp (6) shall be inserted. The design of the axle has been made of material with wedge and with standard diameter of 06 mm. In equivalent designs, this diameter is made of material with diameter 08 mm, however, in this invention; it is made of material of 06 whereby ergonomic features and ease of manufacturing have been considered. The manufacturing of parts with these dimensions and structure was tried for the first time and the outcome was successful.

**[0025]** The invention has been designed in such a manner that it can be inserted on all types of furnaces and stoves to be used on kitchen benches. The fact that the design is small means that the size of the stoves and furnaces to be used on kitchen benches has become smaller. The fact that the size is smaller than its equivalents is an advantage for it. Besides the smallness of the design, the fact that it is light as well is significant too. This invention has been designed in a manner that is much lighter and quite compact when compared its equivalents.

**[0026]** The invention is not only limited with the small size and lightness features referred to above. Its components have also been developed and the system has been made simpler in technological terms. The micro-switch pushing stamp (6) developed specifically for the invention is a component that is easy to use and it complements the circuit. Another feature developed with regard to the invention is the cover (4) of the tap. The cover has been designed in such a manner that it prevents wrong assembly to the body. Furthermore, the pushing axle (1) has also been developed in a special manner. The part with number (35) meets the specifications of the endurance standards. Although all these parts have been made smaller, they very well meet the claims of endurance set forth in the standards and the requests.

**[0027]** The manufacturing company shall have the opportunity to have a better position in the market with the opportunity to purchase such taps with cheaper prices and more suitable conditions. In such designs as the furnace or stove gets smaller, the total volume shall decrease, the parts shall be closer to each other and hence there might be an increase in the internal heat. The endurance of the tap has been increased above the standards to overcome such problems and all parts can endure temperatures above 150°C.

## Claims

1. In the event that the flame goes off or is interrupted, the y type security tap with a going out feature automatically cuts the flow of the gas in the body (7), it is made of the pin (8) working inside the body, the guidance pin guiding it (9), the cover (4), record (20), gas entry connection (2), Gas exit (3), and the arm (15) having in itself the thermo magnetic (14) valve.

2. It is the body (7) referred to in claim 1 and it most predominant feature is the fact that it is made of a single piece.
3. It is a y type security tap with a going out feature and the tap is y shaped as a predominant feature. 5
4. It is the body (7) referred to in claim 1 and its predominant feature is the fact that the inner part of the body is hollow. 10
5. It is the arm (15) referred to in claim 1 and its predominant feature is the fact that it can be positioned in any direction on the A-A axis in a manner that it shall be  $\pm 90^\circ$ . 15
6. It is the gas exit (3) referred to in Claim 1 and its predominant feature is the fact that it is positioned in a manner that is in harmony with the angular specifications in claim 5. 20
7. It is the body (7) referred to in Claim 1 and its predominant feature is the fact that its angle is between  $70^\circ$  and  $110^\circ$ .
8. It is a y type security tap with a going out feature for gas burners or stoves as per claim 1 and its predominant feature is the fact that there is a distance between 22 and 27 mm between its lowest point (21) and highest surface (22). 30
9. It is the body (7) referred to in claim 1 and its predominant feature is the fact that it is approximately 60 grams. 35
10. It is the pin (8) referred to in claim 1 and its predominant feature is the fact that it is cylindrical in shape and its tip has a point contact with the guidance pin (9) and provides its horizontal movement and it is arced in shape, which provides a wide movement capacity for the system. 40
11. It is the guidance pin (9) referred to in claim 1 and its predominant feature is the fact that it is made of two parts as the main part (9a) and the plastic part (9b). 45
12. It is a y type security tap with a going out function for gas furnaces stoves of y type and its predominant feature is the fact that the guiding pin is between tip angles (10)  $70^\circ$  and  $130^\circ$  of the first part. 50
13. It is the cover (4) referred to in claim 1 and its predominant feature is the presence of holes (17) that are not on the same center and plane providing reverse assembly feature with the connecting component on both sides. 55
14. It is the cover (4) referred to in claim 1 and its predominant feature is the fact that there are cloves (34) on the cover of the micro-switch (5) preventing its assembly on the cover and not allowing it to turn and also the fact that there are cloves (44) preventing the micro-switch from coming out.
15. It is a y type security tap with going out function for gas burners and stoves according to claim 1 and its predominant feature is the fact that there is a pushing point (25) on the micro-switch helping the circuit to be completed and there is a pushing stamp (6) placed on the axle in order to be able to close the axle and perform the transaction of pushing.
16. It is the pushing stamp (6) referred to in claim 15, it is circular in cross-section and **characterized** as being made of plastic.
17. It is a pushing stamp (6) as in Claim 15 and Claim 16 and its predominant feature is the fact that there are cloves (26) inside and there are also channels (27) on the upper surface (41) to facilitate stretching when fixing the part to the axle.
18. It is a y type security tap with a going out function for gas burners and stoves according to claim 1 and its predominant feature is the fact that it has a projecting part (23) on the gas exit (3) connection incorporating the adjustment screw to adjust the passage of gas sticking and it also incorporates an adjustment screw (37) for adjusting the speed of flow of gas as requested.

