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(54) **HAIRBRUSH HAVING RETRACTABLE BRISTLES**

(57) It comprises a handle made up of two parts aligned along a shaft -1-, which supports the bristles -2-, a frontal unit -5- and a rear unit -7-, the bristles protruding through orifices -4-, which are concealed underneath the surface of the frame -3-, by means of a manual, circular rotation of the rear unit -7-. The axial displacement of the shaft -1- is achieved by the action of an endless screw set, whose male part -6c- is situated in the central rear area of a displaceable core -6- located inside the front half -5- and the rear unit -7-, while its female part -8a- is disposed inside a cylindrical case -8-, situated and fixed inside of said rear unit -7-, so that upon turning it, while the front half -5- remains fixed, the action of the endless screw causes the axial displacement of the core -6-. The unit -7- is joined to the front half -5- by means of a coupling nut -9-, which permits the circular rotation of this rear unit -7- with respect to the front half -5-, which remains immobile. The inner cylindrical space -5c- of the front half -5- is longer than that of the central area -6b- of the displaceable core -6-, which determines the path thereof. It has an anchoring element -10- which positions the rotation.

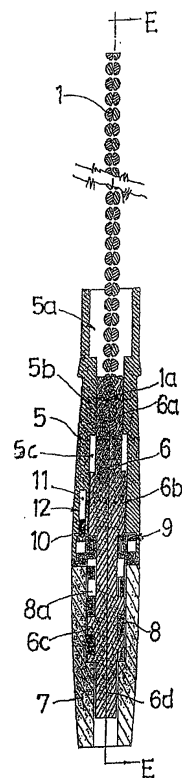


FIG. 2

Description

[0001] The present invention relates to a brush devised for hair care and which, essentially, is characterised in that the bristles thereof, by means of a voluntary manual manoeuvre by the user, shall be concealed underneath the surface of its frame, which shall permit the cleaning of the hairs that have become tangled therein after brushing with total ease. The characteristics of the brush object of this invention are detailed herein.

CURRENT STATE OF THE ART

[0002] Due to how arduous and time-consuming it is to carry out a perfect cleaning of hair brushes after their use, since numerous hairs remain tangled in the bristles of the brush, there currently exist various brush models whose bristles can be concealed at the will of the user. However, these are utensils provided with complicated mechanisms, some of which are based on magnets or springs, whose aim is to keep each and every one of the components of the brush in place, both with the bristles concealed and when they protrude above the frame.

[0003] These mechanisms are mainly affected by the heat coming from manual hair driers, which make their hot air flow come in contact with the brush that is being used, an action which will cause, in time, the loss of effectiveness of the mechanisms of the brush itself.

DESCRIPTION OF THE OBJECT OF THIS INVENTION

[0004] The brush object of this invention is essentially based on the fact that it consists of a central shaft, coaxial with the longitudinal shaft of the brush, whereon the groups of bristles are fastened, which protrude through the orifices on the surface of the frame of the brush.

[0005] This shaft can be moved axially, at the will of the user, by means of a circular rotation of the rear part of the handle or hilt of the brush itself, so that when this rear rotating part is in one of its two positions, the bristles are practically concealed underneath the surface of the frame of the brush, while in the other position, the bristles completely protrude above said frame.

[0006] With the bristles situated in this protruding position, the brush can be used in its function of hair care and brushing, while when they are concealed, the user can easily carry out the cleaning of the surface of the frame of the brush, getting rid of all trace of hair left there, as there is no impediment to doing so.

[0007] The movement of the central shaft of the brush, bearer of the groups of bristles, is performed thanks to the presence and action of a set of endless screws, whose female part is situated on the inner face of the brush handle, while the male part is situated in the displaceable core located inside the handle itself, core whereto the central shaft bearing the bristles is solidly joined at the front end thereof.

GRAPHIC INFORMATION

[0008] In order to complete the description of the brush object of the present invention, drawings have been attached wherein, in an illustrative and non-limitative manner, a practical embodiment of the brush with concealable bristles has been represented.

