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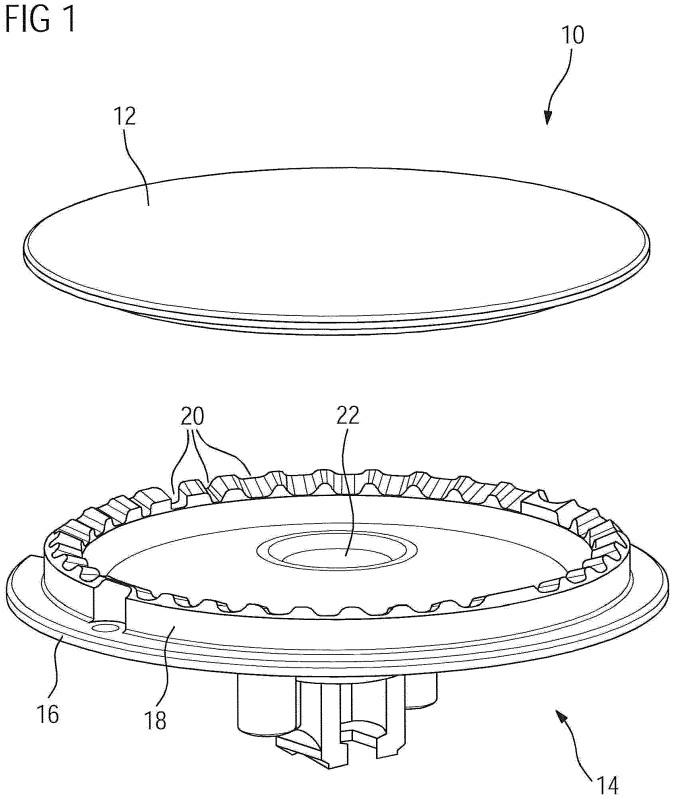
(54) **GAS BURNER ASSEMBLY, PREFERABLY FOR A GAS COOKING HOB**

(57) The present invention relates to a gas burner assembly (10), preferably for a gas cooking hob. The gas burner assembly (10) comprises a burner cap (12) and a burner crown element (14). The burner cap (12) is adapted for covering the burner crown element (14). The burner crown element (14) includes a side wall (18) enclosing an inner space of the gas burner assembly (10). The burner cap (12) is arranged above the side wall (18) of the burner crown element (14). A plurality of flame ports (20) is formed on the top side of the side wall (18). The cross-section of the flame port (20) is formed as the cross-section of a spoon.

FIG 1



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Description

[0001] The present invention relates to a gas burner assembly. Preferably, the gas burner assembly is provided for a gas cooking hob. Further, the present invention relates to a gas cooking hob, in particular for a domestic appliance.

[0002] Many various types of gas burners exist. There are different technologies for supplying a gas-air mixture to a flame spreader or burner crown. A plurality of flame ports is usually arranged in the circumference of said flame spreader or burner crown. For example, the gas burner includes main flame ports and secondary flame ports. Said main flame port is high and narrow and generates a main flame for transferring the heat. The secondary flame port is arranged close to the main flame port and is smaller than said main flame port. The secondary flame port is provided for stabilising the main flame. The main flame port with the secondary flame port is usually formed on aluminium burner crowns. According to another example, the main flame port has the shape of a hole, wherein above or beneath a pilot flame is generated for stabilising the main flame. The latter is often used at brass flame spreaders. There are further concepts with the main flame for transferring the heat and the secondary flame for stabilising the speed and combustion of main flame.

[0003] It is an object of the present invention to provide a gas burner assembly, which allows an improved heat transfer and an improved cleanability of said gas burner assembly by low complexity.

[0004] The object is achieved by the gas burner assembly according to claim 1.

[0005] According to the present invention a gas burner assembly, preferably for a gas cooking hob, is provided, wherein:

- the gas burner assembly comprises a burner cap and a burner crown element,
- the burner cap is adapted for covering the burner crown element,
- the burner crown element includes a side wall enclosing an inner space of the gas burner assembly,
- the burner cap is arranged above the side wall of the burner crown element,
- a plurality of flame ports is formed on the top side of the side wall, and
- the cross-section of the flame ports is formed as the cross-section of a spoon.

