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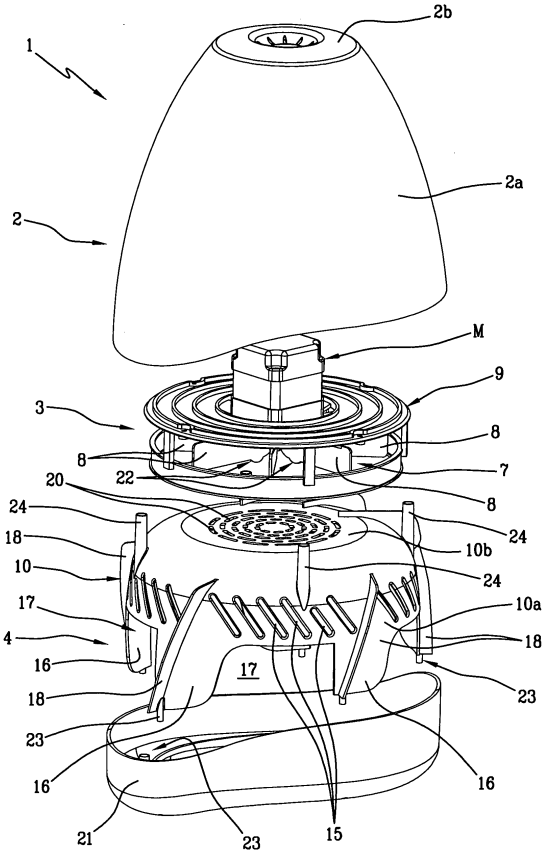
(54) **Hair drying helmet**

(57) A hair-drying helmet, comprises an external crown (2) internally comprising a drying chamber (13) and having a main opening (6) for access to the drying chamber (13). The helmet further comprises means for generating (3) an air flow for sending an air flow into the drying chamber (13), and a hollow space (14) contained into the external crown (2) and placed in fluid communication with the means for generating (3) the air flow. The hollow space (14) exhibits at least a first opening (15) facing the drying chamber (13) for directing the air flow to at least a predetermined point of the drying chamber (13).

FIG 1



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Description

[0001] The invention relates to a helmet hair dryer, and is applicable to the sector of apparatus using a flow of hot air to create a drying action. Known hair-drying helmets comprise an external crown which has an opening destined to enable the crown to surround a part of a user's hair. These helmets are equipped with fans and/or other means for circulating an air flow, arranged in an opposite position with respect to the opening and facing the opening in order to direct a flow of hot air towards the user's hair. A grid is predisposed between the fan and the opening in order to protect the user against accidental contact with the turning fan.

[0002] At an edge of the crown arranged close to the opening there is a curved portion which extends towards a central portion of the opening, in particular having a concavity thereof facing the inside of the crown.

[0003] According to the functioning principle of these helmets, the flow of hot air generated by the fan is directed towards the opening and therefore towards the user's hair. During operation, the internal wall of the crown conveys the remaining part of air flow towards the curved portions, which curved portions ensure that the remaining part of air flow is kept internally of the helmet.

[0004] Helmets of the above-described type exhibit some important drawbacks. The drawbacks originate substantially from the properties of the hot air flow generated internally of the helmet.

[0005] The location and orientation of the fan generates an excessive heating of the portion of hair directly invested by the hot air flow coming from the fan, i.e. the portion of hair situated on the top of the head; this obviously leads to discomfort on the part of the user.

[0006] Further, the part of the flow reaching the opening, which is deviated towards the user from the curved portion, reaches only a limited part of the user's head due to the limited action exerted by the curved portion. A nonuniform drying of the user's hair is the upshot, as well as a longer drying time. It also inevitably follows that the user is exposed for a longer time to the above-mentioned excessive heating to the top of the head.

[0007] The technical aim of the present invention is to make available a hair-drying helmet which does not suffer the above-mentioned drawbacks.

