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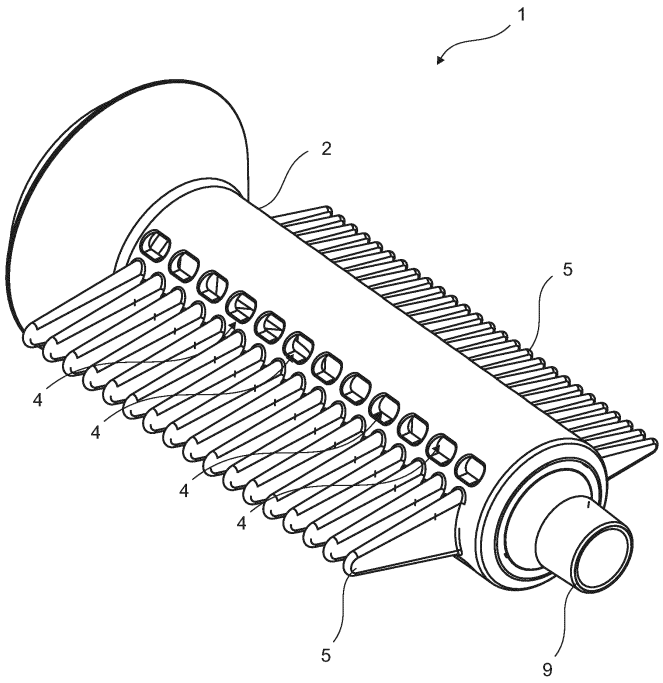
(54) **A HAIR DRYER COMPRISING A REMOVABLE NOZZLE**

(57) The present invention relates to a hair dryer comprising a nozzle (1) which is attached to the air outlet of the hair dryer and which has an air inlet (3), a hollow body (2), at least two combs (5) at different densities with comb teeth arranged at different densities on the outer wall of the body (2) and air outlet holes (4) on the body (2) which open out from the body (2) wall where the comb teeth are located and which enable the air moving in the body (2) to leave the body (2), and the nozzle (1) comprises a guiding member (6) which is placed in the body (2), which extends coaxially with the body (2) along the body (2), which moves with respect to the body (2) and which enables the air entering the body (2) to be directed to the air outlet holes (4) on the body (2) wall.

Figure 1



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Description

[0001] The present invention relates to a hair dryer comprising a removable, double-sided combing component.

[0002] While drying hair, combing hair is relatively more difficult than other processes. The users have to hold the comb with one hand while holding the hair dryer with the other hand to perform the combing process. In the state of the art embodiments, hair dryers with various detachable nozzles are used for styling and drying hair. The air flow directed to the hair during the hair drying process electrifies and fluffs the hair. This is one of the most unwanted situations by the users. Moreover, the user styles their hair while drying their hair. While styling, the incompatibility of the comb with the ergonomics of the user holding the hair dryer causes difficulty during the combing process. Moreover, the users who comb their hair have different hair structures. Hair can be sparse, thin, thick, and in many other types. Therefore, hair dryers with a single type of comb structure are not suitable for every hair type.

[0003] In the state of the art hair dryers comprising nozzles, there are nozzles which can give air to both sides at the same time. However, in the said nozzles, since the air blown from the hair dryer is diffused in both directions, the air flow is not homogeneous, and the air flow decreases in the area where the combing process is performed. The pressure difference between the area where the air first enters the nozzle and the end of the nozzle is high. The nonhomogeneous diffusion of the air entering the nozzle damages the hair. In this case, the user encounters a decrease in performance and the hair style is spoiled in the nozzles where the air is blown from both directions.

[0004] In the state of the art European Patent Application No. EP1124466, a hair dryer is disclosed, comprising a combing component used for styling hair.

[0005] In the state of the art United States Patent No. US3797752, a nozzle is disclosed, which is attached to the hair dryer to style hair and which directs the air.

[0006] In the state of the art European Patent Application No. EP0639339, a hair dryer is disclosed, comprising a nozzle which directs the air leaving the hair dryer.

[0007] The aim of the present invention is the realization of a hair dryer comprising a removable, double-sided combing component.

[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 hollow body, at least two combs at different densities with comb teeth arranged at different densities on the outer wall of the body and air outlet holes on the body which open out from the body wall where the comb teeth are located and which enable the air moving in the body to leave the body, and the nozzle comprises a guiding member which is placed in the body, which extends coaxially with the body along the body, which moves with respect to the body and which enables the air entering the body to be directed to the air outlet holes on the body wall.

[0009] The guiding member ensures that the pressure distribution in the nozzle is homogeneous. Thus, equal performance and homogeneous air outlet are obtained from every part of the nozzle. The homogeneous distribution of the air pressure along the air inlet and air outlet holes in the nozzle provides increased performance and efficiency.

[0010] In an embodiment of the present invention, the nozzle comprises two different combs having comb teeth of two different sizes. In the preferred embodiment of the present invention, the length of the thick combs is 25 mm and the width is 2.8 mm while the length of the thin combs is 16.7 mm and the distance between the thin combs is 1.5 mm.

[0011] In an embodiment of the present invention, the nozzle comprises a plurality of air outlet holes which are arranged between and/or on the sides of the comb teeth. In the embodiment of the present invention, the width of the air outlet holes between the thick comb teeth is 8.2 mm, and the width of the air outlet holes between the thin comb teeth is 1.5 mm.

[0012] In the embodiment of the present invention, the guiding member comprises a casing; a flat base which is arranged in the casing; at least one wall which is positioned on the lower and upper surfaces of the base, which extends outward from the base and which enables the air entering through the air inlet to be directed to the air outlet holes; and an opening which is arranged along the casing on the casing. In this embodiment of the present invention, the height of the casing and the height of the wall are equal. Thus, the air in the body is enabled to remain only between the wall and the casing.

[0013] In an embodiment of the present invention, the body and the casing have a telescopic, cylindrical structure.

[0014] In the embodiment of the present invention, the base is placed into the casing so as to be coaxial with the casing. The base placed into the casing divides the casing into two equal parts along the horizontal axis. In this case, the air entering the nozzle through the air inlet moves between the casing and the base and the walls. In this embodiment of the present invention, the opening is aligned so as to only coincide with one of the combs.

[0015] In the embodiment of the present invention, the nozzle comprises a parabolic wall which connects the short side and long side of the base. Thus, the air entering through the air inlet is enabled to move along the axis of the body and then make an almost right angle so as to be directed towards the opening on the casing and hence the air outlet holes aligned with the opening.