[0006] The main idea of the present invention is the shape of the flame ports. The cross-section of the flame port extends perpendicular to the flow direction of the air-gas mixture. The cross-section of the spoon is relative flat. The inventive flame ports result in flame shapes, which optimise the heat transfer. No secondary flames are required in order to stabilise the main flames. The gas is completely used for heating a subject above the gas burner assembly. Further, the inventive flame ports are easy to clean.

[0007] For example, the width of the flame port is between 2 mm and 6 mm, preferably between 3 mm and 5 mm, in particular 4 mm.

[0008] For instance, the height of the flame port is between 1 mm and 3 mm, preferably between 1.5 mm and 2.5 mm, in particular 2 mm.

[0009] Further, the ratio between the width and the height of the flame port may be between one and three.

[0010] In particular, the lateral walls and the bottom wall of each flame port are formed on the top side of the side wall of the burner crown element, while the top wall of each flame port is provided by the burner cap.

[0011] Preferably, the lateral walls of the flame port are inclined, wherein the width of said flame port increases from the bottom up.

[0012] Moreover, the transition from the lateral wall to the bottom wall of the flame port may be smooth and without any edges.

[0013] Additionally, the bottom wall of the flame ports may be convex.

[0014] Further, the burner crown element includes a base plate, wherein preferably the base plate is formed as a circular or elliptic disk.

[0015] In particular, the side wall of the burner crown element extends upwards from said base plate along a circular or elliptic path. In general, the side wall of the burner crown element may take course along an arbitrary path.

[0016] For example, an opening for supplying a gas-air mixture is formed in the centre of the base plate.

[0017] Additionally, the base plate may be convex, wherein the height in the centre of the inner space of gas burner assembly is lower than the height in an outer portion of said inner space, so that a Venturi effect is achieved.

[0018] Preferably, the burner crown element is formed as single-piece part.

[0019] For instance, the burner cap is made of steel, cast iron or brass.

[0020] At last, the present invention relates to a gas cooking hob, in particular for a domestic appliance, wherein the gas cooking hob comprises at least one gas burner assembly mentioned above.

[0021] Novel and inventive features of the present invention are set forth in the appended claims.

[0022] The present invention will be described in further detail with reference to the drawings, in which

FIG 1 illustrates a schematic exploded perspective view of a gas burner assembly according to a preferred embodiment of the present invention,

FIG 2 illustrates a schematic detailed perspective view of the gas burner assembly according to the preferred embodiment of the present invention, and

FIG 3 illustrates a schematic detailed perspective view of a burner crown element for the gas burner assembly according to the preferred embodiment of the present invention.

[0023] FIG 1 illustrates a schematic exploded perspective view of a gas burner assembly 10 according to a preferred embodiment of the present invention. In this example, the gas burner assembly 10 is provided for a gas cooking hob.

[0024] The gas burner assembly 10 comprises a burner cap 12 and a burner crown element 14. Preferably, the burner cap is made of steel, cast iron or brass. The burner crown element 14 includes a base plate 16 and a side wall 18. The base plate 16 is substantially formed as a circular disk. The side wall 18 extends upwards from said base plate 16 along a circular path. The burner crown element 14 is formed as a single-piece part. An inner space of the gas burner assembly 10 is limited by the burner cap 12, the base plate 16 and the side wall 18. An opening 22 is formed in the centre of the base plate 16. Said opening 22 is provided for introducing a gas-air mixture into the inner space of the gas burner assembly 10.

[0025] A plurality of flame ports 20 is formed on the top side of the side wall 18 of the burner crown element 14. Each flame port 20 has a shape similar to a spoon. The lateral walls and the bottom wall of each flame port 20 are formed on the top side of the side wall 18 of the burner crown element 14. The top wall of each flame port 20 is provided by the burner cap 12.

[0026] The cross-section of the flame port 20 is relative flat. The cross-section of the flame port 20 extends perpendicular to the flow direction of the air-gas mixture leaving the inner space of the gas burner assembly 10. The cross-section of the flame port 20 is similar to the cross-section of a spoon. The width w of the flame port 20 is between 2 mm and 6 mm, preferably between 3 mm and 5 mm. In particular, the width w of the flame port 20 is about 4 mm. The height h of the flame port 20 is between 1 mm and 3 mm, preferably between 1.5 mm and 2.5 mm. In particular, the height h of the flame port 20 is about 2 mm.

