



(43) International Publication Date  
24 March 2016 (24.03.2016)

- (51) International Patent Classification:  
A45D 2/00 (2006.01) A45D 6/00 (2006.01)
- (21) International Application Number:  
PCT/IB2015/057084
- (22) International Filing Date:  
15 September 2015 (15.09.2015)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
201420536599.6  
17 September 2014 (17.09.2014) CN
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

**Published:**

- with international search report (Art. 21(3))

(54) Title: BAFFLE MECHANISM OF HAIR CURLER AND HAIR CURLER HAVING THE SAME

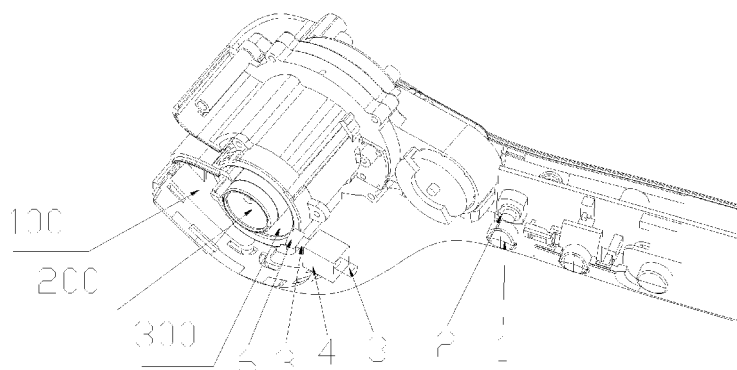


Fig. 1

(57) Abstract: The present invention discloses a baffle mechanism of a hair curler and a hair curler having the same, which is configured to be installed in a shell (100) of the hair curler and positioned outside a heating curling barrel (200) of the hair curler. The baffle mechanism comprises: a switch (2); an actuator positioned in the shell (100) and provided with a movable push rod (3) and an electromagnet (4) which is configured to drive the movable push rod (3) to make a movement after being energized, wherein the movable push rod penetrates the electromagnet (4), and the electromagnet (4) is electrically connected with the switch (2); and a baffle (6) connected to the end portion of the movable push rod (3) and arranged opposite to the heating curling barrel (200). According to the baffle mechanism, the hair being curled can be prevented from rotating by 360 degrees when use is made of the hair curler, so that the hair curling efficiency is improved.



## **Baffle Mechanism of Hair Curler and Hair Curler Having the Same**

### **TECHNICAL FIELD**

The present invention relates to hair curler, and particularly relates to a baffle mechanism of a hair curler.

### **BACKGROUND ART**

A hair curler is a handheld electronic product used for curling hair, and a conventional hair curler generally includes a handle and a heating curling barrel. A heating portion is exposed outside, which easily causes scald when using the conventional hair curler.

Generally, the handle extends out from one end of a shell, and the shell surrounds the heating curling barrel to form a hair guide space between the heating curling barrel and the shell so as to guide hair, so that the hair is conveniently placed inside the hair curler and can be prevented from releasing from the hair curler when being curled. However, the guide space is easily blocked because the hair easily scatters and tangles when gradually curled in the guide space, resulting in incapability of continuously curling the hair, thus causing a high failure rate and great inconvenience during the hair curling operation.

### **SUMMARY OF THE INVENTION**

To overcome the drawback of the prior art, an objective of the present invention is to provide a baffle mechanism of a hair curler, which can be used to improve hair curling efficiency.

The objective of the present invention is achieved by the following technical solution: a baffle mechanism of a hair curler, which is configured to be installed in a shell of the hair curler and positioned outside a heating curling barrel of the hair curler, and the baffle mechanism comprises: a switch; an actuator, which is positioned in the shell and provided with a movable push rod and an electromagnet which is configured to drive the movable push rod to make a movement after being energized, wherein the movable push rod penetrates the electromagnet, and the electromagnet is electrically connected with the switch; and a baffle, which is connected to the end portion of the movable push rod and arranged opposite to the

heating curling barrel.

Preferably, the baffle is a straight plate or arc plate.

Compared with the prior art, the present invention has the following advantageous effects.

The press switch enables the electromagnet of the telescopic apparatus to be energized, so as to drive the movable push rod to make a telescopic movement, as a result of which the baffle may move in a direction such that it is close to the heating curling barrel and in a direction away from the heating curling barrel under the pushing action of the push rod, thus enabling the baffle to be limited in position so as to play a role in baffling the hair, to ensure that the hair may be firmly curled on the heating curling barrel and prevented from rotating by 360 degrees when using the hair curler, so as to avoid hair tangling and blocking of the guide space as well as facilitate effective curling and styling of the hair and further improve hair curling efficiency.

The present invention is further explained in detail below in conjunction with the accompanying drawings and the detailed description.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a schematic view of a baffle mechanism of a hair curler of the present invention, in which the baffle extends into a guide space;

FIG. 2 is a schematic view of a baffle mechanism of a hair curler of the present invention, in which the baffle is repositioned.

