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(54) **Gas tap**

(57) The invention relates to a male (1.2) inside the gas tap (1) that allows opening/closing gas passage and adjusting the amount of gas passage in the meantime within gas operated domestic cookers, said male (1.2), which is located in the center of the gas tap (1) serving to enable the gas to pass at a certain flow rate, and thus allowing the flame to burn at a high or low amount and being provided with a V-shaped channel (1.2.1) with a slot form for full gas passage.

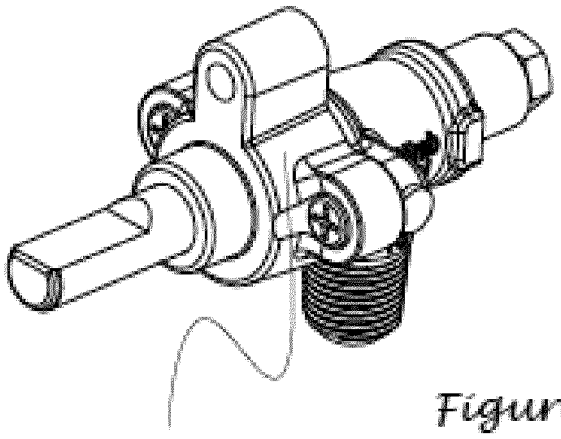

Figure 1

1

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Description

TECHNICAL FIELD

[0001] The invention relates to a male inside the gas tap that allows opening/closing gas passage and adjusting the amount of gas passage in the meantime within gas operated domestic cookers. Said male, which is located in the center of the gas tap, serves to enable the gas to pass at a certain flow rate, and thus allowing the flame to burn at a high or low amount. This male is produced of brass or aluminum material by machining method, or of plastic material by plastic injection or other plastic production methods (sintering) in today's technology. However, since the expansion coefficient of plastic materials is high, the plastic materials inside the tap will expand more than the other components therein in case the tap is subject to heat for a certain period of time; therefore, the possibility of gas leakage within the system will increase. Moreover, as per the article 6.3.2 of the respective European Standard EN 1106 *"the body parts, which separate the part carrying gas from the atmosphere, must be produced only of metal"*. Therefore, it is preferable that the male inside the tap is made of aluminum or brass, rather than plastic. The male according to the invention, on the other hand, is produced of aluminum by injection method unlike the existing production methods, which is a novel application; wherein machining process for the male after the production thereof is no longer necessary and the production is made easier, thereby allowing mass production.

[0002] Today, there are world standards specifying test and use conditions of such gas taps (e.g. EN 1106, EN 125, EN 126). Each gas tap manufacturer makes these gas taps undergo the tests specified in these standards. S/he determines the safety and reliability of the products as per the tests. As per the standards, taps must be gas-tight from operating life of 40000 cycles, which is the cycle life for domestic cookers according to TS EN 1106. Moreover, in thermal life test, which is not included in the standards, yet applied by many manufacturers, at least 5000 operating lives are performed at 130°C. In addition, within this standard, leakage gas flow rate is classified as internal leakage and external leakage. The allowed internal or external leakage is 20 cm3/h. Again in this standard, reference is made to the resistance of the elastomers used on the taps. As per the standard, the elastomers used in gas taps must be resistant against greasers, gas, corrosion, and moisture in accordance with the conditions stated in the standard. Tap body and male must be made of brass or aluminum material in order for the taps to be resistant against the challenging conditions mentioned above. However, after the male, which is produced of brass or aluminum material by machining method, is subject to complicated and sensitive machining processes, the tap body and the male are washed properly. Otherwise, particles like burrs remain inside the tap, and thus causing the tap to leak. These particles are sometimes so small that they cannot be seen by naked eye. However, they are only detected during leakage test after mounting of the tap is completed. Said male according to the invention is made of aluminum by metal injection method; therefore, it can be directly used without any need for machining process and the problems experienced during the production are minimized.

PRIOR ART

[0003] The patent application no. US 5431186 dated 25.07.1994 and owned by George H. Blume discloses an improved plastic valve body design and construction which has strength and durability similar to that of steel valve bodies, but with significantly reduced manufacturing time and cost. The valve body is preferably comprised of Delrin or a nylon/Kevlar composite material. However, this invention is designed for use with pumps handling abrasive fluids. In addition, our invention is totally different from this application since it does not comprise any plastic part.