[0009] In said drawings,

- 10 fig. 1 is an elevational, partially cross-sectioned view from the exterior of the array of the brush, showing the bristles protruding through the orifices of the surface of the frame of the brush;
- fig. 2 is a cross-sectioned view of the entire brush, drawing the central truncated shaft and lacking the bristles and without the frame of the brush;
- 15 fig. 3 is a non-cross-sectioned view of the brush corresponding to the previous figure, also without the frame or the bristles, showing the entire handle, as well as the shape adopted by the central shaft;
- 20 fig. 4 schematically draws a partial cross-section, in a double figure and on a greater scale, the displaceable core and the inner case provided with the female part of the endless screw; and
- 25 fig. 5 finally shows a view, on a larger scale and duly cross-sectioned, of the central part of the handle, the frontal and rear part thereof being connected, with a close up of the coupling nut and the stub which fastens the rear part of the handle in its two positions, with concealed bristles and protruding bristles.
- 30

DESCRIPTION OF THE BRUSH

[0010] According to these drawings, the brush for hair care, with concealable bristles, basically consists of a central shaft -1-, positioned in complete alignment with the axis "E" of the array, whereon the bristles -2- are fastened and suitably grouped in bundles, which protrude above the surface of the cylindrical frame -3- of the brush, through the circular orifices -4- thereof.

[0011] This cylindrical frame -3-, closed at the front end thereof by a cap -3a-, is fastened on the inside -5a- of the front half -5- of the brush handle, where a displaceable core -6-, to the front end whereof is fastened the central shaft -1- at its lower end -1 a-, is also located.

[0012] A hollow cylinder -3b- capable of redirecting to the central shaft -1- at its upper end, in its axial movement, is located inside the closure cap -3a-, ensuring the permanent centring thereof and preventing lateral movements that could make the bristles -2- of its corresponding orifices exit -4-.

[0013] This displaceable core -6- has a variable diameter contour, featuring in the first place, at the front end thereof where the end -1a- of the central shaft -1- is fastened, a cylindrical area -6a-, of a diameter coinciding with the inner diameter of the central part -5b- of the front

half -5- of the hilt. Below, the core -6- features a central area -6b- with a larger diameter, wherein the male part -6c- of the endless screw, said displaceable core -6- finishing in the rear part thereof with a cylindrical tail -6d- of a diameter equal to that of the front area -6a-.

[0014] The rear part of the front half -5- of the handle forms, in the interior thereof, a coaxial cylindrical housing -5c-, where the displaceable core -6- is located in its central area -6b-. This cylindrical area -5c- is of a greater length than the length of the central area -6b- of the displaceable core, a difference of length which offers space for the displacement of said core -6- through the inside of the front half -5- of the hilt, displacement which carries therewith the central shaft -1-, attached thereto.

[0015] The rear unit -7- of the hilt, as a continuation of the front half -5- thereof, houses therein, completely solidly joined, a cylindrical case -8- situated coaxially with the axis "E" of the array, whose case -8- has the female part -8a- of the endless screw on the inner face thereof. Also positioned in this area, completely aligned for its displacing movement, is the male part -6c- of the endless screw.

[0016] This rear unit -7- of the handle is joined by means of a nut -9- at the front half -5- of the handle, joint which permits the circular rotation of that rear unit -7- with respect to the front half -5-. When the user manually and voluntarily performs this circular rotation of the rear unit -7- of the handle, the female part -8a- of the handle, situated inside the case -8-, solidly joined to the aforementioned rear unit -7- of the handle, also rotates at the same time. This rotation causes, due to the mechanical action of the endless screw, the axial displacement of the displaceable core -6-, as well as that of the central shaft -1-.

[0017] As the circular rotation of the rear end -7- of the handle is performed, the central shaft -1- advances, the bristles -2- appearing through the orifices -4- of the frame -3- of the brush, or as it is turned back, it causes the bristles -2- to move backwards, remaining concealed.

[0018] The circular rotation of the rear part -7- of the handle is a single full turn, being anchored, both at the end of the of the start of the turn, as well as at the end of the return rotation, in a fixed position thanks to the action of a stub -10-, located inside of a cylindrical housing -11- situated in the front part -5- of the handle, facing the coupling nut -9-. This stub -10-, pushed by a cylindrical spring -12-, situated in the tail thereof, shall insert its end into the interior of a track -13-, situated on the front face of the aforementioned nut -9-.

[0019] In one of the fixed positions of the rear unit -7-, it will align with the bristles -2- of the brush that are completely protruding, while in the other position, it will align with the concealed bristles -2-, for the easy cleaning of the frame -3-.

