



(12) **DEMANDE DE BREVET CANADIEN**
CANADIAN PATENT APPLICATION
(13) **A1**

(86) Date de dépôt PCT/PCT Filing Date: 2016/08/19
(87) Date publication PCT/PCT Publication Date: 2017/02/23
(85) Entrée phase nationale/National Entry: 2018/02/12
(86) N° demande PCT/PCT Application No.: US 2016/047757
(87) N° publication PCT/PCT Publication No.: 2017/031417
(30) Priorité/Priority: 2015/08/19 (CN201520627529.6)

(51) Cl.Int./Int.Cl. *A45D 6/02* (2006.01),
A45D 4/02 (2006.01), *A45D 6/00* (2006.01)
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(54) Titre : FER A FRISER LES CHEVEUX AUTOMATIQUE
(54) Title: AUTOMATIC HAIR CURLER

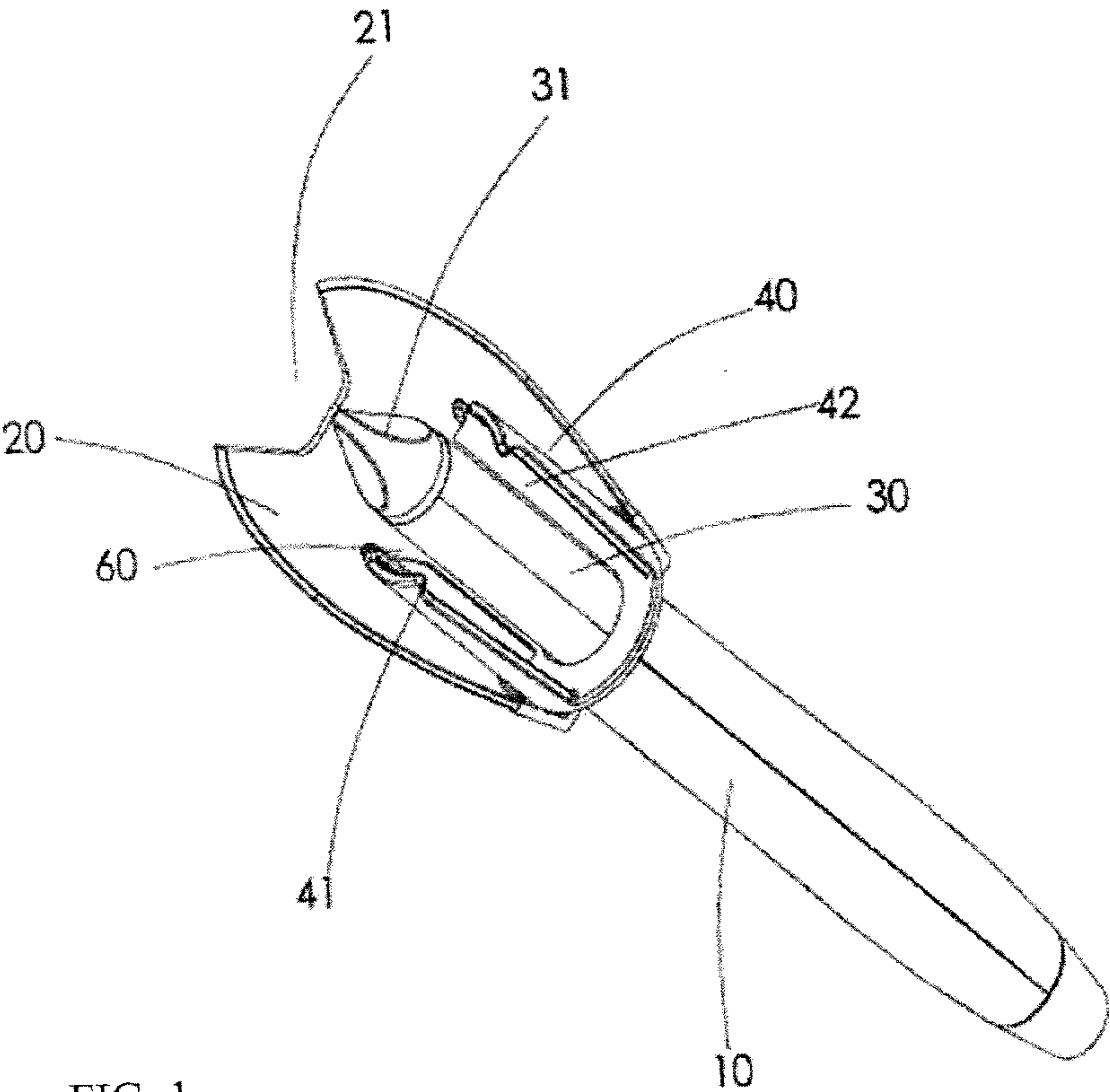


FIG. 1

(57) **Abrégé/Abstract:**
An automatic hair curler includes a handle, a heating rod extending from the handle, a rotating seat extending at least partially around a circumference of the heating rod and extending a height from the handle at least partially overlapping a height of the heating rod, and a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property

Organization

International Bureau



WIPO | PCT



(10) International Publication Number

WO 2017/031417 A1

(43) International Publication Date

23 February 2017 (23.02.2017)

(51) International Patent Classification:

A45D 6/02 (2006.01)

A45D 6/00 (2006.01)

A45D 4/02 (2006.01)

(21) International Application Number:

PCT/US2016/047757

(22) International Filing Date:

19 August 2016 (19.08.2016)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

201520627529.6 19 August 2015 (19.08.2015)

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).