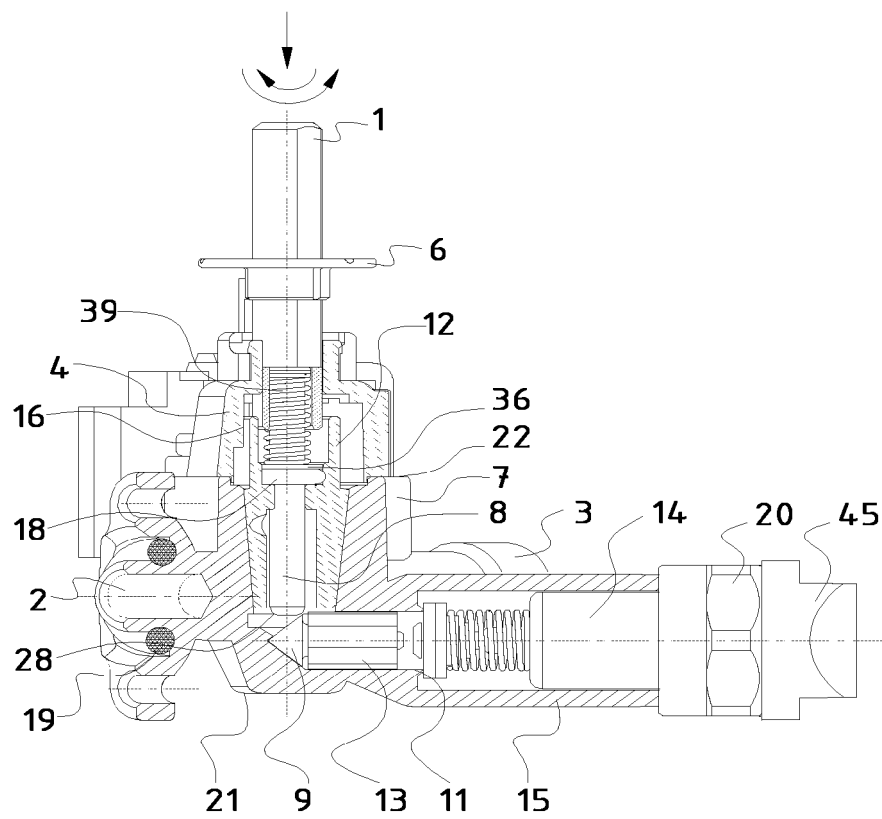


figure 1

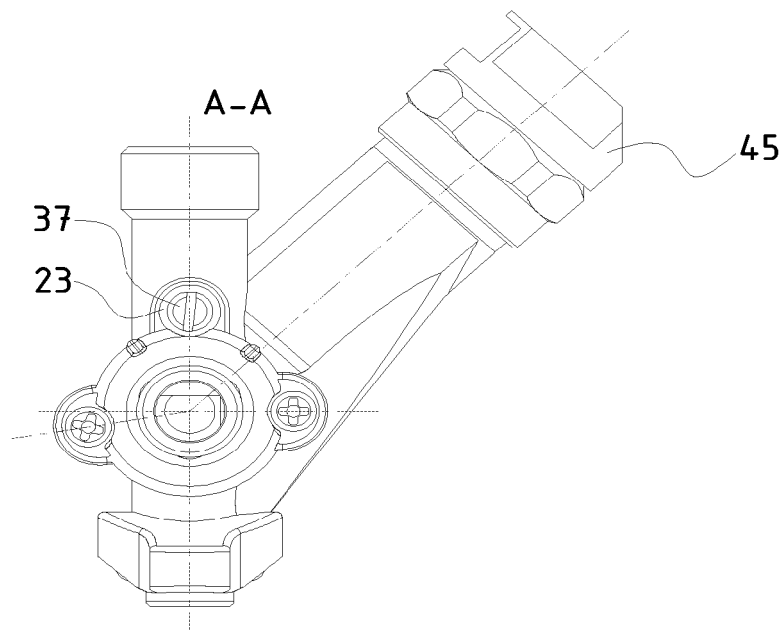
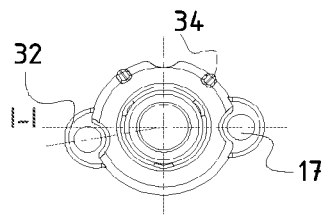
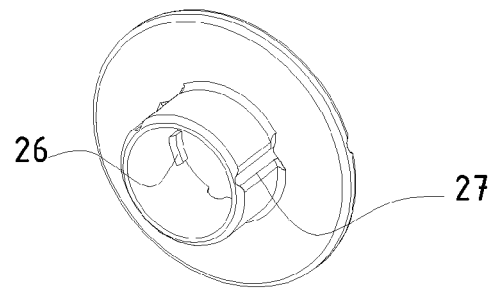