In the drawings, 100: shell; 200: heating curling barrel; 300: guide space; 1: key; 2: press switch; 3: movable push rod; 4: electromagnet; 6: baffle.

## **DETAILED DESCRIPTION OF THE INVENTION**

A baffle mechanism of a hair curler as shown in FIG. 1 to FIG. 2 is configured to be installed in a shell 100 of the hair curler and positioned outside a heating curling barrel 200 of the hair curler, and a guide space 300 is formed between the shell 100 and the heating curling barrel 200. The baffle mechanism comprises: a key 1 exposed out from the shell 100; a press switch 2 positioned in the shell 100 and elastically connected with the key 1; an actuator formed by a telescopic apparatus

positioned in the shell 100 and provided with a movable push rod 3 and an electromagnet 4 which is configured to drive the movable push rod 3 to make a telescopic movement after being energized, wherein the movable push rod 3 penetrates the electromagnet 4, and the electromagnet 4 is electrically connected with the press switch 2; a baffle 6 located on the side of the heating curling barrel 200 and pivotally connected with the shell 100; and a baffle 6 connected to the end portion of the movable push rod 3 and arranged opposite to the heating curling barrel 200.

As shown in FIG. 1, after the key 1 is pushed, the press switch 2 is triggered to turn on a power supply to ensure that the electromagnet 4 is energized, and furthermore the movable push rod 3 is pushed towards the heating curling barrel 200 to enter the guide space 300 until the baffle 6 is pushed to a specified position (this pre-defined position may be preset) and connected with the heating curling barrel 200 so as to perform scraping, baffling, extruding and limiting the hair movement in the hair curling operation and preventing the hair from rotating by 360 degrees. The telescopic apparatus used in this embodiment may employ an apparatus in which a conventional electromagnet drives the movable push rod to make a telescopic movement by virtue of an attracting function, but may also employ a one-way high-speed electromagnet push rod apparatus as described in application number CN200420006371.2 of China utility model patent disclosure, and may also employ a motor-driven gear or other electronically-driven means, to achieve the same function.

As shown in FIG. 2, after the key 1 is pushed again, the press switch 2 turns off the power supply to ensure that the electromagnet 4 is de-energized, and the movable push rod 3 is retracted and drives the baffle 6 to be repositioned.

Preferably, the baffle 6 is a straight plate or arc plate, and may also provide for limiting and baffling the hair. Certainly, the baffle 6 may also be shaped differently and still be capable of baffling the hair.

The hair curler further comprises mechanism to detect hair trap problem. The motor, which drives the part curling the length of hair into the shell 100, and which is usually a brushless DC motor (BLDC), is configured to periodically send pulse signals to a controller. Preferably, the motor send such signals at a specific frequency, the rotation speed of the motor is known or can be measured, therefore, the time difference between two adjacent signals can be determined, which is defined as pre-determined time.

When hair trap occurs, the rotation speed of the motor is slow down, the time difference between two adjacent signals become longer. The controller receiving the signals compares the time difference between two adjacent signals with the pre-determined time, if the time difference is greater than the pre-determined time, the controller classifies a hair trap problem occurs.

After a hair trap problem is classified to occur, the controller stops the motor, and triggers an alert signal to warn the user, and then the controller shuts down the hair curler. The user can restart the hair curler by pressing the switch 2 after removing the hair trap from the shell 100.

The foregoing embodiments merely are preferable embodiments of the present invention, and are not intended to define the scope claimed by the present invention, and any non-essential variations and substitutions made by those skilled in the art on the basis of the present invention fall within the scope claimed by the present invention.

## Claims

1. A baffle mechanism of a hair curler, comprising:  
a switch;  
an actuator, which is provided with a movable push rod and an electromagnet which is configured to drive the movable push rod to make a movement after being energized, wherein the movable push rod penetrates the electromagnet, and the electromagnet is electrically connected with the switch; and  
a baffle, which is connected to the end portion of the movable push rod.
2. The baffle mechanism of a hair curler according to claim 1, wherein said baffle is a straight plate or arc plate.
3. A hair curler comprising a baffle mechanism as claimed in claim 1 or 2.
4. A hair curler, comprising:  
a shell,  
a heating curling barrel arranged in the shell,  
an actuator, positioned in said shell and outside the heating curling barrel, the actuator is provided with a movable push rod and an electromagnet which is configured to drive the movable push rod to make a movement after being energized, wherein the movable push rod penetrates the electromagnet; and  
a baffle, which is connected to the end portion of the movable push rod and arranged opposite to the heating curling barrel.
5. The hair curler according to claim 4, wherein said baffle is a straight plate or arc plate.