Published:

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

(54) Title: AUTOMATIC HAIR CURLER

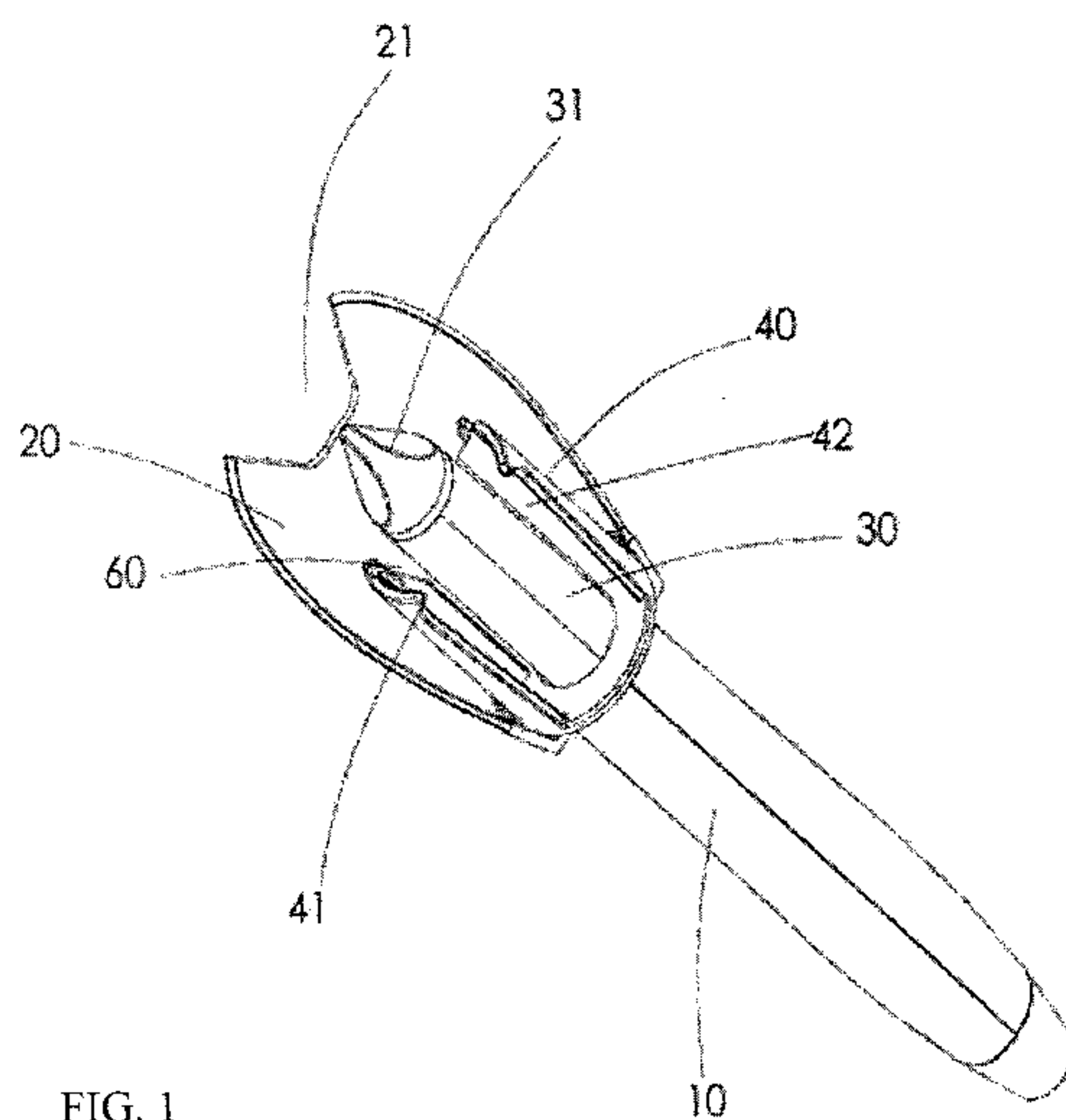


FIG. 1

(57) Abstract: An automatic hair curler includes a handle, a heating rod extending from the handle, a rotating seat extending at least partially around a circumference of the heating rod and extending a height from the handle at least partially overlapping a height of the heating rod, and a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod.

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AUTOMATIC HAIR CURLER

Background

[0001] With the development of society, hair styling has become a lifestyle in the pursuit of beauty of people, thus various hair styling tools have come into being, such as hair straighteners, hair curlers and the like. The hair curler is a hand-held electronic product used for curling hair, and main components thereof are a handle and a heating drum. In the design of the hair curler, a circuit panel is used for controlling the temperature, and the heating drum is made of a tourmaline ceramic panel, which can averagely disperse heat, circularly heat, improve hair protein structures to generate curls and protect the hair during the curling.

[0002] The existing hair curlers on the market can be divided into manual hair curlers and semiautomatic hair curlers based on ways of using them, and heating parts of the hair curlers are generally exposed at the outside, so scald is likely to occur in use. If the manual hair curlers are used for curling hair at home, it can be completed only with the help of others, so the operation is inconvenient. If the semiautomatic hair curlers are operated by the users themselves, they have to choose hair curlers with clips, because hair curlers without clips are difficult to operate by the users themselves, and thus having certain limitation in use.

Summary

[0003] This summary is provided to introduce a selection of concepts that are further described below in the detailed description. This summary is not intended to identify key or essential features of the claimed subject matter, nor is it intended to be used as an aid in limiting the scope of the claimed subject matter.

[0004] In one aspect, embodiments of the present disclosure relate to an automatic hair curler that includes a handle, a hair curling component installed on the handle, wherein the hair curling component includes a heating rod extending from the handle, a shell disposed at least partially around the heating rod, a rotating seat that is sleeved around the heating rod and rotatable relative to the heating rod, and a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the

heating rod, the hair curling cavity having an upper end opening, and a driving device operatively connected to the rotating seat to rotate the rotating seat relative to the heating rod.

[0005] In another aspect, embodiments of the present disclosure relate to an automatic hair curler that includes a handle, a heating rod extending from the handle, a rotating seat extending at least partially around a circumference of the heating rod and extending a height from the handle at least partially overlapping a height of the heating rod, and a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod.

[0006] In yet another aspect, embodiments of the present disclosure relate to an automatic hair curler that includes a handle, a heating rod extending from the handle, a rotating seat extending at least partially around the heating rod, and a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod, the hair curling cavity having an opening formed at an upper end of the rotating seat opposite the handle.

[0007] Other aspects of the invention will be apparent from the following description and the appended claims.

