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(54) Title: APPLICATOR WITH CARTRIDGES CONFIGURED TO DELIVER MICROCURRENT FOR SKIN TREATMENT

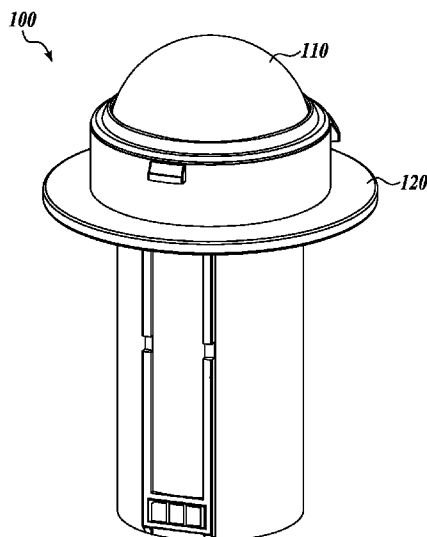


FIG. 1

(57) Abstract: A skin care system including a dispensing device configured to administer a light therapy and a microcurrent treatment, and an applicator configured to apply a formula, comprising a reservoir configured to hold the formula, a first roller ball configured to apply the formula, a connection configured to attach the cartridge to the dispensing device, and a microcontroller configured to direct the dispensing device to apply the microcurrent treatment.

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

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

APPLICATOR WITH CARTRIDGES CONFIGURED TO DELIVER
MICROCURRENT FOR SKIN TREATMENT

CROSS-REFERENCES TO RELATED APPLICATIONS

- 5 This application claims the benefit of U.S. Patent Application No. 17/733365, filed on April 29, 2022, and French Patent Application No. FR 2206218, filed on June 23, 2022; the contents of which are hereby incorporated by reference in their entirety.

SUMMARY

- 10 This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This summary is not intended to identify key features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

- 15 In one aspect, a skin care system comprising a dispensing device configured to administer a light therapy and a microcurrent treatment, and an applicator configured to apply a formula, comprising a reservoir configured to hold the formula, a first roller ball configured to apply the formula, a connection configured to attach the cartridge to the dispensing device, and a microcontroller configured to direct the dispensing device to apply the microcurrent treatment is disclosed.

- 20 In another aspect, a method of administering multiple skin treatments, using the skin care system, the method including selecting an applicator filled with a formula, placing the applicator into the dispensing device, identifying a microcurrent treatment to apply based on the applicator, applying the formula, administering light therapy, and administering the microcurrent treatment is disclosed.

25

DESCRIPTION OF THE DRAWINGS

- 30 The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same become better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is an example applicator, in accordance with the present technology;

FIGURE 2 is an example cross-section of an applicator, in accordance with the present technology;

FIGURE 3 is an example dispensing device, in accordance with the present technology; and

FIGURE 4 is an example method of using a skin care system, in accordance with the present technology.

5

DETAILED DESCRIPTION

While illustrative embodiments have been illustrated and described, it will be appreciated that various changes can be made therein without departing from the spirit and scope of the invention.

Described herein is an applicator containing a formula and configured to attach to a dispensing device capable of administering both light therapy and microcurrent treatment. In some embodiments, the applicator includes a microcontroller to direct the dispensing device to administer a specific type of microcurrent treatment, such as pulsed or continuous microcurrent treatment. In some embodiments, the applicator includes one or more metal roller balls and one or more wires. In some embodiments, the applicator includes a comparator to connect to the one or more wires, circulate the microcurrent up one wire, to the one or more roller balls, and down a second wire.

FIG. 1 is an example applicator, in accordance with the present technology. The applicator 100 may include a roller ball 110, and an attachment 120.

The roller ball 110 may be configured to distribute and apply a formula located a reservoir inside the applicator 100 (as shown in FIG. 2). In some embodiments, the roller ball 110 is plastic, but in other embodiments, the roller ball 110 may be glass or metal.

In some embodiments, the applicator 100 also includes an attachment 120 configured to secure the applicator 100 into a dispensing device, such as the dispensing device 200 in FIG. 3. While the attachment 120 is illustrated as a disk shaped to couple to a dispensing device, the attachment 120 may take any form capable of securing the applicator 110 to a dispensing device including a threaded attachment, a magnet, or an attachment configured to snap into the dispensing device. In some embodiments, the attachment 120 is clear so that the dispensing device is visible through the attachment.