[0004] Another patent application regarding the subject matter is the patent application no. US 4717268 dated 03.01.1984 and made by the firm Kamatics Corporation; wherein a bearing assembly comprising inner race and outer race members is disclosed. In this document, a novel technique developed by making use of self-lubricating property of plastics is mentioned. The invention discloses the use of high (hardened) carbon steels or the use of stainless steels, which are used within the state of the art. Our invention, i.e. our application, is produced of aluminum by metal injection method, with a different novel implementation.

[0005] Another application no. PI 8500156 is owned by Adolfo de Mitry and dated 14.01.1985; wherein gas operated cookers and gas valve serving to open/close gas passage, as well as to regulate the amount of gas in the meantime, in the igniters thereof are disclosed. Closing said valve is performed by means of an elastic disc which serves to allow closing of a metal center, as well as allowing the gas to get out of the center at a smaller or bigger rate, and thus serving for a burning of a higher or lower amount. In this application, there exists a threaded conical valve produced such that it will adjust the inner section of the center and said center is equipped with an orifice (opening) that performs opening/closing of said valve. In order to provide a solution to the inconvenience resulting from this gas valve, which is made of a conical shaft, metal is not used in the inner circle of the center of an elastic cover. Similarly, this invention is also different from our invention.

[0006] In light of the state of the art given above, producing the male provided inside the gas taps of the domestic cooking appliances of aluminum by way of injection method is a novel application. The present invention solves the problems of the prior art, thereby exceeding the state of the art, and it can be readily used in the gas

taps of the domestic cooking appliances in the related industry.

OBJECT OF THE INVENTION

[0007] The object of the invention is to produce a male made of aluminum material, said male being mechanically and thermally resistant, within current gas tap standards.

[0008] Another object of the invention is to reduce total weight of the tap by reducing the density of the male, with the change made in the production method.

[0009] Another object of the invention is to perform production in a faster manner and to perform a production of higher quality without using conventional machining processes, thanks to the fact that the male is produced by metal injection method. Moreover, energy loss and contamination, which are problems occurring in machining process, will be eliminated since conventional methods will not be used.

[0010] 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

[0011]

Fig. 1 is the perspective view of the gas tap,

Fig. 2 is the perspective view of the gas tap body,

Fig. 3 is the perspective view of the male according to the invention,

Fig. 4 is the view showing the V-shaped channel with slot form provided on the male according to the invention,

Fig. 5 is another view showing the V-shaped channel with slot form provided on the male according to the invention,

Fig. 6 is the perspective view showing the male pilot hole according to the invention,

Fig. 7 is the view showing the inner hole angle of the male according to the invention,

Fig. 8 is the view showing the diameter flatness in said male.

REFERENCE NUMERALS

[0012]

1. Gas tap

    1.1. Body
    1.2. Male

        1.2.1. V-shaped channel with slot form

            1.2.1.1. Length
            1.2.1.2. Depth
            1.2.1.3. Angle

        1.2.2. Pilot hole channel
        1.2.3. Inner hole

            1.2.3.1. Angle α

        1.2.4. Longitudinal slot

            1.2.4.1. Width
            1.2.4.2. Height

        1.2.5. Diameter flatness

2. Tap shaft
3. Cap
4. Screw

DETAILED DESCRIPTION OF THE INVENTION

[0013] In Fig. 1, the view of the gas tap (1) where the aluminum male (1.2) to be produced by aluminum injection method will be applied is shown. In Fig. 2, on the other hand, the body (1.1) of said gas tap (1) is shown. In Fig. 3, the perspective view of the male (1.2) according to the invention is given; where a longitudinal slot (1.2.4) which is provided in the rear section of the male (1.2) and the width (1.2.4.1) of which is between about 1 and 4 mm and the height (1.2.4.2) of which is between about 3 and 8 mm is seen. Again in the other figures, the design of the male (1.2) produced of aluminum material and applied in the gas tap (1), and thanks to this design, the male (1.2) can be readily produced by metal injection method. The channel (1.2.1) with slot form which is disposed on said male (1.2) and allows full gas passage is produced in V-shaped manner in order to allow it to be readily removed from injection mold; and the views showing the length (1.2.1.1), depth (1.2.1.2), and angle (1.2.1.3) of this channel are given in Figs. 4 and 5, respectively. The length (1.2.1.1) of said channel (1.2.1) is between 4 and 12 mm, the depth (1.2.1.2) thereof is between 0.7 and 3 mm, and the angle (1.2.1.3) thereof is between 5° and 30°. In Fig. 6, on the other hand, the pilot hole channel (1.2.2) that is also disposed on the male (1.2) according to the invention and allows half gas passage is given. Moreover, the inner hole (1.2.3) in the front section of the male (1.2) is provided with angle α (1.2.3.1) in order to facilitate its production by injection method, wherein the value of this angle is between 1° and 10°.