Brief Description of the Drawings

[0008] Fig. 1 is a schematic diagram of a hair curler according to embodiments of the present disclosure;

[0009] Fig. 2 is a cross sectional schematic diagram of a hair curler according to embodiments of the present disclosure;

[0010] Fig. 3 is a schematic diagram of a rotating seat according to embodiments of the present disclosure;

[0011] Fig. 4 is a schematic diagram of a rotating seat according to embodiments of the present disclosure.

[0012] Reference signs: 10: handle, 20: shell, 21: notch, 30: heating rod, 31: cover body, 40: rotating seat, 41: shifting part, 41': shifting part, 42: positioning elastic part, 43: sleeving part, 44: shifting piece, 45: elastic piece, 51: motor, 52: mounting shaft, 53: gear, 54: bearing and 60: hair curling cavity.

Detailed Description

[0001] Embodiments of the present disclosure relate generally to hair styling tools, and particular embodiments relate to an automatic hair curler.

[0002] Automatic hair curlers according to embodiments of the present disclosure, which can achieve automatic hair curling, may improve hair curling efficiency while also being simple to operate.

[0003] According to embodiments of the present disclosure, an automatic hair curler may include a handle, a hair curling component installed on the handle. The hair curling component may include a shell arranged on the handle, a heating rod arranged on the handle and a rotating seat that is sleeved at the outside of the heating rod and rotatable relative to the heating rod. A hair curling cavity with an upper end opening may be formed between an inner surface of the rotating seat and an outer surface of the heating rod. A notch extending downwards from a top end face of the shell for placing hair may be formed at an upper end of the shell, where the notch may be communicated with the opening of the hair curling cavity. A shifting part for shifting the hair to wind the hair on the heating rod when the rotating seat rotates may be arranged on the rotating seat. The automatic hair curler may also include a driving device used for driving the rotating seat to rotate relative to the heating rod. When hair is inserted into a hair curling cavity of the automatic hair curler and the driving device drives the rotating seat, one or more features on the rotating seat (e.g., a shifting part or a positioning elastic part) may wind the hair around the heating rod as the heating rod is heated, thereby automatically curling the inserted hair.

[0004] The driving device may include a motor installed on the handle, a mounting shaft fixedly connected with the handle, a bearing for pivoting the rotating seat on the mounting shaft and a gear that is fixed on the rotating seat and is synchronously

coupled with a rotating shaft of the motor. The heating rod may be installed at an upper end of the mounting shaft.

[0005] A rotating seat may include a sleeving part that is sleeved on an outer ring of the bearing and fixedly connected with the outer ring of the bearing and a shifting piece distributed on the periphery of the sleeving part, where the hair curling cavity may be located between an inner surface of the shifting piece and the outer surface of the heating rod.

[0006] A shifting part may be composed of projections that are convexly arranged on a side wall of the shifting piece, and a positioning elastic part may be arranged on an inner wall of the shifting piece.

[0007] An elastic piece gradually inclined outwards from bottom to top may be arranged at an upper end of the shifting piece, and the shifting part may be located at a juncture of the shifting piece and the elastic piece.

[0008] The automatic hair curler may further include a cover body installed at a top end of the heating rod, where an outer surface of the cover body is an arc surface.

[0009] According to embodiments of the present disclosure, hair may be put in a notch formed in the shell of an automatic hair curler, and since the notch is communicated with the opening of the hair curling cavity, the hair put in the notch can enter the hair curling cavity, and the shifting part can wind the hair on the heating rod during rotation of the rotating seat to achieve automatic hair curling in a simple operation. In addition, due to the arrangement of the shell and the rotating seat, the heating rod may be effectively prevented from scalding a user, and thus may be safer to use when compared with prior art hair curlers.

[0010] Specific embodiments according to the present disclosure will be further described below in combination with the drawings.

[0011] An automatic hair curler, as shown in Fig. 1 to Fig. 4, may include a handle 10, a hair curling component installed on the handle 10 and a driving device. When in use, under the action of the driving device, the hair curling component starts working

to accomplish a hair curling process, and since a user holds the handle 10, scalding may be avoided.

[0012] The hair curling component may include a shell 20, a heating rod 30 and a rotating seat 40. The shell 20 may extend at least partially around (and up to entirely around) the circumference of the heating rod 30, and may extend a height axially overlapping the entire height of the heating rod 30. The shell 20 may be radially spaced from the heating rod 30, such that hair may be inserted between the shell 20 and the heating rod 30. In some embodiments, the rotating seat 40 may be disposed between the heating rod 30 and the shell 20, wherein the heating rod 30, rotating seat 40 and shell 20 may be radially spaced apart from each other, and wherein hair may be inserted between the heating rod 30 and the rotating seat 40. The rotating seat 40 may extend at least partially around a circumference of the heating rod 30 and may extend a height from the handle 10 that at least partially overlaps the heating rod 30.

[0013] Fig. 1 shows a partial sectional view of an automatic hair curler according to embodiments of the present disclosure, where a portion of the shell 20 is sectioned to show the internal features, including the heating rod 30 and the rotating seat 40. As shown, a shifting part 41 for shifting hair may be arranged on the rotating seat 40. Both of the heating rod 30 and the shell 20 are fixed on the handle 10, while the rotating seat 40 is sleeved around the outside of the heating rod 30 and can rotate relative to the heating rod 30 under the drive of the driving device. Meanwhile, a hair curling cavity 60 used for curling the hair can be formed between an outer surface of the heating rod 30 and an inner surface of the rotating seat 40, where an upper end of the hair curling cavity 60 is open. In addition, a notch 21 communicated with the hair curling cavity 60 is formed on the shell 20, where the notch 21 extends from a top end face of the shell 20 downwards. In this way, during use by the user, the hair may be put in the hair curling cavity 60 from the notch 21, and under the drive of the driving device, the rotating seat 40 starts rotating. Since both of the shell 20 and a mounting shaft 52 are fixed relative to the handle 10, a shifting part 41 arranged on the rotating seat 40 can wind the hair on the heating rod 30 with the rotation of the rotating seat 40, where a curling effect of the hair wound on the heating rod 30 can be achieved in a continuous heating process of the heating rod 30. Furthermore, due to the

arrangement of the shell 20 and the rotating seat 40, the user can be effectively isolated from a heat source of the heating rod 30 to avoid scalding the user by the heating rod 30 in a hair curling process, thus being safer to use.

