

(19)



(11)

EP 4 578 333 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.07.2025 Bulletin 2025/27

(51) International Patent Classification (IPC):
A45D 20/12^(2006.01)

(21) Application number: **24215167.8**

(52) Cooperative Patent Classification (CPC):
A45D 20/122

(22) Date of filing: **25.11.2024**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

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(30) Priority: **28.12.2023 TR 202319308**

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(54) **A HAIR DRYER COMPRISING A REMOVABLE NOZZLE**

(57) The present invention relates to a hair dryer comprising an air outlet and a nozzle (1) which is attached to the air outlet of the hair dryer and which has an air inlet (4), a body (2) with a side wall (3) in the form of a truncated

cone, a diffuser (5) having a spherical surface, placed into the body (2) coaxially with the body (2) and facing the air inlet (4), and an opening (6) provided between the diffuser (5) and the side wall (3) of the body (2).

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Description

[0001] The present invention relates to a hair dryer comprising a removable nozzle which provides sensitive drying.

[0002] In hair dryers, when the heat is not distributed homogeneously during the hair drying process, the heat is concentrated at some points. This causes very adverse results. The hair is damaged at the points where high heat is concentrated. Especially in sensitive, weak, dyed hair and baby hair, the intense heat concentration at certain points causes damage to the hair roots and skin. Moreover, the high temperature generated at the hair disturbs the user. Furthermore, as a result, while intense heat reaches certain areas of the hair during the hair drying, some areas remain moist. Unbalanced moisture distribution is also harmful to the hair health. Therefore, when using a hair dryer, it is necessary to dry the hair from a certain drying distance by taking into account the moisture balance and homogeneous heat distribution.

[0003] In the state of the art, there are hair dryers having nozzles which can be used on different hair types, which prevent the hair roots from being exposed to high temperatures, and at the same time which do not compromise the drying performance by distributing heat. In the said embodiments, there are nozzles which provide sensitive drying by distributing heat during the hair drying process and which prevent damage to delicate, weak, baby hair. However, in the said embodiments, there is no homogeneous distribution of heat, and only a temperature decrease is observed at the point of contact with the hair.

[0004] In the state of the art United States Patent No. US6966125, a hair dryer is disclosed, comprising with a nozzle which allows the homogeneous distribution of the heat.

[0005] In the state of the art European Patent Application No. EP2547229, a hair dryer is disclosed, comprising a nozzle which directs the air outlet.

[0006] In the state of the art European Patent No. EP1339299, a hair dryer is disclosed, comprising a nozzle which has a grill structure changing the air outlet cross-section.

[0007] The aim of the present invention is the realization of a hair dryer comprising a removable nozzle which provides sensitive drying.

[0008] The hair dryer realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a nozzle which is attached to the air outlet of the hair dryer and which has an air inlet, a body with a side wall in the form of a truncated cone, a diffuser having a spherical surface, placed into the body coaxially with the body and facing the air inlet, and an opening provided between the diffuser and the side wall of the body.

[0009] In the embodiment of the preset invention, the air leaving the air outlet of the hair dryer enters the body through the air inlet. The air passing through the air inlet

hits the top of the diffuser, the first surface it encounters in the body and is directed towards the body side wall to be diffused out through the opening between the diffuser and the side wall.

[0010] The hair dryer of the present invention prevents damage to the hair roots and skin, especially in weak, sensitive and dyed hair as well as baby hair, due to the focusing of high temperatures at a certain point of the hair. By means of the present invention, the heat is diffused so as to contact different points of the hair and thus, preventing the temperature from focusing at a single point, and moreover, reducing the high temperatures reaching the hair roots and improving the drying performance by means of the balanced heat distribution.

[0011] In an embodiment of the present invention, the side walls of the body are in the form of a truncated cone expanding outward in the direction where the air is blown. Thus, the side walls prevent the air from diffusing too much and transmit the directed air towards the edges rather than the center. In the embodiment of the present invention, the angle between the side walls of the body which expand outward is 50°.

[0012] In another embodiment of the present invention, the cross-section of the air inlet on the body is circular.

[0013] In another embodiment of the present invention, the nozzle comprises a first connection member which is provided at the top of the body and which surrounds the air inlet.

[0014] In an embodiment of the present invention, the nozzle comprises a second connection member which is suitable for the first connection member and which is provided on the diffuser so as to enable the diffuser to be attached to the first connection member on the body.

[0015] In the embodiment of the present invention, the diffuser is parabolic and is almost in the form of an umbrella with flat sides. The distance between the top of the spherical form of the diffuser and the air inlet is at least 10 mm to prevent the air from rebounding. The diameter range required for the diffuser to direct the air to the side walls of the body without rebounding is 55 to 58 mm. In the preferred embodiment of the present invention, the diameter is 57 mm.

