

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(72) Inventor BENT GEORG JOHANSEN

(54) HAIR-ROLLER

(71) We, BRISTOL-MYERS COMPANY, a Company organised under the laws of the State of Delaware, United States of America, of 345 Park Avenue, New York, New York 10022, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

The invention relates to a hair-rollers of the type provided with an outer plastics casing with projections outwardly directed from a curved surface, and an inner heat-accumulating body.

In known hair-rollers of this type, the projections are of equal height, each being formed usually as a cone or a cylinder ending in a cone or a ball segment. In known hair-rollers, these projections are arranged in groups, each group consisting of several rows of projections extending longitudinally along the roller, and within each row the longitudinal axes of all the projections are parallel. As a result, some of the projections in each group form acute angles with the tangential plane through the curved surface of the hair-roller. The projections of the known hair-rollers serve as gripping means when the hair-rollers is removed from the apparatus in which it is heated and while a hairlock is being wound on the hair-roller. The projections further serve as guiding and retaining means for the wound hair.

The rather pointed projections may, however, be unpleasant to touch with the finger tips when the hair-rollers are removed from the heating apparatus, and they may even involve a slight sensation of pain. If the user seizes the cylindrical top of the hair-roller above the uppermost row of projections, the hair-roller will often be felt to be too hot and therefore cause pain, quite apart from the fact that it may be difficult for the user

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to grasp around the cylindrical top of the hair-roller, since, for example, long finger nails will strike the projections. Also, during the winding of a hairlock on the hair-roller the projections may be unpleasant to touch, and, further, owing to the height of the projections it may be difficult to attach the outermost point of the hairlock to the curved surface of the hair-roller, since the projections are too high to permit the fingers to press firmly against the curved surface wall of the plastics casing.

In the known hair-rollers, the hair nearest the ends of the hair-roller, in particular in the case of long hairs, may have a tendency to slide off the said ends when the hair-roller has been rolled into the hair. When the hair-roller has given off its heat and is to be rolled out of the hair, there is furthermore a certain risk of the hair being caught in the acute angles between the tangential plane of the curved surface of the hair-roller and certain of its projections. This involves entanglement of the hair so that the hair-roller can only with difficulty be removed from the hair, which will then be very troublesome to dress.

Accordingly to the present invention, there is provided a hair-roller comprising an outer plastics casing provided with projections outwardly directed from its curved surface and an inner heat-accumulating or heat-retaining body, the plastics casing being provided at one or both ends with a radial flange having a height above the curved surface of the plastics casing greater than or equal to the height of the highest outwardly directed projections of the casing, each flange being provided with a plurality of perforations spaced at intervals between its periphery and the curved surface of the plastics casing.

Such radial flange(s) are easy to seize with the fingers when removing the hair-roller from the heating apparatus and are

less hot and less unpleasant to touch than the heated projections on the surface of the casing, and the flange(s) prevent the fingers of the user from touching the projections.

- 5 Each radial flange is provided with a number of perforations distributed at intervals between its periphery and the curved surface of the plastics casing. These ensure improved heat insulation of the periphery of each flange against the relatively high temperature of the cylindrical surface of the hair-roller. The perforations provide an additional advantage if the hair-roller is of the type that is heated in an apparatus in which a condensed liquid is fed to the top of the hair-roller from condensation points at the upper end of the apparatus. In such a case, the perforations will act as outlet and distributing passages for the feed of liquid condensate.

- By forming the cylindrical section of the flange with a rough surface, for example knurling or milling it, or providing it with raised lettering or ornamentation, it is possible to obtain an improved grip of the hairwinder during winding and a reduced area of the contact surface of the finger tips.

- In one embodiment of the hair-roller according to the invention, the outwardly directed projections of the plastics casing are of decreasing height in the direction from the ends of the casing towards its centre. The high projections near the flanges at the ends of the plastics casing may engage the hairlock efficiently inside the flanges, as a result of which the hairlock, even when long hairs are wound, does not slide off the ends of the hairwinder, and the low projections at the central part of the hairwinder make it easy for the user to press the point of the hairlock into contact with the curved surface of the plastics casing when the winding is commenced.

- The projections may according to the invention suitably be formed as fins or tongues lying in planes transversely of the longitudinal axis of the hair-roller and with end edges forming an angle of 90° or more with the tangential plane of the curved surface of the plastics casing through the base point of the end edge. As a result, entanglement of the hair during unwinding is avoided, and dressing of the hair is facilitated.

- A preferred form of the invention will now be described in detail, by way of example, with reference to the drawing, in which

- Figure 1 is a perspective view of a hair-roller according to the invention,

- Figure 2 is a side view of the hair-roller, Figures 3 and 4 show the closed end of the plastics casing, viewed from above and as an axial section, respectively.