[0014] Fig. 2 shows a cross sectional view of the hair curler shown in Fig. 1. As shown in Fig. 2, a driving device of the hair curler may include a motor 51, the mounting shaft 52, a bearing 54 and a gear 53. The motor 51 may be installed on the handle 10, and the gear 53 may be fixedly connected with the rotating seat 40, where the gear 53 is synchronously coupled with a rotating shaft of the motor 51. In addition, the mounting shaft 52 may be fixed to the handle 10, the heating rod 30 may be fixed at the upper end of the mounting shaft 52, and the rotating seat 40 may be pivoted on the mounting shaft 52 by the bearing 54. In this way, under the drive of the motor 51, the gear 53 starts rotating, and the rotating seat 40 can rotate under the action of the gear 53 and the bearing 54, and the rotating seat 40 can stably rotate relative to the heating rod 30.

[0015] As shown in Fig. 3, a rotating seat 40 may include a sleeving part 43 and a shifting piece 44, where the shifting piece 44 is distributed on the periphery of the sleeving part 43 and extends outwardly from the sleeving part 43. The sleeving part 43 may be sleeved on an outer ring of the bearing 54 and fixedly connected with the outer ring of the bearing 54. A hair curling cavity 60 can be formed by the inner surface of the shifting piece 44 and the outer surface of the heating rod 30 in cooperation, so the entire structure is more stable.

[0016] The shifting piece 44 may extend at least partially around a circumference of sleeving part 43 (such that the shifting piece may extend at least partially around an assembled heating rod). For example, in the embodiment shown in Figs. 3 and 4, two shifting pieces 44 may be spaced apart around the circumference of the sleeving part 43, thereby extending less than the entire circumference of the sleeving part 43. In some embodiments, one or more shifting pieces may extend the entire circumference around the sleeving part or less than the entire circumference of the sleeving part. Further, the shifting piece 44 may include at least one shifting part 41, where shifting parts 41 may be formed of projections that are convexly arranged as part of a side

wall of the shifting piece 44. Shifting parts 41 may help shifting or otherwise maneuvering of hair inserted into the automatic hair curler. Meanwhile, a positioning elastic part 42 may be arranged on an inner wall of the shifting piece 44, so the hair can be wound on the heating rod 30 more smoothly in a hair curling process, and accordingly, the hair curling effect may be better. The positioning elastic part 42 may extend inwardly from the side wall of the shifting piece 44, such that the positioning elastic part 42 may extend into the hair curling cavity 60 formed between the inner surface of the shifting piece 44 and the outer surface of the heating rod 30.

[0017] In some embodiments, a rotating seat may adopt the structure as shown in Fig. 4, where an elastic piece 45 may be arranged at an upper end of the shifting piece 44. The elastic piece 45 may gradually incline outwards from the upper end of the shifting piece 44, inclining in a direction from a bottom of the elastic piece to a top of the elastic piece. The elastic piece 45 may have certain flexibility, and thus may shake during rotation of the rotating seat 40 and may also play a certain combing function on the hair, so as achieve the effect of winding the hair on the heating rod 30 more smoothly. The shifting part 41' may be located at a juncture of the shifting piece 44 and the elastic piece 45. The positioning elastic part and the elastic piece described above may be made of a silica gel material or such elastic materials as rubber blocks or plastic blocks, etc.

[0018] According to some embodiments of the present disclosure, an automatic hair curler may include a handle, a heating rod extending from the handle, a rotating seat extending at least partially around the heating rod, a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod, a motor installed in the handle, a mounting shaft fixedly connected to the handle, and a gear fixed on the rotating seat and synchronously coupled with a rotating shaft of the motor, wherein the heating rod is installed at an upper end of the mounting shaft. A sleeving part of the rotating seat may be sleeved around at least a partial axial length of the mounting shaft, such that the sleeving part may be axially retained to the handle of the automatic hair curler and rotatable around the mounting shaft. For example, the hair curler shown in Fig. 2 includes a mounting shaft 52 fixed to the handle and a heating rod 30 fixed to the mounting shaft 52. A rotating seat 40 is disposed around

at least a portion of the heating rod 30 and rotatably retained to the handle. Particularly, a sleeving part of the rotating seat 40 may be sleeved around at least a partial axial length of the mounting shaft 52 and rotatable around the mounting shaft 52 by gear 53 when driven by the motor 51. In some embodiments, the diameter of the heating rod 30 may be greater than the diameter of the mounting shaft 52, whereby the diameter of the heating rod may act to axially retain the sleeving part of the rotating seat 40. In some embodiments, one or more gears 53 may act to axially retain the sleeving part of the rotating seat 40 to the handle.

[0019] In some embodiments, such as shown in Figs. 1 and 2, a bearing 54 may be disposed between a mounting shaft 52 and a sleeving part 43 of a rotating seat 40, where the bearing 54 may be fixed to either the mounting shaft 52 or the sleeving part 43. In some embodiments, an outer surface of a mounting shaft and/or an inner surface of a sleeving part may be coated with a bearing material, such as a reduced friction material, where the coated surface may act as the bearing between the mounting shaft and the sleeving part of a rotating seat.

[0020] As shown in Figs. 1 and 2, an automatic hair curler may further include a cover body 31 installed at a top end of the heating rod 30. An outer surface of the cover body 31 may be an arc surface, which may provide a better guide function for the hair in the hair curling process.

[0021] While the present disclosure has been described with respect to a limited number of embodiments, those skilled in the art, having benefit of this disclosure, will appreciate that other embodiments may be devised which do not depart from the scope of the disclosure as described herein. Accordingly, the scope of the disclosure should be limited only by the attached claims.