[0016] In an embodiment of the present invention, the edges of the diffuser are sinusoidal, wavy. In this embodiment of the present invention, by means of the said wavy form of the edge of the diffuser, the air is carried towards the wall of the body and the air is directed, thus ensuring a more homogeneous distribution of the air.

[0017] In the preferred embodiment of the present invention, the nozzle comprises eight elevations and eight recesses which are provided on the edge of the diffuser. In this embodiment of the present invention, the width of the elevation is at least 8 mm, and the width of the recess is 6.9 mm.

[0018] In the embodiment of the present invention, the nozzle comprises at least one, preferably four holes at the top of the diffuser, on the surface opposite the air inlet. Thus, the air entering through the air inlet is enabled to be

homogeneously diffused by means of the said holes at the center of the diffuser. The minimum and maximum range of the width of the holes is determined by the manufacturer according to the flow rate value to ensure air passage. Accordingly, the holes are 2 mm to 4 mm wide. In the preferred embodiment of the present invention, the diameter of each hole is 2.8 mm.

[0019] In the embodiment of the preset invention, the air leaving the hair dryer passes to the nozzle attached to the air outlet of the hair dryer. While some of the air entering through the air inlet of the body on the nozzle passes through the holes at the top of the diffuser, some of it is diffused through the wavy edge thereof. As a result of this diffusion, the hair drying area increases and the heat coming from the hair dryer is distributed more evenly. Thus, the temperature affecting the hair roots decreases and the drying performance increases since the blown air contacts a wider area. The use of the nozzle of the present invention, especially in sensitive, weak and baby hair, is also beneficial for hair health. By means of the present invention, possible damage to sensitive, weak and baby hair roots and skin is prevented.

[0020] Moreover, by means of the present invention, damage to the hair roots and scalp is also prevented. The hair drying performance is not compromised by means of the balanced heat distribution covering a large surface of the hair. Moreover, there is no change in hair drying time by means of the heat distributing form thereof. The hair root health is protected by reducing the temperature reaching the hair roots.

[0021] A hair dryer nozzle realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the front perspective view of a nozzle.

Figure 2 - is the rear perspective view of the nozzle.

Figure 3 - is the front view of the nozzle.

Figure 4 - is the view of the cross-section A-A in Figure 3.

Figure 5 - is the front view of the body.

Figure 6 - is the view of the cross-section B-B in Figure 5.

Figure 7 - is the front view of the diffuser.

Figure 8 - is the view of cross section C-C in Figure 7.

[0022] The elements illustrated in the figures are numbered as follows.

1. Nozzle
2. Body
3. Side wall
4. Air inlet
5. Diffuser

6. Opening

7. Hole

8. First connection member

9. Second connection member

[0023] The hair dryer comprises an air outlet and a nozzle (1) which is attached to the air outlet of the hair dryer and which has an air inlet (4), a body (2) with a side wall (3) in the form of a truncated cone, a diffuser (5) having a spherical surface, placed into the body (2) coaxially with the body (2) and facing the air inlet (4), and an opening (6) provided between the diffuser (5) and the side wall (3) of the body (2) (Figure 1 and Figure 2).

[0024] In the embodiment of the preset invention, the air leaving the air outlet of the hair dryer enters the body (2) of the nozzle (1) through the air inlet (4). The air passing through the air inlet (4) hits the top of the diffuser (5), the first surface it encounters in the body (2) and is directed towards the side wall (3) of the body (2) to be diffused out through the opening (6) between the diffuser (5) and the side wall (3) (Figure 3 and Figure 4).

[0025] The hair dryer of the present invention prevents damage to the hair roots and skin, especially in weak, sensitive and dyed hair as well as baby hair, due to the focusing of high temperatures at a certain point of the hair. By means of the present invention, the heat is diffused so as to contact different points of the hair and thus, preventing the temperature from focusing at a single point, and moreover, reducing the high temperatures reaching the hair roots and improving the drying performance by means of the balanced heat distribution.

[0026] In an embodiment of the present invention, the side walls (3) of the body (2) are in the form of a truncated cone expanding outward in the direction where the air is blown. Thus, the side walls (3) prevent the air from diffusing too much and transmit the directed air towards the edges rather than the center. In the embodiment of the present invention, the angle between the side walls (3) of the body (2) which expand outward is 50° (Figure 5 and Figure 6).

[0027] In another embodiment of the present invention, the cross-section of the air inlet (4) on the body (2) is circular.

[0028] In another embodiment of the present invention, the nozzle (1) comprises a first connection member (8) which is provided at the top of the body (2) and which surrounds the air inlet (4).

