Abstract:
An animal grooming brush has resiliently flexible bristles (4, 5) with a different stiffness to bend in one direction than another, so that when the brush is used in a first direction it acts as a stiffer brush and when used in a second direction it acts as a softer brush. This makes the brush suitable for de-shedding an animal coat when used on the coat in the first direction, and for de-tangling the animal coat when used on the coat in the second direction. The first and second directions may be substantially perpendicular to each other. The bristles may be thicker in one direction than another over at least part of their length. The bristles may be arranged in alternating rows of longer and shorter bristles.

Title: ANIMAL GROOMING BRUSH
ANIMAL GROOMING BRUSH

Technical Field of the Invention

The present invention relates to an animal grooming and particularly, but not exclusively, to a grooming brush for grooming dogs.

Background to the Invention

Dogs, and other animals, generally have two coats, a visible outer coat formed from longer hairs and a thicker under coat formed from shorter hairs. The undercoat is constantly shedding and dog owners use brushes to remove these hairs in order to stop them building up on home furnishings. This process is known as de-shedding.

Efficient de-shedding requires a brush with a stiff bristle. However, brushes with stiff bristles are apt to snag on knots and tangles in a dog’s coat. This can make them difficult to use, as well as being uncomfortable for the dog, unless knots and tangles have already been removed from the dog’s coat. This requires the use of a different brush. Switching between brushes during grooming is time consuming and inconvenient.

Embodiments of the present invention have been made in consideration of these issues.

Summary of the Invention

According to the present invention there is provided an animal grooming brush comprising resiliently flexible bristles with a different stiffness to bend in one direction than another, so that when the brush is used in a first direction it acts as a stiffer brush suitable for de-shedding an animal’s coat and when used in a second direction it acts as a softer brush suitable for de-tangling an animal’s coat.
Having one brush which can serve both functions is more convenient than having to switch between different brushes.

The bristles may be at least 10% or at least 20% stiffer in one direction than the other.

The first and second directions may be substantially perpendicular to each other.

The bristles may be thicker in one direction than another over at least part of their length. The bristles may be thicker in one direction than another over all or substantially all their length.

The ratio of the widest width to the narrowest width of the bristles at a given point along their length may be from 1.1, or 1.2 and may be up to 1.5 or 1.7.

The cross-sectional shape of the bristles may be elongate over at least part, substantially all or all of their length. Any suitable cross-sectional shape may be used. Shapes with continuously curved edges are preferred, so that the bristles do not have sharp corners that could snag or damage hair. The cross-sectional shape of the bristles may be oval, and may be elliptical over at least part of, substantially all or all of their length.

The bristles may be arranged in spaced apart rows. The bristles in each row may be evenly spaced apart. The rows may be off-set relative to each other so that a bristle in one row lies substantially at the mid-point between bristles in adjacent rows. There may be at least 2, 3, 4, 5, 6 or more rows of bristles. Each row may contain 2, 3, 4, 5, 6 or more bristles.
The bristles may be of two or more different lengths. Where the bristles are arranged in rows the majority of bristles in one row may be of a different length to the majority of bristles in an adjacent row. All the bristles in one row may be of substantially the same length and all the bristles in an adjacent row may be of substantially the same different length.

There may be longer bristles and shorter bristles, and the ratio of the lengths of the longer to shorter bristles may be from 1.25 or 1.5 and up to 2 or 2.5.

There may be alternating rows of longer and shorter bristles.

At least half of all bristles on the brush may have a different stiffness to bend in one direction than the other. All or substantially all the bristles on the brush may have a different stiffness to bend in one direction than another.

The brush may comprise a body. The body may be sized and shaped to be held, in use, by a single human hand. The body may be sized and shaped to be comfortably held in a single human hand in each of two different orientations, which respectively facilitates its use in both the first and second directions.

In one embodiment the body of the brush has opposed sides, and at least one, and preferably both sides, are shaped to facilitate being gripped by a human hand. Either or both sides may be concave in shape. One or both sides could include indentations for receiving fingers of a human hand. The body also has opposed ends, these may extend generally perpendicularly to the sides and at least one, and preferably both, ends may also be shaped to facilitate being gripped by a human hand. Either or both ends may be concave in shape. One or both ends could include indentations for receiving fingers of a human hand.
The invention also provides a method of grooming an animal comprising the steps of:

providing a hair brush according to the invention;

brushing the animal using the brush, moving the brush through the animal’s coat in the second direction in order to de-tangle the coat; and

brushing the animal using the brush, moving the brush through the animal’s coat in the first direction in order to de-shed the coat.