[0008] The main aim of the invention is to make available a hair-drying helmet which produces a uniform drying of a user's hair.

[0009] A further aim of the invention is to make available a hair-drying helmet which reduces the time required for a correct drying action. A further aim of the invention is to provide a hair-drying helmet which is comfortable for a user.

[0010] The specified aims, and other besides, are all substantially attained by the hair-drying helmet according to what is set out in claim 1 and/or in one or more of the claims dependent thereon.

[0011] A description is now provided by way of non-limiting example of a preferred embodiment of the hair-drying helmet in agreement with the accompanying figures of the drawings, in which:

figure 1 is an exploded perspective view of the hair-drying helmet of the present invention;
figure 2 is a section of the helmet of figure 1.

[0012] With reference to the figures of the drawings, 1 denotes in its entirety the hair-drying helmet of the present invention.

[0013] As shown in the exploded view of figure 1, the helmet 1 comprises an external crown 2 defining the externally-visible portion of the helmet 1, means 3 for generating an air flow, and distributor means 4 for entraining the flow of air, generated by the means for generating 3, in predetermined directions internally of the helmet 1.

[0014] The crown 2 comprises a rounded external shell which can be connected to means for supporting the helmet 1, which means are of known type and therefore not illustrated in the figures of the drawings. In the preferred embodiment of the invention, the crown 2 comprises a lateral wall 2a and an upper wall 2b, the upper wall 2b being preferably provided with an opening for allowing air coming from the outside to enter the helmet 1. Inferiorly the crown 2 further presents a main opening 6 which is arranged in an opposite position to the upper part 2b. The lateral wall 2a and the upper wall 2b internally define a space which is accessible through the main opening 6.

[0015] The main opening 6 exhibits a size which enables a user's hair to enter, i.e. to enable the helmet 1 at least partially to surround a user's head.

[0016] The means 3 for generating the flow of air are located internally of the crown, and specifically internally of the space in the crown. The means for generating 3 comprise a fan 7, preferably axial-flow and comprising a plurality of blades 8 extending radially outwards from a rotation axis X of the fan 7. The fan 7 is activated by an electric motor having known characteristics and being denoted overall by M in the figures of the drawings. The fan 7 is preferably arranged in a configuration which directs a flow of air towards the main opening 6 of the helmet 1. More preferably, the rotation axis X of the fan 7 intersects the main opening 6 in a central portion thereof.

[0017] In the illustrated preferred embodiment, the fan 7 is inserted in a corresponding rigid frame 9 having a containing function as well as a protecting function of the fan 7.

[0018] Advantageously the means for distributing 4 act on the flow of air generated by the fan 7 to distribute and convey the flow so as to obtain a uniform drying effect on the user's hair.

[0019] In particular, the means for distributing 4 comprise an internal shell 10 which is inserted at least partially, preferably entirely, in an external shell of the crown 2. The internal shell 10 also has a crown conformation and exhibits a lateral wall 10a and an upper wall 10b. On the opposite side with respect to the upper wall 10b, the

shell exhibits a bottom opening 11 which is located at the main opening 6 of the helmet 1 and, preferably, is arranged in a substantially aligned position to the main opening 6.

[0020] The lateral wall 10a and the upper wall 10b of the internal shell 10 internally define a drying chamber 12 which is accessible from the bottom opening 11 of the helmet 1 and therefore is accessible from the main opening 6 of the helmet 1.

[0021] The lateral wall 10a of the internal shell 10 and the lateral wall 2a of the external crown 2 delimit between them a channel which is active between the means for generating 3 the flow and the drying chamber 13 and is in fluid communication therewith. The channel, in the embodiment of figure 2, is defined by a hollow space 14 which is laterally delimited by the lateral walls 2a, 10a of the external crown 2 and the internal shell 10, and is toroidal.

[0022] The hollow space 14 develops along a peripheral direction of the external crown 2 and the internal shell 10, and preferably develops about the rotation axis X of the fan 7.

