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(54) Hair styling device

(57) In a hair styling device having first and second outer parts (S1, S2) having fixed positions, first and second heating plates (HP1, HP2) between which hair can be clamped, and elastic elements between the first and second outer parts (S1, S2) and the first and second heating plates (HP1, HP2), respectively, to push the first and second heating plates (HP1, HP2) together so as to clamp any hair between the first and second heating plates (HP1, HP2), a distance element is provided to ensure a minimum distance between the heating plates. The minimum distance is preferably between 0.01 mm and 2 mm, and preferably larger than 0.12 mm. The distance element may be formed by interlocking teeth. Preferably the distance element is integrated inside the device whereby hair cannot be clamped by the distance element.

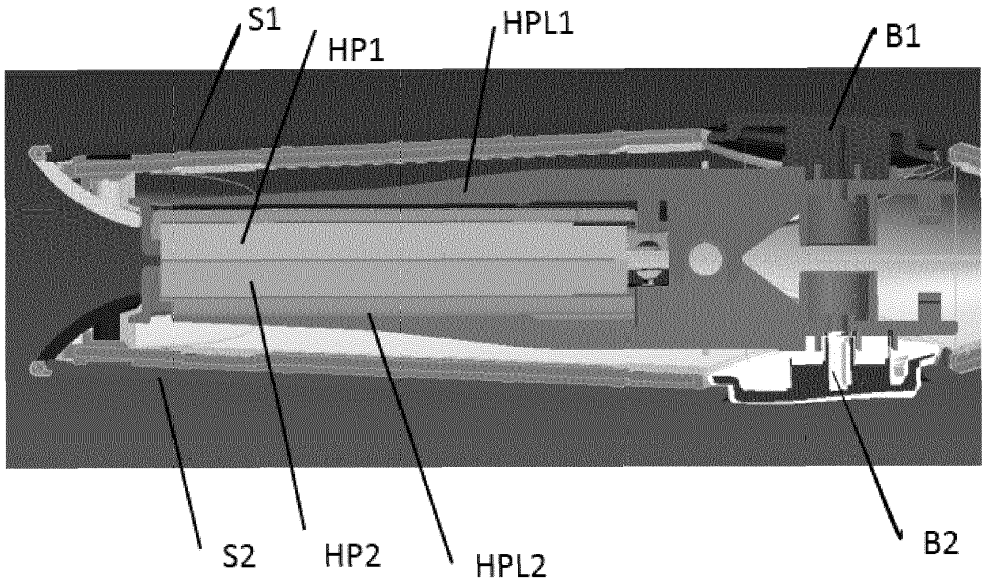

Fig. 1B

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Description

FIELD OF THE INVENTION

[0001] The invention relates to a hair styling device, and in particular to a hair styling device having heating plates such as a hair straightener or a hair curler.

BACKGROUND OF THE INVENTION

[0002] In classic hair styling devices, when the heating plates are closed, there is no gap between the heating plates (lack of play). This can lead to hair being trapped between the heating plates, i.e. that at the end of a hair strand only a few hairs are still between the heating plates and that those few hairs get the whole clamping force of the plates which significantly increases the pulling force on those few hairs. This is less of a problem for hair styling devices in which the closing of the heating plates is done by hand, as by manually releasing the heating plates the pulling force can be reduced immediately.

[0003] However, in hair styling devices as known from e.g. EP 2 319 354, in which the heating plates are clamped together by spring force, the pulling force cannot be manually reduced and single hairs clamped between the heating plates can get pulled out of the scalp or ripped apart. During striking a strand of hair, the last few hairs may get stuck between the plates which may lead to uncomfortable pulling on the trapped hair.

SUMMARY OF THE INVENTION

[0004] It is, inter alia, an object of the invention to provide an improved hair styling device. The invention is defined by the independent claims. Advantageous embodiments are defined in the dependent claims.