[0027] The flame ports 20 result in flame shapes, which optimise the heat transfer. No secondary flames are required in order to stabilise the main flames. In this way, the gas is completely used for heating a cooking vessel above the gas burner assembly 10. Further, the flame ports 20 are easy to clean.

[0028] Moreover, the base plate 16 of the burner crown element 14 is convex, so that the height in the centre of the inner space of gas burner assembly 10 is lower than the height in the outer portion of said inner space. This results in a Venturi effect.

[0029] FIG 2 illustrates a schematic detailed perspective view of the gas burner assembly 10 according to the preferred embodiment of the present invention. FIG 2 clarifies the shapes of the flame ports 20.

[0030] The lateral walls of the flame ports 20 are inclined, so that the width of the flame ports 20 increases from the bottom up. The bottom wall of the flame ports 20 is marginally convex. The transition from the lateral wall to the bottom wall is smooth and without any sharp edges.

[0031] FIG 3 illustrates a schematic detailed perspective view of a burner crown element 14 for the gas burner assembly 10 according to the preferred embodiment of the present invention. FIG 3 clarifies the flat structure of the flame ports 20.

[0032] The cross-section of the flame port 20 is similar to the cross-section of a spoon. The width w of the flame port 20 is between 2 mm and 6 mm, preferably between 3 mm and 5 mm. In particular, the width w of the flame port 20 is about 4 mm. The height h of the flame port 20 is between 1 mm and 3 mm, preferably between 1.5 mm and 2.5 mm. In particular, the height h of the flame port 20 is about 2 mm. The ratio between the width and the height of the flame port 20 is between one and three.

[0033] The transition between the lateral wall to the bottom wall of the flame ports is smooth and without any sharp edges. The lateral walls of the flame ports 20 are inclined, so that the width of the flame ports 20 increases from the bottom up. The bottom wall of the flame ports 20 is marginally convex.

[0034] The flame ports 20 according to the present invention result in flame shapes, which optimise the heat transfer. No secondary flames are required in order to stabilise the main flames. The gas is completely used for heating a cooking vessel above the gas burner assembly 10. In particular, the flame ports 20 are easy to clean.

[0035] Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawings, it is to be understood that the present invention is not limited to that precise embodiment, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

List of reference numerals

[0036]

10	gas burner assembly
12	burner cap
14	burner crown element
16	base plate
18	side wall
20	flame port
22	opening
h	height of the flame port
w	width of the flame port

Claims

1. A gas burner assembly (10), preferably for a gas cooking hob, wherein:

   - the gas burner assembly (10) comprises a burner cap (12) and a burner crown element (14),
   - the burner cap (12) is adapted for covering the burner crown element (14),
   - the burner crown element (14) includes a side wall (18) enclosing an inner space of the gas burner assembly (10),
   - the burner cap (12) is arranged above the side wall (18) of the burner crown element (14),
   - a plurality of flame ports (20) is formed on the top side of the side wall (18), and
   - the cross-section of the flame port (20) is formed as the cross-section of a spoon.

2. The gas burner assembly according to claim 1, **characterised in that** the width of the flame port (20) is between 2 mm and 6 mm, preferably between 3 mm and 5 mm, in particular 4 mm.

3. The gas burner assembly according to claim 1 or 2, **characterised in that** the height of the flame port (20) is between 1 mm and 3 mm, preferably between 1.5 mm and 2.5 mm, in particular 2 mm.

4. The gas burner assembly according to any one of the preceding claims, **characterised in that** the ratio between the width and the height of the flame port (20) is between one and three.

5. The gas burner assembly according to any one of the preceding claims, **characterised in that** the lateral walls and the bottom wall of each flame port (20) are formed on the top side of the side wall (18) of the burner crown element (14), while the top wall of each flame port (20) is provided by the burner cap (12).

6. The gas burner assembly according to any one of the preceding claims, **characterised in that** the lateral walls of the flame port (20) are inclined, wherein the width of said flame port (20) increases from the bottom up.

7. The gas burner assembly according to any one of the preceding claims, **characterised in that** the transition from the lateral wall to the bottom wall of the flame port (20) is smooth and without any edges.

8. The gas burner assembly according to any one of the preceding claims, **characterised in that** the bottom wall of the flame ports (20) is convex.

9. The gas burner assembly according to any one of the preceding claims, **characterised in that** the burner crown element (14) includes a base plate (16), wherein preferably the base plate (16) is formed as a circular or elliptic disk.