[0016] In an embodiment of the present invention, the nozzle comprises four walls which are parallel to each other with a certain distance therebetween.

[0017] In another embodiment of the present invention,

the nozzle comprises a lid which is attached to the other end of the body after the guiding member is mounted into the body, which connects the body and the guiding member and which enables the guiding member to rotate in the body.

[0018] In the embodiment of the present invention, after the base is placed into the casing, the guiding member is placed into the body so as to be coaxial with the body. Then, the lid is attached and the assembly is completed. The user uses the nozzle by attaching the same to the end of the hair dryer. During the use of the nozzle, the user uses the lid to rotate the guiding member towards the comb preferred to use. In this case, the guiding member in the body moves radially with respect to the body. At the same time, the opening on the wall of the casing is aligned with the air outlet holes around the comb the user prefers to use, and the air entering through the air inlet moves between the walls and the casing wall, leaves through the air outlet holes and then through between the comb teeth. Thus, the user directs the air passing through the nozzle towards one of the combs with different densities preferred to be used without experiencing any decrease in pressure.

[0019] By means of the present invention, the air is enabled to be blown from the desired comb by using the guiding member which can rotate in both directions. Thus, the user is enabled to dry or style their hair with both thin and thick-teeth combs without any temperature or pressure loss.

[0020] In another embodiment of the present invention, the nozzle is attached to the air outlet of the hair dryer with a magnetic locking mechanism. Thus, the user can attach the nozzle at the desired angle while combing their hair so as to enable the same to remain fixed in the desired position.

[0021] By means of the present invention, while drying hair with two different comb structures according to the hair type, the user can comb with higher performance by means of the guiding member which can rotate in both directions. By means of the present invention, the pressure and speed of the air entering the nozzle is spread homogeneously throughout the entire nozzle.

[0022] 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 D-D in Figure 3.

Figure 5 - is the sideways view of the nozzle.

Figure 6 - is the sideways view of the nozzle from the other side.

Figure 7 - is the detailed view of the nozzle together with the casing and the guiding member.

Figure 8 - is the detailed view of the nozzle together with the guiding member.

Figure 9 - is the perspective view of the guiding member.

Figure 10 - is the perspective view of the casing and the cover.

[0023] The elements illustrated in the figures are numbered as follows.

1. Nozzle
2. Body
3. Air inlet
4. Air outlet holes
5. Comb
6. Guiding member
7. Casing
8. Wall
9. Lid
10. Base
11. Opening

[0024] The hair dryer comprises a nozzle (1) which is attached to the air outlet of the hair dryer and which has an air inlet (3), a hollow body (2), at least two combs (5) at different densities with comb teeth arranged at different densities on the outer wall of the body (2) and air outlet holes (4) on the body (2) which open out from the body (2) wall where the comb teeth are located and which enable the air moving in the body (2) to leave the body (2), and the nozzle (1) comprises a guiding member (6) which is placed in the body (2), which extends coaxially with the body (2) along the body (2), which moves with respect to the body (2) and which enables the air entering the body (2) to be directed to the air outlet holes (4) on the body (2) wall (Figure 1 and Figure 2).

[0025] The guiding member (6) ensures that the pressure distribution in the nozzle (1) is homogeneous. Thus, equal performance and homogeneous air outlet are obtained from every part of the nozzle (1). The homogeneous distribution of the air pressure along the air inlet (3)

and air outlet holes (4) in the nozzle (1) provides increased performance and efficiency.

[0026] In an embodiment of the present invention, the nozzle (1) comprises two different combs (5) having comb teeth of two different sizes. In the preferred embodiment of the present invention, the length of the thick combs (5) is 25 mm and the width is 2.8 mm while the length of the thin combs (5) is 16.7 mm and the distance between the thin combs (5) is 1.5 mm.

[0027] In an embodiment of the present invention, the nozzle (1) comprises a plurality of air outlet holes (4) which are arranged between and/or on the sides of the comb teeth. In the embodiment of the present invention, the width of the air outlet holes (4) between the thick comb teeth is 8.2 mm, and the width of the air outlet holes (4) between the thin comb teeth is 1.5 mm.

[0028] In the embodiment of the present invention, the guiding member (6) comprises a casing (7); a flat base (10) which is arranged in the casing (7); at least one wall (8) which is positioned on the lower and upper surfaces of the base (10), which extends outward from the base (10) and which enables the air entering through the air inlet (3) to be directed to the air outlet holes(4); and an opening (11) which is arranged along the casing (7) on the casing (7). In this embodiment of the present invention, the height of the casing (7) and the height of the wall (8) are equal. Thus, the air in the body (2) is enabled to remain only between the wall (8) and the casing (7) (Figure 7 and Figure 8).

[0029] In an embodiment of the present invention, the body (2) and the casing (7) have a telescopic, cylindrical structure.

[0030] In the embodiment of the present invention, the base (10) is placed into the casing (7) so as to be coaxial with the casing (7). The base (10) placed into the casing (7) divides the casing (7) into two equal parts along the horizontal axis. In this case, the air entering the nozzle (1) through the air inlet (3) moves between the casing (7) and the base (10) and the walls (8). In this embodiment of the present invention, the opening (11) is aligned so as to only coincide with one of the combs (5) (Figure 3 and Figure 4).

[0031] In the embodiment of the present invention, the nozzle (1) comprises a parabolic wall (8) which connects the short side and long side of the base (10). Thus, the air entering through the air inlet (3) is enabled to move along the axis of the body (2) and then make an almost right angle so as to be directed towards the opening (11) on the casing (7) and hence the air outlet holes (4) aligned with the opening (11) (Figure 9).

[0032] In an embodiment of the present invention, the nozzle (1) comprises four walls (8) which are parallel to each other with a certain distance therebetween.

[0033] In another embodiment of the present invention, the nozzle (1) comprises a lid (9) which is attached to the other end of the body (2) after the guiding member (6) is mounted into the body (2), which connects the body (2) and the guiding member (6) and which enables the guiding member (6) to rotate in the body (2) (Figure 10).