[0005] In advantageous embodiments of the invention, in a hair styling device having first and second outer parts having fixed positions, first and second heating plates between which hair can be clamped, and elastic elements between the first and second outer parts and the first and second heating plates, respectively, to push the first and second heating plates together so as to clamp any hair between the first and second heating plates, a distance element prevents the two heating plates of a straightener/curler from closing completely in order to prevent trapping of single hairs from being trapped which leads to inconvenient pulling. Advantageously, the plates are kept open by at least x mm (0.01 mm < x < 2 mm), and preferably the minimum opening is wider than the biggest human hair diameter (~0.12mm). Openings that are too wide would lead to a diminishing of the grip and thus to a reduction of effectiveness during curling/straightening. As a result of the invention, the hair pulling/trapping problem during the act of straightening or curling would be mitigated, which is especially interesting with a device where the heating plates are closed by spring force.

[0006] These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

Figs. 1A - 1B illustrate a device in which the invention could be applied.
Figs. 2A - 2C illustrate a first embodiment of the invention.
Figs. 3A - 3C illustrate a second embodiment of the invention.
Fig. 4 illustrates a third embodiment of the invention.
Fig. 5 illustrates a forth embodiment of the invention.

DESCRIPTION OF EMBODIMENTS

[0008] Figs. 1A - 1B illustrate two views of a device in which the invention could be advantageously applied. Outer shell parts S1, S2 are fixed, i.e. they do not move. If buttons B1, B2 are pressed together, heating plate levers HPL1, HPL2 open up, so that hair can be received between heating plates HP1, HP2 from the opening shown at the left. In a rest position, springs (not shown) or other elastic elements between the first and second outer shell parts S, S2 on the one hand, and on the other hand the first and second heating plates HP1, HP2, respectively, press the heating plates HP1, HP2 together, thereby clamping any hair between the heating plates HP1, HP2.

[0009] Figs. 2A - 2C illustrate a first embodiment of the invention. The outer shell parts S1, S2 and the buttons B1, B2 are not shown in these figures. In this embodiment the minimum distance is achieved by means of a distance element formed by two interacting teeth IT on both sides of the heating plate levers HPL1, HPL2. Due to this teeth geometry the probability of hairs getting trapped between the touching points of the teeth is minimized. The interlocking teeth help to push hairs away from the clamping surfaces of the heating plates HP1, HP2, which reduces the risk of clamping hairs in-between the surfaces. In this embodiment the minimum heating plate distance HPD is at least 0.15 mm.

[0010] Figs. 3A - 3C illustrate a second embodiment of the invention, which form an alternative option to achieve the opening of the heating plates. In this second embodiment, the minimum distance between the heating plates is ensured by a distance element DE formed by plain distance pieces which touch each other on a small plane surface.

[0011] Fig. 4 illustrates a fourth embodiment of the invention. In this embodiment the minimum distance is achieved by a distance element formed by spacers S near the front of the two heating plate levers (i.e. where the hair is received by the hair styling device), between the outer shell and the heating plate levers. These spac-

ers S are positioned inside the outer shell of the device and touch the inside of the outer shell before the heating plates are touching each other. In this embodiment the risk of clamping hairs between distance pieces is eliminated.

[0012] Fig. 5 illustrates a third embodiment of the invention. In this embodiment the minimum distance is achieved with by a distance element formed by a spacer S between the two heating plate levers, near the joint of the two heating plate levers. In this embodiment too the risk of clamping hairs between distance pieces is eliminated.

[0013] It should be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. The word "comprising" does not exclude the presence of elements or steps other than those listed in a claim. The word "a" or "an" preceding an element does not exclude the presence of a plurality of such elements. In the device claim enumerating several means, several of these means may be embodied by one and the same item of hardware. The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage.

[0014] In summary, this description discloses a hair styling device having heating plates between which hair is clamped, characterized by a distance element to ensure a minimum distance between the heating plates. The minimum distance is preferably between 0.01 mm and 2 mm, and preferably larger than 0.12 mm. The distance element is preferably formed by interlocking teeth. Preferably the distance element is integrated inside the device whereby hair cannot be clamped by the distance element.