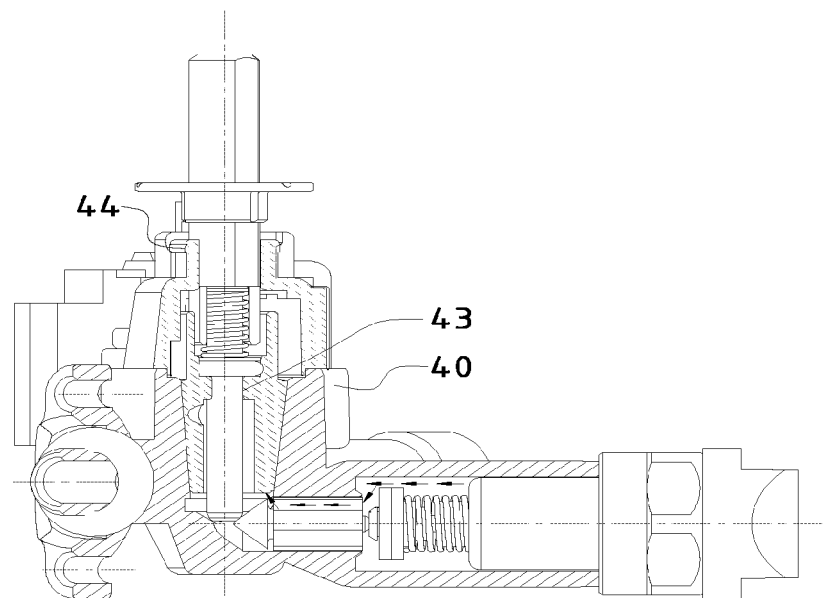
figure 2



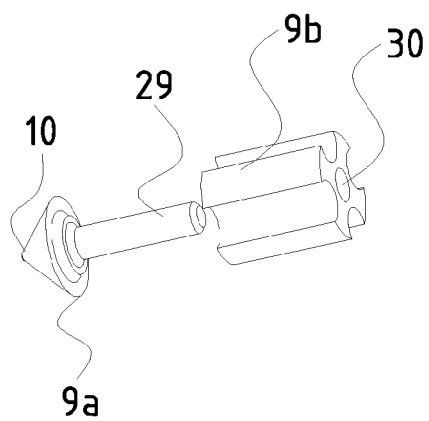
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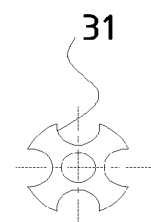
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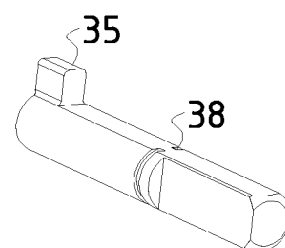
