

(14)

In the matter of the Proposed Registration in  
Singapore of European Patent No. 0 028 385  
in the name of ICOMAG Trust Reg.

STATUTORY DECLARATION

I, COLIN EDWARD POOLE, of 42 Gress, Isle of Lewis, Scotland,  
PA86 ONB and professional translator to Messrs. Barlow, Gillett  
& Percival, of 94 Market Street, Manchester 1, M1 1PJ, do hereby  
solemnly and sincerely declare as follows:

1. I am a translator by profession and have been so since 1956.
2. I am a fully competent translator of the German and French  
languages into English.
3. My name figures on the official list of persons from whom the  
Comptroller of the Patent Office in Great Britain is prepared  
to accept translations from the German and French languages into  
English and the said Comptroller has accepted my translations  
from the German and French languages into English since 1963.
4. The attached is a true and accurate translation made by me into  
the English language of the accompanying document in the German  
language ( and in the French and English languages as regards  
one version each of the claims ) ( European Patent No. 0 028 385 )
5. The said translation has been exhibited to the undersigned  
Notary Public at the time of his appending his signature hereto.

And I make this solemn declaration, conscientiously believing the  
same to be true, by virtue of the provisions of the Statutory  
Declarations Act, 1835.

Declared at Stornoway, Isle of Lewis,  
Scotland, this 16<sup>th</sup> day of April 1984.

*C.E. Poole*  
.....  
(C.E. Poole)

*H. Macdonald MacLellan & Co.*  
20 FRANCIS STREET (A Notary Public) N.P.  
STORNOWAY  
PA87 2ND  
*Notary Public*

European Patent  
Office

European Patent  
Office

European Patent  
Office

DEED

regarding European Patent

No. O 028 385

It is hereby confirmed that the above-mentioned European  
Patent has been granted, for the invention described in  
the appended Patent, to

ICOMAG Trust Reg.

Aeulestrasse 772

9490 Vaduz (LI)

for the Convention countries designated in the Patent.

Munich, 6.4.1983

(signature)

General Management 2

Formal Examination Office

European Patent Office

(19)

European Patent Office

(11) Publication number: 0 028 385

European Patent Office

B1

(12)

EUROPEAN PATENT

(45) Date of publication of (51) Int. Cl.<sup>3</sup>: A 45 D 1/18, A 45 D 2/24  
the Patent: 6.4.83

(21) Application number: 80106600.2

(22) Date of application: 28.10.80

---

(54) A hair curler

---

(30) Priority: 31.10.79 DE 2944050

(43) Date of publication of the application:  
13.5.81 Patent Journal 81/19

(45) Publication of the reference to the Patent grant:  
6.4.83 Patent Journal 83/14

(84) Convention countries named:  
AT BE CH FR GB IT LI NL SE

(56) Citations:

DE-A-2 529 026

DE-A-2 551 508

DE-C-818 549

DE-C-907 288

FR-A-1 039 368

FR-A-1 382 241

US-A-3 205 901

US-A-3 386 453

(73) Patent owner: ICOMAG Trust Reg., Aeulestrasse 772, FL-9490 Vaduz (LI)

(72) Inventor: Ernst Bertschi, Bachtelstrasse 124, CH-8400 Winterthur (CH)

(74) Representative: Dipl. Eng. Leonhard Hain, Tel 18/IV, D-8000

Munich 2 (DE)

---

,.../...

Note: Within nine months from publication of the reference to the grant of the European Patent in the European Patent Journal anyone may file opposition at the European Patent Office to the granted European Patent. The opposition is to be submitted and substantiated in writing. It counts as lodged only when the opposition fee has been paid (Art. 99(1) European Patent Convention).

The invention relates to a hair curler for dressing hair with a curler tube formed in continuation of a handle, swivel rods which are mounted on the outer circumference of this curler tube parallel to the curler axis and which are rotary about their longitudinal axes and are fitted with a plurality of curler teeth, a sleeve surrounding the curler tube and the swivel rods and having passage apertures for the teeth, which, upon rotation of the sleeve relative to the curler tube or vice versa, are erected or respectively laid down through these passage apertures, as well as a free space between the curler tube and the sleeve for the laid-down teeth.