[0034] In the embodiment of the present invention, after the base (10) is placed into the casing (7), the guiding member (6) is placed into the body (2) so as to be coaxial with the body (2). Then, the lid (9) is attached and the assembly is completed. The user uses the nozzle (1) by attaching the same to the end of the hair dryer. During the use of the nozzle (1), the user uses the lid (9) to rotate the guiding member (6) towards the comb (5) preferred to use. In this case, the guiding member (6) in the body (2) moves radially with respect to the body (2). At the same time, the opening (11) on the wall of the casing (7) is aligned with the air outlet holes (4) around the comb (5) the user prefers to use, and the air entering through the air inlet (3) moves between the walls (8) and the casing (7) wall, leaves through the air outlet holes (4) and then through between the comb teeth. Thus, the user directs the air passing through the nozzle (1) towards one of the combs (5) with different densities preferred to be used without experiencing any decrease in pressure.

[0035] By means of the present invention, the air is enabled to be blown from the desired comb (5) by using the guiding member (6) which can rotate in both directions. Thus, the user is enabled to dry or style their hair with both thin and thick-teeth combs (5) without any temperature or pressure loss (Figure 5 and Figure 6).

[0036] In another embodiment of the present invention, the nozzle (1) is attached to the air outlet of the hair dryer with a magnetic locking mechanism. Thus, the user can attach the nozzle (1) at the desired angle while combing their hair so as to enable the same to remain fixed in the desired position. Preferably, four different positions are provided with 90 ° intervals.

[0037] The casing (7), the guiding member (6) and the lid (9) are connected to each other. When turned 180 ° right or left with respect to the front surface of the comb (5), the lid (9) component is locked with the body (2) by means of claws.

[0038] By means of the present invention, while drying hair with two different comb (5) structures according to the hair type, the user can comb with higher performance by means of the guiding member (6) which can rotate in both directions. By means of the present invention, the pressure and speed of the air entering the nozzle (1) is spread homogeneously throughout the entire nozzle (1).

Claims

1. A hair dryer **comprising** a nozzle (1) which is attached to the air outlet and which has an air inlet (3), a hollow body (2), at least two combs (5) at different densities with comb teeth arranged at different densities on the outer wall of the body (2) and air outlet holes (4) on the body (2) which open out from the body (2) wall where the comb teeth are located and which enable the air moving in the body (2) to leave the body (2), **characterized by** a nozzle (1) having a

guiding member (6) which is placed in the body (2), which extends coaxially with the body (2) along the body (2), which moves with respect to the body (2) and which enables the air entering the body (2) to be directed to the air outlet holes (4) on the body (2) wall.

2. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising two different combs (5) having comb teeth of two different sizes.

3. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising a plurality of air outlet holes (4) which are arranged between and/or on the sides of the comb teeth.

4. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising the guiding member (6) having a casing (7); a flat base (10) which is arranged in the casing (7); at least one wall (8) which is positioned on the lower and upper surfaces of the base (10), which extends outward from the base (10) and which enables the air entering through the air inlet (3) to be directed to the air outlet holes(4); and an opening (11) which is arranged along the casing (7) on the casing (7).

5. A hair dryer as in Claim 4, **characterized by** the casing (7) of which the height is equal to the height of the wall (8)

6. A hair dryer as in Claim 4, **characterized by** the casing which has a cylindrical structure and which telescopes with the body (2).

7. A hair dryer as in Claim 4, **characterized by** the base (10) which is placed into the casing (7) so as to be coaxial with the casing (7).

8. A hair dryer as in Claims 4 and 7, **characterized by** the base (10) which divides the casing (7) into two equal parts along the horizontal axis.

9. A hair dryer as in Claim 4, **characterized by** the opening (11) which is aligned so as to only coincide with one of the combs (5)

10. A hair dryer as in Claim 4, **characterized by** the nozzle (1) comprising a parabolic wall (8) which connects the short side and long side of the base (10).

11. A hair dryer as in Claims 4 and 10, **characterized by** four walls (8) which are parallel to each other with a certain distance therebetween.

12. A hair dryer as in Claim 1, **characterized by** the nozzle (1) comprising a lid (9) which is attached to the other end of the body (2) after the guiding member (6) is mounted into the body (2), which connects the body (2) and the guiding member (6) and which enables the guiding member (6) to rotate in the body (2).