CLAIMS

1. An automatic hair curler, comprising:
 - a handle;
 - a hair curling component installed on the handle, wherein the hair curling component comprises:
 - a heating rod extending from the handle;
 - a shell disposed at least partially around the heating rod;
 - a rotating seat that is sleeved around the heating rod and rotatable relative to the heating rod; and
 - a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod, the hair curling cavity having an upper end opening; and
 - a driving device operatively connected to the rotating seat to rotate the rotating seat relative to the heating rod.
2. The automatic hair curler of claim 1, wherein the driving device comprises:
 - a motor installed in the handle;
 - a mounting shaft fixedly connected to the handle; and
 - a bearing disposed between the mounting shaft and a gear, the gear being fixed on the rotating seat and synchronously coupled with a rotating shaft of the motor;wherein the heating rod is installed at an upper end of the mounting shaft.
3. The automatic hair curler of claim 2, wherein the rotating seat comprises:
 - a sleeving part that is sleeved on an outer ring of the bearing, the sleeving part of the rotating seat being fixed to the gear; and

at least one shifting piece distributed on the periphery of the sleeving part and extending outwardly from the sleeving part, wherein the hair curling cavity is located between an inner surface of the shifting piece and the outer surface of the heating rod.

4. The automatic hair curler of claim 3, wherein the sleeving part is fixedly connected with the outer ring of the bearing.

5. The automatic hair curler of claim 1, wherein the rotating seat comprises:

a sleeving part disposed within a portion of the handle;

a shifting piece disposed around the heating rod and extending from the sleeving part, the shifting piece comprising a plurality of projections convexly arranged on a side wall of the shifting piece;

the hair curling cavity formed between an inner surface of the shifting piece of the rotating seat and the outer surface of the heating rod.

6. The automatic hair curler of claim 1, wherein the rotating seat comprises:

a sleeving part disposed within a portion of the handle;

a shifting piece disposed around the heating rod and extending from the sleeving part;

an elastic piece gradually inclined outwards from an upper end of the shifting piece;

and

a shifting part located at a juncture between the shifting piece and the elastic piece;

the hair curling cavity formed between an inner surface of the shifting piece of the rotating seat and the outer surface of the heating rod.

7. The automatic hair curler of claim 1, further comprising a cover body installed at a top end of the heating rod, wherein an outer surface of the cover body is an arc surface.
8. The automatic hair curler of claim 1, further comprising a notch extending downwards from a top end face of the shell, the notch being in communication with the hair curling cavity.
9. The automatic hair curler of claim 1, further comprising a positioning elastic part extending from the inner surface of the rotating seat into the hair curling cavity.
10. An automatic hair curler, comprising:
 - a handle;
 - a heating rod extending from the handle;
 - a rotating seat extending at least partially around a circumference of the heating rod and extending a height from the handle at least partially overlapping a height of the heating rod; and
 - a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod.
11. The automatic hair curler of claim 10, further comprising a shell mounted to the handle, the shell extending a height greater than the height of the heating rod from the handle.
12. The automatic hair curler of claim 11, wherein the shell comprises a notch extending from an upper end of the shell towards the handle, the notch being in communication with an opening of the hair curling cavity.

13. The automatic hair curler of claim 11, wherein the shell extends entirely around the circumference of the heating rod.
14. The automatic hair curler of claim 11, wherein the shell is radially spaced apart from the heating rod.
15. An automatic hair curler, comprising:
- a handle;
 - a heating rod extending from the handle;
 - a rotating seat extending at least partially around the heating rod; and
 - a hair curling cavity formed between an inner surface of the rotating seat and an outer surface of the heating rod, the hair curling cavity having an opening formed at an upper end of the rotating seat opposite the handle.
16. The automatic hair curler of claim 15, wherein the rotating seat comprises:
- a sleeving part rotatably mounted to the handle; and
 - at least one shifting piece extending outwardly from the sleeving part and at least partially around a circumference of the heating rod.
17. The automatic hair curler of claim 16, wherein the rotating seat comprises two space apart shifting pieces.
18. The automatic hair curler of claim 16, wherein the at least one shifting piece extends the entire circumference of the heating rod.
19. The automatic hair curler of claim 15, further comprising:
- a motor installed in the handle;

a mounting shaft fixedly connected to the handle; and

a gear fixed on the rotating seat and synchronously coupled with a rotating shaft of the motor;

wherein the heating rod is installed at an upper end of the mounting shaft.

20. The automatic hair curler of claim 19, wherein a diameter of the heating rod is greater than a diameter of the mounting shaft.