[0029] In an embodiment of the present invention, the nozzle (1) comprises a second connection member (9) which is suitable for the first connection member (8) and which is provided on the diffuser (5) so as to enable the diffuser (5) to be attached to the first connection member (8) on the body (2).

[0030] In the embodiment of the present invention, the diffuser (5) is parabolic. The distance between the top of

the spherical form of the diffuser (5) and the air inlet (4) is at least 10 mm to prevent the air from rebounding. The diameter range required for the diffuser (5) to direct the air to the side walls (3) of the body (2) without rebounding is 55 to 58 mm. In the preferred embodiment of the present invention, the diameter is 57 mm.

[0031] In an embodiment of the present invention, the edges of the diffuser (5) are wavy. In this embodiment of the present invention, by means of the said wavy form of the edge of the diffuser (5), the air is carried towards the side wall (3) of the body (2) and the air is directed, thus ensuring a more homogeneous distribution of the air (Figure 7 and Figure 8).

[0032] In the preferred embodiment of the present invention, the nozzle (1) comprises eight elevations and eight recesses which are provided on the edge of the diffuser (5). In this embodiment of the present invention, the width of the elevation is at least 8 mm, and the width of the recess is 6.9 mm.

[0033] In the embodiment of the present invention, the nozzle (1) comprises at least one, preferably four holes (7) at the top of the diffuser (5), on the surface opposite the air inlet (4). Thus, the air entering through the air inlet (4) is enabled to be homogeneously diffused by means of the said holes (7) at the center of the diffuser (5). The minimum and maximum range of the width of the holes (7) is determined by the manufacturer according to the flow rate value to ensure air passage. Accordingly, the holes (7) are 2 mm to 4 mm wide. In the preferred embodiment of the present invention, the diameter of each hole (7) is 2.8 mm.

[0034] In the embodiment of the present invention, the air leaving the hair dryer passes to the nozzle (1) attached to the air outlet of the hair dryer. While some of the air entering through the air inlet (4) of the body (2) on the nozzle (1) passes through the holes (7) at the top of the diffuser (5), some of it is diffused through the wavy edge thereof. As a result of this diffusion, the hair drying area increases and the heat coming from the hair dryer is distributed more evenly. Thus, the temperature affecting the hair roots decreases and the drying performance increases since the blown air contacts a wider area. The use of the nozzle (1) of the present invention, especially in sensitive, weak and baby hair, is also beneficial for hair health. By means of the present invention, possible damage to sensitive, weak and baby hair roots and skin is prevented.

[0035] Moreover, by means of the present invention, damage to the hair roots and scalp is also prevented. The hair drying performance is not compromised by means of the balanced heat distribution covering a large surface of the hair. Moreover, there is no change in hair drying time by means of the heat distributing form thereof. The hair root health is protected by reducing the temperature reaching the hair roots.

Claims

1. A hair dryer **comprising** an air outlet, **characterized by** a nozzle (1) which is attached to the air outlet of the hair dryer and which has an air inlet (4), a body (2) with a side wall (3) in the form of a truncated cone, a diffuser (5) having a spherical surface, placed into the body (2) coaxially with the body (2) and facing the air inlet (4), and an opening (6) provided between the diffuser (5) and the side wall (3) of the body (2).
2. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising the body (2) of which the side walls (3) are in the form of a truncated cone expanding outward in the direction where the air is blown.
3. A hair dryer as in Claim 2, **characterized by** the body wherein the angle between the side walls (3) which expand outward is 50°.
4. A hair dryer as in any one of Claims 1 to 3, **characterized by** the nozzle (1) comprising the body (2) having the air inlet (4) with a circular cross-section.
5. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising a first connection member (8) which is provided at the top of the body (2) and which surrounds the air inlet (4).
6. A hair dryer as in Claims 1 and 5, **characterized by** the nozzle (1) comprising a second connection member (9) which is suitable for the first connection member (8) and which is provided on the diffuser (5) so as to enable the diffuser (5) to be attached to the first connection member (8) on the body (2).
7. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising the parabolic diffuser (5).
8. A hair dryer as in Claims 1 and 7, **characterized by** the diffuser (5) with wavy edges.
9. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising at least one hole (7) at the top of the diffuser (5), on the surface opposite the air inlet (4).
10. A hair dryer as in Claim 9, **characterized by** the nozzle (1) comprising at least four holes (7) at the top of the diffuser (5), on the surface opposite the air inlet (4).

