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(54) Benævnelse: **Grillbrænder og grillprocesfremgangsmåde med anvendelse af samme**

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DESCRIPTION

Technical Field

[0001] The present invention relates to a roasting burner and a roasting processing method.

Background Art

[0002] Conventionally, in order to prevent accidents such as poisoning, ignition, and explosion, fuel gas has been added with an odorant having a specific odor so that it can be detected quickly and easily by appealing to the sense of smell when leaked. Conventionally known odorants include sulfur compounds such as mercaptan and sulfide, and these are used singly or in combination. Currently, the sulfur-containing compounds used are very small and have a high odor effect, and their odor quality is generally perceived as a gas odor (for example, refer to Patent Literature 1).

[0003] Patent Literature 2 discloses a gas burner wherein a cap is attached to a flame injection nozzle to reduce the transfer of gas odor to the food material.

Prior Art Document

Patent Literature

[0004]

Patent Literature 1: JP H08-060167 A

Patent Literature 2: JP 3125015 U

Summary of Invention

Technical Problem

[0005] By the way, a roasting process such as roasting a surface of a food material or blowing off moisture on the surface may be performed with a combustion flame such as a gas burner.

At this time, the odorant added to the fuel gas may adhere to the food material as a gas odor, which may deteriorate the flavor of the food.

[0006] An object of the present invention is to provide a roasting burner and a roasting processing method that can improve the flavor of foods that have been subjected to roasting processing. Solution to Problem

[0007] The present invention provides a roasting burner according to claim 1.

[0008] According to the present invention as described above, gas odor does not occur from food that has been subjected to roasting processing by being roasted by the combustion flame that has passed through the hole. It is presumed that gas odor was reduced due to complete combustion of the flame and the generation of far infrared rays. Therefore, the flavor of the processed food can be improved.

[0009] Further, preferably, a plurality of hole portions is formed, one of the plurality of hole portions is formed at a central position in a surface perpendicular to an output direction of the combustion flame, and the hole portions excluding the one are formed side by side in a circumferential direction centering on the one. That is, since the plurality of hole portions are formed at predetermined positions, a large amount of oxygen can be taken into the combustion flame. As a result, the combustion flame to be output can be brought into a completely burned state, so that the gas odor can be further reduced, and the flavor of the processed food can be further improved.

[0010] Moreover, preferably, the tubular member is made of a material containing carbon. According to this, since the flavor of charcoal can be attached to the foodstuff, the flavor of the food subjected to the roasting process can be further improved.

[0011] The present invention also provides a roasting processing method according to claim 4. According to this, it is possible to improve the flavor of the food that has been subject to roasting processing.

Effect of the Invention

[0012] According to the present invention, it is possible to improve the flavor of foods that have been subjected to roasting processing.

Brief Description of Drawings

[0013]

FIG. 1 is a perspective view showing a burner with a tubular member according to one

embodiment of the present invention;

FIG. 2 is a plan view showing the burner with the tubular member seeing from an output direction of a combustion flame;

FIG. 3 is a perspective view showing a part of the tubular member which comprises the burner with the tubular member transparently;

FIG. 4 is a sectional view showing a part of the burner with the tubular member; and

FIG. 5 is a sectional view taken along line I-I in FIG. 3.

Description of Embodiments

[0014] Hereinafter, a burner with a tubular member 10 (cooking burner) according to a first embodiment of the present invention will be described with reference to FIGS. 1 to 5. FIG. 1 is a perspective view showing a burner with a tubular member 10 including a tubular member 1 according to the first embodiment of the present invention. In the drawings, an axial direction of the tubular member 1 may be referred to as "front-rear direction" and an output direction of a combustion flame may be referred to as "front".

[0015] As shown in FIGS. 1 and 2, the burner with the tubular member 10 includes: a gas cylinder 2 filled with LP gas (liquefied propane gas); a gas burner 3 that supplies oxygen to LP gas delivered from the gas cylinder 2 to output a combustion flame; the tubular member 1 that is attached to a tip of the gas burner 3 and allows the combustion flame to pass therethrough; and a support member 4 for supporting the tubular member 1 on the gas burner 3.