[0023] The hollow space 14 exhibits at least a first opening 15 facing the drying chamber 13 to direct the air flow coming from the fan 7 towards the drying chamber 13. The hollow space 14 preferably exhibits a plurality of first openings 15 having the above-described characteristics. The first openings 15, which are obtained on the lateral wall 10a of the internal shell 10, are though-openings and are preferably distributed along an entire peripheral development of the internal shell 10.

[0024] Each of the first openings 15 preferably exhibits an elongate shape. Further, each first opening 15 is oriented such that a prevalent development direction thereof is inclined with respect to an axis about which the plurality of first openings 15 develops. Each first opening 15 is preferably oriented such that the prevalent direction is inclined with respect to an air flow direction internally of the hollow space 14, and more preferably inclined with respect to the rotation axis of the fan 7. In other words, the prevalent development direction of each first opening 15 lies on a line that follows a screw-type trajectory, on the lateral wall 10a, of the internal shell 10. In the illustrated embodiment of the helmet 1 of the invention, the first openings 15 are arranged side-by-side and are parallel to one another.

[0025] The internal shell 10 further exhibits at least an expansion 16 which extends away from the lateral wall 10a in an opposite direction with respect to the upper portion of the internal shell 10. The internal shell 10 preferably exhibits a plurality of expansions 16 arranged along a whole peripheral development of the internal shell 10 and defining between each other corresponding terminal openings 17 facing the drying chamber 13 and destined to set the hollow space 14 in fluid communication with the drying chamber 13 in proximity or at the main opening 6 of the helmet 1.

[0026] Further, the internal shell 10 comprises at least a deviator element 18 which extends away from the lateral wall 10a of the internal shell 10 and externally thereof. In more detail, the deviator element 18 extends along the whole hollow space 14, and preferably also extends at one of the expansions 16 in order that it can guide the air flow along the whole hollow space 14 up to the terminal openings 17.

[0027] The internal shell 10 preferably comprises a plurality of deviator elements 18, arranged along an entire peripheral development of the internal shell 10.

[0028] The plurality of deviator elements 18 enables a uniform sharing-out of the air distributed internally of the hollow space 14.

[0029] In particular, each deviator element 18 acts as a dividing wall and subdivides the hollow space 14 into a plurality of distinct channels, each of which is preferably associated to a corresponding terminal opening 17. To this end, each deviator element 18 extends along a whole extension of the hollow space 14, i.e. it extends from the lateral wall 10a of the internal shell 10 up to the lateral wall 2a of the external crown 2.

[0030] Each deviator element 18 preferably exhibits a prevalent development direction which inclines in a screw-type trajectory on the lateral wall 10a of the internal shell 10, and, in more detail, the trajectory of the deviator elements 18 tends in an opposite direction to the trajectories of the first openings 15.

[0031] The internal shell 10 is positioned internally of the external crown 2 in such a way that the upper portion of the internal shell 10 defines a separator wall 10b between the drying chamber 13 and a remaining internal part of the external crown 2. The remaining internal part of the external crown 2 is substantially delimited inferiorly by the separator wall 10b, laterally by the lateral wall 2a of the external crown 2 and superiorly by the upper wall 2b of the external crown 2. The remaining internal part of the external crown 2 defines a chamber 19 which is advantageously destined to house the means for generating 3 the air flow. The chamber 19 is in fluid communication with the hollow space 14, which is connected to the chamber 19 at a preferably peripheral annular portion 19a thereof. This places the chamber 19 in indirect fluid communication with the drying chamber 13.

[0032] The chamber 19 is further advantageously placed in direct fluid communication with the drying chamber 13. For this purpose, the upper portion, or separator wall 10b of the internal shell 10, which defines the separator wall between the chamber 19 and the drying chamber 13, exhibits at least a second through-opening 20, preferably a plurality of second through-openings 20. The second openings 20 are preferably all arranged in a central portion of the separator wall 10b. Further, the central portion of the separator wall 10b, exhibiting the plurality of second openings 20, is preferably directly facing the fan 7 and preferably also directly faces a front portion of the fan 7 in order to channel a part of the fluid generated by the fan 7 directly towards the drying chamber 13.