Figure 1

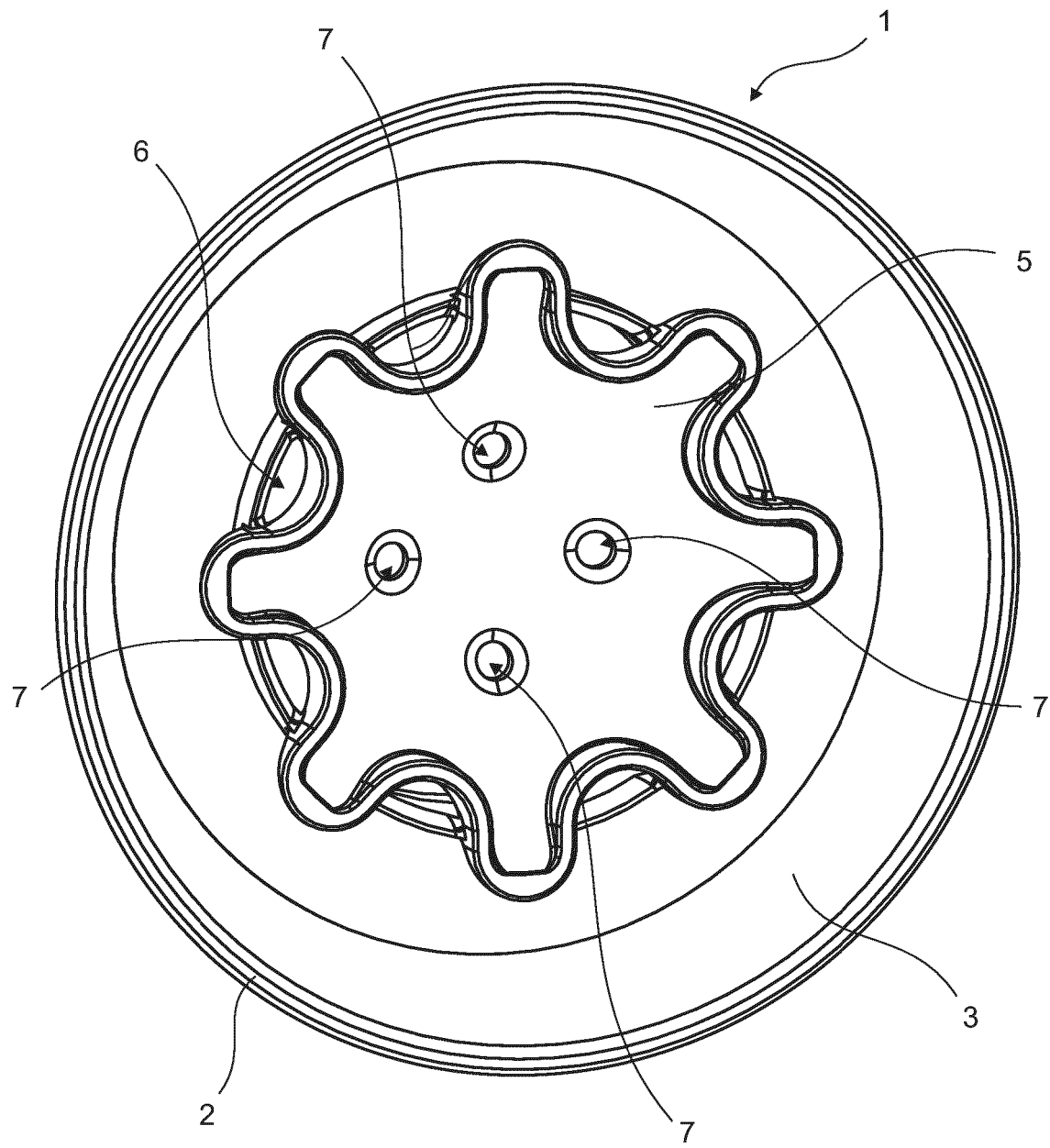


Figure 2

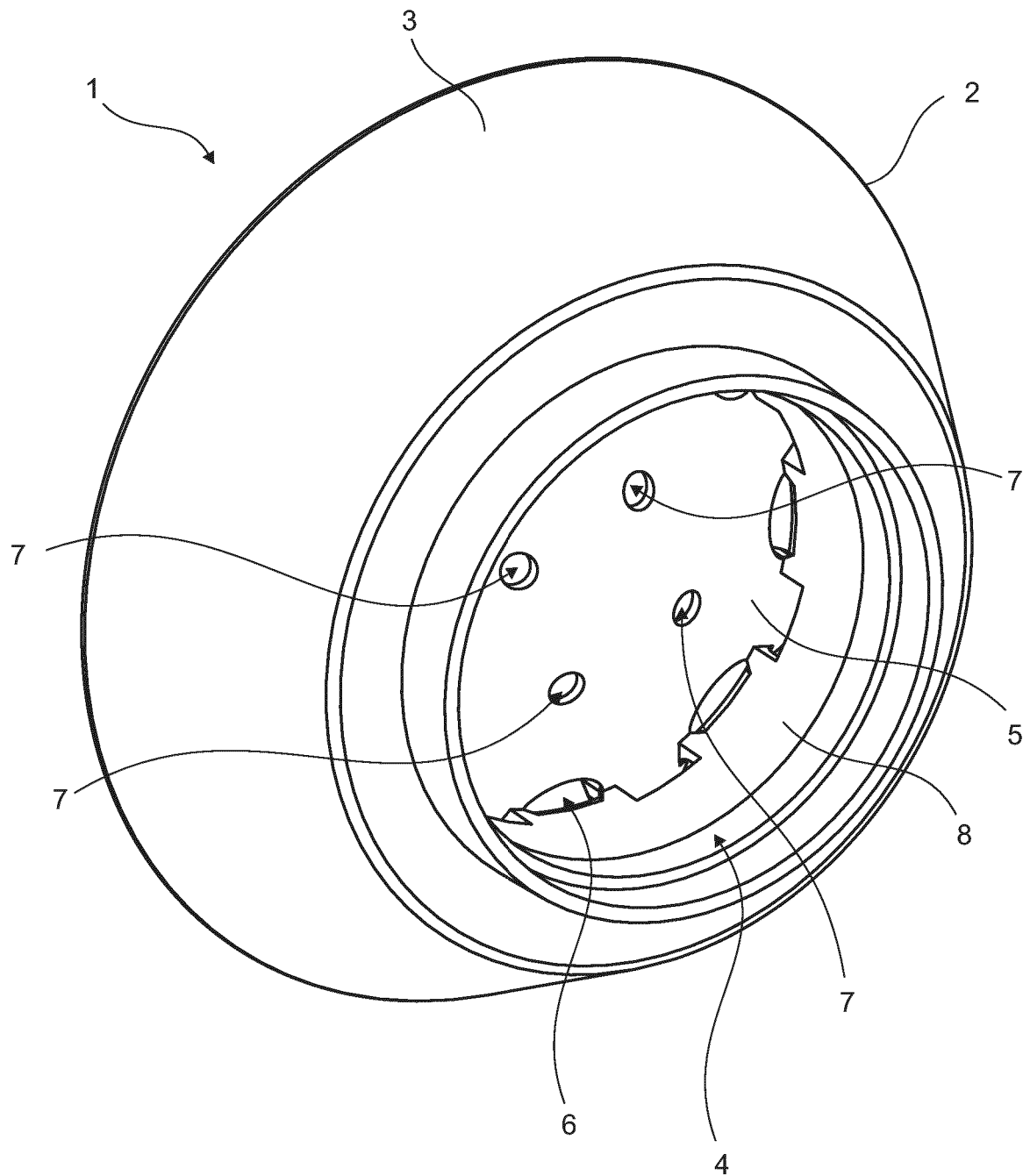


Figure 3

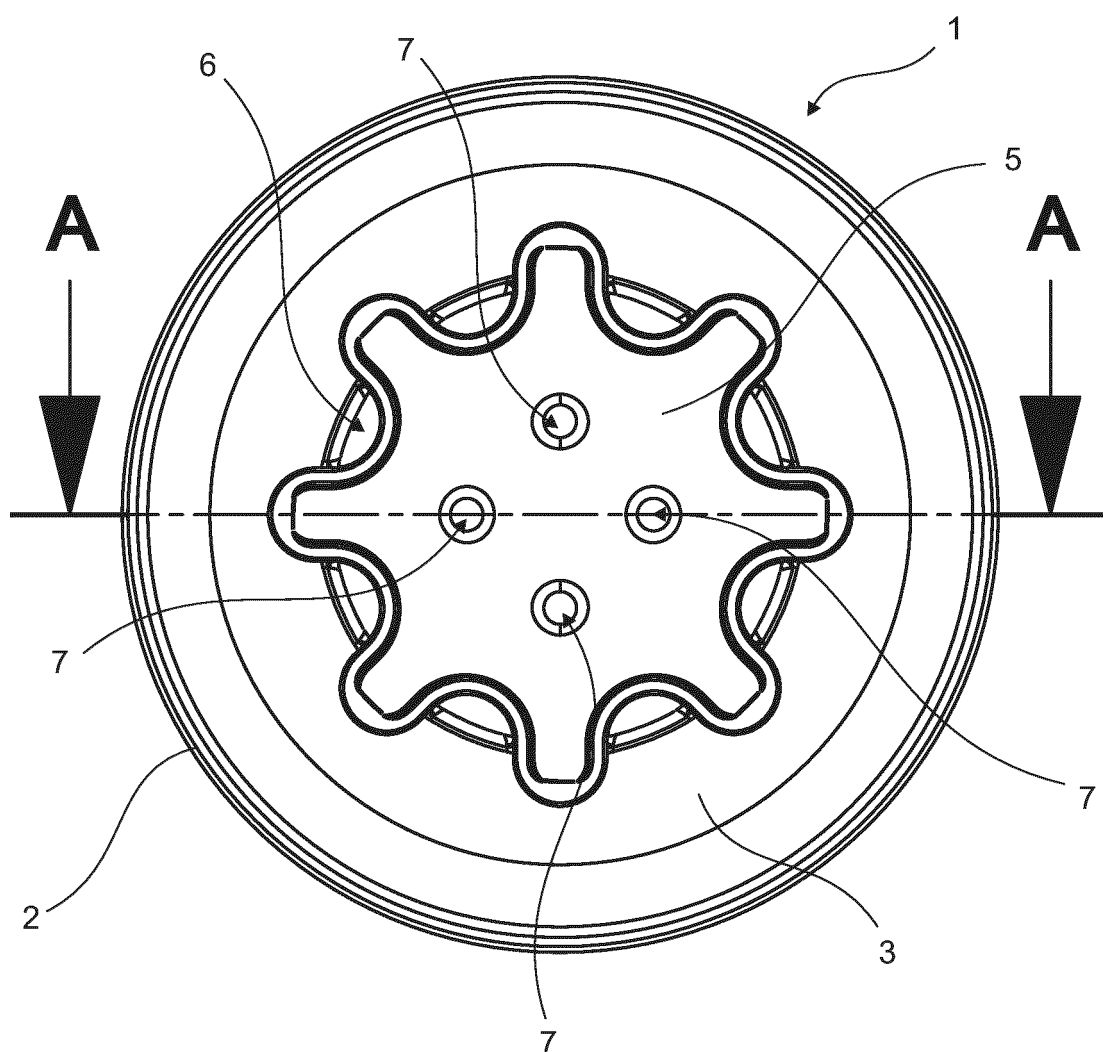