[0016] The gas burner 3 includes: an adjustment mechanism 31 for adjusting the amount of gas sent out from the gas cylinder 2 and taking in air (oxygen) mixed into the gas; and a metal pipe 32 that outputs the combustion flame sent out from the adjusting mechanism 31 in a predetermined direction (front-rear direction) . The metal pipe 32 is formed with a screw hole 33 into which a screw 42 of the support member 4 is screwed. As shown in FIG. 4, the screw hole 33 is formed at a position where while the screw 42 is screwed (hereinafter sometimes referred to as screwed state), a gap S4 (fourth gap) in the axial direction is formed between a boundary between a main body portion 11 and an insertion tubular portion 12 of the tubular member 1 and the metal pipe 32.

[0017] In the present embodiment, the tubular member 1 is made of an isotropic graphite material. As shown in FIGS. 3 to 5, the tubular member 1 is integrally formed with the disc-shaped main body portion 11 having a plurality of (9 in the illustrated example) through holes, and the insertion tubular portion 12 which is erected in a cylindrical shape from a peripheral edge of the main body portion 11 and into which metal pipe 32 of the gas burner 3 is inserted.

[0018] As shown in FIGS. 4 and 5, the main body portion 11 is formed so that a shaft dimension L2 is a predetermined thickness, and has a plurality of (9 in the illustrated example) through-holes 110 penetrating in the axial direction that are circular in plan view.

[0019] Among the nine through-holes 110, one (hereinafter may be referred to as the center hole 11a) is formed at a center position of the disc-shaped main body portion 11 (the same position as the center point P of the main body portion 11) . The remaining eight through-holes are formed around the center position and at equal intervals. a diameter of the center hole 11a is formed so as to be slightly larger than diameters of the remaining eight through holes (hereinafter also referred to as surrounding holes) described later. The nine through-holes 110 are formed such that an end (front end, tip) 111 in the front in the axial direction (output direction of the combustion flame) communicates with the outside, and a rear end (rear end, base end) 112 in the axial direction communicates with an inside of the insertion tubular portion 12. Further, the nine through-holes 110 are formed so that the inner diameter dimension is substantially constant from the front end 111 to the rear end 112.

[0020] The insertion tubular portion 12 is formed coaxially with the main body portion 11, and an outer diameter of the insertion tubular portion 12 is substantially equal to an outer diameter R1 of the main body portion 11 (an outer diameter R1 of the tubular member 1) . Further, an inner diameter R2 of the insertion tubular portion 12 is formed to be larger than an outer diameter of the metal pipe 32 of the gas burner 3. That is, as shown in FIG. 4, while the tip of the metal pipe 32 is inserted into the insertion tubular portion 12, a gap S1 (third gap) is formed in a radial direction between the insertion tubular portion 12 and the metal pipe 32.

[0021] As shown in FIG. 5, the tubular member 1 is formed such that the axial dimension L1 of the tubular member 1 is 25 mm, the axial dimension L2 of the main body 11 is 12.5 mm, the axial dimension L3 of the insertion tubular portion 12 is 12.5 mm, the outer diameter R1 of the tubular member 1 is 36 mm, the inner diameter R2 of the insertion tubular portion 12 is 22 mm, the diameter R3 of the center hole 11a is 6 mm, and the diameter R4 of the surrounding hole is 5 mm.

[0022] In the present embodiment, each of the above dimensions is merely an example, and in the present invention, it may be appropriately designed according to the diameter of the metal pipe, thermal power, application, etc. For example, preferably, the axial dimension L1 of the tubular member 1 is 20 mm to 60 mm, the axial dimension L2 of the main body 11 is 10 mm to 55 mm, the axial dimension L3 of the insertion tubular portion 12 is 5 mm to 50 mm, the outer diameter R1 of the tubular member 1 is 35 mm to 37 mm, the inner diameter R2 of the insertion tubular portion 12 is 21 mm to 23 mm, the diameter R3 of the center hole 11a is 5 mm to 7 mm, and the diameter R4 of the surrounding hole is 4 mm to 6 mm.