Figure 1

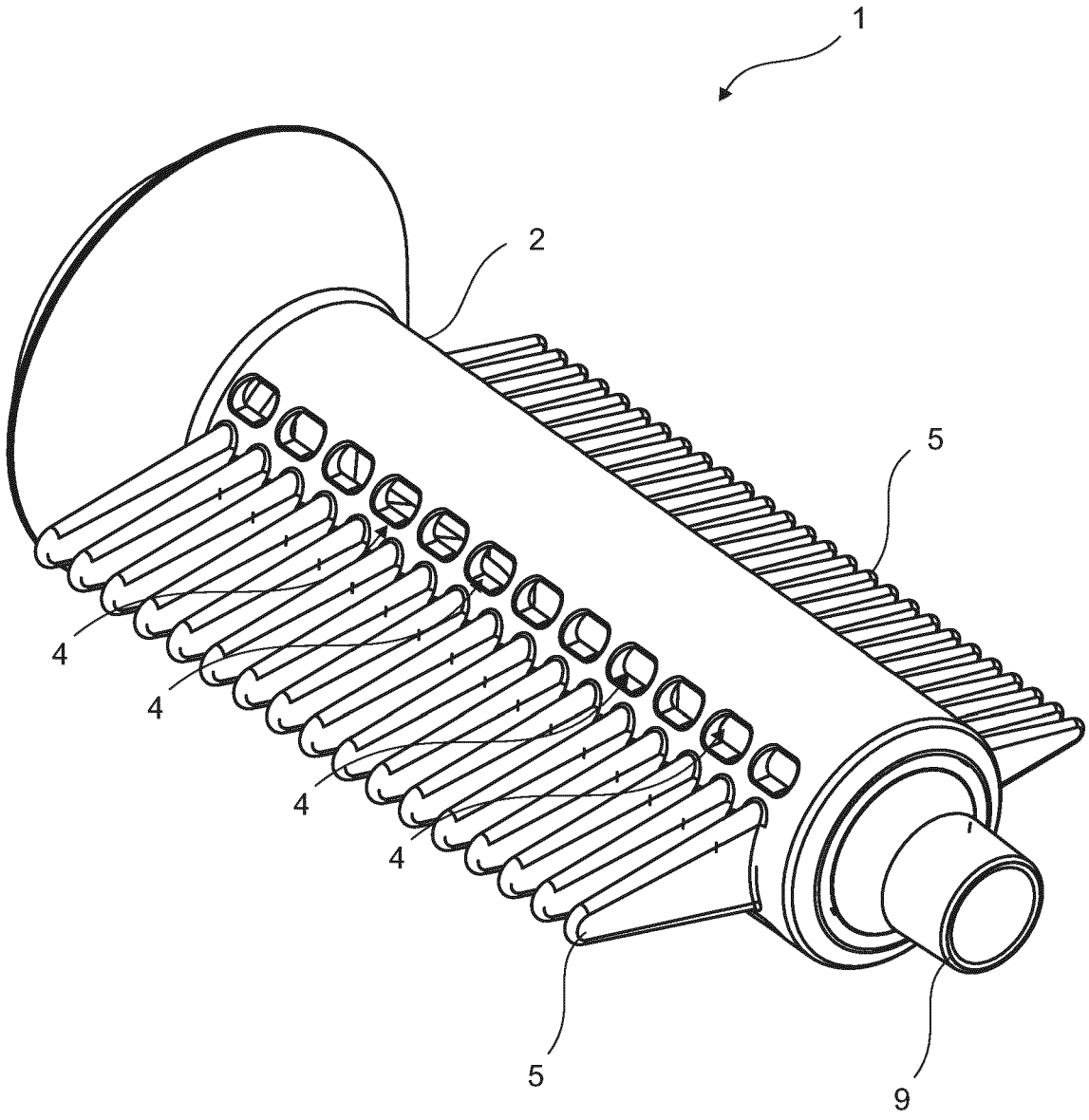


Figure 2

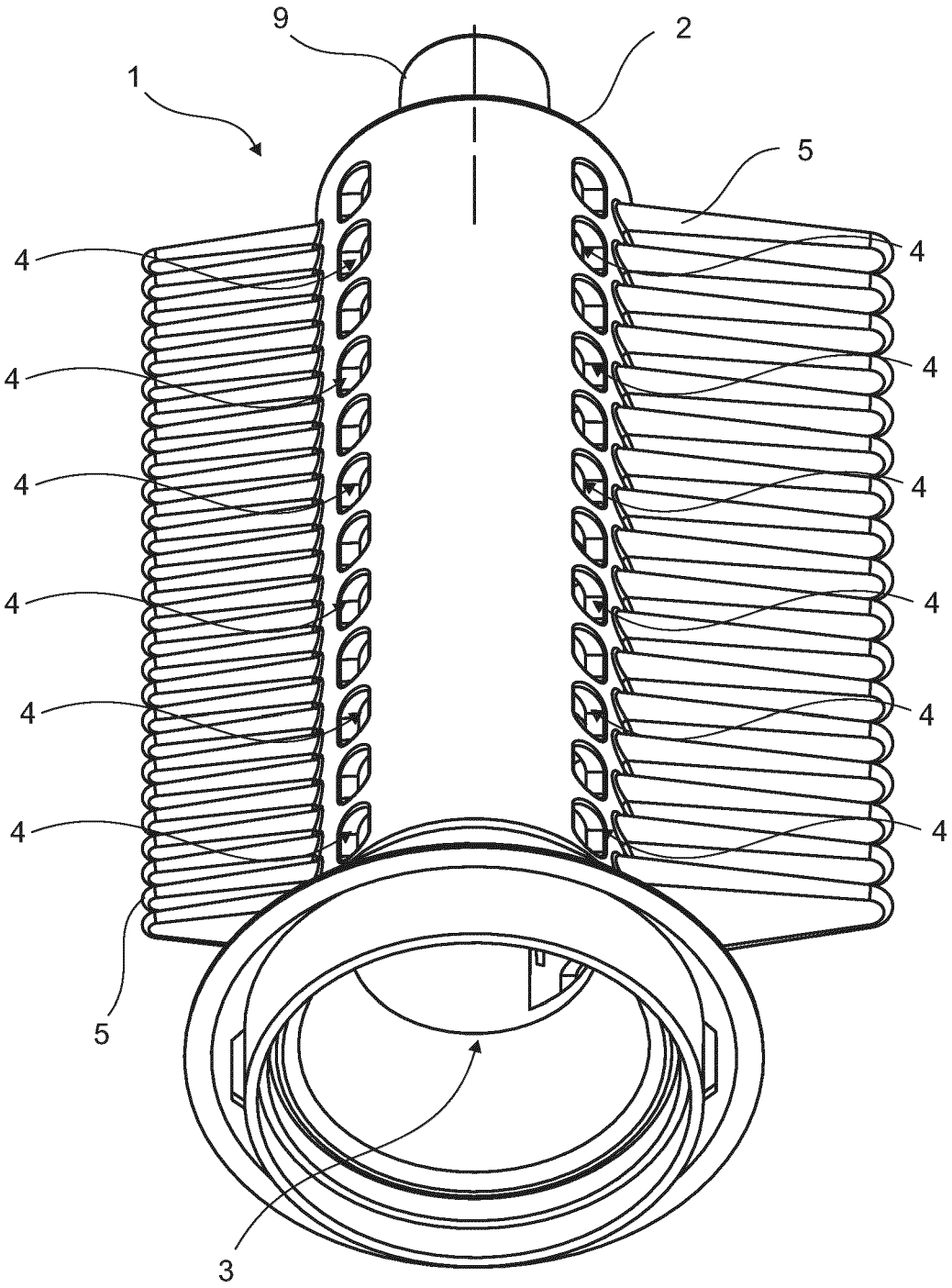


Figure 3

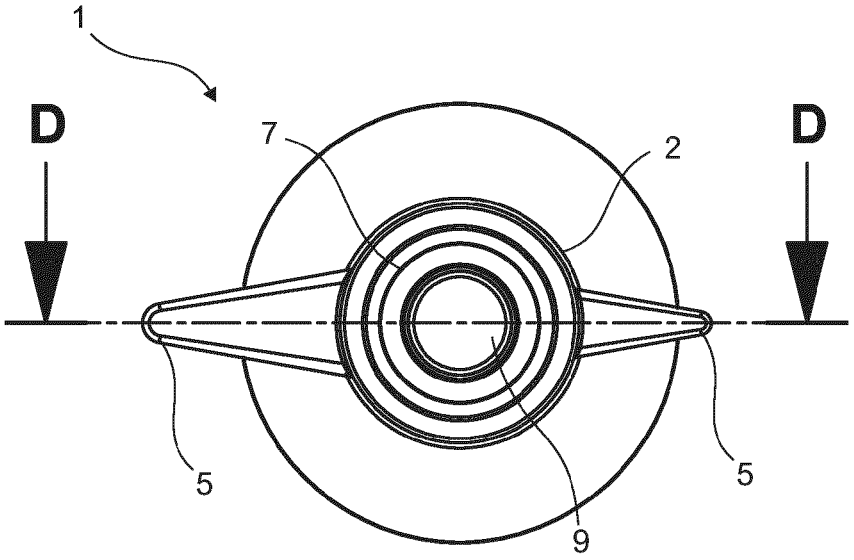


Figure 4

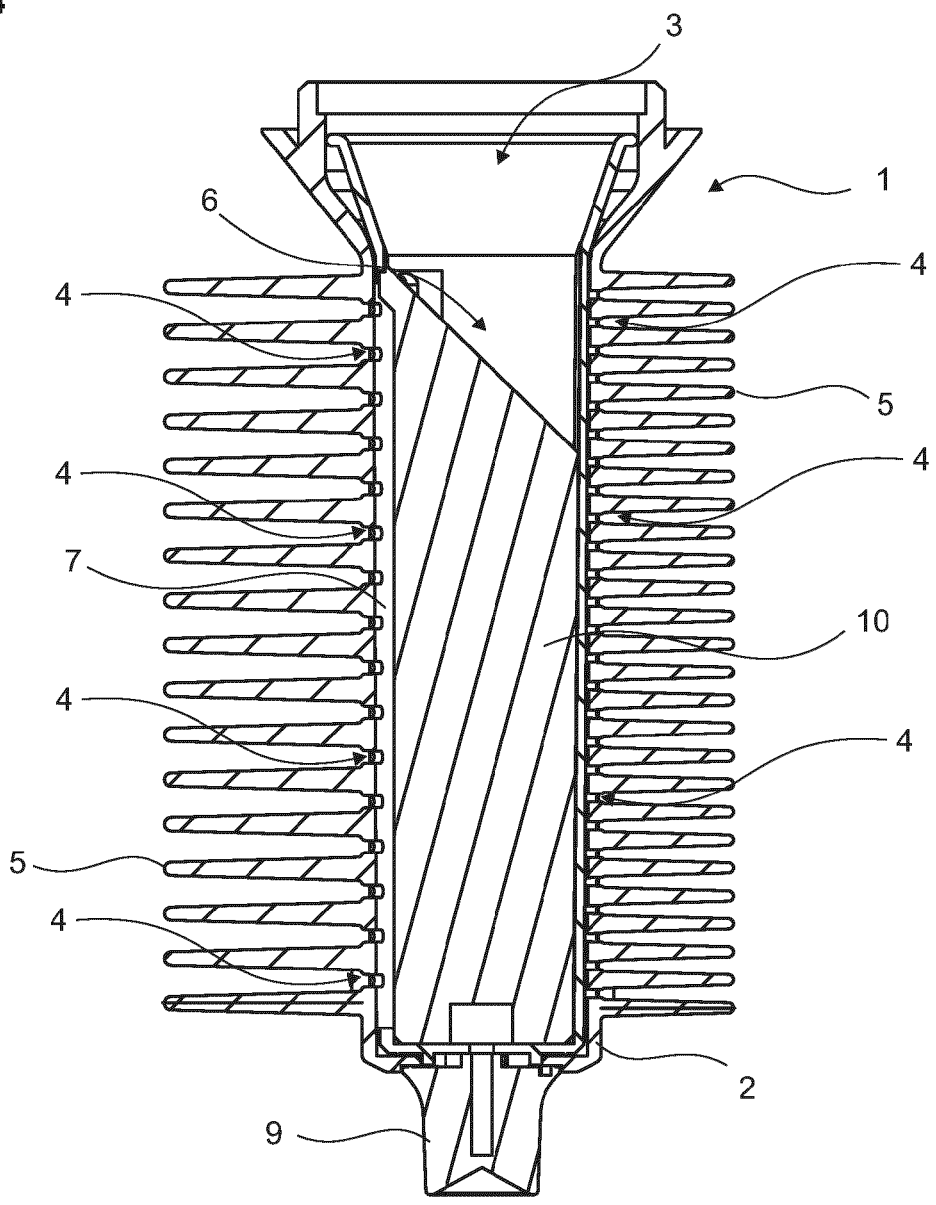


Figure 5

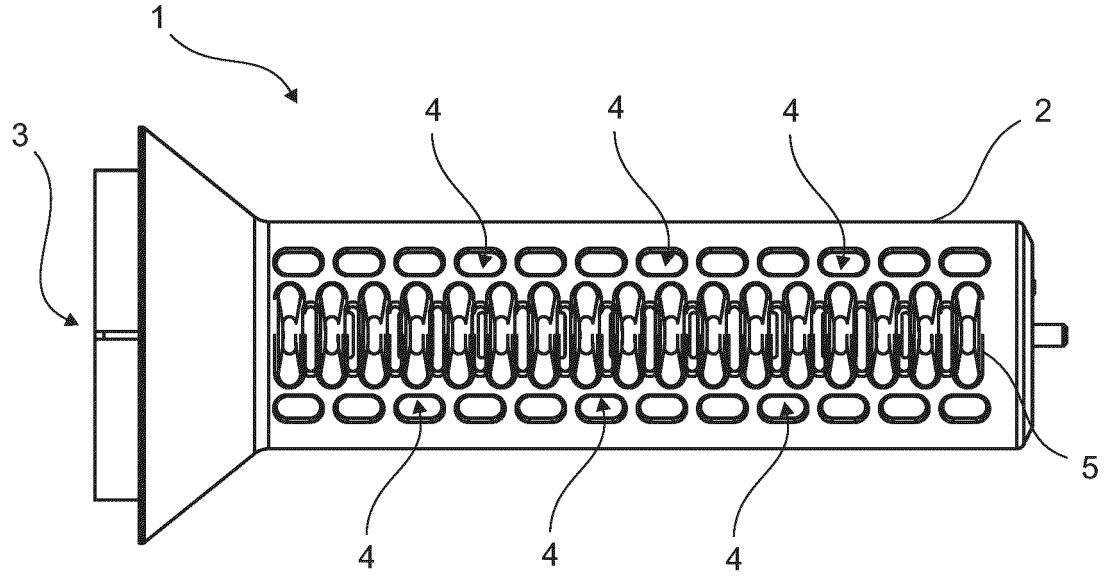


Figure 6

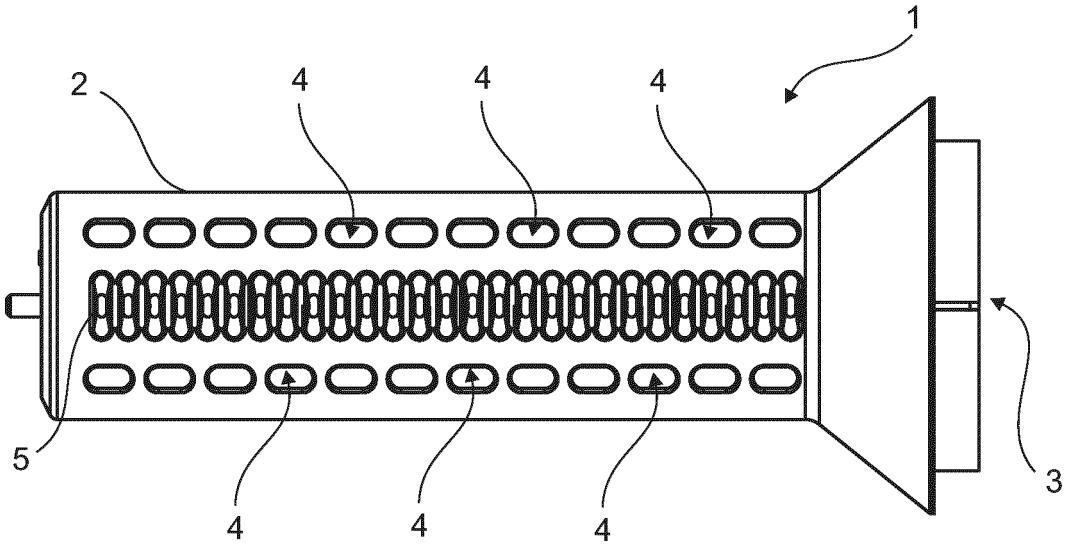


Figure 7

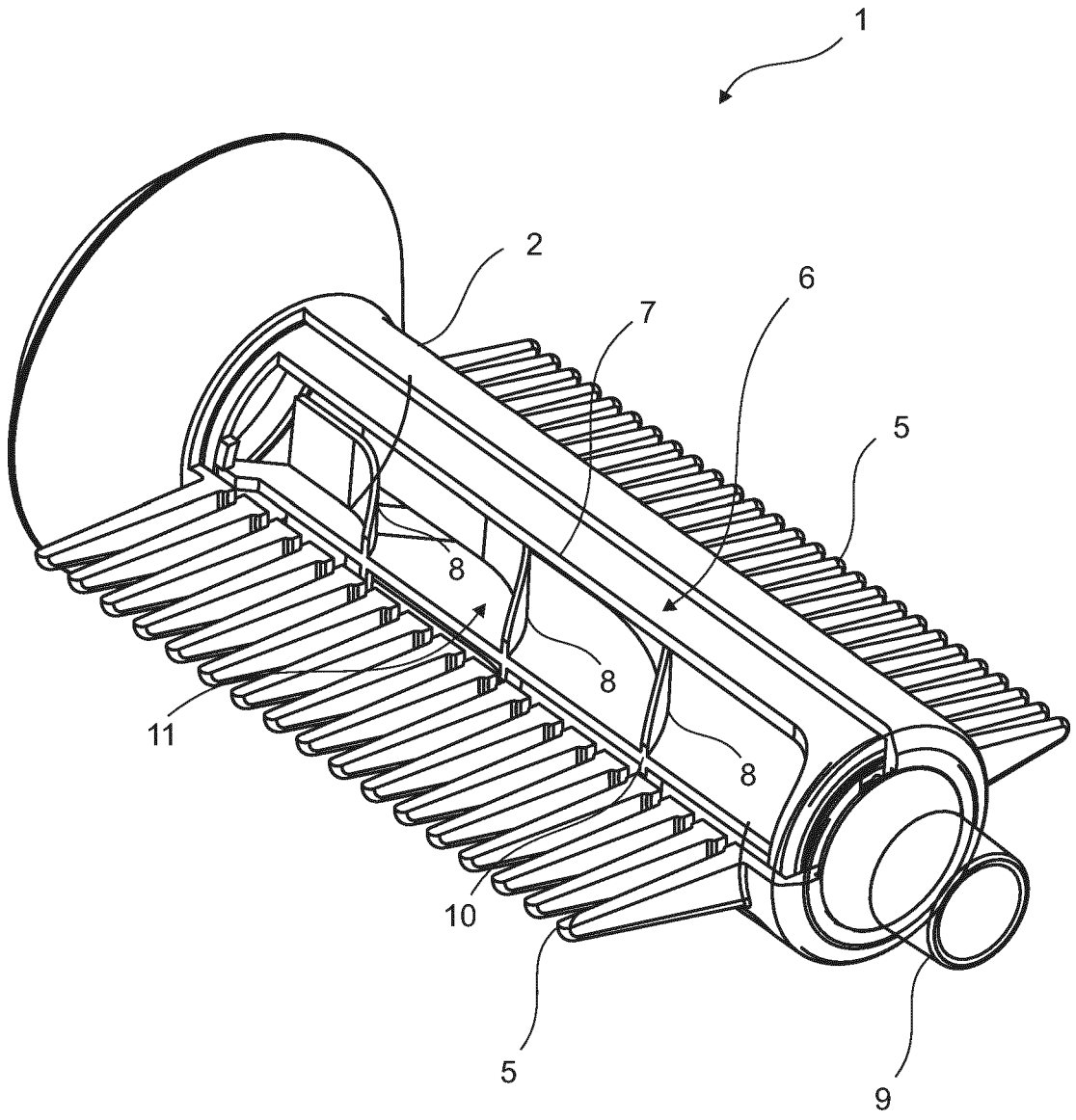


Figure 8

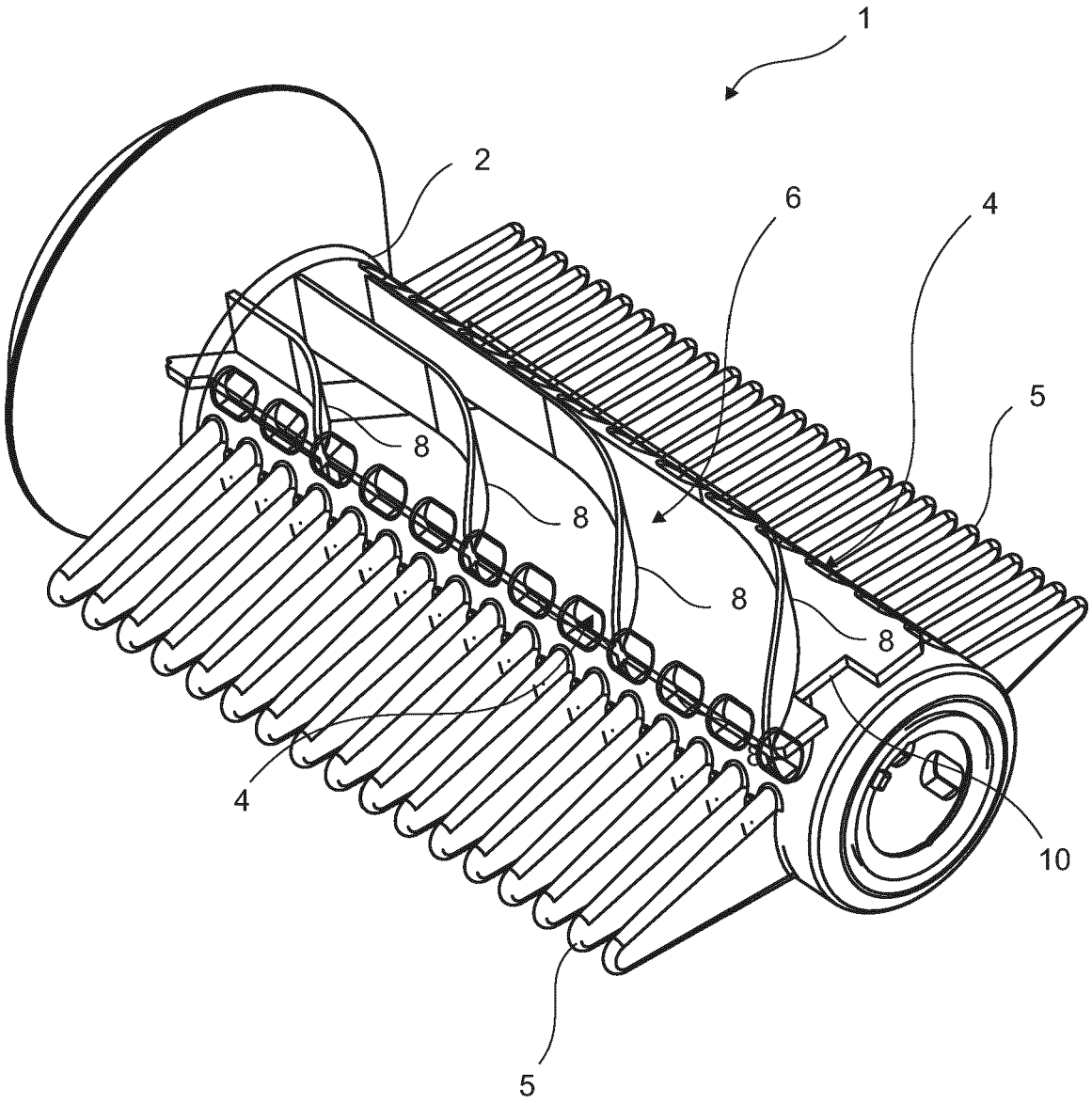