In the case of a known hair curler of this kind (DE-A-2 551 508, Figs. 5 and 6) the swivel rods mounted at the outer circumference of a curler tube are rotary about their longitudinal axes and are fitted with a plurality of curler prongs. A sleeve surrounding the curler tube and the swivel rods and having passage apertures for these prongs is also present. By rotating the curler tube relative to the sleeve or vice versa, the prongs can be drawn back partially into a free space existing between the curler tube and the sleeve. However, complete drawing of the prongs into the interior of the sleeve is not possible, neither are the prongs suitable for that, nor is sufficient space for complete reception of the prongs available in the interior of the sleeve. Also no provisions are made to enable the prongs to be pushed out through the sleeve. Therefore, in the case of this known hair curler, even the drawn-in wire prongs still protrude from the sleeve and make it difficult to remove the hair curler from a wrapped-around roll of hair, likewise conversely this hair curler cannot be introduced into already wound locks of hair for re-dressing, since the hairs get caught upon the protruding prongs. In the case of another hair curling device (DE-C-818 549), in a sleeve-shaped winding-on

mandrel a single comb with a row of teeth is mounted on a longitudinal axis in such a way that the comb can be swung in and out through a mandrel aperture. Since this longitudinal axis is positionally fixed relative to the mandrel housing and the comb is sickly-shaped, also only a single comb with a row of teeth can be accommodated in the interior of the winding-on mandrel. In the case of a known touping rod (US-A-3 386 453), two swivel rods having teeth arranged in a comb-like manner are provided. The movement of the combs is effected by guide coulisses formed on the housing ends and control cams engaging therein in such a way that at all times only one comb is disposed in the interior of the housing, whilst the other comb projects from a comparatively large housing aperture, as is necessary for a touping rod. This dressing device is not serviceable as a hair curler.

The problem underlying the invention is, therefore, to design a hair curler of the kind mentioned at the beginning hereof in such a way that a plurality of rows of teeth can be drawn simultaneously and completely into the interior of the winding mandrel and also be erected once more.

To solve this problem, the hair curler of the kind mentioned at the beginning hereof is, in accordance with the invention, characterised in that the free space existing between the sleeve and the curler tube is designed for the complete reception of the laid-down teeth and in that provided at the abutment edges of the passage apertures for the erection of the teeth that are to be pushed out are sliding surfaces which extend into the free space as far as the ends of the laid-down teeth.

As a result of the rotary mounting of the swivel rods, equipped with rows of teeth, about a curler tube and the formation of an

appropriate free space, many rows of teeth can be accommodated in a hair curler. By means of the sleeve which is simple to actuate, all the curler teeth are moved simultaneously and without appreciable resistance, because the passage apertures with their sliding surfaces guarantee easy erection and dropping-down of the teeth. Since the teeth of this hair curler can be drawn completely into the interior of the winding-on mandrel, this can be drawn out of any rolled-in roll of hair without hindrance and without ruining the shape of the hair. Finally, the design, in accordance with the invention, of the curler tube also makes it possible to accommodate a heating rod in its interior.

Teeth can be moved particularly easily if they are curved convexly contrary to the erection movement. To improve guidance, a passage aperture is formed for each tooth in the sleeve.

A thick-walled curler tube can be used whenever outwardly-open longitudinal troughs for the mounting of the swivel rods and annular grooves for the reception of the laid-down teeth are formed therein. Such a curler tube can receive a heating rod and enter into direct contact by its outer surface with the sleeve, whereby the transfer of heat from the heating rod to the sleeve is aided.

Further features of the invention can be gathered from the remaining sub-claims.

