

HAND OPERATED CURLY COMB WITH ASPIRATION MEANT

~~A MANUAL SUCTION BRUSH DEVICE FOR GROOMING ANIMALS~~

The present invention relates to the general technical field of devices and utensils for cleaning and grooming animals, and in particular domestic animals such as cats and dogs, for example.

5 The present invention relates to a manual brush device comprising a main body provided with a series of brushing teeth on which a removable grid is threaded for the purpose of collecting hairs.

10 The owners of domestic animals, and in particular dogs, are regularly confronted with the problem of cleaning the coat of their pet, and also of recovering the hairs in order to prevent them spreading around.

Proposals have already been made to solve this problem by providing a manual brush device that is provided with a series of brushing teeth that define a brushing surface. A removable grid for recovering the hairs is threaded over the teeth and is generally pushed up the entire length thereof. The brushing teeth are secured to a support which is slidably mounted along the main axis of the brushing teeth so as to enable the removably mounted grid to be released from the main body of the brushing appliance. With such a device, after brushing the animal, the user unlocks the support of the brushing teeth, generally by rotation, and then retracts the teeth by axial sliding which has the effect of releasing the grid from the teeth. The animal hairs recovered and tangled between the teeth are then freely accessible from the grid which no longer has teeth. The user can then easily recover the hairs removed during brushing since they are resting freely on the grid. After putting the grid back into place, a new brushing cycle can be performed.

Such a device clearly performs the primary function for which it is designed, namely brushing the coat and recovering dead hairs. Nevertheless, such a device cannot be considered as completely satisfying the function it is normally called on to perform. When the brush is passed through the coat of the animal, the teeth situated at the periphery of the brushing surface perform a mechanical action of expelling some of the dead hairs away from the brushing surface. These hairs which have been detached and brought to the surface of the coat are then free to be spread about in the immediate environment of the animal. Brush devices complying with that known technique are in widespread use, but are therefore not suitable for recovering all of the dead hairs carried by an animal. In the long run, this drawbacks leads to hairs being spread throughout the environment normally occupied by the animal. This is clearly to be avoided, particularly since such dead hairs are generally covered at least in part in a film of grease that causes them to adhere to supports of all types.

Also known, e.g. from application FR-A-2 595 539, is an appliance designed to clean the coat of animals and suitable for connection to a vacuum cleaner. The appliance has a coupling that defines a suction chamber within which there are mounted a comb, a brush, and a spray device. The noise generated by such an appliance makes it difficult to use with many animals, and even if they do put up with the noise, it still makes them nervous. Grooming thus becomes difficult and is not very satisfactory overall. Furthermore, the dispositions relating to the comb, the brush, and the suction flow give rise to dead hairs being inadequately sucked up and

recovered so some of them continue to be deposited in the immediate environment of the animal.

Also known, from application CH-A-304937, is a brushing appliance having scratching teeth and a removable grid, and suitable for coupling to a vacuum cleaner.

The object of the invention is specifically to solve the drawbacks mentioned above and to provide a manual brush device that enhances accumulation of dead hairs in the brushing teeth while avoiding ejecting and outwardly disseminating dead hairs that are situated in the vicinity of the brushing zone.

An additional object of the invention is to provide a brush device that improves the operation of brushing proper while avoiding tangling hairs that constitute the coat of the animal.

Another object of the invention is to provide a brush device which is tolerated and accepted by the animal, and which is capable of grooming the animal in a short period of time.

The objects of the invention are achieved by means of a manual brush device for grooming animals, the device comprising a main body including:

a series of scratching teeth extending from a support and defining a scratching surface; and

a removable hair-recovery grid threaded over the teeth over at least a fraction of their length; characterized in that:

suction means are mounted in the main body behind the scratching surface, said suction means being connected to a drive source for generating a suction flow; and

the hair-recovery grid extends over an area greater than the scratching surface so as to form an annular belt around the periphery of the scratching surface in which there are no teeth but which is subjected to the suction flow.

The characteristics and advantages of the invention appear more clearly on reading the following description given by way of non-limiting example and made with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a brush device of the invention;

Figure 2 is a cross-section through a brush device of the invention; and

Figure 3 is a half-cross-section through a brush device of the invention showing how the various portions making up the device are engaged in one another.

The manual brush device of the invention as shown in Figures 1 to 3 comprises a main body 1 constituted, for example, by a shell-shaped case defining a volume of revolution about an axis x-x'. In the preferred example shown in Figures 1 to 3, the main body 1 is closed on top and possesses an outside case 2 that bulges slightly outwards. The outside case 2 is provided with openings having air-ejecting fins 2a that are preferably inclined, thus putting the inside volume of the main body 1 into communication with the outside. The inside of the main body is provided with an internal volute 1b serving to partition the inside of the main body 1 in such a manner as to define a lower volume 1c and an upper volume 1d. The main body 1 may be made of any material, and in particular out of a plastics material.