- Figure 5 shows an axial section through the open end of the plastics casing, and

Figure 6 is a partial view of two rows of the projections of the plastics casing, viewed from the central part of the hair-roller towards one of the ends.

The hair-roller illustrated consists of an inner heat-accumulating body (not visible in the drawing) and an outer plastics casing 1 formed as a body of revolution, the curved surface of which is provided with rows of projections so that the projections 2, 4, 6, 8 of one row are staggered in relation to the projections 3, 5, 7 of a neighbouring row. The said projections are constituted by narrow lugs or tongues having their plane at right angles to the central axis of the hair-roller and the end edges of each projection forming an angle ν which is greater than or equal to 90° with the tangential plane of the plastics casing through the base point of the end edge. The angle in question is marked on Figure 6. The tangential plane forming one arm of the angle ν has, in fact, been omitted from Figure 6 for clarity so that the angle ν appears to be marked between the projection and the curved surface of the plastics material.

At one closed end, the plastics casing is provided with a flange 9 which at its extreme peripheral edge passes into a cylindrical section 10. The open end of the plastics casing 1 is in corresponding manner surrounded by a flange 11 which passes into a cylindrical section 12. The flanges 9 and 11 are provided with recesses 14 on the cylindrical surfaces thereof.

The flanges 9 and 11 project to a distance from the curved surface of the plastics casing 1, this distance being, in the embodiment illustrated, equal to the height of the projections 2 lying close to the flange. As will appear from Figure 6, the projections 2, 4, 6, 8 and 3, 5, 7, respectively, of each row, are of a height decreasing from the ends of the plastics casing towards its central part where the lowest projections 8 and 7, respectively, are located.

The hair-roller is adapted for heating from inside by being placed on a heating post in a heating apparatus. By means of the flange 9 provided on its upper, closed end, it may be removed from the apparatus without the user touching the very hot projections 2-8 with the finger tips, and the flanges may further advantageously be used for turning the hair-roller when a hairlock is to be wound on it. Owing to the low projections 7, 8 near the central part of the hair-roller a hair-lock may readily be pulled taut with its outermost point against the curved surface of the plastics casing 1. During the continued winding of the hair, the flanges 9 and 11 prevent the hair from sliding off the ends of the hair-roller. The flat tongues or fins 2-8 form no acute

angles between any part of the projections and the tangential surface to the cylindrical surface of the hair-roller, that is, there are no sections liable to act as hooks when the hair-roller has given off its heat and is to be wound out of the hair. This means that the hair will not become entangled, but will be easy to dress when the hair-roller has been removed.

10 The flanges 9 and 11 are provided with perforations 13 uniformly distributed between the periphery of the flanges and the curved surface of the plastics casing 1. The perforations 13 reduce the heat transmission from the plastics casing 1 to the cylindrical sections 10 and 12 of the flanges. The perforations 13 at the closed end of the plastics casing may further serve as outlet and distributing passages for a feed of condensate in the cases in which the hair-roller is heated in an apparatus in which condensed liquid is fed to the top 15 of the hair-roller from condensation points in the upper part of the apparatus.

25 WHAT WE CLAIM IS:—

1. A hair-roller comprising an outer plastics casing provided with projections outwardly directed from its curved surface and an inner heat-accumulating or heat-retaining body, the plastics casing being provided at one or both ends with a radial flange having a height above the curved surface of the plastics casing greater than or equal to the height of the highest outwardly directed projection of the casing,

each flange being provided with a plurality of perforations spaced at intervals between its periphery and the curved surface of the plastics casing.

2. A hair-roller as claimed in Claim 1 wherein at its periphery, the radial flange is cylindrical.

3. A hair-roller as claimed in Claim 2 wherein the radial flange is provided with a plurality of recesses on the cylindrical surface thereof.

4. A hair-roller as claimed in Claim 2 or 3 wherein the cylindrical surface of the radial flange is rough.

5. A hair-roller as claimed in any one of Claims 1 to 4 wherein the height of the outwardly directed projections decreases in the direction from the ends of the casing towards its centre.

6. A hair-roller as claimed in any one of Claims 1 to 5 wherein the projections are formed as fins or tongues located in planes transversely of the longitudinal axis of the hair-roller and with end edges whose angle with the tangential plane of the curved surface of the plastics casing through the base point of the end edge is 90° or more.

7. A hair-roller substantially as hereinbefore described with reference to the accompanying drawing.

For the Applicants.

CARPMAELS & RANSFORD.

Chartered Patent Agents.

43 Bloomsbury Square,
London, WC1A 2RA.



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6. A hair-roller as claimed in any one of Claims 1 to 5 wherein the projections are formed as fins or tongues located in planes transversely of the longitudinal axis of the hair-roller and with end edges whose angle with the tangential plane of the curved surface of the plastics casing through the base point of the end edge is 90° or more. 65
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43 Bloomsbury Square,
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