[0020] The circular path of the rear unit -7- of the handle is enough to cause the displacement of the core -6- inside the free space of the cylindrical area -5a- of the inside of the front part -5- of the handle, displacement which will also be done by the central shaft -1-, as it is solidly joined

to the displaceable core -6-, causing therewith the bristles -2- to be concealed or to protrude from the surface of the frame -3- of the brush.

[0021] The length of the displacement, both of the core -6- and of the central shaft -1- is practically equivalent to the part of the length of the bristle -2- which protrudes from the frame -3-.

[0022] It is clear that the simple, manual rotational movement of the rear end -7- makes it so the user does not have to perform complicated or difficult manoeuvres to conceal the bristles -2-, thus permitting the cleaning of the frame -3- of the brush to be done with great ease. The projecting of the bristles -2- is obviously very easy only by turning the rear end -7- in the opposite direction from that of the previous turn.

[0023] The object of the present invention having been sufficiently described, it must be mentioned that any variation in dimensions, shapes, appearance and finish, as well as types of materials use in the practical embodiment of the referenced brush for hair care, does not vary in any way the essentiality of the invention, which is summarised in the following claims.

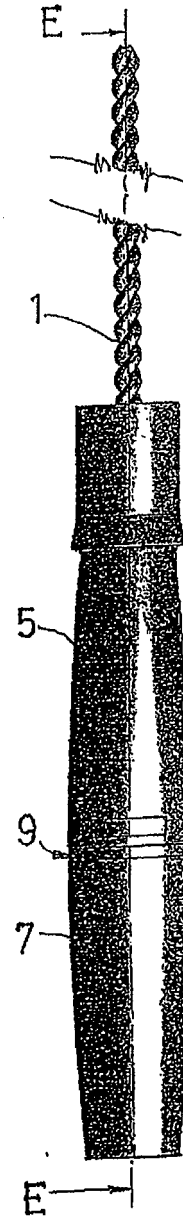
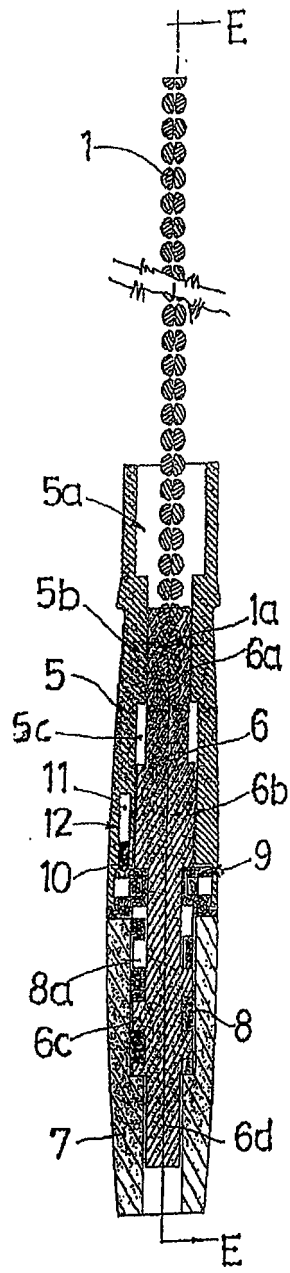
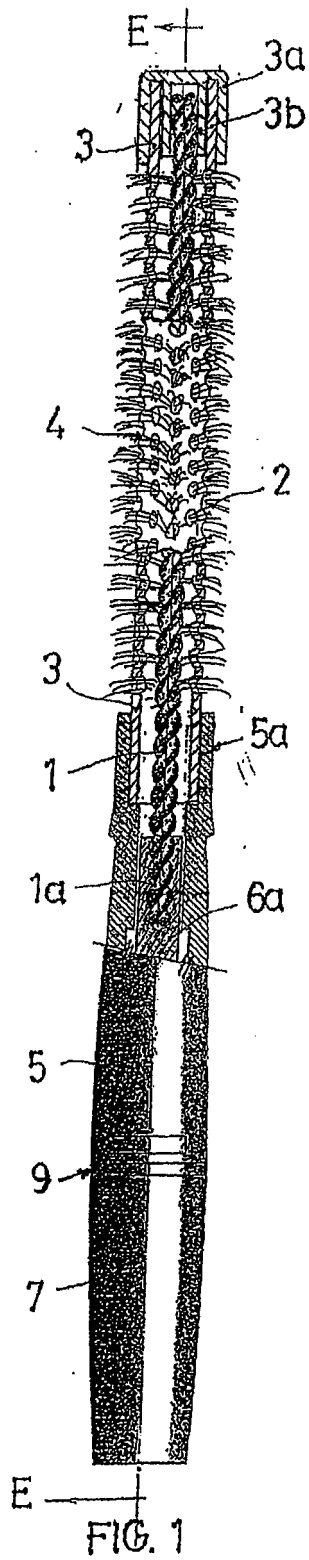
Claims