In operation, the applicator 100 can be placed inside a dispensing device (as shown in FIG. 3) and secured to the dispensing device with the attachment 120. The roller ball 110 can be rolled over a surface, such as a user's skin, to apply a formula.

FIG. 2 is an example cross-section of an applicator 100, in accordance with the present technology. The applicator 100 may include a first roller ball 110a, a second roller ball 110b, an attachment 120, a reservoir 130 configured to hold a formula 140, a piston 150, a microcontroller 160, and a processor 170. In some embodiments, the applicator 110
5 further includes one or more wires 190a, 190b.

In some embodiments, the applicator may include two or more roller balls 110a, 110b. In some embodiments, the two or more roller balls 110a, 110b are configured to apply microcurrent treatment. In some embodiments, the two or more roller balls 110a, 110b are further configured to measure the hydration of a surface. In some embodiments,
10 the surface is skin. In some embodiments, the surface is a human face.

In some embodiments, the reservoir 130 is located inside the applicator 100, and is configured to hold a formula. In some embodiments, the formula is a skin care formula. In some embodiments, the skin care formula is a moisturizer, a toner, an acne treatment, a wrinkle treatment, fine line treatment, or a cosmetic. As the roller balls 110a, 110b rolls,
15 formula 140 from the reservoir 130 is applied to a surface.

In some embodiments, the applicator 100 further includes a piston 150 configured to push the formula 140 towards the roller balls 110a, 110b as the formula is applied. In some embodiments, the piston 150 is directed by circuitry on a dispensing device or on the applicator itself to push the formula 140.

20 In some embodiments, the applicator 100 includes a microcontroller 160 configured to identify the type of formula 140 inside the applicator 100 to a dispensing device. In some embodiments, the microcontroller 160 further identifies the type of treatment the applicator should apply, *i.e.*, the type of microcurrent treatment that should be applied with the type of formula 140. In some embodiments, the microcurrent treatment is continuous.
25 In some embodiments, the microcurrent treatment is pulsed. In some embodiments, the microcurrent treatment is applied for a specific time amount, such as one minute, or five minutes. In some embodiments, the applicator stops administering microcurrent treatment when the specific time amount has elapsed. In some embodiments, the microcurrent treatment may be one of any number of intensities or frequency. The microcontroller 160
30 may also be used to identify any number of things about the formula 140 or applicator 100, including the amount of formula 140 inside the applicator 100, the expiration date of the formula 140 inside the applicator 100, or when to replace the applicator.

In some embodiments, the applicator 100 further includes one or more wires 190a, 190b. In some embodiments, the one or more wires 190a, 190b run the length of the applicator 110. In some embodiments, the one or more wires 190a, 190b couple to the one or more roller balls 110a, 110b to apply a microcurrent treatment. In some embodiments, the attachment 120 is made of a conductive material. In some embodiments, the one or more wires 190a, 190b are connected to the attachment to apply the microcurrent treatment. In some embodiments, the one or more wires 190a, 190b receive the current from a comparator inside the applicator or inside a dispensing device (as shown in FIG. 3).

In operation, a current is applied to the first wire 190a by, for example, a comparator inside a dispensing device, and to the first and second roller balls 110a, 110b and then down the second wire 190b. This current generates a microcurrent treatment. In some embodiments, the microcurrent can further measure the hydration of a user's skin.

FIG. 3 is an example dispensing device, in accordance with the present technology. In some embodiments, the applicator 100 can be attached to a dispensing device 200. In some embodiments, the dispensing device includes an end 210, one or more light sources 220a, 220b, an actuator 230, a contactless reader 240, and a comparator 250. In some embodiments, the applicator 100 connects to the dispensing device 200.

In some embodiments, the dispensing device 200 includes an end 210. The end 210 may be configured to be seen through the attachment 120 on the applicator 100. In some embodiments, the end 210 includes one or more light sources 220a, 220b configured to administer light therapy to a surface while the formula 140 is being applied.

In some embodiments, the one or more light sources 220a, 220b are LEDs. In some embodiments, there are only two light sources 220a, 220b on the dispensing device. In some embodiments, a first light source 220a is configured to administer light therapy in a first wavelength. In some embodiments, a second light source 220b is configured to administer light therapy in a second wavelength. In some embodiments, the light therapy in the first wavelength and the light therapy in the second wavelength are administered simultaneously. In some embodiments, the light therapy and applying the formula happen simultaneously. In some embodiments, there are one or more light sources 220a, 220b in a ring, located around the end 210 of the dispensing device 200.