Furthermore, there is a diameter flatness (1.2.5) on the male (1.2) in order that the paths likely to be formed on the diameter by burrs during injection production will not cause any inconvenience on the diameter; wherein said flatness (1.2.5) can be located at any point on the diameter, thereby providing a way in, i.e. allowing entry. In Fig. 8, the view of said flatness (1.2.5), the distance of which from the center of the male (1.2) is between about 3 and 6 mm, is given.

[0014] The object of the present invention is to change the production method and to produce a gas tap above the standards for gas taps, and to perform this production process with minimum energy consumption.

[0015] The protection scope of this application is stated under the claims and cannot be restricted to the descriptions given only for illustrative purposes.

[0016] Other characteristics and additional advantages of the present invention will be better understood with the explanations below. Non-restricted examples and the references to the attached drawings will make the aspects of the invention more clear.

Claims

1. A male (1.2) which is produced of aluminum by metal injection method and is used in gas taps (1) having at least one gas tap body (1.1) and consisting of a tap shaft (2) allowing the male (1.2) according to the invention to rotate and of a male (1.2) permitting the gas to be opened/closed, **characterized in that** a V-shaped channel (1.2.1) with slot form which allows full gas passage is provided on said male (1.2).

2. The male (1.2) according the Claim 1, **characterized in that** there is a pilot hole channel (1.2.2) allowing half gas passage thereon.

3. The channel (1.2.1) with slot form according to Claim 1, **characterized in that** its length (1.2.1.1) is between 4 and 12 mm.

4. The channel (1.2.1) with slot form according to Claims 1 and 3, **characterized in that** its depth (1.2.1.2) is between 0.7 and 3 mm.

5. The channel (1.2.1) with slot form according to Claims 1, 3, and 4, **characterized in that** its angle (1.2.1.3) is between 5° and 30° mm.

6. The male (1.2) according to Claim 1, **characterized in that** an inner hole (1.2.3) is disposed in the front side thereof, said inner hole being provided with angle α (1.2.3.1).

7. The inner hole (1.2.3) according to Claim 6, **characterized in that** said angle α (1.2.3.1) is between 1° and 10°.

8. The male (1.2) according to Claim 1, **characterized in that** it is provided with a longitudinal slot (1.2.4) in the rear section thereof.

9. The longitudinal slot (1.2.4) according to Claim 8, **characterized in that** its width (1.2.4.1) is between 1 and 4 mm.

10. The longitudinal slot (1.2.4) according to Claim 8, **characterized in that** its height (1.2.4.2) is between 3 and 8 mm.

11. The male (1.2) according to Claim 1, **characterized in that** there is diameter flatness (1.2.5) therein in order for the paths formed by burrs not to cause inconvenience on the diameter.

12. The diameter flatness (1.2.5) according to Claim 11, **characterized in that** its distance from the center is between 3 and 6 mm.