1. Hair brush having retractable bristles, which shall permit an easy and complete cleaning of the hairs tangles on the outside of the frame -3- of the brush, **characterised in that** it consists of a handle made up of two parts aligned along an axis "E" and adjoining, consisting of a front unit -5- and a rear unit -7-, whose parts wrap around a central shaft -1-, coaxial with the longitudinal axis "E" of the brush, whereon the groups of bristles -2- that protrude from the frame -3- through orifices -4-, are fastened, this central shaft -1- capable of axial displacement, at the will of the user, by means of a manual, circular rotation of the rear unit -7- of the brush handle, so that this rear unit -7- being in one of its two possible positions, the bristles -2- remain concealed underneath the surface of the frame -3-, while in the other position, the bristles -2- completely protrude above the frame -3-, which remains fixed in the interior -5a- of the front half -5- of the handle.
2. Hair brush having retractable bristles, according to the preceding claim, **characterised in that** the axial displacement of the central shaft -1- is performed by the action of an endless screw set, the male part -6c- whereof being situated in the central rear area of the displaceable core -6- located inside the front half -5- and the rear unit -7- of the brush handle, both joined as a continuation of each other, while the female part -8a- thereof is situated inside a cylindrical case -8-, situated and fastened inside said rear unit -7- of the handle, all of this so that when said rear unit -7- is turned, while the front half -5- remains fixed, the axial

displacement of the core -6- is caused by the action of the endless screw.

frontal face of the nut - 9-, blocking the circular rotations of the array.

3. Hair brush having retractable bristles, according to claims 1 and 2, **characterised in that** the rear unit -7- of the handle is joined to the front half -5- by means of a coupling nut -9-, joint which permits the circular rotation of this rear unit -7- with respect to the front half -5-, this remaining immobile. 5
10
4. Hair brush having retractable bristles, according to claim 1, **characterised in that** the central shaft -1-, which bears the bristles -2-, is fastened to the displaceable core -6- at the lower end -1 a- thereof, so that the axial displacement of said core -6- entails the simultaneous displacement of the central shaft -1-, while its front end is housed inside a hollow cylinder -3b- that has a closure cap -3a- of the frame -3-, guaranteeing the permanent centring of the central shaft -1- in the axial displacement thereof. 15
20
5. Hair brush having retractable bristles, according to claims 1 and 2, **characterised in that** the inner cylindrical space -5c- of the front half -5- of the handle is longer than that of the central area -6b- of the displaceable core -6-, a difference in length that determines the path during axial displacement of said core -6- through the interior of the front half -5- of the handle. 25
30
6. Hair brush having retractable bristles, according to claims 1 and 5, **characterised in that** the greater length of the inner space -5c- of the front half -5- of the handle permits the displacement of the core -6- and, together therewith, that of the central shaft -1-, fastened to said displaceable core -6-, causing the bristles -2- to be concealed or to protrude from the frame -3-, this length being practically identical to the length of the bristles -2-. 35
40
7. Hair brush having retractable bristles, according to claims 1, 2 and 3, **characterised in that** the circular rotation of the rear unit -7- of the handle is a full, single turn, remaining anchored at the end of the start of the turn and at the end of the return rotation, in a fixed position, aligning in one of them with the bristles -2- completely protruding and in the other with the bristles -2- concealed. 45
8. Hair brush having retractable bristles, according to claims 3 and 7, **characterised in that** it has an anchoring element that positions the circular rotation of the rear unit -7- of the handle with respect to the front part -5- thereof, consisting of a stub -10- located inside a cylindrical housing -11- situated in said front part -5- of the handle, facing the coupling nut -9-, which inserts the end thereof, pushed by a cylindrical tail spring -12-, inside a track -13- existing on the 50
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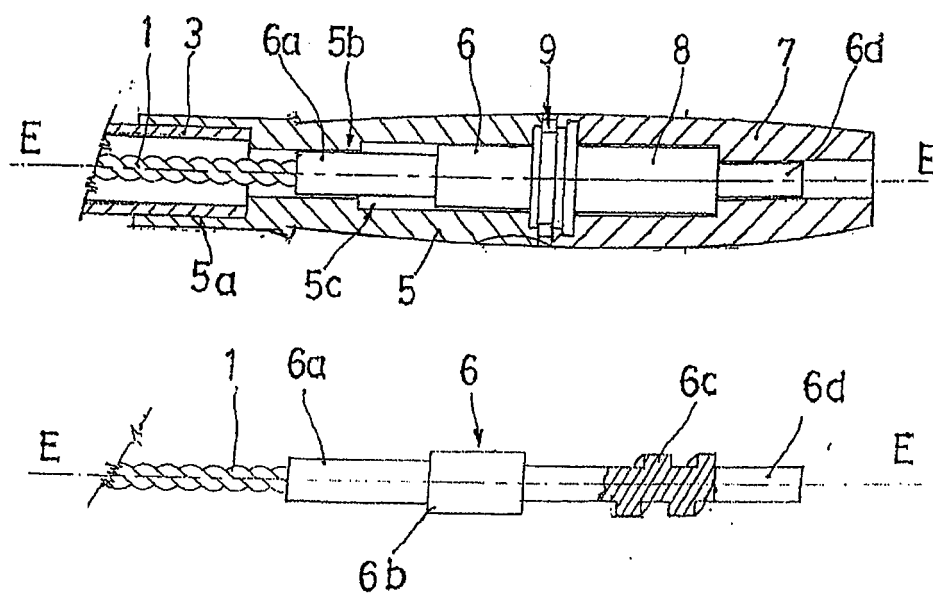