**Detailed Description of the Invention**

In order that the invention may be more clearly understood an embodiment thereof will now be described, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of a brush, from above;

Figure 2 is an end elevation of the brush of figure 1;

Figure 3 is a perspective view of the brush of figure 1 from below;

Figure 4 is a plan view of the brush of figure 1;

Figure 5 is a side elevation of the brush of figure 1;

Figure 6 is an underplan view of the brush of figure 1;

Figure 7 is a plan view of an array of bristles;

Figure 8 is an enlargement of the circled area of figure 7;

Figure 9 is a side elevation of the array of figure 7;
In the following the terms front, back, top, bottom and like terms refer to the articles in the orientation in which they are illustrated, but should not be taken as otherwise limiting.

Referring to the drawings, figures 1 to 6 show a grooming brush intended for grooming animals, especially dogs. Figures 7 to 15 show an array of bristles which forms a part of the brush of figures 1 to 6.

The brush comprises a moulded plastics body 1. The body is elongate having longer sides and shorter ends. The sides are concave, so that the body narrows towards its mid-section, the sides curving about an upright axis. The ends are also concave, and curve about a horizontal axis. The concavities in the body, and its overall size and shape, enable it to be comfortably gripped in one hand, either gripping the sides or ends of the body. When the body is gripped by its sides this facilitates a brushing action where the brush is moved in a path generally perpendicular to its long axis, as shown by arrow 2 in figure 4. When the body is gripped by its ends this facilitates a brushing action where the brush is moved in a path generally parallel to its long axis, as shown by arrow 3 in figure 4.
The body 1 defines a cavity which opens to its underside, and into which inserts 4 are fitted. The exposed surfaces of the inserts, to the underside of the brush, are generally convex and each comprise, or support, an array of moulded bristles which project generally perpendicularly from the surfaces. The bristles are moulded in one piece with the inserts. The bristles are moulded from a resiliently flexible plastics material. Suitable materials are thermoplastic elastomers, such as copolyesters and aliphatic polyamides (nylons) and, in particular, the copolyester sold under the trade mark Hytrel by E.I. du Pont de Nemours and Company. Grades of Hytrel with hardness from 45 to 82 Shore D are particularly suitable.

There are two types of bristle, longer bristles 5 and shorter bristles 6. The length of the shorter bristles is approximately half that of the longer bristles. The bristles are arranged in alternating rows of longer and shorter bristles. In each row the bristles are substantially evenly spaced apart by substantially the same amount. The rows are substantially straight, extend substantially parallel to each other and to the long axis of the body 1 of the brush. Adjacent rows are off-set relative to each other so that a bristle in one row is positioned substantially mid-way between bristles in adjacent rows, when viewed perpendicularly to the direction of the rows. The rows are spaced apart so that the distance between the centre lines of adjacent rows is substantially equal to half the distance between the centres of adjacent bristles in each row.

The bristles are all tapered, tapering from their base at the inserts 4 to their free end, and the free ends of the bristles are domed. The longer bristles 5 are divided into two portions, a first portion extending from the insert with a first taper and a second portion extending from the first portion to the free end of the bristle, the second potion having a smaller angle of taper than the first. The change in the angle of taper defines the interface
between the first and second portions. The shorter bristles have a substantially constant
taper over their entire length.

At least the part of the longer bristles 5 which projects beyond the shorter bristles
has a smaller cross-sectional area than any part of the shorter bristles, save for the domed
end. This region of the longer bristles 5 is therefore a little more flexible than the shorter
bristles 6. Additionally, the greater length of the longer bristles 5 gives them a greater
flexibility as it provides greater leverage for flexing the material from which it is formed.

All of the bristles have a substantially oval cross-section throughout the length of
the bristle. All of the bristles are oriented so that the short axis of their oval cross-sections
are all substantially parallel to each other and to the axis of the body 1. The long axis of
the oval cross-section is about twice the length of the short axis. So, the thickness of the
bristles when viewed perpendicular to the axis of the body 1 is about half that when
viewed parallel to the axis of the body 1.

The oval cross-section of the bristles causes them to be stiffer to bend in a
direction parallel to the long axis of the oval cross-section than in a perpendicular
direction. In the illustrated embodiment, therefore, the bristles are stiffer to bend in a
direction perpendicular to the long axis of the body 1 than in a direction parallel to the
long axis of the body 1. This differential in stiffness of the bristles in different directions
enables the brush to be used to perform different functions.

For de-shedding relatively stiff bristles are required. This can be achieved by
moving the brush through an animal's coat in a direction generally perpendicular to the
long axis of the body 1. As the bristles move through the animal's coat, drag on the
bristles will tend to try and bend them in a plane parallel to the long axis of their oval cross-sections, which is the direction in which they have greater stiffness.

For de-tangling relatively flexible bristles are required. This can be achieved by moving the brush through an animal's coat in a direction generally parallel to the long axis of the body. In this case, as the bristles move through the animal's coat, drag on the bristles will tend to try and bend them in a plane parallel to the short axis of their oval cross-sections, which is the direction in which they have lesser stiffness.