A preferred embodiment of a hair curler in accordance with the invention will be described in more detail hereinunder with reference to drawings:

Fig. 1 shows a longitudinal section;

Fig. 2 shows a section along the line II-II of Fig. 1, enlarged; and

Fig. 3 shows a perspective view of a portion of curler tube, enlarged.

Formed on a handle 1 of a hair curler is a tubular extension 2 into which a curler tube 3 is inserted and is held therein in a torsionally-fast manner by means of a screw 4. In a cavity 5 of this curler tube there is a heating rod 6 with a connecting cable 7. Fixed onto the open end of the curler tube is a bearing cap 8 which fits tightly, by means of a screw 9 and a retaining spring 10, on the curler tube. This bearing cap butts with its bearing disc 12 against the curler tube and forms a bearing ring 13, into which there extend the ends of swivel rods 15 which engage, with their other ends, into a bearing gap 16 between the sleeve 2 and a plug-in extension 14 of the curler tube 3. The swivel rods 15 thus extend parallel to the curler axis and are rotary or swingable about their own longitudinal axis. Formed onto each of the swivel rods is a plurality of curler teeth 17, aligned in each case in a row. In the case of the exemplified embodiment shown, the swivel rods 15 are mounted in longitudinal troughs 18 (Figs. 2 and 3) of the curler tube 3. For the reception of the teeth 17 standing out from the swivel rods, the curler tube additionally has free spaces in the form of annular grooves 19 into which these teeth can be laid down completely (Fig. 2, dashed tooth 30). For this reason, the annular grooves are advantageously somewhat deeper than the longitudinal troughs. The curler tube thus fitted with swivel rods 15 is enclosed by a sleeve 20 which is in this case rotary and which is in contact with it, in order thus to attain a direct transfer for the heat given off by the heating rod 6. The sleeve also engages over the bearing disc 12 and is firmly fixed with its end 21 on a rotary handle 22. This cap-shaped rotary handle is fixed by means of an inner guide ring 23 in a groove 24 of the bearing cap against axial displacement, but is mounted for rotation about its longitudinal axis in both directions. The other end 25 of the sleeve ends near the extension 2. It can be masked by a protective sleeve 26. The sleeve

20 has, in the case of the exemplified embodiment, for each tooth 17 of the rows of teeth, a passage aperture 28 which is somewhat larger, in the direction of rotation of the sleeve, than the teeth dimensions. The teeth stand up through these apertures in the working position (Fig. 2). These upstanding teeth are, however, dropped down when the sleeve is rotated in the direction of the arrow in accordance with Fig. 2 relative to the curler tube, because in so doing the abutment edges 29 of the passage apertures butt against the teeth and lay them down, until they rest on the annular groove 19 in the curler tube 3 (Fig. 2, dashed tooth 30). In this position the teeth are disposed in the interior of the sleeve and also the free ends 31 do not protrude from the passage apertures. If the teeth are to be erected once more, a counter-rotation is sufficient. In this respect, the free tooth ends butt against the contiguous abutment edges 32, which are widened to form sliding surfaces 33. Upon further rotation of the sleeve the teeth are erected along these sliding surfaces until they assume once more the operating position. Because the passage apertures 28 are somewhat larger than the contours of the through-standing teeth, these are, in the erection or operating position respectively, movable to a certain extent. In order to prevent even this, the sleeve only needs to be rotated back until the teeth are clamped in slight obliquity inwards (Fig. 2, dashed tooth 35) between the two abutment edges of the passage aperture. The sliding surfaces 33 standing into the curler tube must, of course, be narrower than the annular grooves 19, in order not to obstruct the rotary motion.

It has proved to be advantageous to limit the motion of the sleeve relative to the curler tube by a stop pin 36 which is anchored in the curler tube 3 and which engages into an appropriately long slot 37 in the sleeve and the abutments of which determine the rotary end positions. In order also to fix these rotary positions, additionally

a catch or a pawl ( not shown ) can be situated on this pin 36 or in place thereof.