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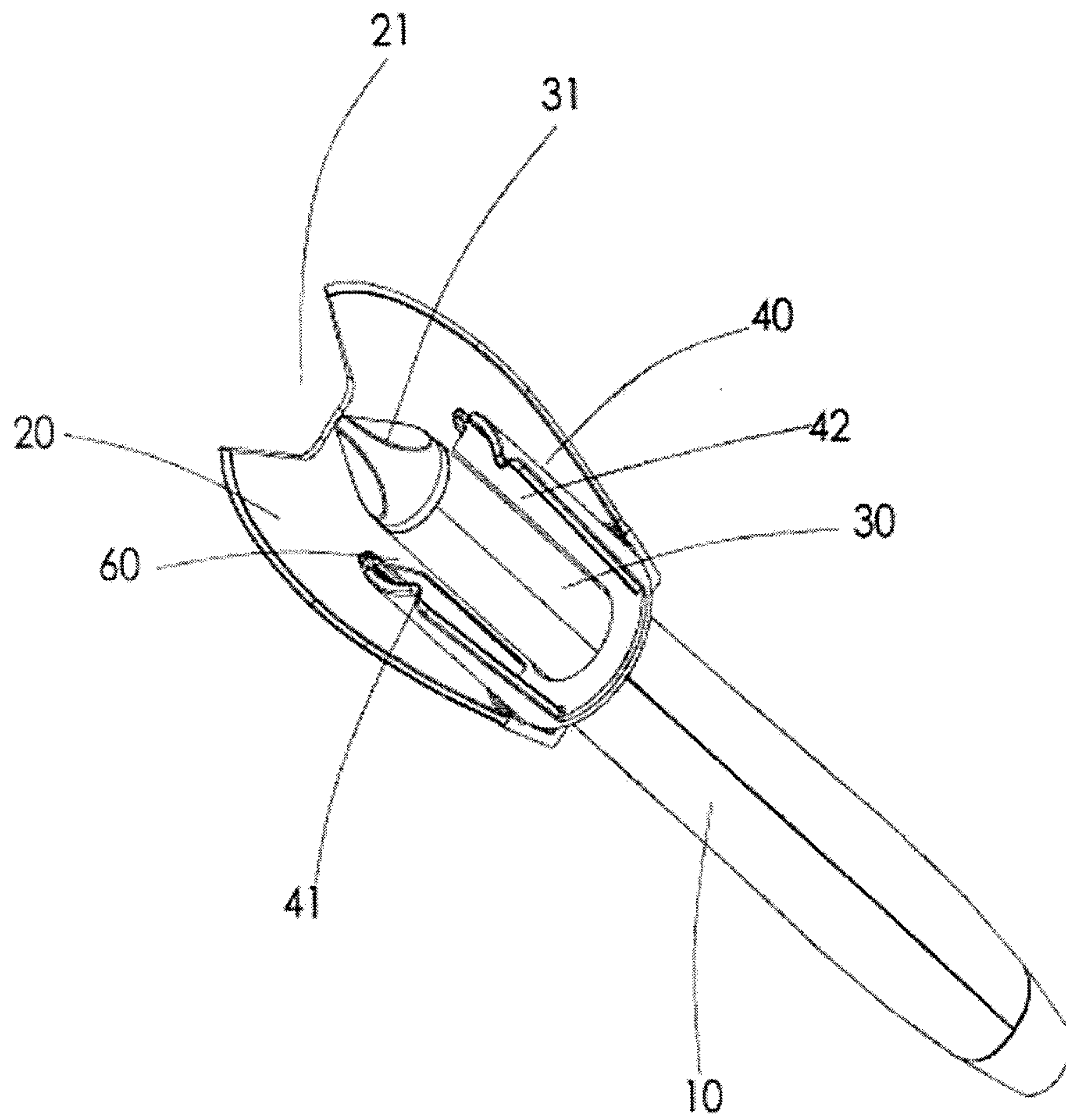


FIG. 1

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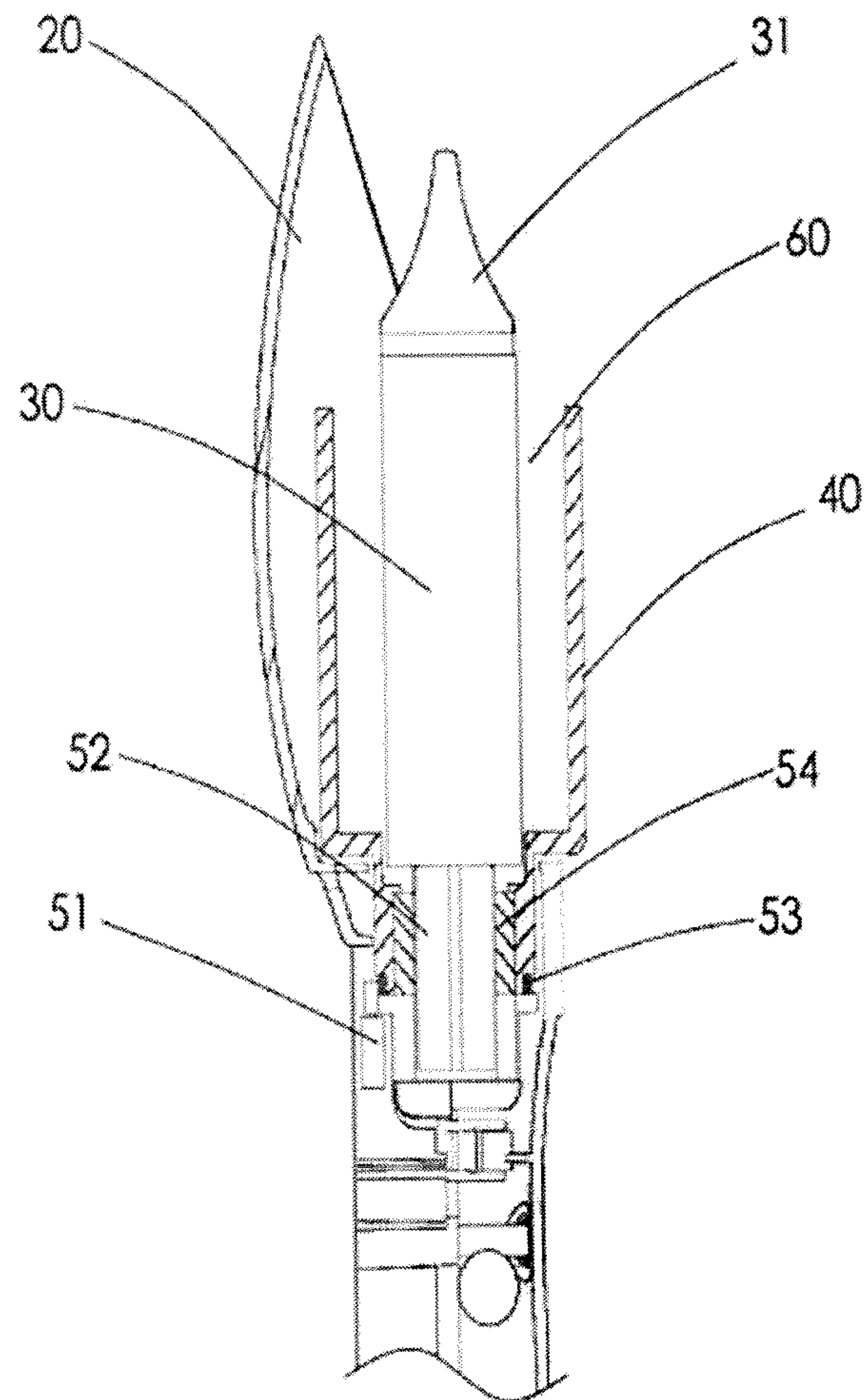