The selected variation in thickness of the bristles in directions parallel and perpendicular to the axis of the body of the brush is such that the brush can be used to de-shed when used in one direction and to de-tangle when used in a perpendicular direction. A user can therefore use the same brush to perform two different functions. Animal hair can therefore be de-tangled before de-shedding. And, if a knot or tangle is encountered during de-shedding, the brush can simply be re-oriented to enable the animal's coat to be de-tangled at that point.

Of course, it will be appreciated that the brush will to some extent serve both de-shedding and de-tangling functions when used in either direction, but its de-shedding and de-tangling functions are optimised when used in a particular direction.

In one embodiment the long bristles have a height of about 13.5mm. At their base the major axis of their oval cross-section is about 2.0mm and the minor axis about 1.4mm. The bristle tapers over its length to an oval cross-section with a major axis of about 1.1mm and a minor axis of about 0.7mm, at its free end, excluding the domed part. The short bristles have a height of about 7.0mm, a major axis of about 1.4mm and a minor axis of about 1.0mm at their base, tapering to a major axis of about 1.2mm and a
minor axis of about 0.8mm at the free end excluding the domed part. Adjacent rows of short and long bristles are separated so that there is a distance of about 2.75mm between lines running through the centre of bristles in each row. The centres of bristles in each row are spaced apart by about 5.50mm. It will of course be appreciated that these dimensions may be varied as desired or appropriate.

The above embodiment is described by way of example only. Many variations are possible without departing from the scope of the invention as defined in the appended claims.
CLAIMS

1. An animal grooming brush comprising resiliently flexible bristles with a different stiffness to bend in one direction than another, so that when the brush is used in a first direction it acts as a stiffer brush suitable for de-shedding an animal's coat and when used in a second direction it acts as a softer brush suitable for de-tangling an animal's coat.

2. An animal grooming brush as claimed in claim 1 wherein the first and second directions are substantially perpendicular to each other.

3. An animal grooming brush as claimed in any preceding claim wherein the bristles are thicker in one direction than another over at least part of their length.

4. An animal grooming brush as claimed in claim 3 wherein the ratio of the widest width to the narrowest width of the bristles at a given point along their length is between 1.25 and 1.50.

5. An animal grooming brush as claimed in either claim 3 or 4 wherein the cross-sectional shape of the bristles is elongate over at least part of their length.

6. An animal grooming brush as claimed in claim 5 wherein the cross-sectional shape of the bristles is oval over at least part of their length.

7. An animal grooming brush as claimed in any preceding claim wherein the bristles are arranged in spaced apart rows.

8. An animal grooming brush as claimed in claim 7 wherein the bristles in each row are evenly spaced apart.
9. An animal grooming brush as claimed in claim 8 wherein the rows are off-set relative to each other so that a bristle in one row lies substantially at the mid-point between bristles in adjacent rows.

10. An animal grooming brush as claimed in any preceding claim wherein the bristles are of two or more different lengths.

11. An animal grooming brush as claimed in claim 10 wherein the bristles are arranged in rows and the majority of bristles in one row are of a different length to the majority of bristles in an adjacent row.

12. An animal grooming brush as claimed in either claim 10 or 11 wherein there are longer bristles and shorter bristles, and the ratio of the lengths of the longer to shorter bristles is in the range 1.5 to 2.5.

13. An animal grooming brush as claimed in any preceding claim comprising at least three rows of bristles.

14. An animal grooming brush as claimed in any preceding claim wherein at least half of all bristles on the brush have a different stiffness to bend in one direction than the other.

15. An animal grooming brush as claimed in any preceding claim comprising a body, the body of the brush being sized and shaped to be held in a single human hand in each of two different orientations which respectively facilitate its use in both the first and second directions.
16. An animal grooming brush as claimed in claim 15 wherein the body of the brush has opposed sides, at least one of which is shaped to facilitate being gripped by a human hand.

17. An animal grooming brush as claimed in claim 16 wherein the body of the brush has opposed ends, extending generally perpendicular to the sides, and at least one end is shaped to facilitate being gripped by a human hand.

18. An animal grooming brush as claimed in claim 17 wherein at least one side or end is concave.

19. An animal grooming brush as claimed in claim 18 where both sides and both ends are concave.

20. A method of grooming an animal comprising the steps of:

   providing an animal grooming brush as claimed in any preceding claim;

   brushing the animal using the brush, moving the brush through the animal’s coat in the second direction in order to de-tangle the coat; and

   brushing the animal using the brush, moving the brush through the animal’s coat in the first direction in order to de-shed the coat.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. A46D1/00 A46B5/02

ADD.

According to International Patent Classification (IPC) into both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A46D A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C. See patent family annex.

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X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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* Special categories of cited documents

**Date of the actual completion of the international search**

7 October 2015

**Date of mailing of the international search report**

14/10/2015

**Name and mailing address of the ISA**

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**Authorized officer**

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