[0033] The remaining part of air flow generated by the

fan 7 is channelled, through the annular portion 19a, internally of the hollow space 14 and, from here, once more towards the drying chamber 13 through both the terminal openings 17 and the first openings 15.

[0034] The means for distributing 4 advantageously further comprise a curved annular portion 21 which is preferably arranged on a lie plane thereof and is inferiorly stably associated to an end part of the external crown 2 at the main opening 6. The curved annular portion 21 substantially exhibits a semi-circumferential conformation, viewed in section in a perpendicular plane to the lie plane. Further, the curved annular portion 21 extends from the end part of the external crown 2 towards the drying chamber 13 and exhibits a concavity facing towards the drying chamber 13.

[0035] Following the positioning of the curved annular portion 21, as can be seen in figure 2, the curved annular portion acts on the terminal openings 17 to direct the air flow coming from the hollow space 14 and exiting the terminal openings 17 towards the drying chamber 13. In this way the part of the air flow does not flow directly through the second openings 20 or indirectly through the first openings 15, is not dissipated externally of the helmet 1, but is re-integrated into the helmet 1 by direct return of the flow into the drying chamber, and re-direction thereof towards the user's hair, and what is more to a portion of the hair which is not invested by the flow exiting the above-mentioned first openings 15 and second openings 20.

[0036] In the present invention, the curved annular portion 21 is separate and represented by the external crown 2; this is so that the helmet 1 can be assembled. However, the curved annular portion 21 could be made in a single piece with the external crown 2.

[0037] In order to improve the uniformity of the drying operation, each of the blades 8 of the fan 7 exhibits a protuberance 22 which preferably extends in a parallel direction to the rotation axis X of the fan 7 and is preferably arranged in proximity of the rotation axis X. In the illustrated embodiment, the protuberances 22 are substantially semi-circular, or more generally, exhibit a profile of an arc of circumference. The protuberances 22 face towards the main opening, and preferably towards the separator wall 10b, so as to realise a depression at the central portion of the separator wall 10b which determines an increase in drying efficiency of the helmet 1. During rotation of the fan 7, the protuberances 22 which face the second openings 20 closest to the rotation axis X of the fan 7 generate a depression which, through the closest second openings 20 to the rotation axis X, collects a flow of air from the drying chamber 13. This facilitates an entry into the drying chamber 13 of the air flow coming from the first openings 15 and the second openings 20 located the most distant from the rotation axis X of the fan 7. Therefore, the second openings 20 are subject to differentiated flows, according to whether they are located close to the centre of the separator wall 10b, and therefore close to the rotation axis X, or distant from the rotation axis X.

[0038] In the preferred embodiment, the internal shell 10 is directly connectable to the curved annular portion 21 by means of first plugs 23, preferably associated to threaded fastening organs. The first plugs 23 of the internal annular shell 10 are afforded on the expansions 16 of the internal annular shell 10, while the first plugs 23 of the curved annular portion 21 are afforded at the semi-circumferential portion of the curved annular portion 21.

[0039] The internal shell 10 is further directly connectable to the external crown 2 by means of second plugs 24, also preferably associated to respective threaded fastening organs. Figure 1 shows only the second plugs of the internal shell 10 while the second plugs of the external crown 2 are not visible, as they are afforded internally thereof.

[0040] The present invention attains the set aims, obviating the drawbacks which are inherent in prior-art hair-drying helmets.

[0041] The flow distribution from the fan to the first and second openings and to the terminal openings enables the flow of air generated by the fan to be distributed towards a plurality of predetermined zones of the drying chamber, providing a more uniform drying action which is free of concentrated flows of hot air. This last characteristic also makes possible more rapid drying treatments which are also more comfortable for the user.

