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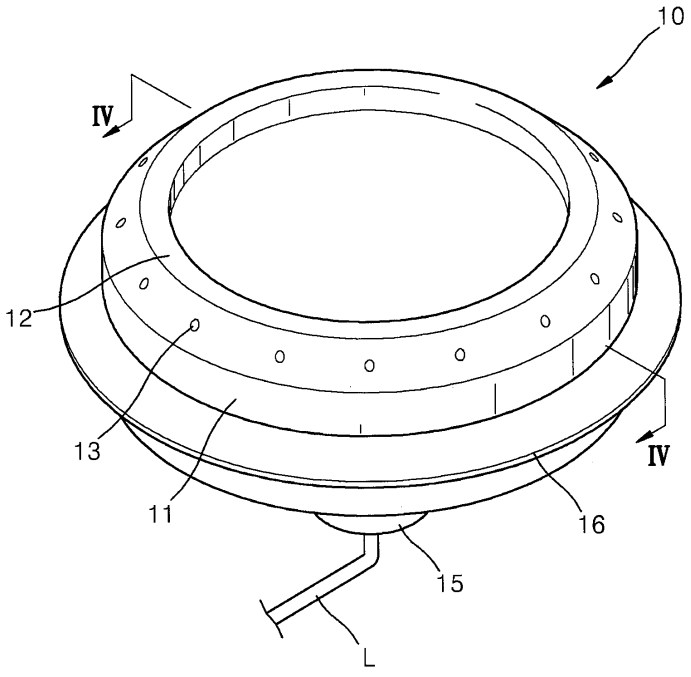
(54) Combustion burner of a mixture of hydrogen and oxygen

(57) The combustion burner of a mixture of hydrogen and oxygen according to the present invention is disclosed. The combustion burner 10 comprises a body part 11 which is airtight connected with a gas line L used for supplying a mixture of hydrogen and oxygen gases while preventing oxygen from being externally inputted and is generally formed in a cylindrical shape; a combustion part 12 whose inclined surface is formed in a rim shape along an upper edge portion of the body part 11; a plurality of flame holes 13 which are formed at regular intervals along an inclined surface of the combustion part; and a distribution part 14 which is formed in the interior of the body part 11 and distributes a mixture of hydrogen and oxygen gases inputted through the gas line L toward the flame holes 13.

Figure 3



EP 2 146 144 A2

Description

TECHNICAL FIELD

[0001] The present invention relates to a combustion burner of a mixture of hydrogen and oxygen which can be applied to a gas instrument for heating a container using a burning flame of a mixture of hydrogen and oxygen produced from water.

BACKGROUND ART

[0002] The apparatus for generating a harmful mixture of hydrogen and oxygen is directed to generating a mixture of hydrogen and oxygen which are obtained based on an electrolysis and does not produce pollution and are not harmful in such a manner that water with a small amount of electrolyte to an electrolytic cell with positive and negative electrodes. At this time, the hydrogen and oxygen are produced at a mole ratio of 2:1, the hydrogen produced in a bubble shape at the surface of the negative electrode, the oxygen produced in a bubble shape at the surface of the positive electrode. The thusly produced hydrogen and oxygen are mixed in a mixed gas form, which can burn. During the combustion, since the mixture of hydrogen and oxygen does not produce pollutants, it is very friendly and can be recognized as a new energy source.

[0003] At this time, when a mixture of hydrogen and oxygen produced in an apparatus of a mixture of hydrogen and oxygen is burned, the entire of the same decreases since oxygen is contained in a mixture gas, and the mixed gas burns, and water is produced as a byproduct. At this time, a combustion flame of a mixture of hydrogen and oxygen has a narrow rod shape. As shown in Figure 1, a combustion flame C of a mixture of hydrogen and oxygen has a high temperature flame core N in its interior, whose temperature reaches 3,000~6,000°C.

[0004] The metal used to make a container for cooking foods melts at about 2,000°C. Since the temperature of the flame core N of a combustion flame C of a mixture of hydrogen and oxygen reaches 3,000~6,000°C, the portion contacting with the flame core N melts. So, it is not proper to use the combustion flame C of a mixture of hydrogen and oxygen when heating a container. Since the flame in the course of combustion has a rod shape, it is impossible to heat wider area, which leads to a limited use of combustion heat.

DISCLOSURE OF THE INVENTION

[0005] Accordingly, it is an object of the present invention to provide a combustion burner of a mixture gas of hydrogen and oxygen which is invented in order to resolve the problems encountered in the conventional art.