In some embodiments, the dispensing device 200 includes one or more actuators 230. While the actuator 230 is illustrated as a button, in some embodiments, the actuator 230 may be a switch, a capacitive touch type button, a dial, or the like. The actuator may

be configured to begin the administration of light therapy, to apply the formula, to control the microcurrent treatment, or all three. In some embodiments, the dispensing device 200 also includes a contact-less chip reader 240 to read the microcontroller 160 on the applicator 100.

5 In some embodiments, the dispensing device 200 further includes a comparator 250 configured to push a current through one or more wires to one or more roller balls of the applicator (as seen in FIG. 2). In some embodiments, the comparator is configured to circulate a current up one wire and down the other. In some embodiments, the comparator 250 is configured to pulse the microcurrent in bursts. In some embodiments, the
10 comparator 250 is configured to run the microcurrent continuously.

In operation, a user may place an applicator 100 into the dispensing device 200. When the actuator 230 is actuated, the formula is applied, the light therapy is administered, or both, simultaneously. A user may then apply the formula with the applicator 100. Additionally, the microcurrent treatment can be administered at the same time as the light
15 therapy and applying the formula.

FIG. 4 is an example method 300 of using a skin care system, in accordance with the present technology.

In block 410, an applicator is selected having a specific formula and configured to direct the applicator and/or the dispensing device to administer a specific microcurrent
20 treatment. In some embodiments, the microcurrent treatment is continuous. In some embodiments, the microcurrent treatment is pulsed. In some embodiments, the microcurrent treatment is applied for a specific time amount, such as one minute, or five minutes. In some embodiments, the applicator stops administering microcurrent treatment when the specific time amount has elapsed. In some embodiments, the applicator further
25 directs the applicator and/or the dispensing device to administer the microcurrent treatment at a specific intensity.

In block 420, the applicator is attached to the dispensing device. In some embodiments, the applicator is attached to the dispensing device with an attachment. In some embodiments, the applicator is clear to allow one or more light sources on the
30 dispensing device to emit light through the attachment. In some embodiments, the applicator slides, clicks, or connects into the dispensing device. In some embodiments, the applicator attaches to the dispensing device with a threaded connection or a magnet.

In block 430, the dispensing device reads the microprocessor (or contactless chip) on the applicator with a contactless reader. In some embodiments, the microprocessor on the applicator identifies the type of formula, the type of microcurrent treatment to administer, the lifetime of the applicator, the amount of formula inside the applicator, or a combination thereof.

In block 440, formula is applied as the roller ball is rolled along a surface. In some embodiments, the surface is a user's face. In some embodiments, the surface may be any portion of the user's skin.

In block 450, light therapy is applied with the dispensing device. In some embodiments, the dispensing device includes an actuator configured to begin both the application of the formula and the administration of the light therapy. In some embodiments, the dispensing device includes two or more light sources configured to administer the light therapy. In some embodiments, the dispensing device is configured to deliver two or more types of light therapy, either one at a time, or simultaneously. In such embodiments, one light source is configured to administer a first light therapy, and another light source is configured to administer a second light therapy. In some embodiments, the first light therapy may include emitting a first light at a first wavelength, and the second light therapy may include emitting a second light at a second wavelength.

In block 460, the microcurrent treatment is applied with the applicator. In some embodiments, blocks 440, 450, and 460 occur simultaneously.

In block 470, the method ends.

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A skin care system comprising:
a dispensing device configured to administer a light therapy and a microcurrent treatment; and
an applicator configured to apply a formula, comprising:
a reservoir configured to hold the formula,
a first roller ball configured to apply the formula,
a connection configured to attach the cartridge to the dispensing device, and
a microcontroller configured to direct the dispensing device to apply the microcurrent treatment.
2. The skin care system of Claim 1, wherein the light therapy and the microcurrent treatment are administered simultaneously with the application of the formula.
3. The skin care system of Claim 1 or Claim 2, wherein the dispensing device is configured to apply two or more wavelengths of light therapy simultaneously.
4. The skin care system of any one of Claims 1-3, wherein the dispensing device administers light therapy through one or more light sources.
5. The skin care system of Claim 4, wherein the one or more light sources are a ring of LEDs around a top of the dispensing device.
6. The skin care system of Claim 4 of Claim 5, wherein the applicator further comprises a clear attachment so that the light from the one or more light sources on the dispensing device can pass through the attachment to administer the light therapy.
7. The skin care system of any one of Claims 1-6, wherein the applicator further comprises:
a comparator; and
at least a second metal roller ball, wherein the first roller ball and the second roller ball distribute microcurrent treatment.