[0023] Further, in the present embodiment, the number of through-holes as the holes formed in the tubular member is nine, but the present invention is not limited to this. The number of through-holes may be one or more, and the size may be designed as appropriate. Further, each through-hole 110 is formed so that the inner diameter dimension is substantially constant

from the front end 111 to the rear end 112, but the present invention is not limited to this. Each through hole may be formed so that its diameter dimension gradually increases toward the front end 111, or may be formed so that its diameter dimension gradually decreases toward the front end 111.

[0024] As shown in FIGS. 1 and 4, the support member 4 includes: a plate member 41 obtained by bending a rectangular plate-shaped sheet metal; and a screw 42 for fixing the plate member 41 to the metal pipe 32.

[0025] As shown in FIG. 4, the plate member 41 includes: a first plate portion 41A (opposed plate portion) extending in the radial direction of the tubular member 1; a second plate portion 41B (plate portion) that is continuous with the first plate portion 41A and extends in the axial direction of the tubular member 1; a third plate portion 41C (opposed plate portion) that is continuous with the second plate portion 41B and extends in the radial direction of the tubular member 1; and a fourth plate portion 41D (fixed plate portion) that is continuous with the third plate portion 41C and extends in the axial direction of the tubular member 1. That is, the first plate portion 41A and the third plate portion 41C are formed to face each other. The axial dimension of the second plate portion 41B is formed to be slightly larger than the axial dimension L1 of the tubular member 1. A screw hole 43 into which the screw 42 is screwed is formed in the fourth plate portion 41D.

[0026] That is, a gap S2 (first gap) is formed between the first plate portion 41A and the tubular member 1, and between the third plate portion 41C and the tubular member 1 in the axial direction in a state where the screw 42 is screwed. Further, the diameter of the third plate portion 41C is formed such that a gap S3 (second gap) is provided between the insertion tubular portion 12 and the second plate portion 41B in the radial direction in a state where the screw 42 is screwed. In this way, the gaps S1, S2, S3, S4 are formed between the tubular member 1, the support member 4, and the metal pipe 32 in a state where the screw 42 is screwed. Thus, air is easily taken into the combustion flame passing through the through holes 110 from the gaps S1, S2, S3, and S4.

[0027] A method for attaching such a tubular member 1 to the metal pipe 32 will be described.

[0028] The axial direction of the tubular member 1 is arranged along the axial direction of the metal pipe 32 of the gas burner 3, and the insertion tubular portion 12 is brought close to the tip of the metal pipe 32 to insert the tubular member 1. With this inserted state, the tubular member 1 is sandwiched between the first plate portion 41A and the third plate portion 41C of the support member 4, and the screw 42 is screwed to the screw hole 43 of the support member 4 and the screw hole 33 of the metal pipe 32. In this way, the tubular member 1 is attached to the gas burner 3.

[0029] According to the embodiment described above, the combustion flame that has passed through the through-holes 110 (hole portions) applying the roasting process, the gas odor will not be generated from the food subjected to roasting processing. It is presumed that gas odor

was reduced due to complete combustion of the flame and the generation of far infrared rays. Therefore, the flavor of the food subjected to the roasting process can be improved.

[0030] Further, a plurality of through-holes 110 (hole portions) are formed, and one of the plurality of holes (center hole 11a) is formed at a center position in a direction perpendicular to the output direction of the combustion flame, and the plurality of holes (surrounding holes 11b) excluding the one (center hole 11a) is formed side by side in the circumferential direction centering on the one (center hole 11a). That is, since a plurality of through-holes 110 (hole portions) is formed at predetermined positions, a large amount of oxygen can be taken into the combustion flame. As a result, the combustion flame to be output can be brought into a completely burned state, so that the gas odor can be further reduced, and the flavor of the food subjected to the roasting process can be further improved.

[0031] Further, the tubular member 1 is made of a material containing carbon (isotropic graphite material) . According to this, since the flavor of charcoal can be attached to the food material, the flavor of the food subjected to the roasting process can be further improved. As materials containing carbon, various graphite materials, charcoal, bamboo charcoal, coal (coke), etc. can be used.