The lower volume 1c is closed by a curry-comb brush 5 including in its center a support that forms a solid wall such as a disk 6, and provided at its periphery with a series of radial arms 7. The disk 6 serves to support a series of scratching teeth 8 that are inserted and embedded in the disk 6, and that extend, regularly or otherwise, and preferably perpendicularly to the outside face of said disk 6. The teeth 8 are preferably made of metal and are preferably identical in length. In order to facilitate scratching, the disk 6 is advantageously characteristically curved in uniform manner with its concave side facing the lower volume 1c. Advantageously, the teeth 8 cover all of the surface of the disk 6 in substantially uniform manner, so that their ends thus define a scratching surface area that is substantially equivalent to the surface area of the disk 6. The scratching teeth 8 may also be made of a plastics type material, for example. The teeth 8 may be circular, oval, triangular, or square in section depending on the types of function they are required to perform, with teeth that are triangular or square in section being particularly recommended, for example, for untangling purposes. The teeth 8 are implanted and held in the disk 6 by any known means, e.g. by overmolding. It is also possible to consider modifying the shape of the end portions of the teeth, e.g. making them frustoconical or even spherical in shape. Under such circumstances, the active length of a tooth 8 may be as much as three times its base diameter. Advantageously, the teeth 8 are coated in any material that facilitates sliding through the coat of the animal and that reduces wear.

The curry-comb brush 5 is associated with a peripheral annular part 9 secured to the ends of the radial arms 7 and in which a series of ordinary comb teeth 10 are cut out. Advantageously, the comb teeth 10 form a peripheral row of teeth all the way around the scratching teeth 8. In order to avoid unwanted interaction between the scratching teeth 8 and the comb teeth 10 while said teeth are passing through the coat of the animal, it is advantageous, as shown in Figures 1 to 3, to provide for the comb teeth 10 to extend from substantially the same extension plane as the scratching teeth 8, but to be of shorter total length. The peripheral annular part 9 may be integrally molded with the curry-comb brush assembly 5, and it may be constituted, for example, by a plastics material based on polyamide filled with 20% to 30% of glass fibers.

The curry-comb brush 5 is removably fixed on the main body 1 by any known releasably-lockable means, e.g. by means of a bayonet fastener system. To this end, fixing ribs 11 may be provided at the periphery and in the upper portion of the peripheral annular part 9.

The brush device of the invention includes suction means 15 preferably mounted in the lower volume 1c of the main body 1 behind the disk 6. The suction means 15 is constituted, for example, by a shaped fan whose blades 16 extend, at least in part, over the radial arms 7. The suction means 15 is secured to a hub 17 angularly secured on a drive shaft 18 connected to a drive source 19, e.g. constituted by an electric motor. The drive source 19 is integrated and held in place in conventional manner inside a compartment and at least part of it extends into the upper volume 1d of the main body 1. In conventional manner, the drive source 19 is connected by a set of connection wires (not shown in the figures) to an electrical power

supply that may equally well be mains or a set of optionally-rechargeable batteries.

The blades 16 extend radially from the hub 17 over the peripheral annular space situated adjacent the radial arms 17 so as to cause preferably all of said annular space to be swept during rotation of the suction means 15. The suction flow F created in this way is greatly increased and may even be accentuated by suitably shaping the walls of the internal volute 1b so as to create a peripheral suction chimney.

The brush device of the invention also includes a recovery grid 25 of appropriate mesh size for being fitted to and removably mounted on the brushing teeth 8 in order to recover the hairs of the animal. The recovery grid 25 is made of a metal material, for example, and it extends over an area that is greater than the brushing area defined by the brushing teeth 8 so as to cover all of the peripheral annular space situated adjacent the radial arms 7. In the embodiment shown in Figures 1 to 3, the recovery grid 25 is circular and has a perforated central zone 26 that is designed to be threaded over the scratching teeth 8, together with an annular belt 27 that is designed to cover all of the annular space beneath and adjacent the radial arms 7. The outside periphery of the recovery grid 25 is constituted by a peripheral row of orifices 28 designed to be threaded on the comb teeth 10, and by a rim 29 designed to engage against the lower portion of the main body 1.

The recovery grid 25 may be fixed on the main body by means of at least two fingers 30 that are preferably symmetrically disposed about the axis x-x', enabling said grid to be locked in place. Advantageously, the fingers 30 also perform a pre-centering function for the recovery grid 25 while they are engaging in corresponding recesses provided in the main body 1. The fingers 30 are provided with any known locking means enabling them to be locked with complementary locking means provided on the main body 1. In a variant, and as shown in Figure 3, provision may be made to place an electrical switch 32 inside the main body 1 in contact with a tilting flap 33 actuated by one of the fingers 30 when the recovery grid 25 is put into place. Such a configuration makes it possible to switch on the appliance automatically when the recovery grid 25 is in place and also ensures that it stops automatically when the recovery grid 25 is extracted.