8. The skin care system of Claim 7, wherein the comparator is inside the dispensing device.

9. The skin care system of Claim 8, wherein the applicator further comprises one or more wires to apply current to the first metal roller ball and the second metal roller ball from the comparator inside the dispensing device.

10. The skin care system of any one of Claims 1-9, wherein the applicator further comprises circuitry to measure the hydration of the surface.

11. A method of administering multiple skin treatments, using the device of Claim 1, the method comprising:

- selecting an applicator filled with a formula;
- placing the applicator into the dispensing device;
- identifying a microcurrent treatment to apply based on the applicator;
- applying the formula;
- administering light therapy; and
- administering the microcurrent treatment.

12. The method of Claim 11, wherein applying of the formula, the administering the light therapy, and administering the microcurrent treatment is done simultaneously.

13. The method of Claim 11 or Claim 12, wherein the dispensing device administers light therapy through one or more light sources.

14. The method of any one of Claims 11-13, wherein the method further comprises identifying the formula in the applicator with the dispensing device.

15. The method of any one of Claims 11-14, wherein the method further comprises:

- outputting a voltage through a comparator in the applicator; and
- distributing a current with two or more metal balls in a roller ball of the applicator to administer microcurrent treatment.

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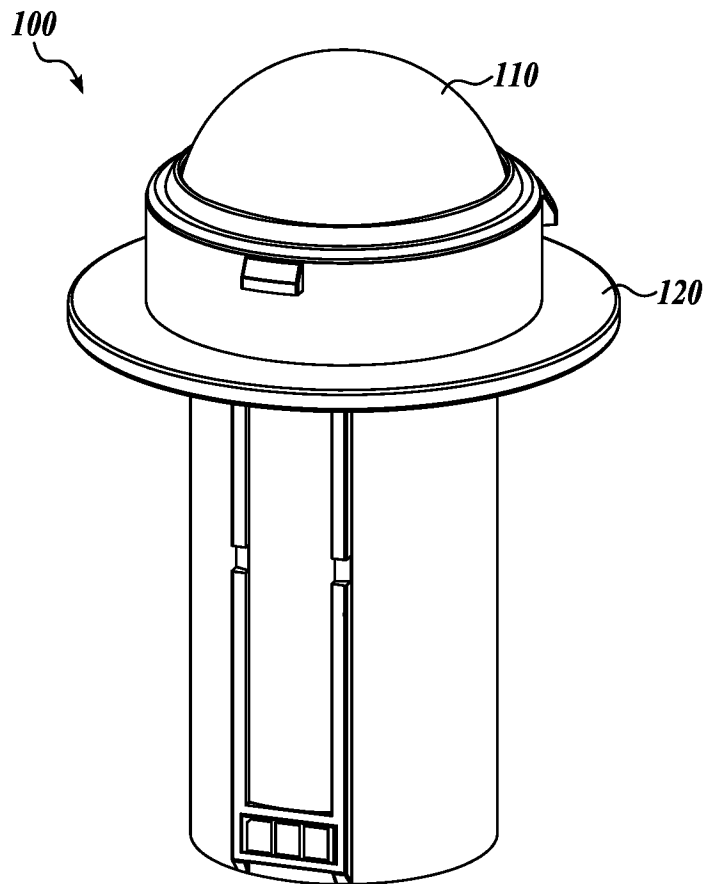