[0032] In addition, this invention is not limited to the above embodiment, and includes other modifications etc. which can achieve the object of the present invention. The modification as shown below is also contained in the present invention.

[0033] In the above embodiment, the tubular member 1 is made of isotropic graphite material, but the present invention is not limited to this. The tubular member 1 may be made of ceramic or various metals. Even when the tubular member 1 is made of these metals, the gas odor does not occur from the food subjected to the roasting process. That is, as compared with the first embodiment, although the flavor is inferior to the extent that the flavor of charcoal does not adhere to the food, the flavor of the food subjected to the roasting process can be improved.

[0034] Further, in the above embodiment, the gaps S1, S2, S3, and S4 are formed between the tubular member 1 and the support member 4, and between the tubular member 1 and the metal pipe 32 in a state where the screw 42 is screwed. However, the present invention is not limited to this. In the state where the screw 42 is screwed, the gaps located between the tubular member 1 and the support member 4, and between the tubular member 1 and the metal pipe 32 may be appropriately provided according to the use and required performance.

[0035] Next, the inventors of the present invention confirmed the effects of the present invention by letting 30 subjects taste the following foods. First, the subjects were made to sample a food (denoted as food 1) obtained by roasting food with a gas burner 3 without the tubular member 1, and then the following three foods were sampled. Relative to food 1, answer A if the subject feels the taste is better, answer B if the subject feels the taste does not change, and answer C if the subject feels the taste is not good.

1. 1) Food that has been subjected to the roasting process by using a burner 10 with a tubular member 1 made of isotropic graphite;
2. 2) Food that has been subjected to the roasting process by a burner with a tubular member made of ceramic;
3. 3) Food that has not been subjected to the roasting process.

[0036] For 1), all of the 30 subjects answered A;
For 2), 23 of 30 subjects answered A and the remaining 7 answered B;
For 3), 3 of 30 subjects answered A, 5 answered B, and the remaining 22 answered C. From the above results, the excellent taste improving effect of the present invention could be confirmed.

[0037] In addition, the best configuration, method, and the like for carrying out the present invention have been disclosed above, but the present invention is not limited to these. That is, the present invention has been illustrated and described primarily with respect to particular embodiments, but without departing from the scope of the present invention, various modifications can be made by those skilled in the art in terms of shape, material, quantity, and other detailed configurations. Therefore, the description limited to the shape, material, etc. disclosed above is an example for easy understanding of the present invention, and does not limit the present invention. The description by the name of the member which removed the limitation of a part of shape, material, etc. or all limitations is included in the present invention.

Reference Signs List

[0038]

1 tubular member

3 gas burner

10 burner with tubular member (cooking burner)

110 through hole (hole portion)

11a center hole (one of a plurality of hole portions)

11b surrounding holes (hole portions excluding the one of the plurality of hole portions)

111 front end (tip)

112 rear end (base end)

S1 gap (third gap)

S2 gap (first gap)

S3 gap (second gap)

S4 gap (fourth gap)

41A first plate portion (opposed plate portion)

41B second plate portion (plate portion)

41C third plate portion (opposed plate portion)

41D fourth plate portion (fixed plate portion)

REFERENCES CITED IN THE DESCRIPTION

Cited references

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

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- JPH08060167A **[0004]**
- JP3125015U **[0004]**

PATENTKRAV

1. Grillbrænder (10), omfattende

en gasbrænder (3) med et metalrør (32) med et skruehul (33),
et rørformet element (1) fastgjort til en spids af metalrøret (32) og med et hulafsnit (110), hvorigennem en forbrændingsflamme deraf passerer; og
et støtteelement (4) til at støtte det rørformede element (1) på metalrøret (32),
hvor det rørformede element (1) har et skiveformet hovedkropsafsnit (11), hvori hulafsnittet (110) er dannet, og et rørformet indføringsafsnit (12), som er opbygget i en cylindrisk form af en omkreds af hovedkropsafsnittet (11), og hvor det rørformede indføringsafsnit (12) er dannet koaksialt med hovedkropsafsnittet (11), og en udvendig diameter af det rørformede indføringsafsnit (12) er i det væsentlige lig med en udvendig diameter af hovedkropsafsnittet (11), og spidsen af metalrøret (32) er indført i det rørformede indføringsafsnit (12), og
hvor støtteelementet (4) omfatter:

et U-formet afsnit, som opnås ved at bukke et rektangulært pladeformet blik med et pladeafsnit (41B) og et par modsatte pladeafsnit (41A, 41C), som er sammenhængende med hver ende af pladeafsnittet (41B) og vender mod hinanden;
et fast pladeafsnit (41D), som er sammenhængende med et af parret af modsatte pladeafsnit (41A, 41C) og er tilvejebragt til at vende mod pladeafsnittet (41B) og er fastgjort til metalrøret (32); og en skrue (42) til at fastgøre pladeafsnittet (41D) til metalrøret (32), og
hvor de modsatte pladeafsnit (41A, 41C) strækker sig i det rørformede elements (1) radiale retning, pladeafsnittet (41B) strækker sig i det rørformede elements (1) aksiale retning, og det faste pladeafsnit (41D) strækker sig i det rørformede elements (1) aksiale retning og har et skruehul (43), og

hvor metalrøret (32), det rørformede element (1) og støtteelementet (4) er dannet i sådan en størrelse, at i den tilstand, hvor skruen (42) er skruet ind i skruehullet (33) i metalrøret (32) og ind i skruehullet (43) i det faste pladeafsnit (41D), er der dannet en første spalte (S2) mellem parret af modsatte pladeafsnit (41A, 41C) og det rørformede element (1) i en aksial retning, er der dannet en anden spalte (S3) mellem pladeafsnittet (41B) og det rørformede indføringsafsnit (12) i en radial retning, er der dannet en tredje spalte (S1) mellem metalrøret (32) og en indvendig omkredsflade af det rørformede indføringsafsnit (12) i den radiale retning, og er der dannet en fjerde spalte (S4) mellem en spidsende af metalrøret (32) og en basisende af hulafsnittet (110) i den aksiale retning.

2. Grillbrænder (10) ifølge krav 1,
hvor der er dannet en flerhed af hulafsnittene (110),
hvor et (11a) af flerheden af hulafsnit (110) er dannet ved en midterste position i en overflade vinkelret på en udstrømningsretning af forbrændingsflammen, og hvor hulafsnittene (110) blandt flerheden af hulafsnit (110) med undtagelse af det ene (11a) er dannet side om side i en omkredsretning centreret om det ene (11a).

3. Grillbrænder (10) ifølge krav 1 eller 2,
hvor det rørformede element (10) er fremstillet af et materiale, som indeholder kulstof.

4. Grillprocesfremgangsmåde, som griller ingredienser med en brænder,
hvor grillbrænderen (10) ifølge et hvilket som helst af kravene 1 til 3 anvendes som brænderen.