Figure 9

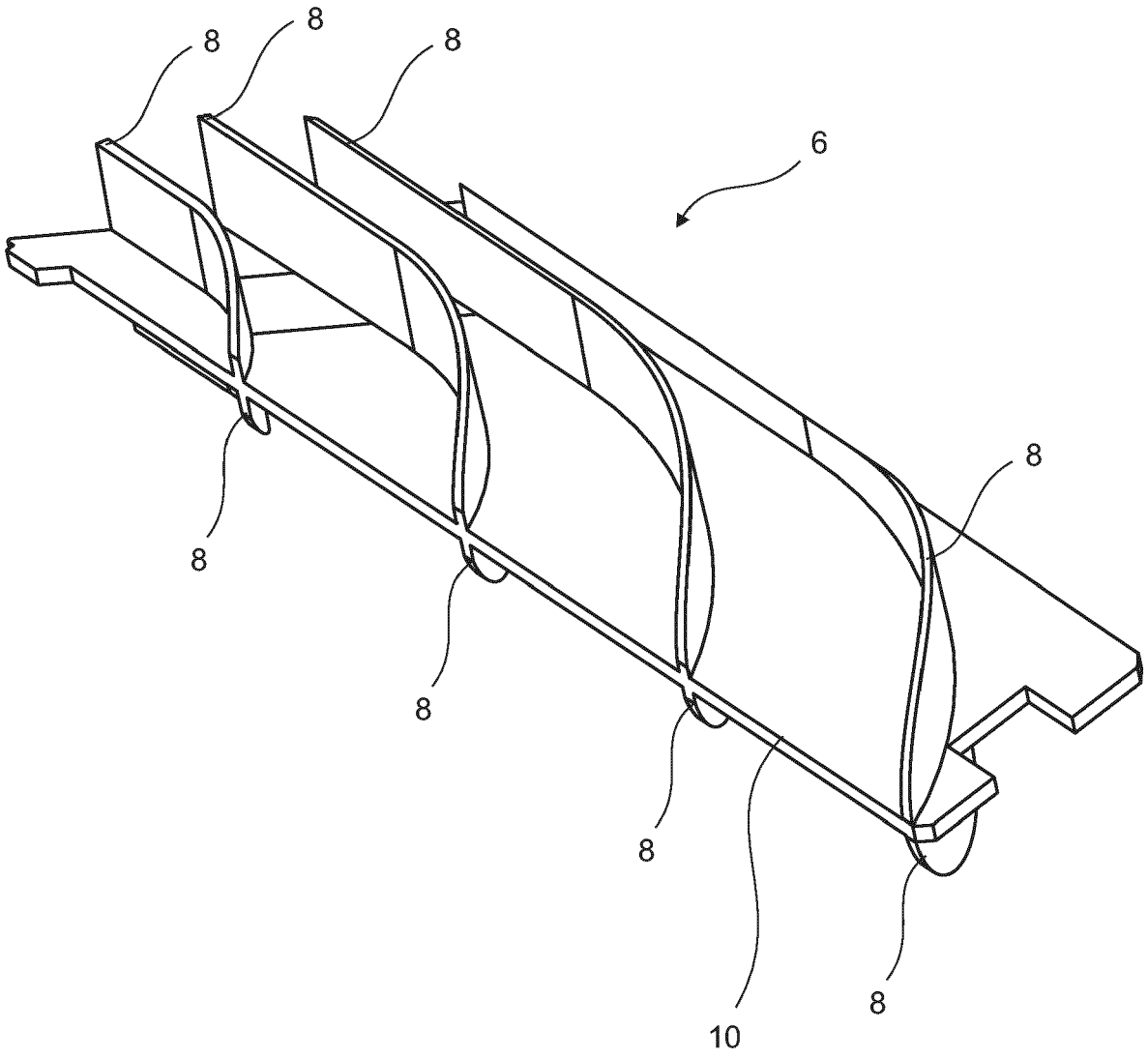
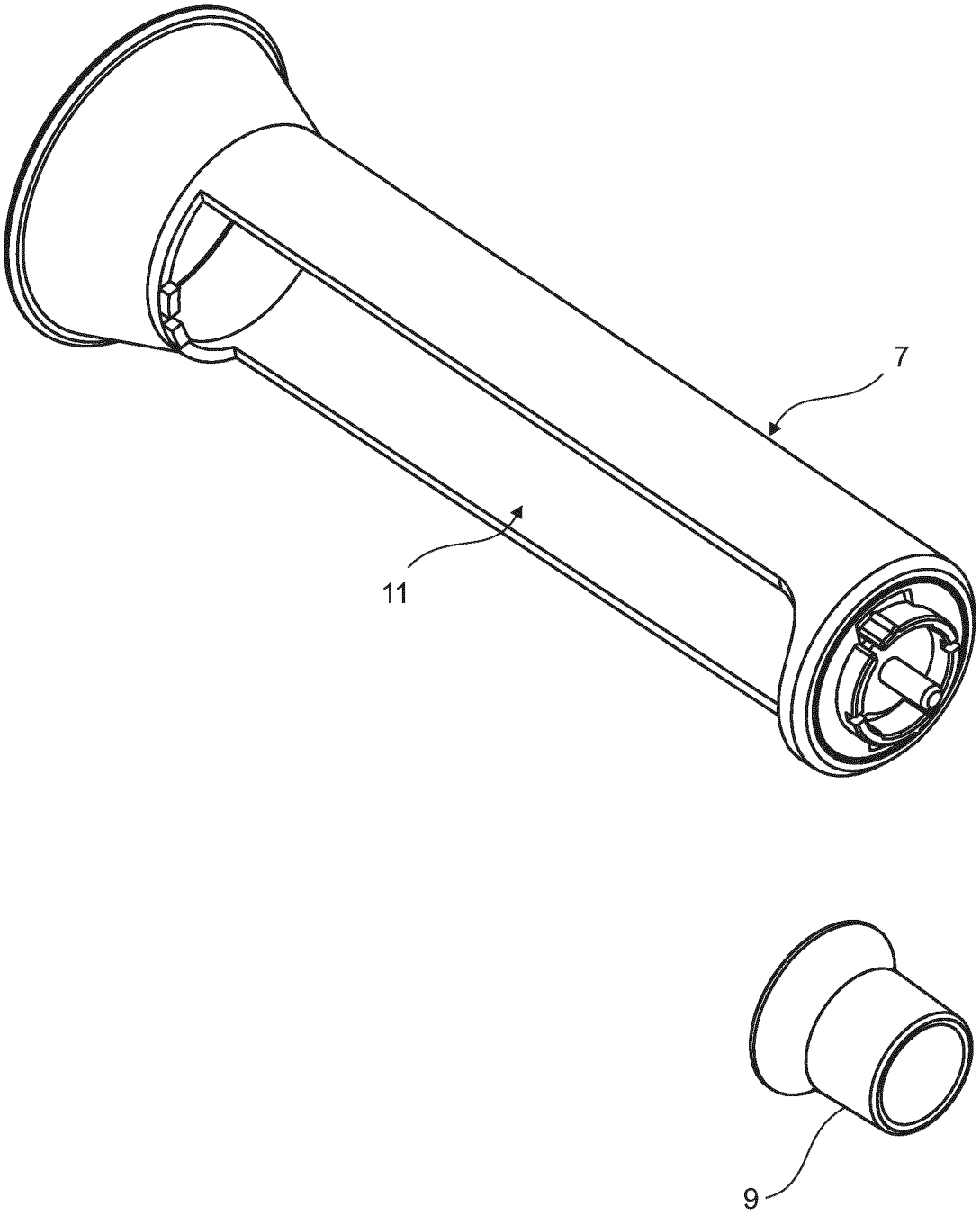


Figure 10



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EUROPEAN SEARCH REPORT

Application Number
EP 24 21 5152

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	CN 111 297 027 A (HANGZHOU SPARK IND DESIGN CO LTD) 19 June 2020 (2020-06-19) * the whole document *	1-3,12 4-11	INV. A45D20/12 A45D20/50