Figure 4

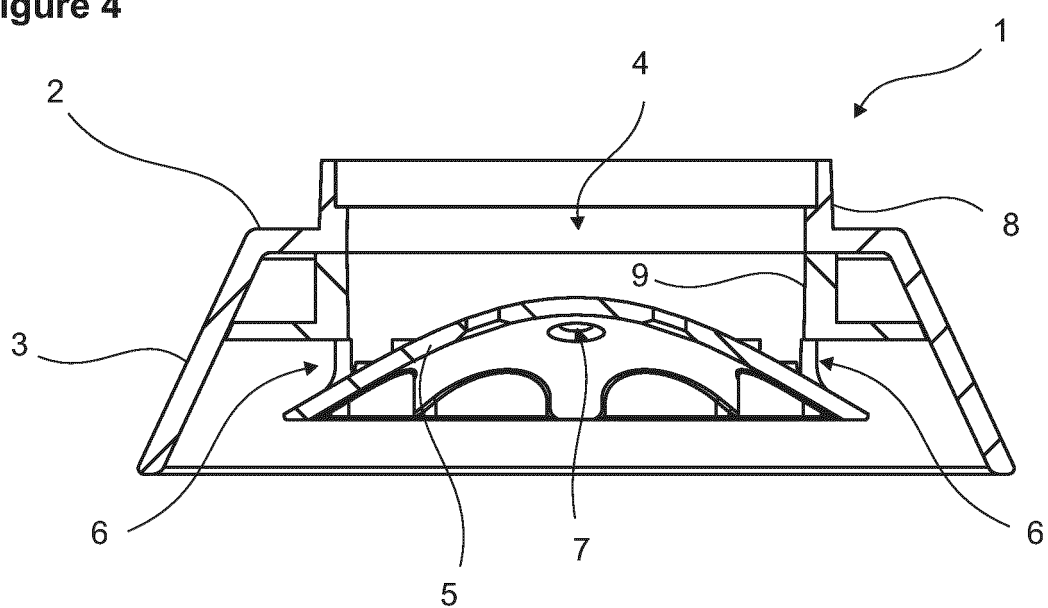


Figure 5

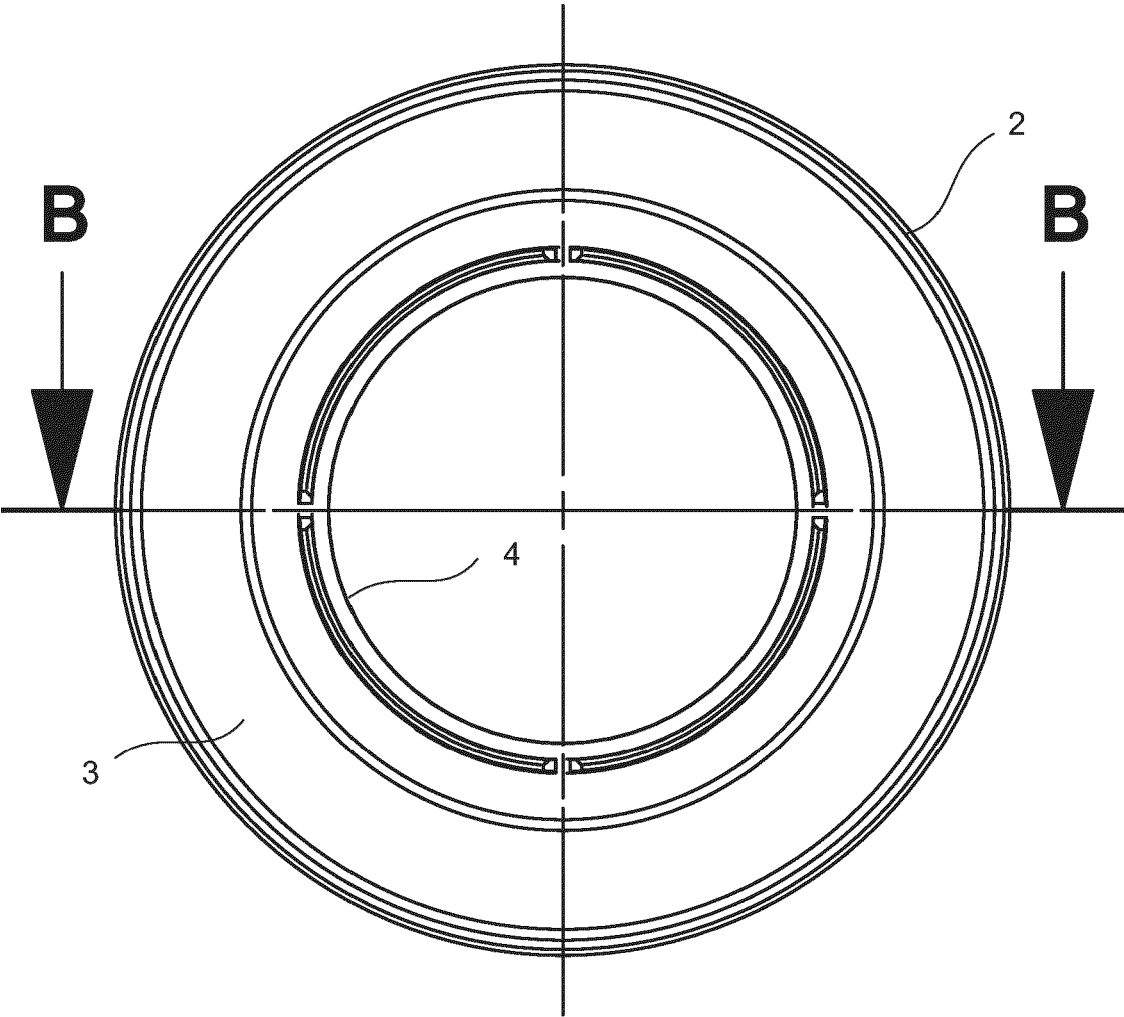


Figure 6

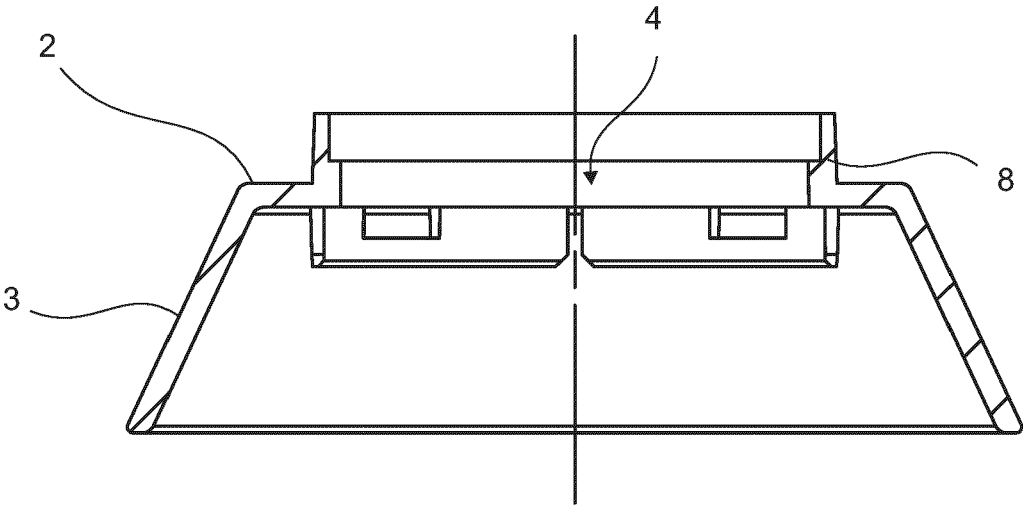


Figure 7