FIG. 4

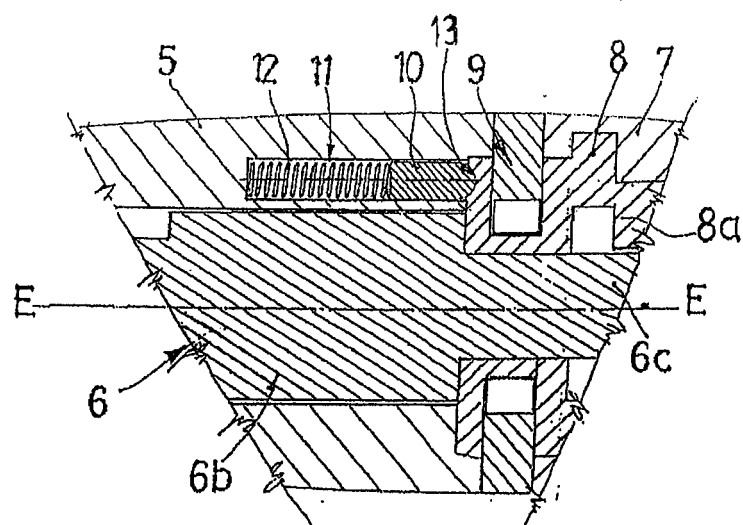


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2012/000029

A. CLASSIFICATION OF SUBJECT MATTER

A45D24/10 (2006.01)

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A45D

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)

EPODOC, INVENES, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6070594 A (MEARS CHRISTOPHER) 06/06/2000, description; figures 1 - 9.	1-8
X	ES 1072449 U (RUBIO BUENO CARMEN ET AL.) 15/07/2010, description; figures 1 - 7.	1
A	US 6631831 B1 (LOISELLE DAVID J) 14/10/2003, description; figures 1 - 13.	1-8
A	US 5584088 A (PAULDINE CONCETTA J) 17/12/1996, description; figures 1 - 6.	1-8
A	US 2004112398 A1 (GRANT GEORGE L ET AL.) 17/06/2004, description; figures 1 - 5.	1-8

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

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.	
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Date of the actual completion of the international search
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Name and mailing address of the ISA/

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Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2012/000029

Information on patent family members

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