DRAWINGS

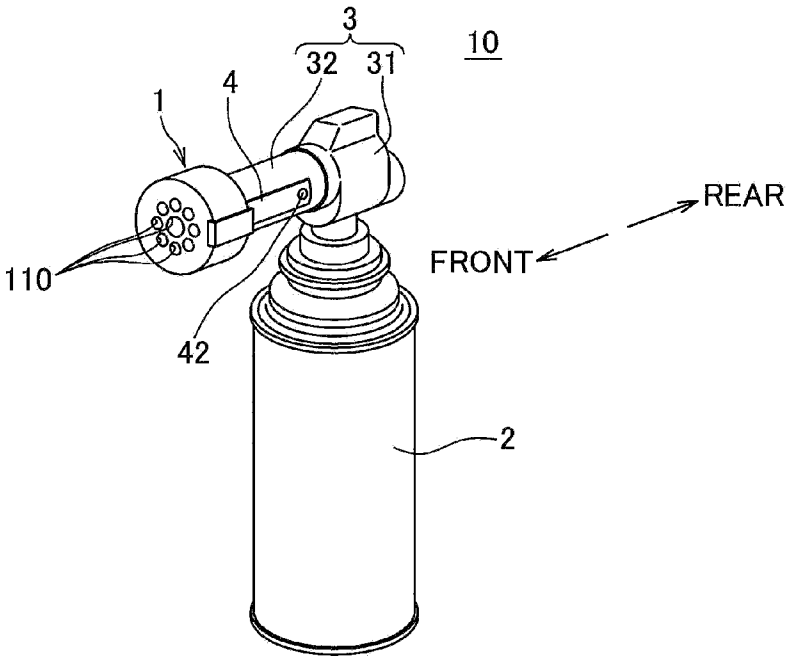


FIG.1

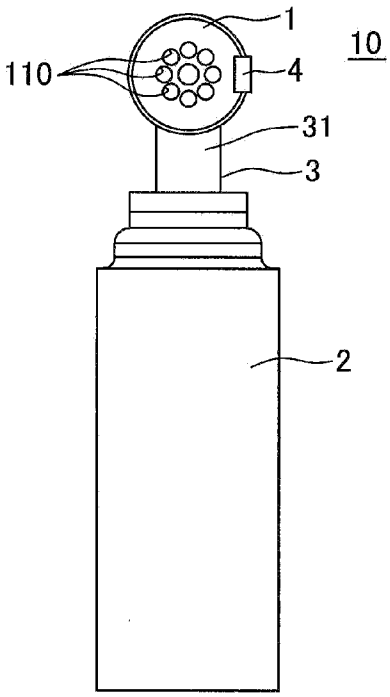


FIG.2

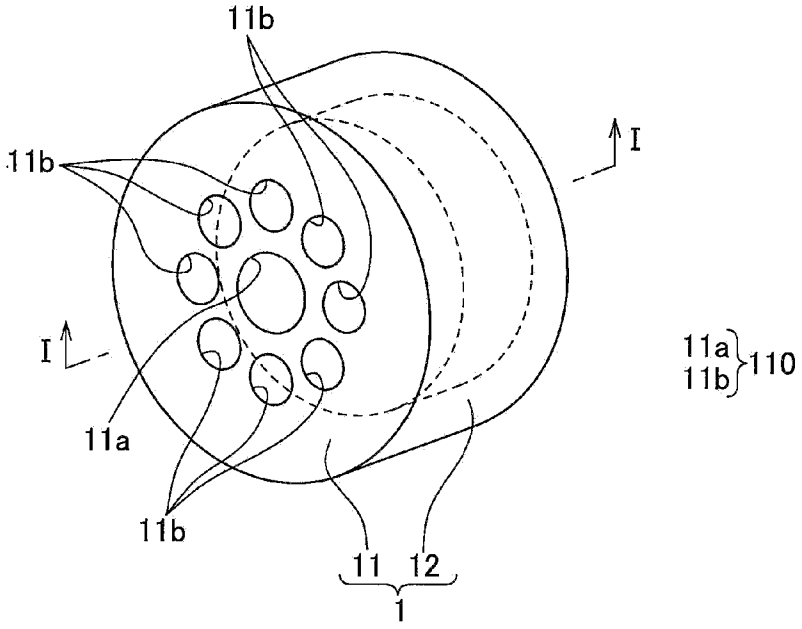
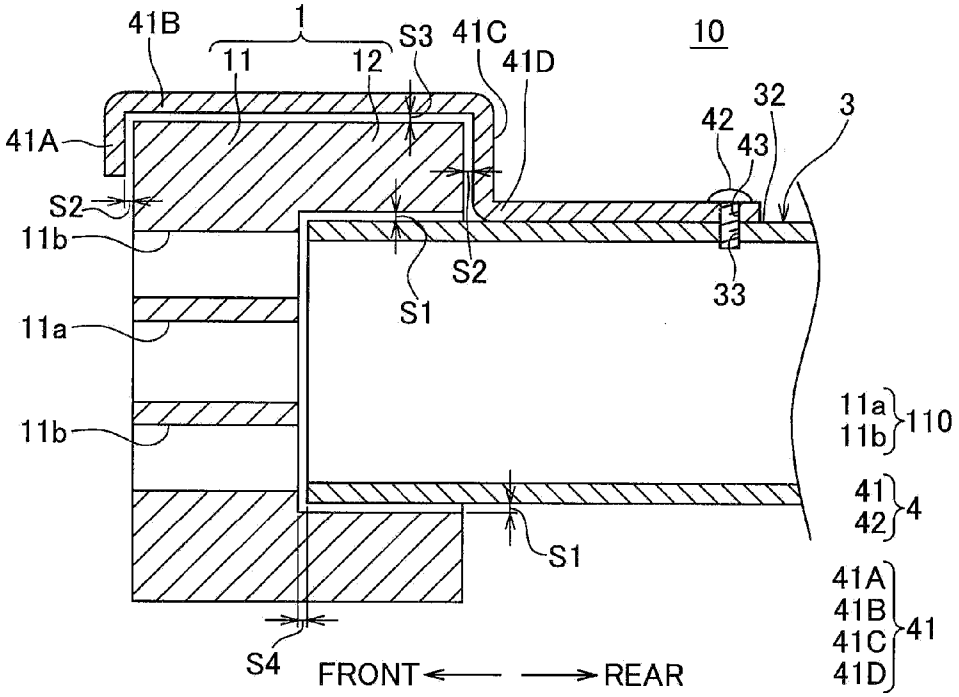