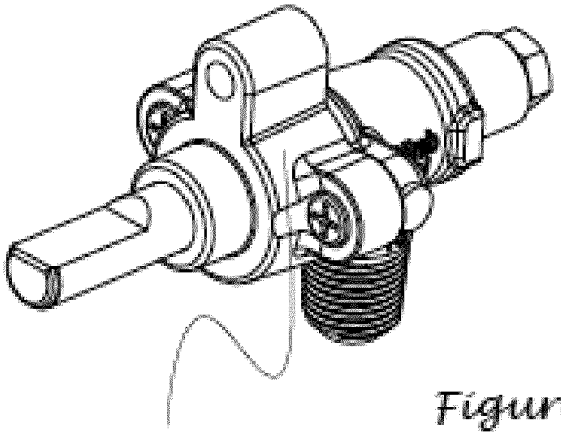

Figure 1

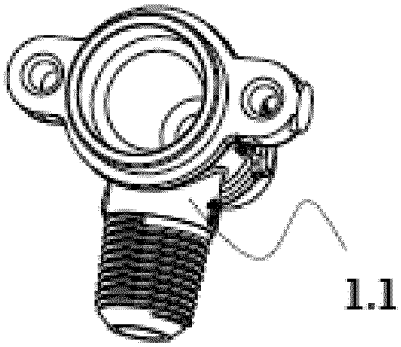

Figure 2

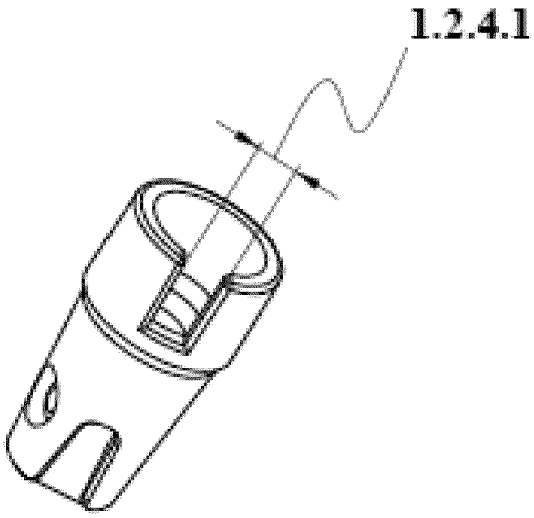

Figure 3

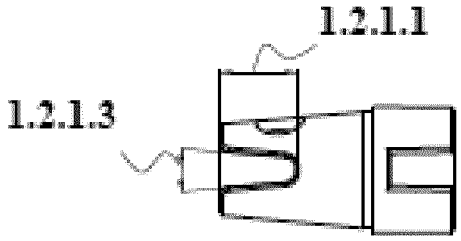

Figure 4

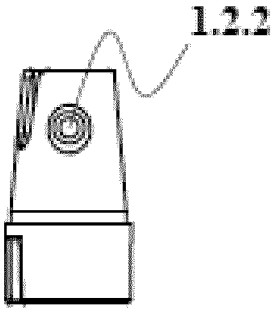

Figure 6

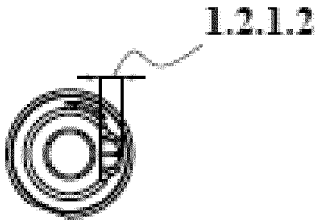

Figure 5

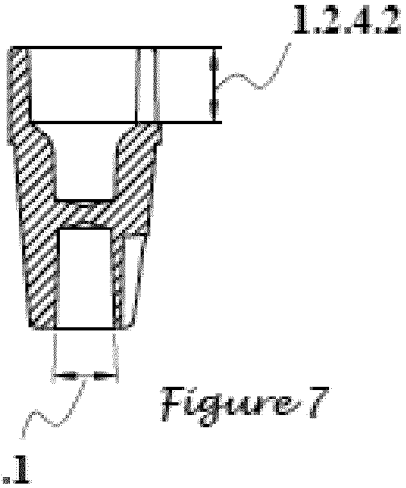

Figure 7

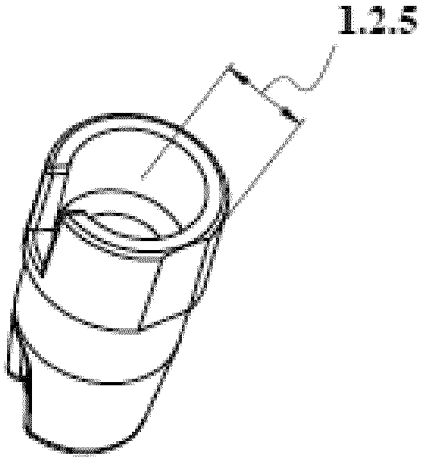

Figure 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5431186 A, George H. Blume **[0003]**
- US 4717268 A **[0004]**
- US PI8500156 A, Adolfo de Mitry **[0005]**