The brush device of the invention also has a handle 40 that extends the main body 1.

The brush device of the invention operates as follows.

After the suction means 15 has been put into operation, e.g. by means of an on/off switch, the user takes hold of the handle 40 of the brush device and then applies the device to the coat of the animal. As the scratching teeth 8 pass through the coat of the animal, dead or renewed hairs pushed by the scratching teeth 8 away from the brushing surface are sucked up at the periphery of the brushing surface by the suction flow F created by rotation of the blades 16 and passing through the annular belt 27. Hairs that are not subjected to the action of the suction flow but that are subjected to the effect of the scratching teeth 8 are simultaneously pressed against the grid 25 and build up progressively between the teeth 8 over the entire brushing surface. During a brushing cycle, hairs which are not retained or not sufficiently retained by the

teeth 8 are expelled towards the periphery of the brushing surface and are sucked up and pressed against the recovery grid 25 in the annular belt 27. There is therefore no risk of the hairs spreading further outwards. Simultaneously with the brushing action, the
 5 portion of the animal coat that is freed from the action of the scratching teeth 8 is subjected to the action of the ordinary comb teeth 10 which serve only to shape and give surface luster to the hairs.

It is also possible, as shown in Figure 2, to envisage mounting
 10 heater resistances 38 in the lower volume of the main body 1. The heater resistances 38 are advantageously mounted in the upward path of the suction flow F over the annular belt 27. As shown in Figure 3, the heater resistances 38 are disposed above the suction means 15. The operation of a brush device including heater resistances 38
 15 requires the direction of rotation of the suction means 15 to be reversed so that its blades 16 then expel hot air on a downwards path through the annular belt 27 towards the coat of the animal. In this application, immediately after washing the animal's coat, the user can use the device of the invention not only for removing residual
 20 hairs, and for shining the coat, but also in its heater mode of operation for rapidly drying the coat.

In all of the variants described above, the user cleans the device by extracting the recovery grid 25 from the curry-comb brush
 5. During such extraction, the recovery grid 25 slides axially along the scratching teeth 8 and along the comb teeth 10, thereby
 25 recovering the hairs that have tangled with said teeth. The user then needs only to recover the hairs present on the recovery grid 25, after which the grid can be clipped back into place and a new brushing cycle can be begun.

The brush device of the invention has the advantage of avoiding
 30 spreading dead hairs in the environment of the animal insofar as hairs that do not attach to the scratching teeth 8 are directed to the periphery of the brushing surface where they are sucked up and pressed against the annular belt 27. Unlike prior art systems, there
 35 is thus no dissemination of non-retained dead hairs. In addition, the suction flow F is concentrated at the periphery over a limited surface area, thereby contributing to creating an optimum suction flow.

CLAIMS

- 1/ A manual brush device for grooming animals, the device comprising a main body (1) including:
 - a series of scratching teeth (8) extending from a support (6) and defining a scratching surface; and
 - a removable hair-recovery grid (25) threaded over the teeth (8) over at least a fraction of their length; characterized in that:
 - suction means (15) are mounted in the main body (1) behind the scratching surface, said suction means being connected to a drive source (19) for generating a suction flow (F); and
 - the hair-recovery grid (25) extends over an area greater than the scratching surface so as to form an annular belt (27) around the periphery of the scratching surface in which there are no teeth but which is subjected to the suction flow (F).
- 2/ A device according to claim 1, characterized in that the annular belt (27) extends around the entire periphery of the scratching surface.
- 3/ A device according to claim 1 or 2, characterized in that the support (6) for the scratching teeth (8) is constituted by a solid wall that is impermeable to the suction flow (F) and that is preferably curved.
- 4/ A device according to any preceding claim, characterized in that it includes comb teeth (10) disposed at the outer periphery of the annular belt (27) and surrounding said annular belt (27).
- 5/ A device according to claim 4, characterized in that the comb teeth (10) extend over a total height that is less than the height of the scratching teeth (8) and preferably form a peripheral row completely surrounding the annular belt (27).
- 6/ A device according to claim 4 or claim 5, characterized in that the comb teeth (10) are cut out in a peripheral annular part (10) that is secured to the support (6) by means of radial arms (7).
- 7/ A device according to any preceding claim, characterized in that the main body (1) includes internal heating resistances (38) disposed in the suction flow (F) preferably over the annular belt (27) and connected to the drive source (19).
- 8/ A device according to any preceding claim, in particular claim 4, characterized in that the recovery grid (25) is removably fixed by snap-fastening on the main body (1).
- 9/ A device according to claim 8, characterized in that the recovery grid (25) includes at least two pre-centering fingers (30) provided with locking means designed to lock with complementary locking means provided on the main body (1).
- 10/ A device according to any preceding claim, characterized in that the suction means (10) are formed by a fan rotatably mounted in the main body (1).