Claims

1. A hair styling device having
   first and second outer parts (S 1, S2) having fixed positions;
   first and second heating plates (HP1, HP2) between which hair can be clamped,
   and
   elastic elements between the first and second outer parts (S1, S2) and the first and second heating plates (HP1, HP2), respectively, to push the first and second heating plates (HP1, HP2) together so as to clamp any hair between the first and second heating plates (HP1, HP2),
   characterized by a distance element to ensure a minimum distance between the heating plates (HP1, HP2).

2. A hair styling device as claimed in claim 1, in which the minimum distance between the heating plates is between 0.01 mm and 2 mm.

3. A hair styling device as claimed in claim 2, in which the minimum distance exceeds 0.12 mm.

4. A hair styling device as claimed in any of the preceding claims, in which the distance element is formed by interlocking teeth.

5. A hair styling device as claimed in any of the preceding claims, in which the distance element is integrated inside the device whereby hair cannot be clamped by the distance element.

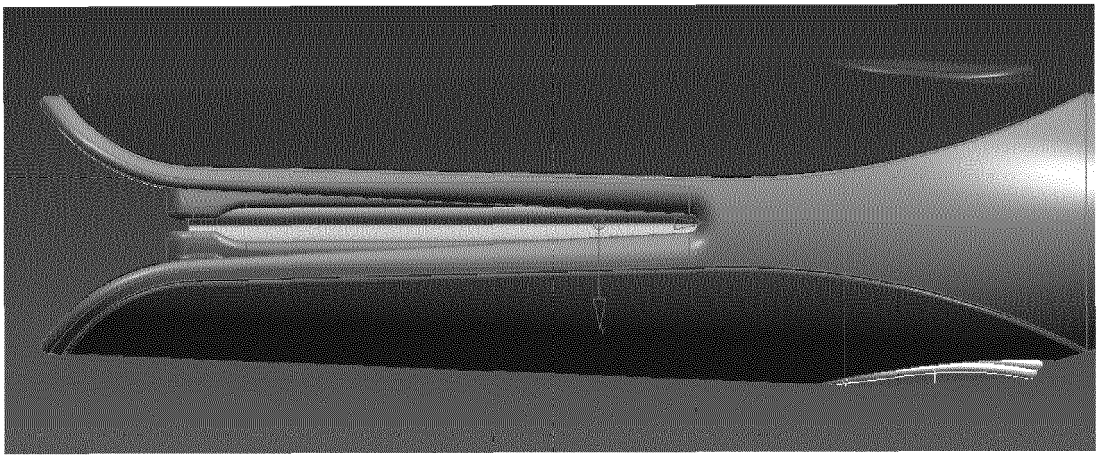