A	CN 220 024 379 U (GUANGDONG LIFENG ELECTRIC APPLIANCES CO LTD) 17 November 2023 (2023-11-17) * claims; figures *	4-11	
A	CN 220 141 014 U (GUANGDONG ROMAN TECH CO LTD) 8 December 2023 (2023-12-08) * figures *	4-11	
A	CN 113 243 646 A (HUIZHOU WENDE INTELLIGENT TECH CO LTD) 13 August 2021 (2021-08-13) * claims; figures *	1-12	
A	FR 1 046 500 A (AGOSTINI L.) 7 December 1953 (1953-12-07) * claim 1 *	1-12	TECHNICAL FIELDS SEARCHED (IPC)
X,P	CN 221 769 514 U (CIXI RYACA ELECTRICAL CO LTD) 27 September 2024 (2024-09-27) * figures *	1-12	A45D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	17 March 2025	Zattoni, Federico

CATEGORY OF CITED DOCUMENTS

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17-03-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 111297027 A	19-06-2020	NONE	
CN 220024379 U	17-11-2023	NONE	
CN 220141014 U	08-12-2023	NONE	
CN 113243646 A	13-08-2021	NONE	
FR 1046500 A	07-12-1953	NONE	
CN 221769514 U	27-09-2024	NONE	

EPO FORM P0459

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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Patent documents cited in the description

- EP 1124466 A **[0004]**
- US 3797752 A **[0005]**
- EP 0639339 A **[0006]**