[0042] Further, the air flow distribution to the first and second openings and the terminal openings enables a reduction in the overall noise levels of the helmet 1.

Claims

1. A hair-drying helmet, comprising:

   an external crown (2) internally comprising a drying chamber (13) and
   having a main opening (6) for access to the drying chamber (13);
   means for generating (3) an air flow for sending an air flow into the drying chamber (13);
   characterised in that it comprises at least a channel which is at least partially contained in the external crown (2) and placed in fluid communication with the means for generating (3) for generating the flow; the channel having at least a first opening (15) facing the drying chamber (13) in order to direct the flow to at least a predetermined point of the drying chamber (13).

2. The helmet of claim 1, **characterised in that** it comprises an internal shell (10) inserted in the external crown (2) and delimiting, in cooperation with the external crown (2), the at least a channel.

3. The helmet of claim 2, **characterised in that** the

channel is a hollow space (14) having a substantially toroidal development along an entire periphery of the external crown (2).

4. The helmet of claim 2 or 3, **characterised in that** the channel exhibits a plurality of first openings (15).

5. The helmet of claim 3, **characterised in that** the internal shell (10) has a crown shape and internally delimits the drying chamber (13), the internal shell (10) and the external crown (2) together delimiting a chamber (19) in an opposite position to the main opening (6) and containing the means for generating (3) the flow.

6. The helmet of claim 5, **characterised in that** the internal shell (10) exhibits a separator wall (10b) which divides the drying chamber (13) from the chamber (19), the separator wall (10b) exhibiting a plurality of second openings (20) which are through-openings which set the chamber (19) in fluid communication with the drying chamber (13).

7. The helmet of claim 6, **characterised in that** the second openings (20) are made entirely in a central portion of the separator wall (10b).

8. The helmet of claim 2, **characterised in that** the internal shell (10) and the external crown (2) together define at least a terminal opening (17) which is a through-opening and which is afforded in proximity of the main opening (6) and faces towards the drying chamber (13), the terminal opening (17) setting the channel in fluid communication with the drying chamber (13).

9. The helmet of claim 8, **characterised in that** the internal shell (10) and the external crown (2) together define a plurality of terminal openings (17) arranged along an entire periphery of the internal shell (10).

10. The helmet of claim 8 or 9, **characterised in that** it comprises a curved annular portion (21), acting on the terminal opening (17) and extending towards a central portion of the drying chamber (13), the curved annular portion (21) exhibiting a concavity which faces the drying chamber (13) in order to direct a flow of air exiting from the terminal opening (17) towards the drying chamber (13).

11. The helmet of claim 3, **characterised in that** it comprises a plurality of deviator elements (18), operatively active internally of the hollow space (14) in order to separate the hollow space (14) into a plurality of channels.

12. The helmet of one or more of the preceding claims, **characterised in that** the means for generating (3) the air flow comprise a fan (7) exhibiting a plurality of blades (8) which generates an air flow in the direction of the main opening (6), each of the blades (8) exhibiting -a protuberance (22) extending along a rotation axis (X) of the fan (7) and projecting towards the main opening (6).

13. The helmet of claim 12, **characterised in that** the protuberances (22) are arranged in proximity of the rotation axis (X) of the fan (7).

14. The helmet of claims 6 and 12, **characterised in that** the fan (7), the separator wall (10b) and the main opening (6) are reciprocally aligned, the fan (7) being arranged in such a way as to generate an axial flow along an alignment direction between the fan (7), the separator wall (10b) and the main opening (6).