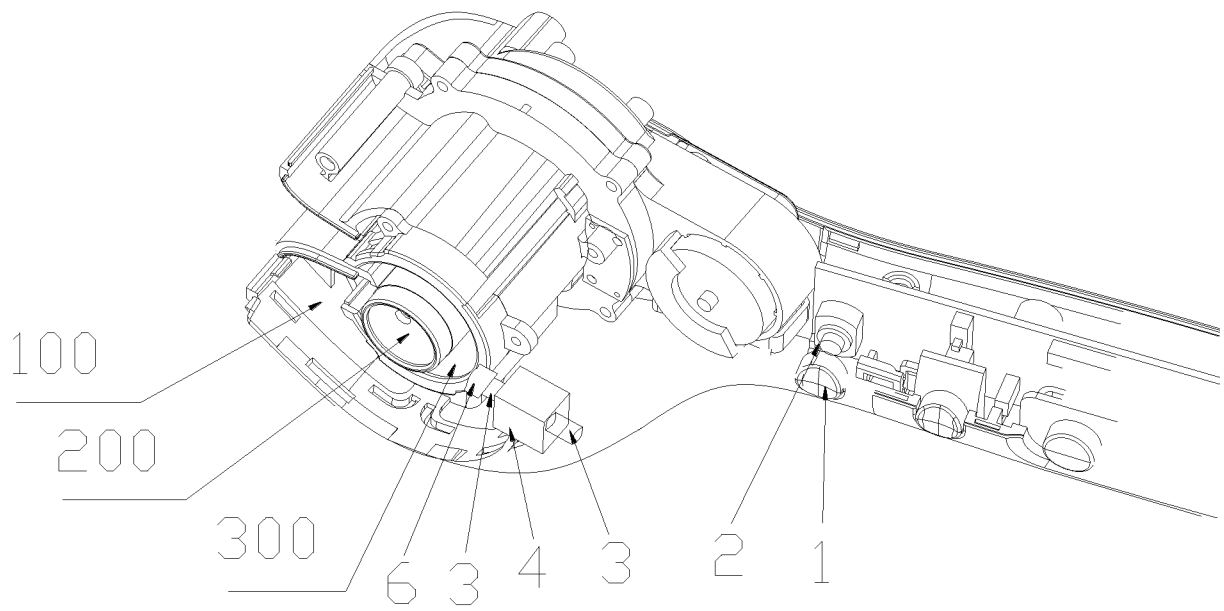


Fig. 1

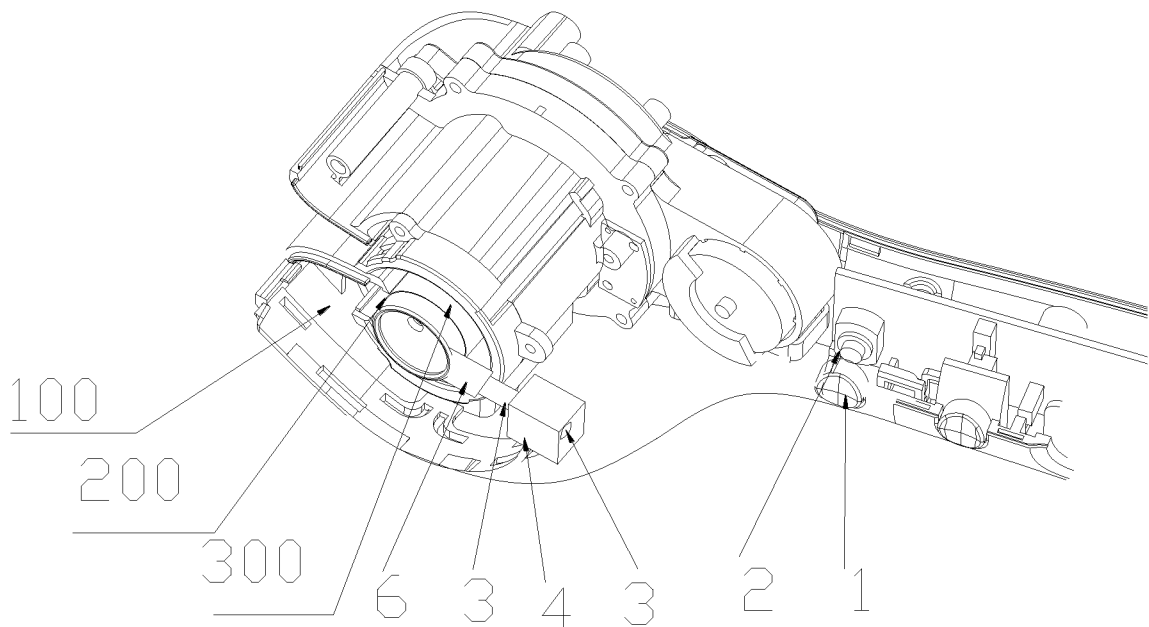


Fig. 2

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/IB2015/057084

**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. A45D2/00 A45D6/00  
 ADD.  
 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)  
 EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 203 563 816 U (SHENZHEN JINBA HEALTH TECHNOLOGY CO LTD) 30 April 2014 (2014-04-30) the whole document	1-5
X	US 2013/068245 A1 (DE BENEDICTIS ALFREDO [GB] ET AL) 21 March 2013 (2013-03-21) the whole document	1-5

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "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
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search  17 November 2015	Date of mailing of the international search report  25/11/2015
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Nicolás, Carlos

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2015/057084

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