10. The gas burner assembly according to claim 9, **characterised in that** the side wall (18) of the burner crown element (14) extends upwards from said base plate (16) along a circular or elliptic path.

11. The gas burner assembly according to claim 9 or 10, **characterised in that** an opening (22) for supplying a gas-air mixture is formed in the centre of the base plate (16).

12. The gas burner assembly according to claim 11, **characterised in that** the base plate (16) is convex, wherein the height in the centre of the inner space of gas burner assembly (10) is lower than the height in an outer portion of said inner space, so that a Venturi effect is achieved.

13. The gas burner assembly according to any one of the preceding claims, **characterised in that** the burner crown element (14) is formed as single-piece part.

14. The gas burner assembly according to any one of the preceding claims, **characterised in that** the burner cap (12) is made of steel, cast iron or brass.

15. A gas cooking hob, in particular for a domestic appliance, **characterised in that** the gas cooking hob comprises at least one gas burner assembly (10) according to any one of the preceding claims.

FIG 1

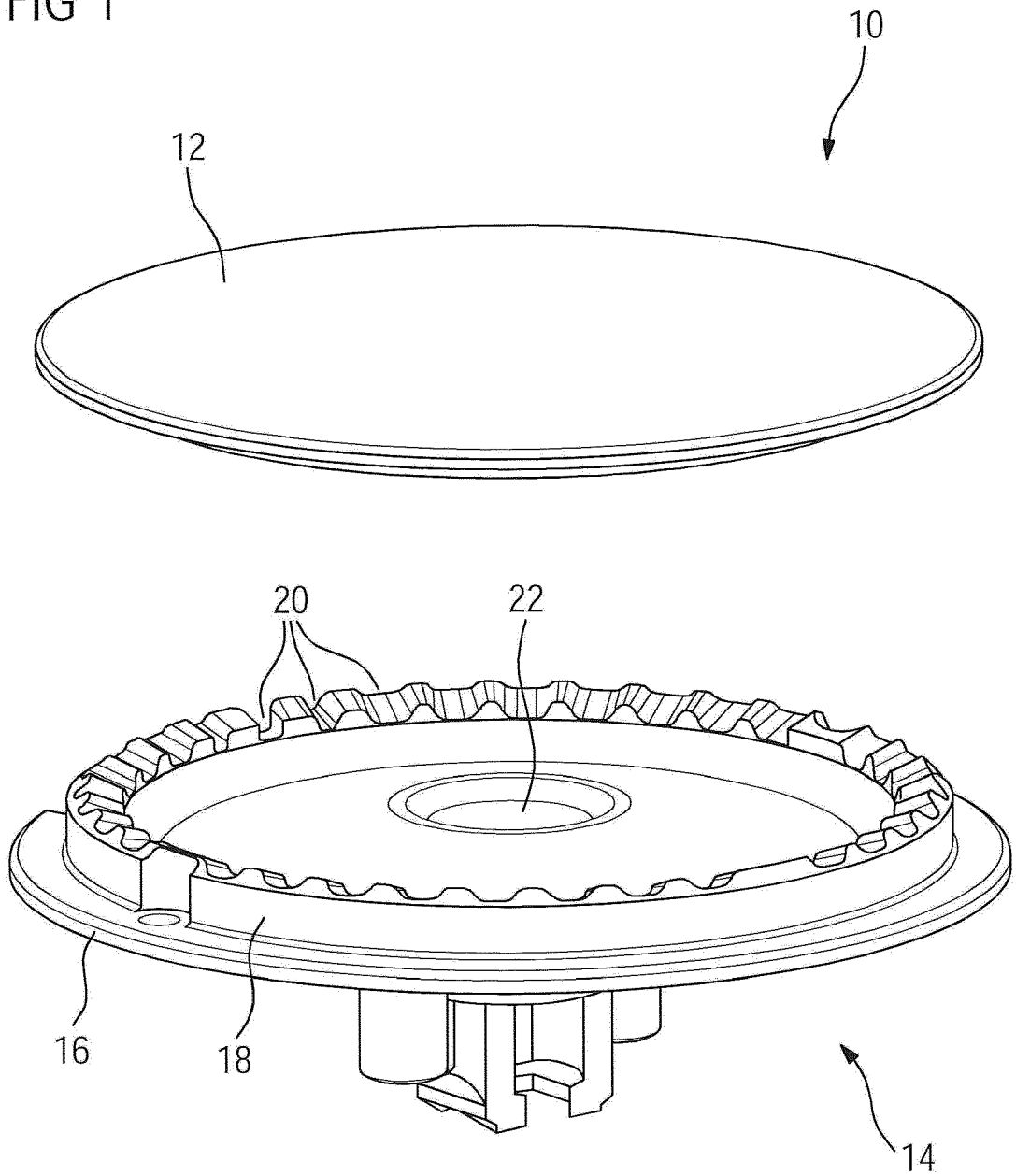


FIG 2

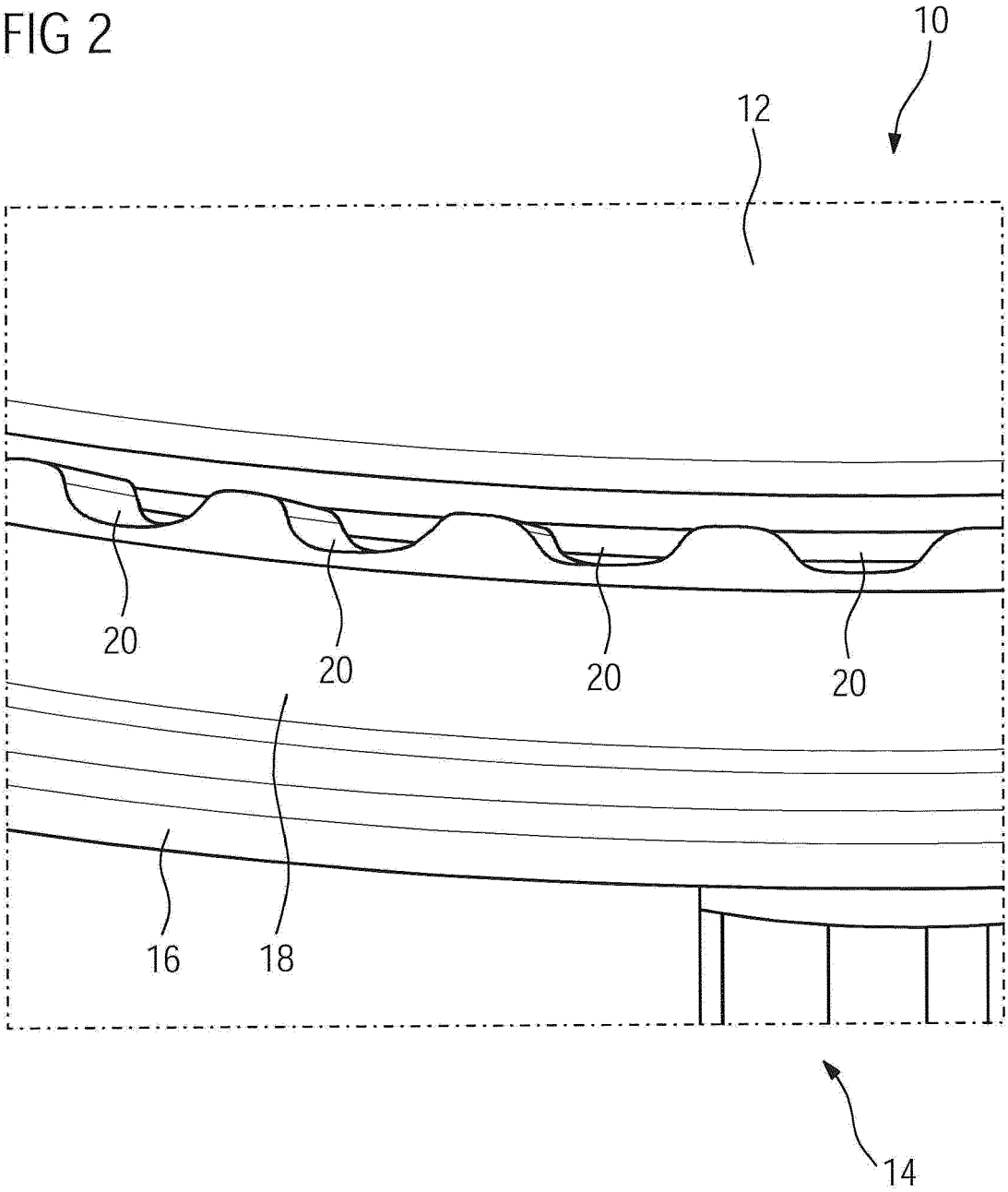
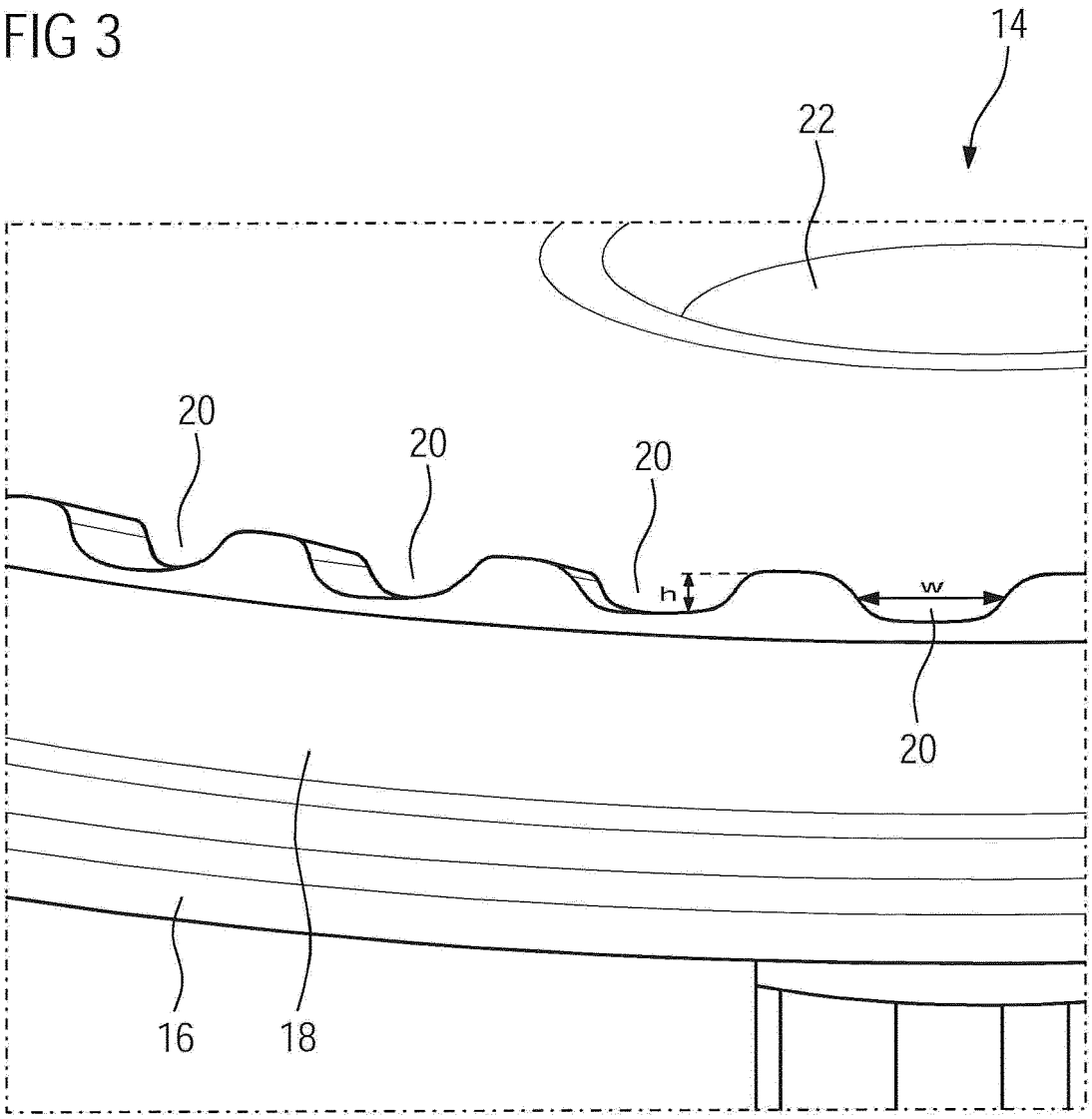


FIG 3



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EUROPEAN SEARCH REPORT

Application Number
EP 17 17 3312

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 November 2017	Coli, Enrico

CATEGORY OF CITED DOCUMENTS

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