FIG. 1

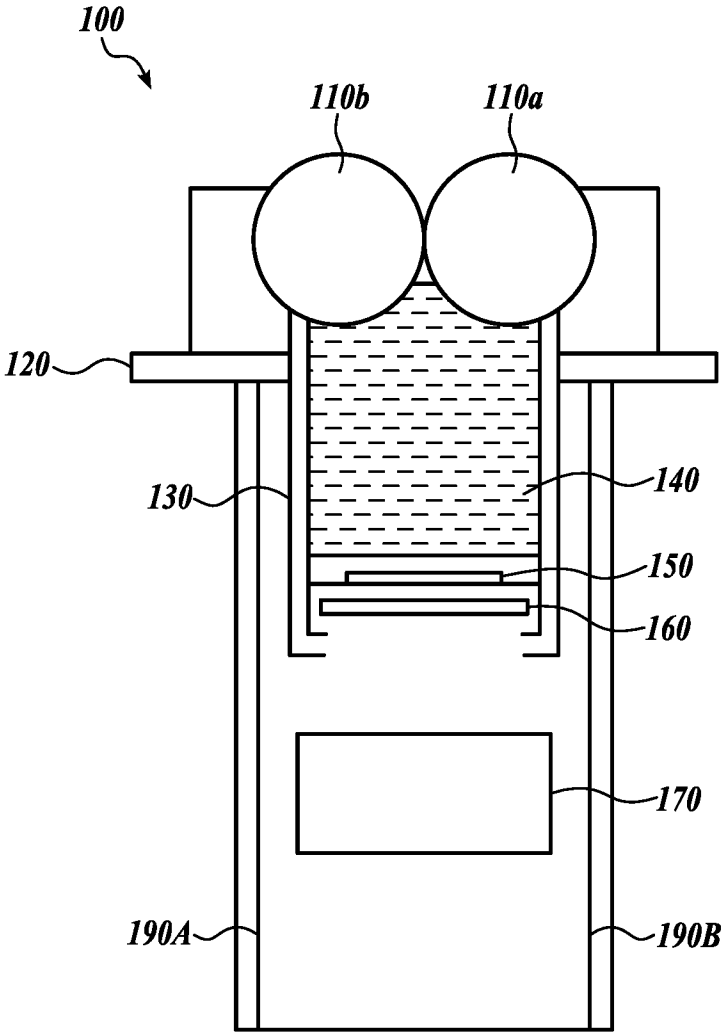
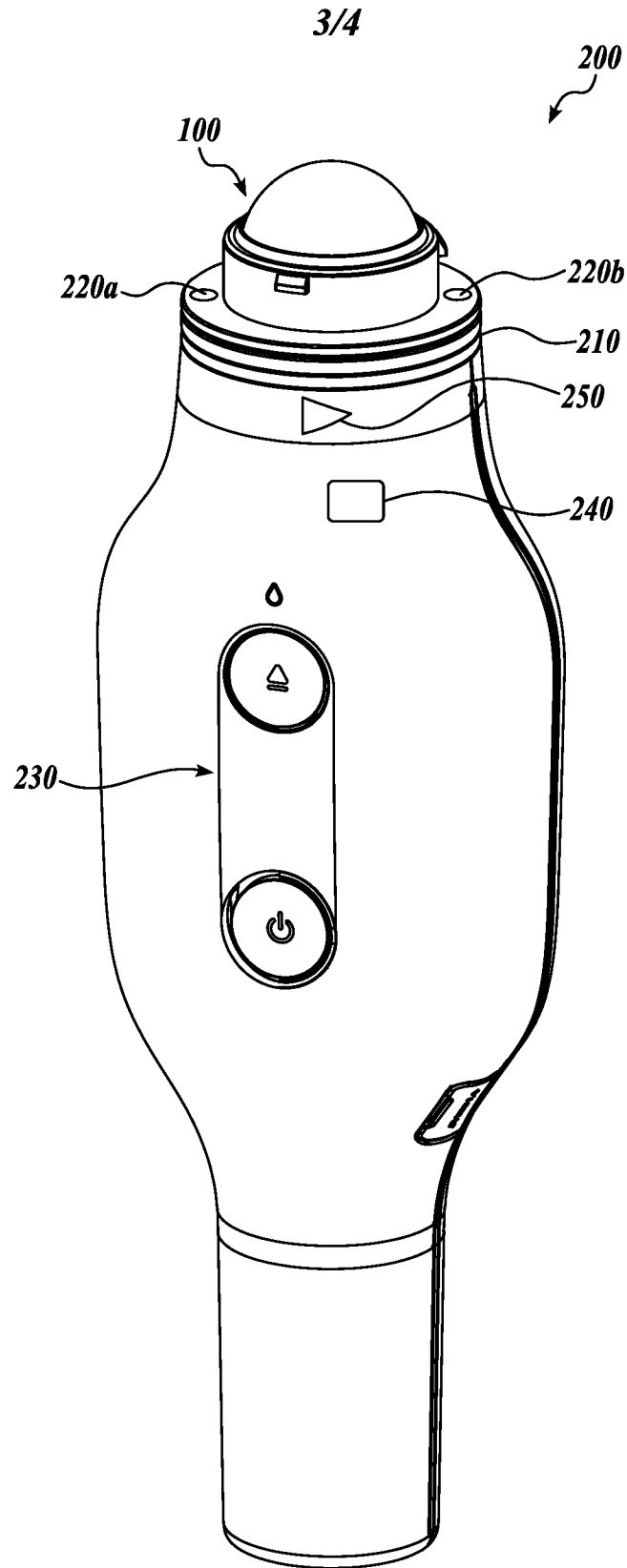
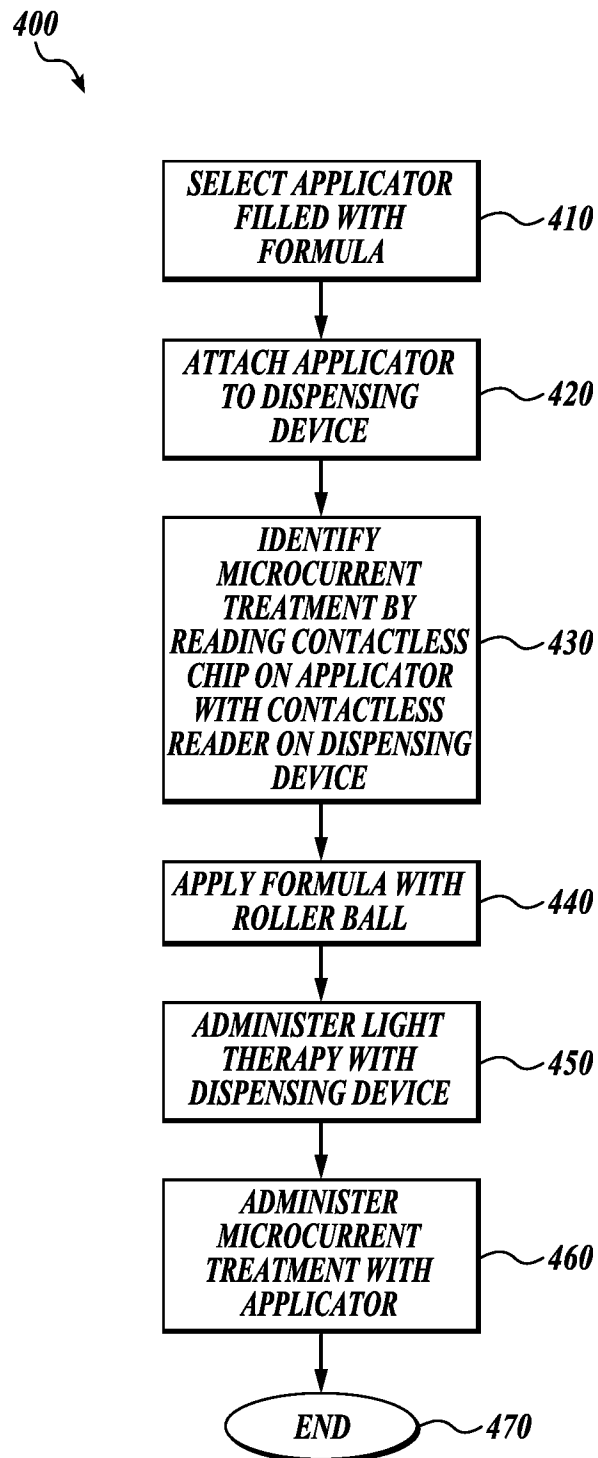