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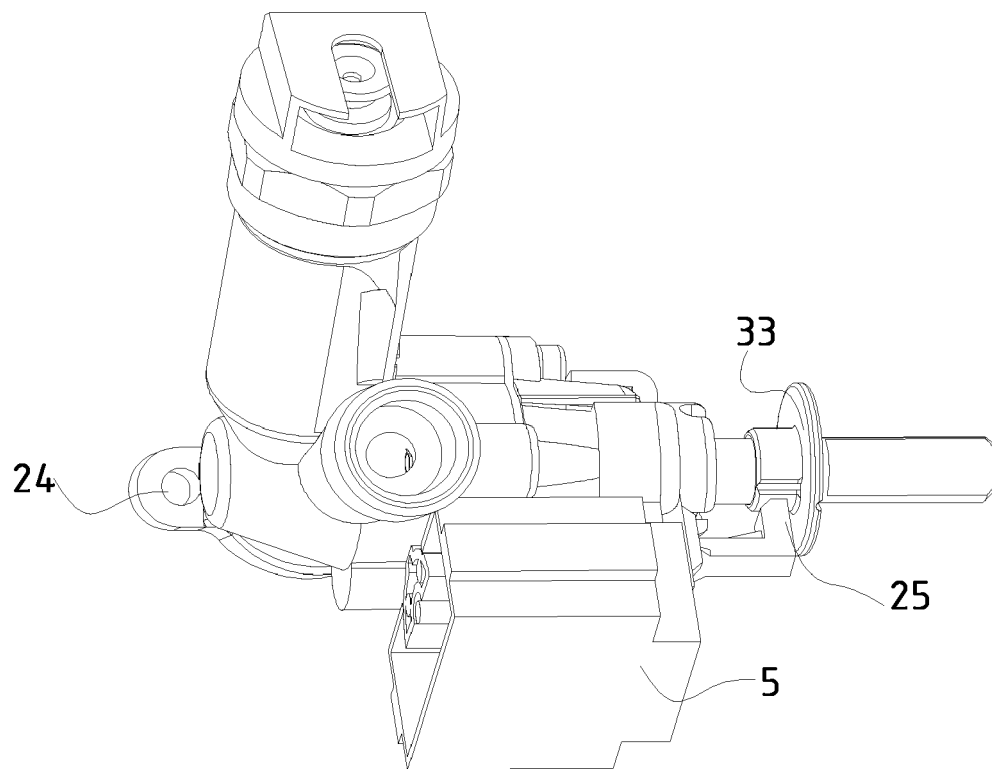
**figure 6**



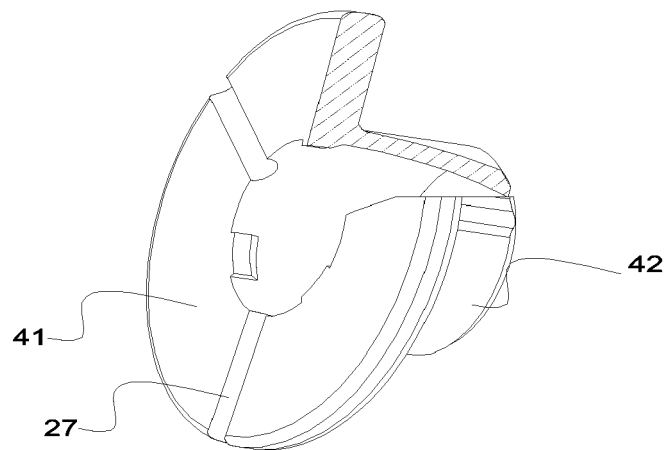
**figure 7**



**figure 8**



**figure 9**



**figure 10**

**REFERENCES CITED IN THE DESCRIPTION**

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