[0006] It is another object of the present invention to provide a combustion burner of a mixture of hydrogen and oxygen which can effectively heat a container user for heating foods by decreasing a temperature by allowing a flame core not to generate from a combustion flame of a mixture of hydrogen and oxygen and at the same time by increasing the volume of combustion.

[0007] It is further another object of the present invention to provide a combustion burner of a mixture of hydrogen and oxygen which can implement a gas instrument similar with a conventional gas range.

[0008] To achieve the above objects, there is provided a combustion burner of a mixture of hydrogen and oxygen, comprising a body part 11 which is airtight connected with a gas line L used for supplying a mixture of hydrogen and oxygen gases while preventing oxygen from being externally inputted and is generally formed in a cylindrical shape; a combustion part 12 whose inclined surface is formed in a rim shape along an upper edge portion of the body part 11; a plurality of flame holes 13 which are formed at regular intervals along an inclined surface of the combustion part; a distribution part 14 which is formed in the interior of the body part 11 and distributes a mixture of hydrogen and oxygen gases inputted through the gas line L toward the flame holes 13; and an ignition medium cap 17 which is installed in an upper side of the body part 11and allows the combustion flame burned through the flame hole 13 to ignite a mixture of gases which is sprayed through other flame holes, wherein the diameter of the flame holes 13 is in a range of 0.2mm-2mm.

[0009] A suspending part 16 is formed in a lower side of the body part 11 and is suspended over the through holes G1 formed in the upper plate of the gas instrument.

[0010] The flame holes 13 are formed at an angle of 5~90° with respect to a center axis.

[0011] In the present invention, there is further provide an ignition medium cap 17 which is installed in an upper side of the body part 11 in order for the combustion flame burned through a certain flame hole 13 to ignite a mixture of hydrogen and oxygen gases which is sprayed through other flame holes.

EFFECTS

[0012] In the combustion burner of a mixture of hydrogen and oxygen according to the present invention, it is possible to heat a wider area by preventing a high temperature flame core from being produced in the interior of a combustion flame and by creasing the entire volume of a container used for cooking foods. In addition, the combustion burner according to the present invention can be applied to a variety of fields since a gas instrument similar with a conventional gas range can be implemented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The present invention will become better understood with reference to the accompanying drawings which are given only by way of illustration and thus are

not limitative of the present invention, wherein;

Figure 1 is a view for describing a formation of flame core in the course of burning a mixture of hydrogen and oxygen gases;

Figure 2 is a perspective view illustrating a gas instrument equipped with a combustion burner of a mixture of hydrogen and oxygen gases according to the present invention;

Figure 3 is a perspective view of a combustion burner of Figure 2;

Figure 4 is a cross sectional view taken along the line IV-IV' of Figure 3; and

Figure 5 is a view for describing a state that an ignition medium cap is installed in the body part of Figure 4.

MODES FOR CARRYING OUT THE INVENTION

[0014] The combustion burner of a mixture of hydrogen and oxygen according to the present invention will be described with reference to the accompanying drawings.

[0015] Figure 2 is a perspective view illustrating a gas instrument equipped with a combustion burner of a mixture of hydrogen and oxygen gases according to the present invention, Figure 3 is a perspective view of a combustion burner of Figure 2, Figure 4 is a cross sectional view taken along the line IV-IV' of Figure 3, and Figure 5 is a view for describing a state that an ignition medium cap is installed in the body part of Figure 4.

[0016] As shown therein, the combustion burner of a mixture of hydrogen and oxygen according to the present invention is installed on an upper plate of a gas instrument G on which a container used for cooking foods is placed. The combustion burner 10 comprises a body part 11 which is airtight connected with a gas line L used for supplying a mixture of hydrogen and oxygen gases while preventing oxygen from being externally inputted and is generally formed in a cylindrical shape; a combustion part 12 whose inclined surface is formed in a rim shape along an upper edge portion of the body part 11; a plurality of flame holes 13 which are formed at regular intervals along an inclined surface of the combustion part; and a distribution part 14 which is formed in the interior of the body part 11 and distributes a mixture of hydrogen and oxygen gases inputted through the gas line L toward the flame holes 13.

[0017] The body part 11 and the combustion part 12 are integral with each other and are made by processing one selected from the group comprising stainless steel, tungsten, nonferrous metal, and alloy steel.