FIG 1

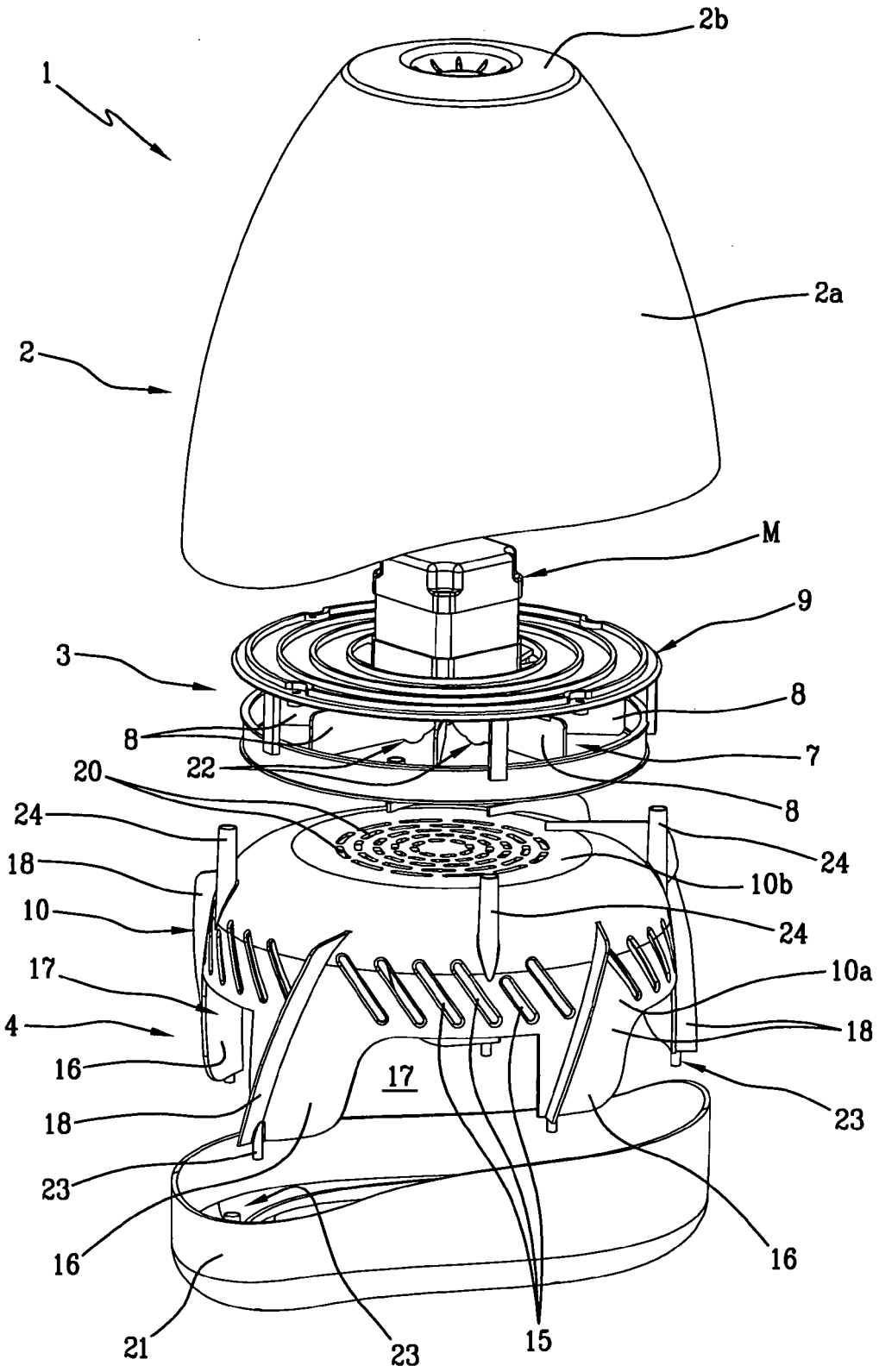
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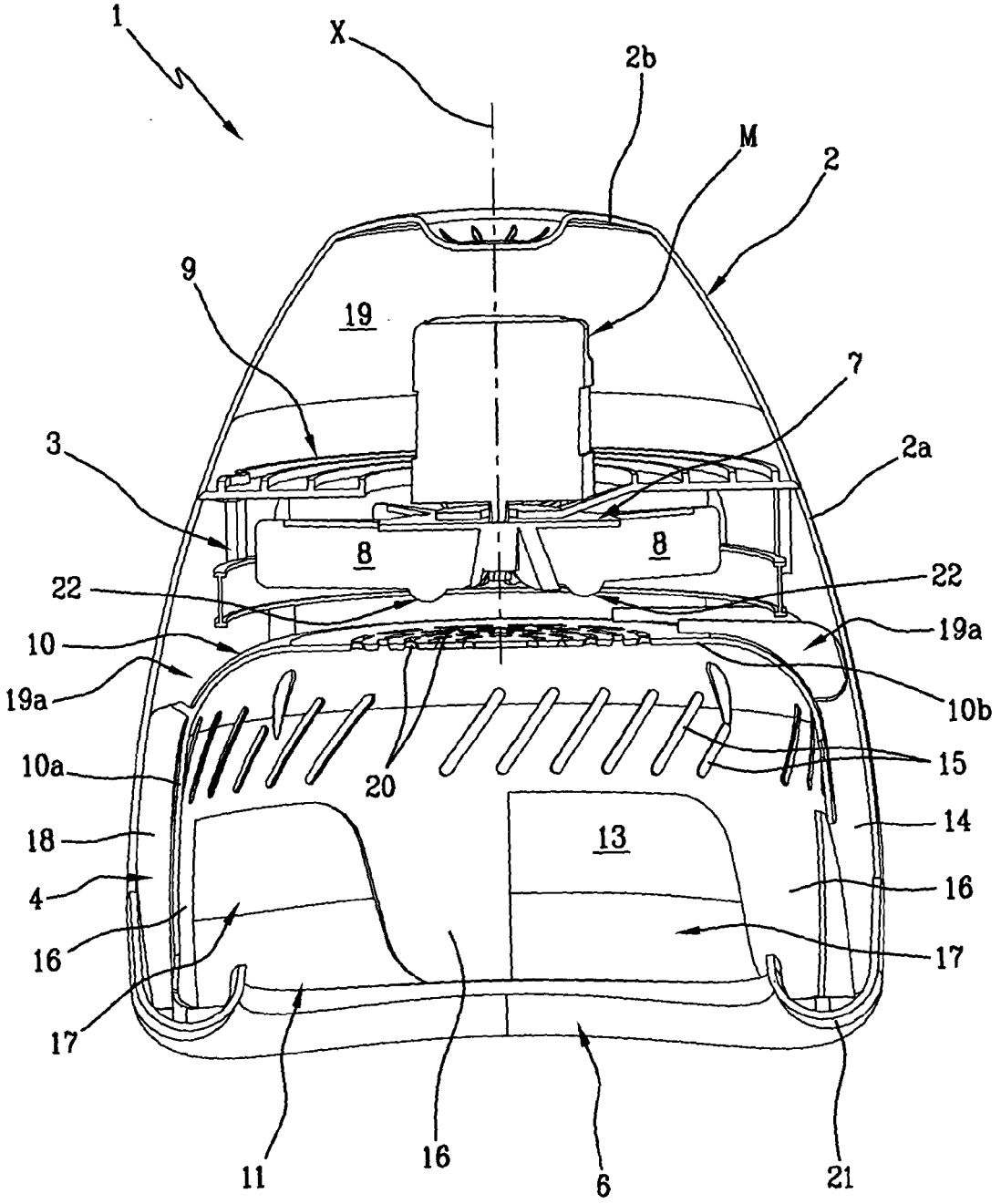
FIG 2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EUROPEAN SEARCH REPORT

Application Number
EP 07 42 5186

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

A45D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	14 September 2007	Lang, Denis

CATEGORY OF CITED DOCUMENTS

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14-09-2007

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82