11b
11b
I
I
11a
11b
11b
11
12
1
11a
11b
110

FIG.3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1
11
12
S3
41C
41D
10
42
43
32
3
41A
S2
11b
S2
S1
33
11a
11b
11a
11b
110
41
42
4
S1
41A
41B
41C
41D
41
S4
FRONT
REAR

FIG.4

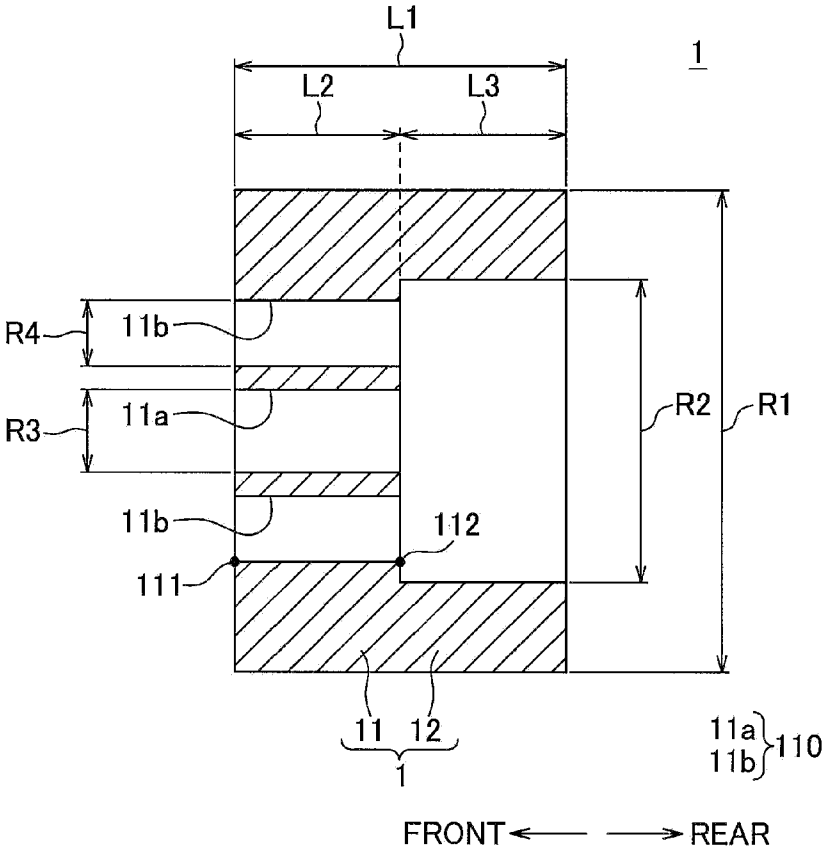
L1
1
L2
L3
R4
11b
R3
11a
11b
111
112
R2
R1
11
12
1
11a
11b
110
FRONT
REAR

FIG.5