FIG. 2

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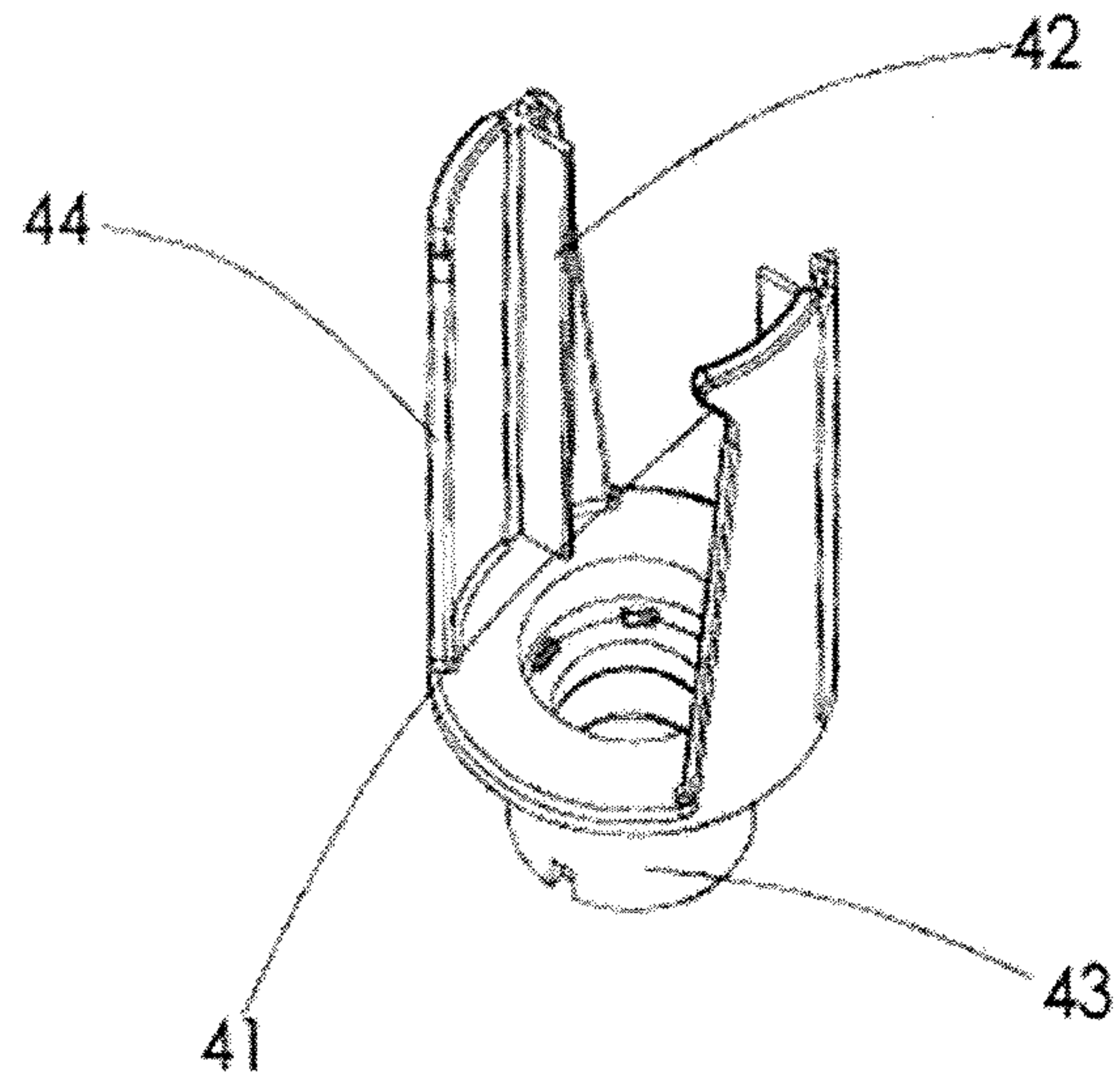