FIG. 2

**FIG. 3**

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**FIG. 4**

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2023/017612

A. CLASSIFICATION OF SUBJECT MATTER INV. A61N1/04 A61N1/32 A61N1/36 A61N5/06 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) A61N		
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	US 10 492 980 B2 (SEB SA [FR]) 3 December 2019 (2019-12-03)	1, 2, 4-9
Y	column 4, line 25 - column 7, line 24; figures 1-4	3, 10

X	WO 2021/206244 A1 (MCURE CO LTD [KR]) 14 October 2021 (2021-10-14)	1, 2, 4, 5
Y	paragraphs [0031] - [0075]; figures 1-4	3, 10

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Y	paragraphs [0042] - [0073]; figures 1-13	3, 10

Y	FR 3 002 148 A1 (OREAL [FR]) 22 August 2014 (2014-08-22) page 1 - page 2; figures 1-2 page 630 - page 7, line 6 page 10, lines 1-4	3

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☒ 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 21 June 2023		Date of mailing of the international search report 30/06/2023
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 Lahorte, Philippe

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2023/017612

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2018/352937 A1 (VANDIER STANISLAS [FR] ET AL) 13 December 2018 (2018-12-13) paragraphs [0025] - [0026], [0029]; figure 1 -----	10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2023/017612

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: **11-15**
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims;; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 11-15

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) PCT declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2023/017612

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