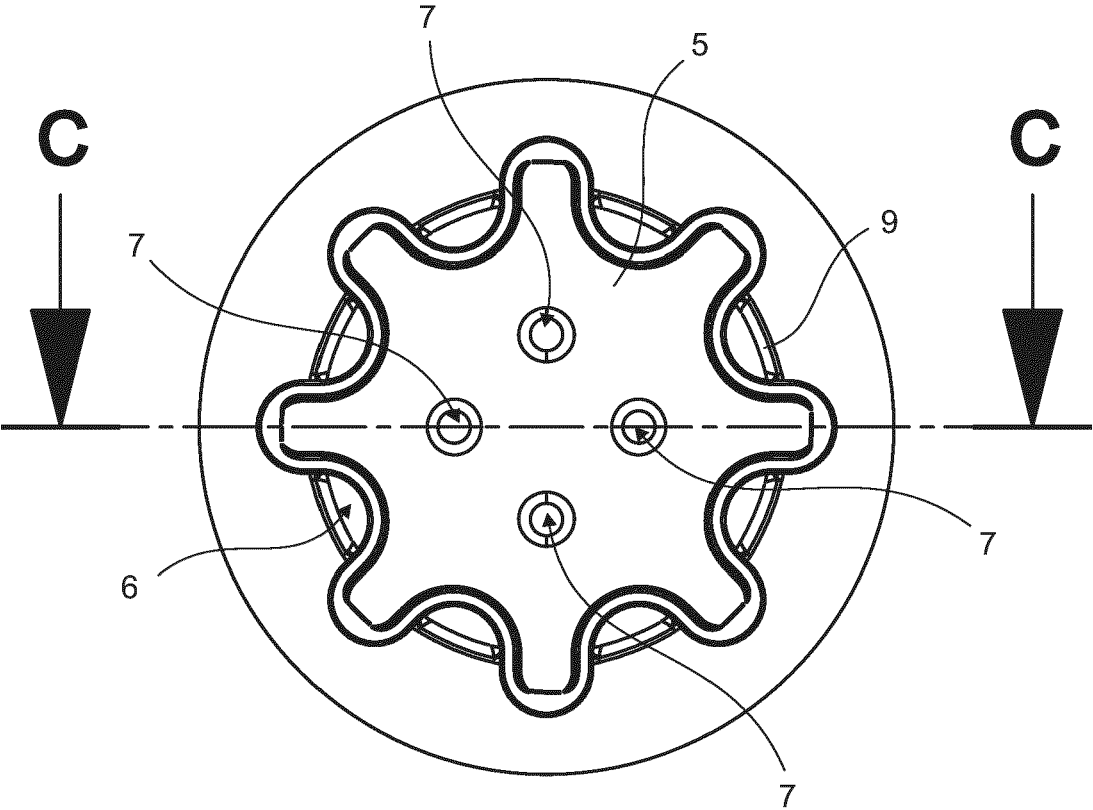
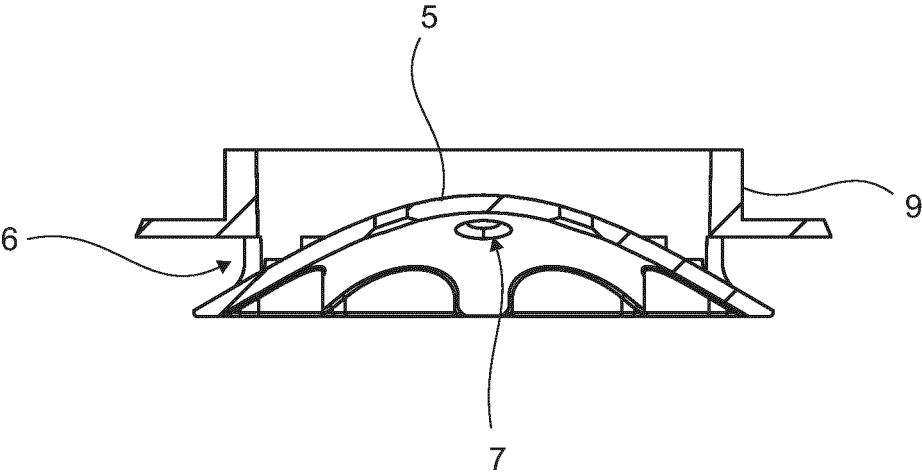


Figure 8





EUROPEAN SEARCH REPORT

Application Number

EP 24 21 5167

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			TECHNICAL FIELDS SEARCHED (IPC)
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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		19 March 2025	Zattoni, Federico
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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