FIG. 3

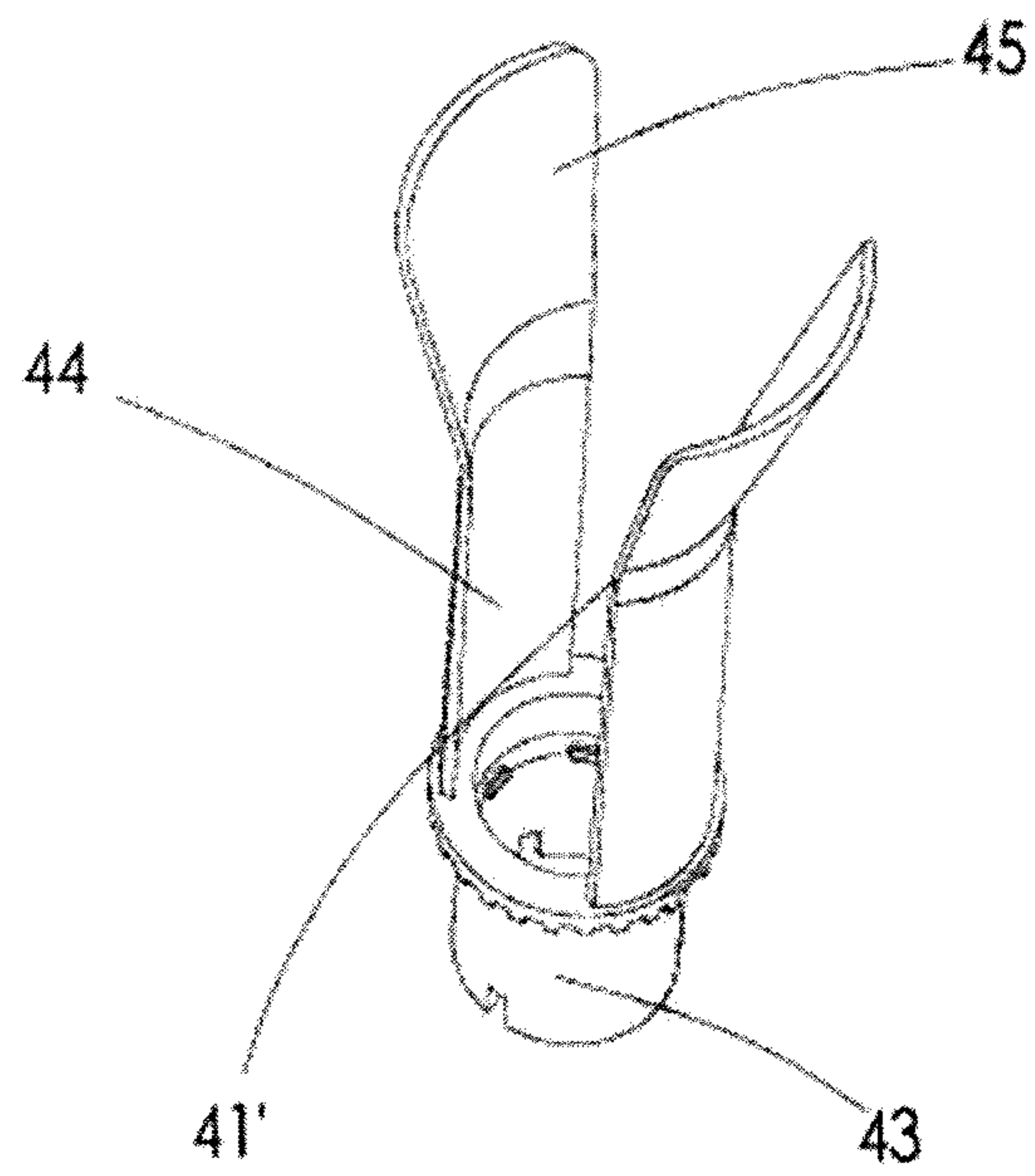


FIG. 4

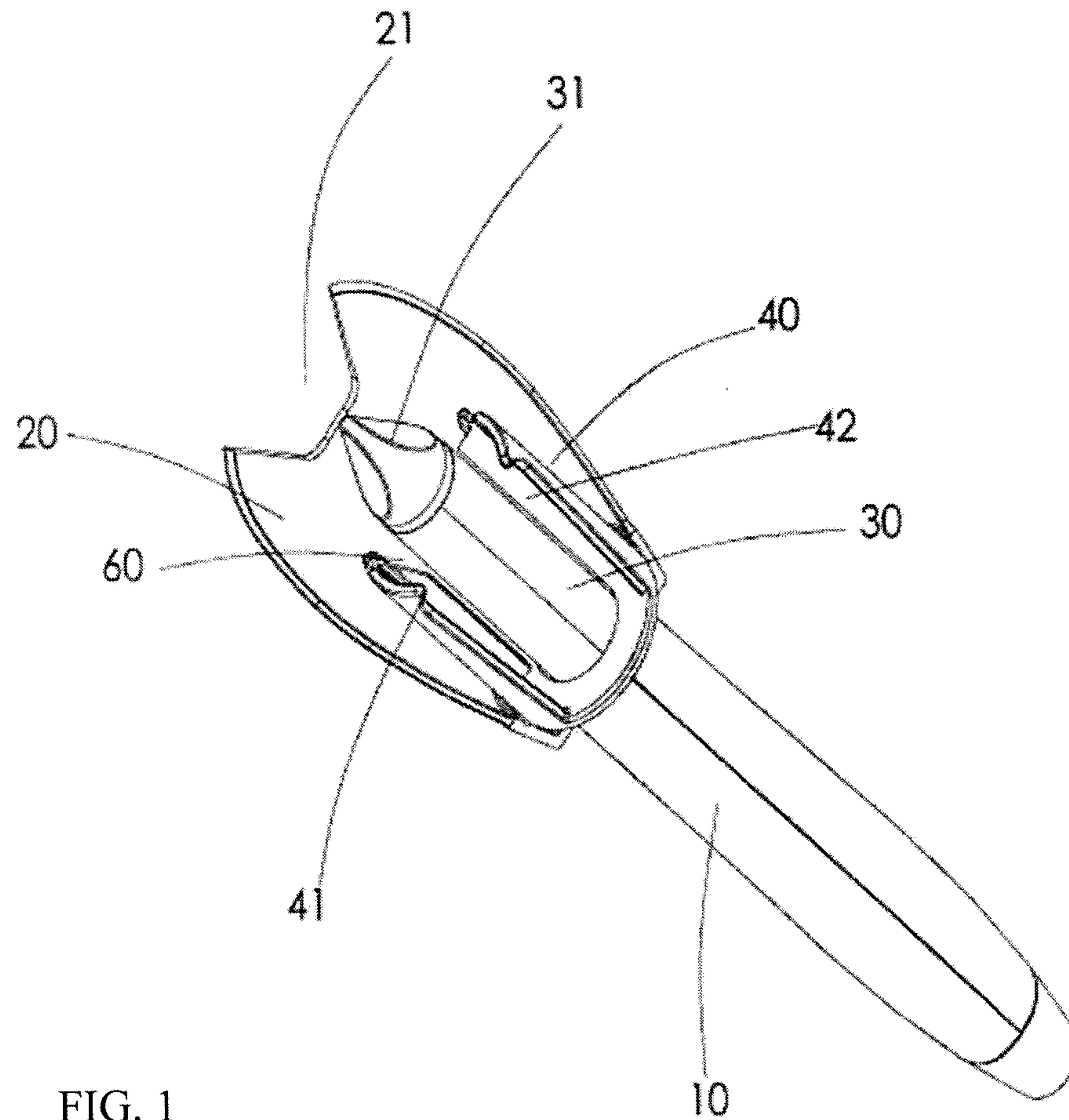


FIG. 1