Use of the hair curler is simple and easy to execute. If the teeth of the curler are erected, then it can be used like any other curler. If, after conclusion of a treatment, it is to be removed, for which as a rule it has to be withdrawn from a curled lock or roll of hair, then first of all the upstanding teeth are drawn back out of the hair by counter-rotation of the rotary handle 22 relative to the handle 1 until they are laid down onto the curler tube and no longer protrude from the sleeve. In this position the curler, which is substantially smooth on its surface, can then be removed without hindrance from the lock of hair.

The invention is not restricted to the exemplified embodiment shown. Thus, the passage apertures 28 could also extend for the entire length, or part of the length, of the sleeve and thus take in several or all the teeth of a row. The swivel rods 15 do not need to be accommodated in longitudinal troughs of a reinforced curler tube if the curler tube has only a wall thickness which creates, between the tube and the sleeve, a free space in which the swivel rods are then supported, for example with their ends. The teeth of the individual rows can be aligned with regard to one another or else even be displaced relative to one another.

If, in the above description, there is talk only of the rotation of the rotary handle 22, then this does not preclude also only the handle or both grips being appropriately rotated for the laying down or erection of the teeth. Instead of the pin-shaped teeth, also individual bristles or bunches of bristles can be provided. Insofar as these are sufficiently elastic, they can be laid down and erected with appropriate design of the sliding surfaces on the sleeve or on the curler tube.

Patent Claims ( German version )

1. A hair curler for dressing hair with a curler tube (3) formed in continuation of a handle (1), swivel rods (15) which are mounted on the outer circumference of this curler tube parallel to the curler axis and which are rotary about their longitudinal axes and are fitted with a plurality of teeth (17), a sleeve (20) surrounding the curler tube and the swivel rods and having passage apertures (28) for the teeth, which, upon rotation of the sleeve relative to the curler tube or vice versa, are erected or respectively laid down through these passage apertures, as well as a free space (19) between the curler tube and the sleeve for the laid-down teeth, characterised in that the free space (19) present between the sleeve (20) and the curler tube (3) is designed for the complete reception of the laid-down teeth (17) and in that provided at the abutment edges (32) of the passage apertures (28) for the erection of the teeth that are to be pushed out are sliding surfaces (33) which extend into the free space as far as to the end of the laid-down teeth.
2. A hair curler according to claim 1, characterised in that the curler tube (3) forms the support for the laid-down teeth (17).
3. A hair curler according to claim 1 or 2, characterised in that a passage aperture (28) is formed for each tooth (17).
4. A hair curler according to one of claims 1 to 3, characterised in that the teeth (17) are convexly curved contrary to the erection movement.
5. A hair curler according to one of claims 1 to 4, characterised in that outwardly-open longitudinal troughs (18) for the mounting of the swivel rods (15) and annular grooves (19) for the reception of the laid-down teeth (17) are formed in a thick-walled curler tube (3).

6. A hair curler according to claim 5, characterised in that the curler tube (3) is designed for the reception of a heating rod (6) and is in contact by its outer surface with the sleeve (20).

7. A hair curler according to one of claims 1 to 6, characterised in that the curler tube (3) is connected in torsionally-fast manner to the handle (1) and the sleeve (20) is connected in torsionally-fast manner to a rotary handle (22) which is mounted for rotation on a bearing cap (8) which is anchored in the curler tube (3).

8. A hair curler according to one of claims 1 to 7, characterised in that the rotary motion of the sleeve (20) and/or of the curler tube (3) reciprocally is limited by a stop pin (36) and/or is fixed by catch or pawl in the rotary end positions.

Claims ( French version )

1. A curler used for curling hair, provided with a coiling tube (3) formed in extension of a handle (1), swivel rods (15) mounted at the outer circumference of this coiling tube, parallel to the axis of the curler, able to rotate about their longitudinal axes and provided with multiple teeth (17), a sleeve (20) surrounding the coiling tube and the swivel rods with passage apertures (28) for the teeth which, when the sleeve is caused to rotate relative to the coiling tube, or vice versa, are erected or lowered through these passage apertures, and a free space (19) between the coiling tube and the sleeve for the lowered teeth, characterised in that the free space (19) existing between the sleeve (20) and the coiling tube (3) is designed to accommodate completely the lowered teeth (17) and that provided at the abutment edges (32) of the passage apertures (28), in order to erect the teeth that are to be deployed, are sliding surfaces (33) which penetrate into the free space as far as the ends of the lowered teeth.