Fig. 1A

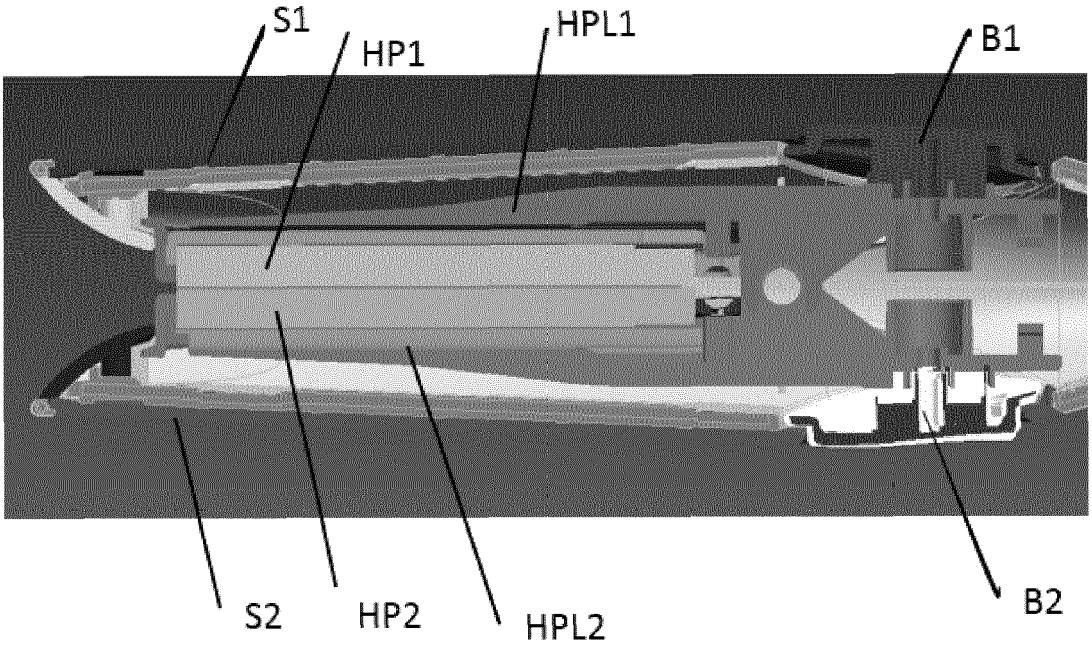

Fig. 1B

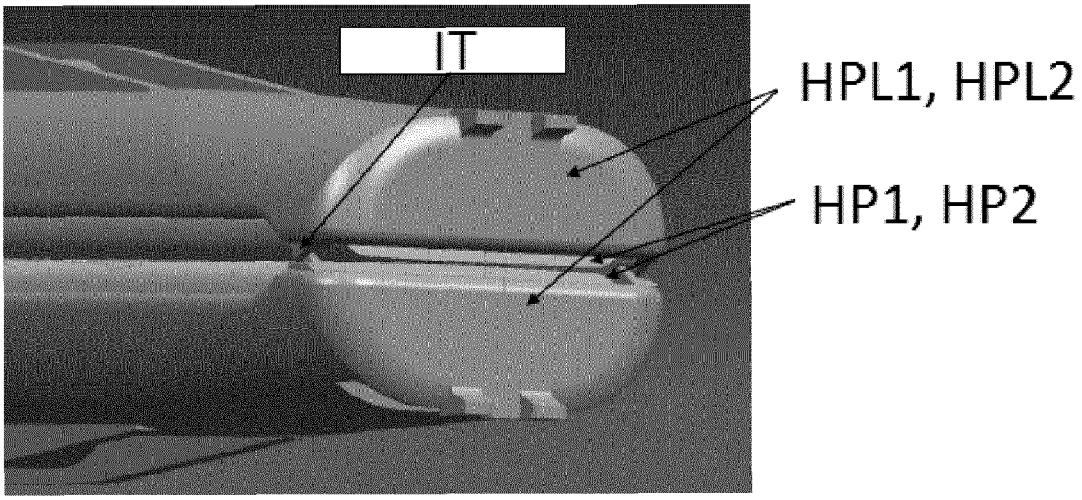

Fig. 2A

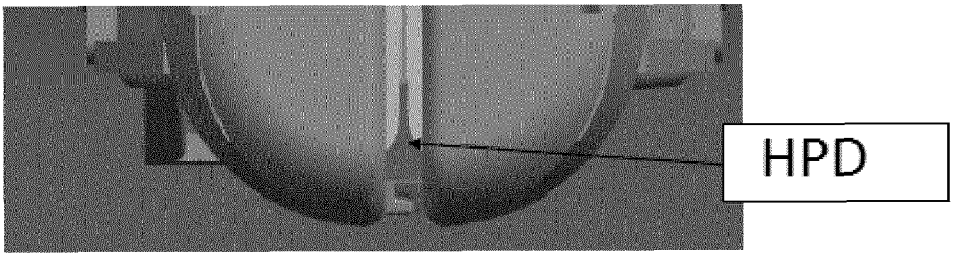

Fig. 2B

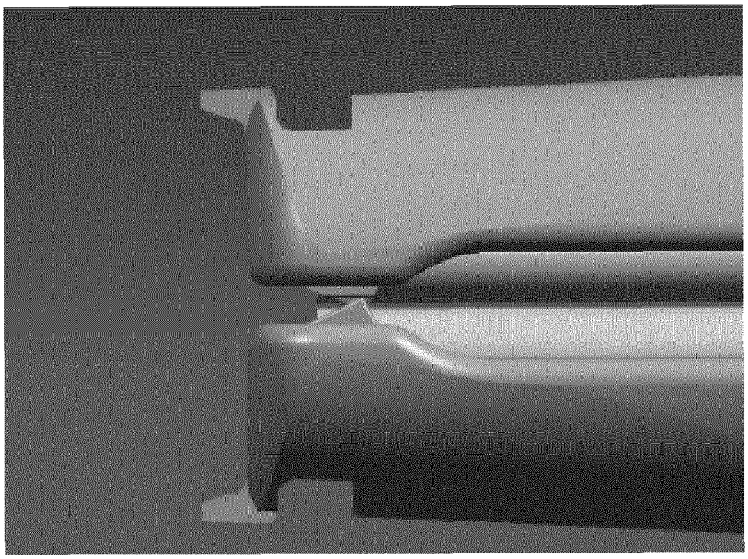

Fig. 2C

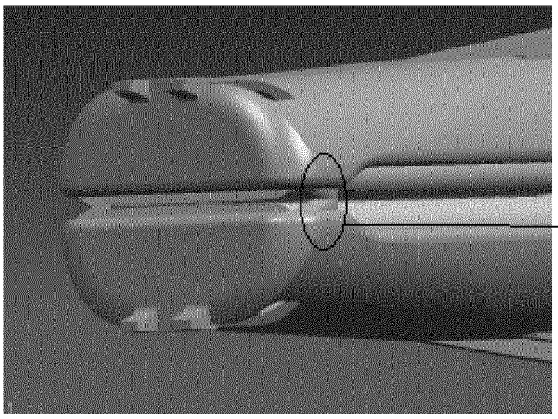

Fig. 3A

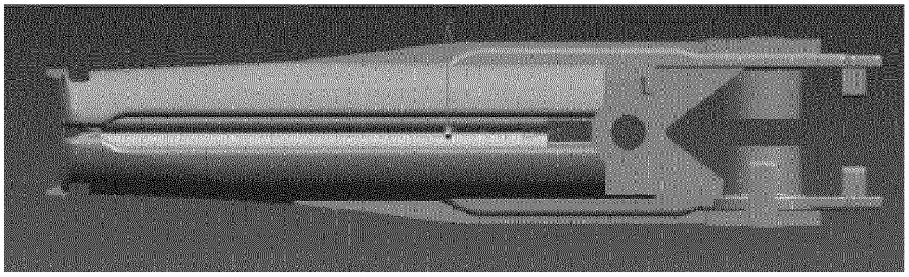

Fig. 3B

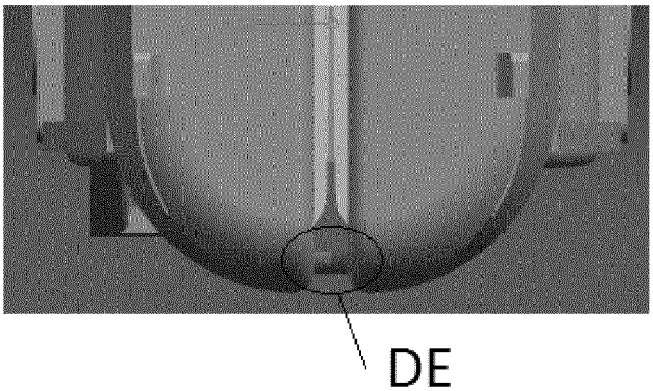

Fig. 3C

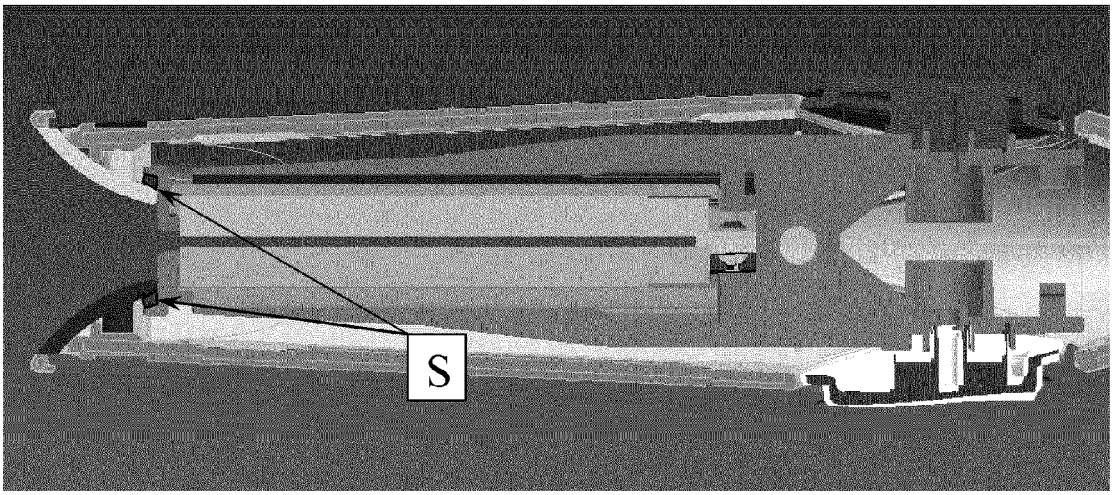

Fig. 4

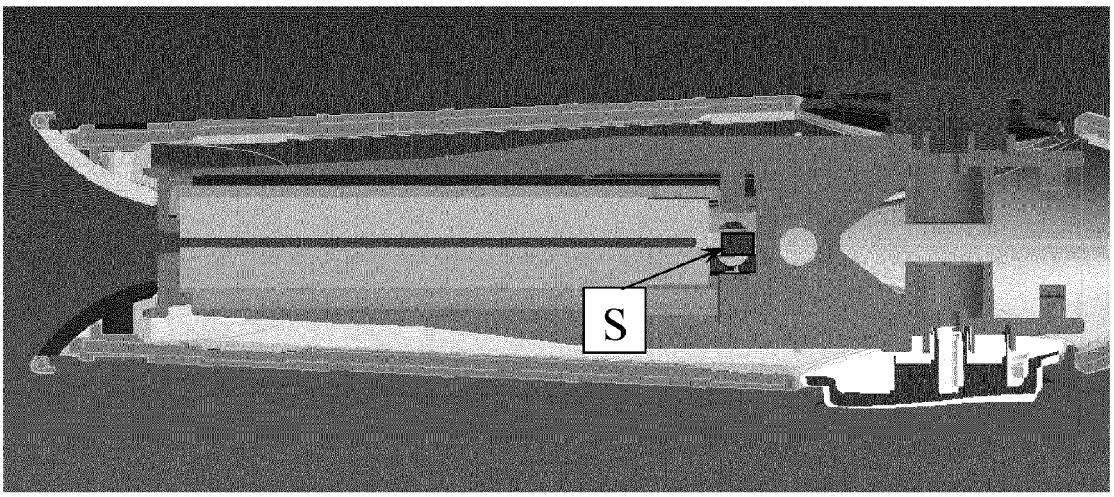

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 7515

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	EP 2 319 354 A1 (TENACTA GROUP SPA [IT]) 11 May 2011 (2011-05-11) * the whole document *	1-5	INV. A45D1/08 A45D1/04
X	US 2014/202488 A1 (RIVOLA MARCO [IT] ET AL) 24 July 2014 (2014-07-24) * the whole document *	1-5	
A	CA 2 848 852 A1 (CONAIR [US]) 14 July 2014 (2014-07-14) * the whole document *	1	

TECHNICAL FIELDS SEARCHED (IPC)

A45D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 July 2015	Nicolás, Carlos

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 15 7515

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28-07-2015

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