[0018] A connection part 15 connected with a gas line L for supplying a mixture gas of hydrogen and oxygen is formed in a lower side of a body part 11. At this time, the gas line L and the connection part 15 have a seal engaged structure for preventing an external oxygen of a combustion burner of the present invention from being inputted. Since oxygen is contained in a mixture of hydrogen and oxygen produced in the course of decomposing water, when an external oxygen is inputted, a stable combustion cannot be obtained.

[0019] A suspending part 16 suspended over a through hole G1 formed in an upper plate of the gas instrument is disposed in a lower side of the body part 11, so it is possible to easily apply the combustion burner 10 of the present invention to a gas instrument.

[0020] Flame homes 13 are formed along an inclined surface of the combustion part at regular intervals. The flame holes 13 are formed at an angle range of 5~90° with respect to a center axis. In a preferred embodiment of the present invention, the flame holes 13 are formed at an angle of 45° with respect to a center axis. The diameter of the flame hole 13 is 0.2mm through 2mm, and in the embodiment of the present invention, it is 1 mm. It is possible to adjust the heat calorie of the combustion flame by increasing or decreasing the number of the flame holes 13.

[0021] The diameters of the flame holes 13 are small and of the units of mm, so the spraying pressure of the mixture of hydrogen and oxygen is low, and it is partially mixed with an external air in the course of combustion. Since the mixture of hydrogen and oxygen sprayed with a lower pressure is partially mixed with air, so flame cores of Figure 1 do not occur.

[0022] The distribution part 14 distributes a mixture of hydrogen and oxygen toward the flame holes 13.

[0023] Since oxygen is contained in the mixture, the oxygen should not be externally inputted into the interior of the combustion burner 10, so the distribution part 14 is disposed in the interior of the body part 11 while substantially being sealed from the outside.

[0024] An ignition medium cap 17 is installed on an upper side of the body part 11 foe helping combustion flame from the flame hole 13 to ignite a mixture of gases which are sprayed through the flame holes. The ignition medium cap 17 allows the combustion flames burning through the flame holes 13 to spread toward the surrounding, so combustion flames are transferred to other flame holes. In addition, the ignition medium cap 17 is able to prevent the overflowing foods from blocking the flame holes 13.

[0025] In the above structure of the present invention, a mixture of hydrogen and oxygen inputted through a gas line L is divided into flame holes 13 and is spread. The mixture of hydrogen and oxygen, which are spread in the above manner, helps generate combustion heat while forming combustion flames. Since the diameters of the flame holes are small in the units of mm, the spraying pressure of the mixture of hydrogen and oxygen sprayed from the flame holes 13 is small, and partially mixed with an external air in the course of combustion. Since it is partially mixed with an external air in the course of combustion, high temperature flame cores don't form in the course of combustion.

[0026] Since the combustion flame burned through the flame holes 13 is formed along the combustion part 12,

the volume of the combustion flame is great, and it is possible to effectively heat the container for cooking foods.

[0027] As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described examples are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

Claims

1. A combustion burner of a mixture of hydrogen and oxygen, comprising:

a body part 11 which is airtight connected with a gas line L used for supplying a mixture of hydrogen and oxygen gases while preventing oxygen from being externally inputted and is generally formed in a cylindrical shape;
a combustion part 12 whose inclined surface is formed in a rim shape along an upper edge portion of the body part 11;
a plurality of flame holes 13 which are formed at regular intervals along an inclined surface of the combustion part;
a distribution part 14 which is formed in the interior of the body part 11 and distributes a mixture of hydrogen and oxygen gases inputted through the gas line L toward the flame holes 13; and
an ignition medium cap 17 which is installed in an upper side of the body part 11and allows the combustion flame burned through the flame hole 13 to ignite a mixture of gases which is sprayed through other flame holes, wherein the diameter of the flame holes 13 is in a range of 0.2mm-2mm.

2. The burner of claim 1, wherein said body part 11 and said combustion part 12 are integral with each other and are made by processing one selected from the group comprising stainless steel, tungsten, nonferrous metal, and alloy steel.

3. The burner of claim 1, wherein a suspending part 16 is formed in a lower side of the body part 11 and is suspended over the through holes G1 formed in the upper plate of the gas instrument.