2. A curler according to claim 1, characterised in that the coiling tube (3) forms the support of the lowered teeth (17).
3. A curler according to one of claims 1 and 2, characterised in that a passage aperture (28) is formed for each tooth (17).
4. A curler according to one of claims 1 to 3, characterised in that the teeth have a convex curvature contrary to the erection movement.
5. A curler according to one of claims 1 to 4, characterised in that longitudinal troughs (18), open towards the outside, for the mounting of the swivel rods (15) and annular grooves (19) for the accommodation of the lowered teeth (17) are formed in a coiling tube (3) having a thick wall.
6. A curler according to claim 5, characterised in that the coiling tube (3) is constituted to accommodate a heating rod (6) and that it is in contact, by its outer surface, with the sleeve (20).
7. A curler according to one of claims 1 to 6, characterised in that the coiling tube (3) is connected to the sleeve (1) in a manner which excludes rotation and in that the sleeve (20) is connected to a rotary handle (22) which is mounted so as to be able to rotate on a bearing cap (8) anchored in the coiling tube (3).
8. A curler according to one of claims 1 to 7, characterised in that the rotary motion of the sleeve (20) and/or of the coiling tube (3) relative to one another is limited by a stop pin (36) and/or fixed by catch or by pawl in the rotary end positions.

Claims ( English version )

1. A hair curler for dressing hair comprising a curler tube (3) formed as continuation of a handle (1), swivel rods (15) which are mounted on the outer circumference of this curler tube parallel to

the curler axis and which are rotary about their longitudinal axes and are fitted with a plurality of teeth (17), a sleeve (20) surrounding the curler tube and the swivel rods and having passage apertures (28) for the teeth, which, upon rotation of the sleeve relative to the curler tube or vice versa, are erected to project through these passage apertures or respectively tilted to lie down, as well as a free space (19) between the curler tube and the sleeve for the laid-down teeth, characterised in that the free space (19) present between the sleeve (20) and the curler tube (3) is designed for the complete reception of the laid-down teeth (17) and in that provided at the abutment edges (32) of the passage apertures (28) for the erection of the teeth that are to be caused to project are sliding surfaces (33) which extend, as far as to the end of the laid-down teeth, into the free space.

2. A hair curler according to claim 1, characterised in that the curler tube (3) forms the support for the laid-down teeth (17).

3. A hair curler according to claim 1 or 2, characterised in that a passage aperture (28) is formed for each tooth (17).

4. A hair curler according to one of claims 1 to 3, characterised in that the teeth (17) are convexly curved contrary to the direction of erection movement.

5. A hair curler according to one of claims 1 to 4, characterised in that outwardly-open longitudinal troughs (18) for the mounting of the swivel rods (15) and annular grooves (19) for the reception of the laid-down teeth (17) are formed in a thick-walled curler tube (3).

6. A hair curler according to claim 5, characterised in that the curler tube (3) is designed for the reception of a heating rod (6) and is in contact by its outer surface with the sleeve (20).

7. A hair curler according to one of claims 1 to 6, characterised in that the curler tube (3) is connected in torsionally-fast manner to the handle (1) and the sleeve (20) is connected in torsionally-fast manner to a rotary handle (22) which is mounted for rotation on a bearing cap (8) which is anchored in the curler tube (3).

8. A hair curler according to one of claims 1 to 7, characterised in that the rotary motion of the sleeve (20) and/or of the curler tube (3) reciprocally is limited by a stop pin (36) and/or is fixed by a catch or a pawl in the rotary end positions.