4. The burner of claim 1, wherein said flame holes 13 are formed at an angle of 5~90° with respect to a center axis.

Figure 1

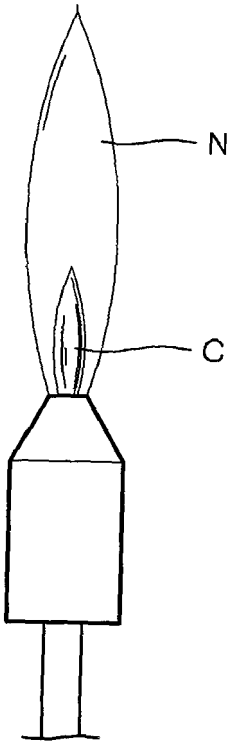


Figure 2

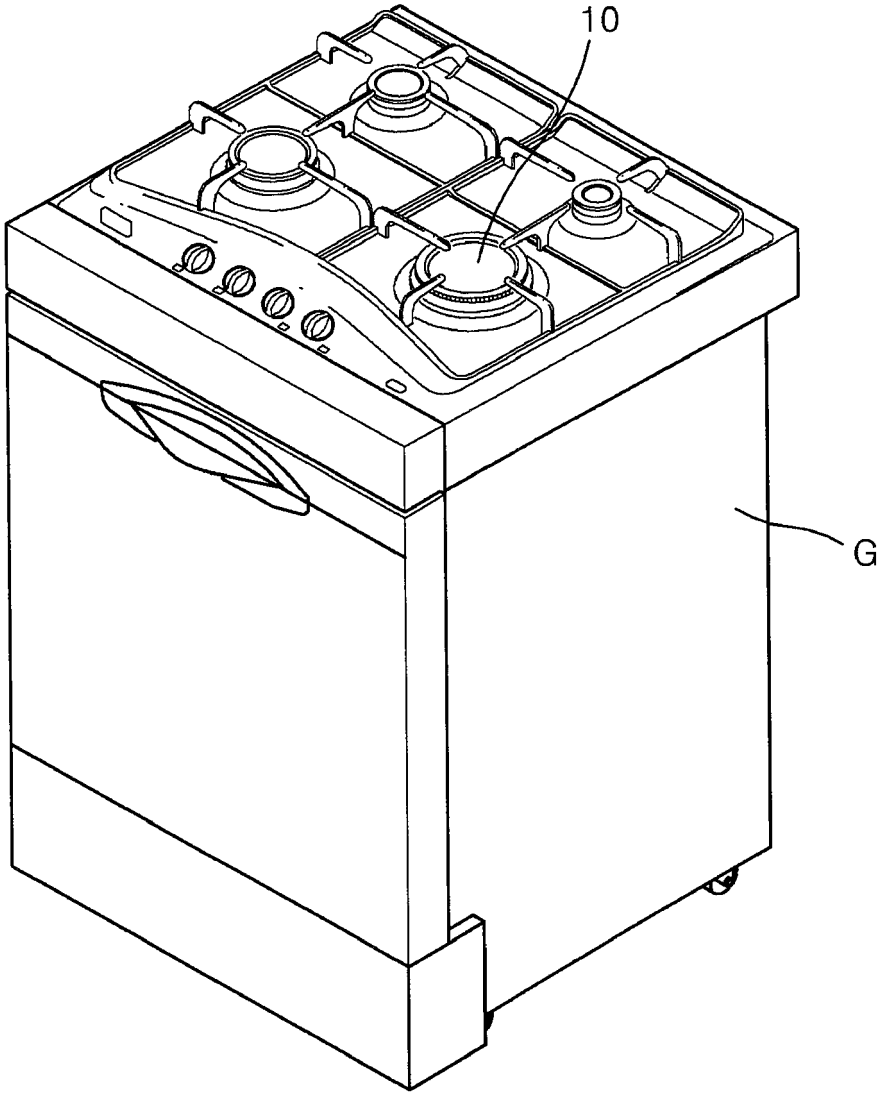


Figure 3

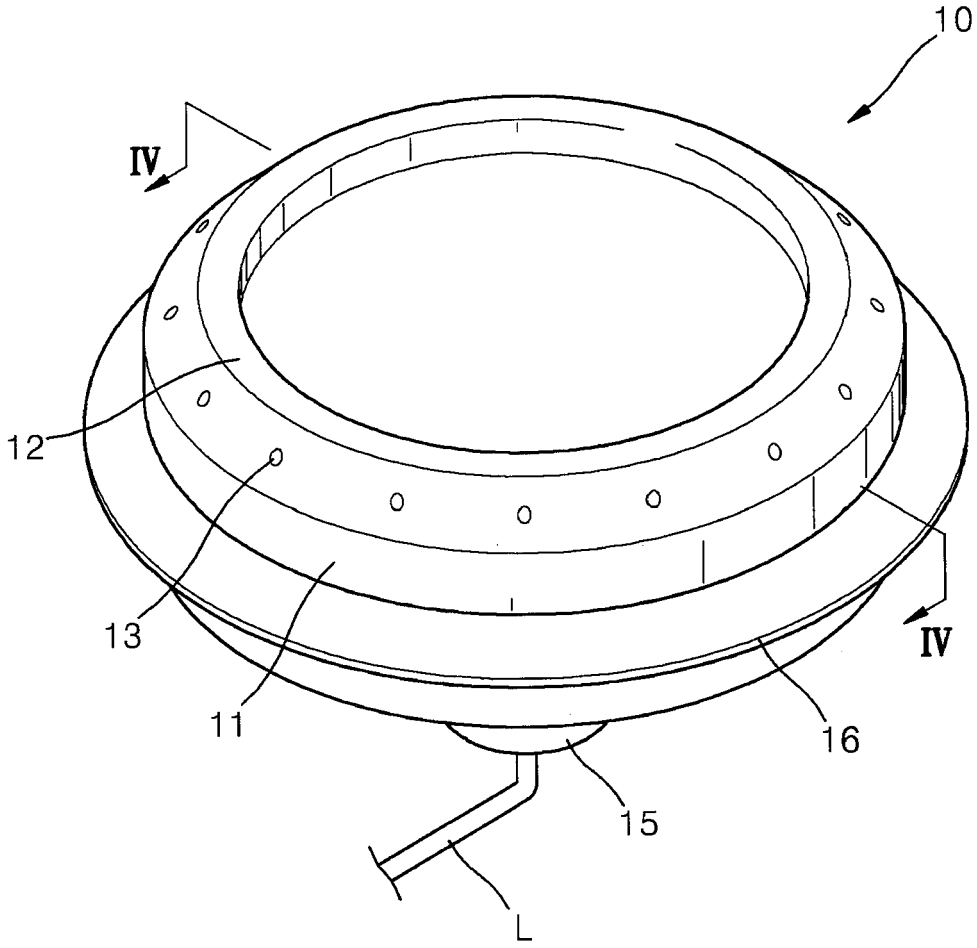


Figure 4

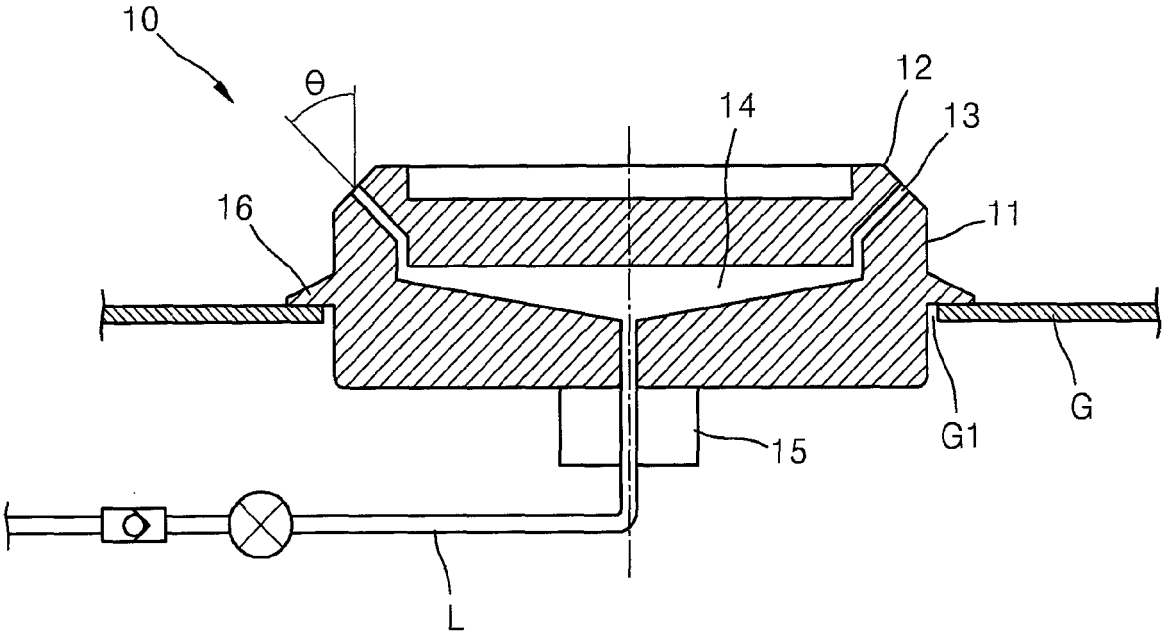


Figure 5