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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
02 November 2023 (02.11.2023)

WIPO | PCT

(10) International Publication Number
WO 2023/211656 A1

(51) International Patent Classification:
A61N 5/06 (2006.01)

(21) International Application Number:
PCT/US2023/017607

(22) International Filing Date:
05 April 2023 (05.04.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

17/733,270	29 April 2022 (29.04.2022)	US
FR2206220	23 June 2022 (23.06.2022)	FR

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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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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).

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

(57) **Abstract:** A skin care system including a dispensing device configured to administer a light therapy and a vibration treatment, and an applicator configured to apply a formula, including a reservoir configured to hold the formula, a 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 vibration treatment.

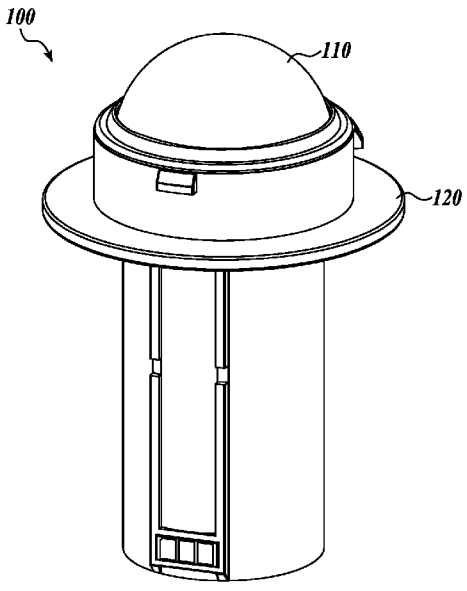

FIG. 1

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[Continued on next page]

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 VIBRATION FOR SKIN TREATMENT

CROSS-REFERENCES TO RELATED APPLICATIONS

This application claims the benefit of U.S. Patent Application No. 17/733270, filed on April 29, 2022, and French Patent Application No. FR 2206220, filed on June 23, 2022; the contents of which are hereby incorporated by reference in their entirety.

SUMMARY

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.

In one aspect, a skin care system comprising a dispensing device configured to administer a light therapy and an applicator configured to apply a formula, comprising a reservoir configured to hold the formula, a 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 a vibration treatment is disclosed.

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

DESCRIPTION OF THE DRAWINGS

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.

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 configured to apply a formula to a surface, such as skin. In some embodiments, the applicator is configured to fit inside of a dispensing device. A magnet inside a roller ball in the applicator is configured to deliver vibrational therapy while the formula is applied. The dispensing device is further configured to administer a light therapy simultaneously while administering the vibration treatment and applying the formula.

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 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 roller ball 110, 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 further includes a magnet 180.

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 ball 110 rolls, 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 ball 110 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.

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 vibration treatment that should be applied with the type of formula 140. In some embodiments, the vibration treatment is continuous. In some embodiments, the vibration treatment is pulsed. In some embodiments, the vibration treatment is applied for a specific time amount, such as one minute, or five minutes. In some embodiments, the applicator stops administering vibration treatment when the specific time amount has elapsed. In some embodiments, the vibration treatment may be one of any number of intensities of frequency. The microcontroller 160 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 a magnet 180 inside the roller ball 110. In some embodiments the magnet 180 is configured to respond to a magnetic field inside the applicator or inside a dispensing device (as shown in FIG. 3). In some embodiments, the magnet 180 is agitated to activate vibration in the roller ball 110. In some embodiments, the magnetic field is generated by a coil. In some embodiments, the coil is located inside the dispensing device, as shown in FIG. 3. In some embodiments, the coil is configured to agitate the magnet 180 in any number of intensities.

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 coil 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 is illustrated as a button, in some embodiments, the actuator 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 vibration 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.

In some embodiments, the dispensing device 200 further includes a coil 250 configured to generate a magnetic field to agitate a magnet in the roller ball of the applicator (as seen in FIG. 2). In some embodiments, the coil is configured to agitate the magnet in an intensity. In some embodiments, the coil 250 is configured to pulse the vibration by agitating the magnet in bursts. In some embodiments, the coil 250 is configured to vibrate the magnet 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 vibration treatment can be administered at the same time as the light therapy and applying the formula.

FIG. 4 is an example method 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 vibration treatment. In some embodiments, the vibration treatment is continuous. In some embodiments, the vibration treatment is pulsed. In some embodiments, the vibration treatment is applied for a specific time amount, such as one minute, or five minutes. In some embodiments, the applicator stops administering vibration treatment when the specific time amount has elapsed. In some embodiments, the applicator further directs the applicator and/or the dispensing device to administer the vibration 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 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 vibration 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 vibration treatment is applied with the applicator. In some embodiments, blocks 440, 450, and 460 occur simultaneously. In some embodiments, the method further includes removing the applicator and placing a second applicator into the dispensing device to administer a second vibration treatment and/or a second formula.

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 vibration treatment; and

an applicator configured to apply a formula, comprising:

a reservoir configured to hold the formula,

a 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 vibration treatment.

2. The skin care system of Claim 1, wherein the light therapy and the vibration 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 or 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 magnet in located in the roller ball; and

a coil, wherein the coil is configured to agitate the magnet to apply vibration treatment.

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

9. The skin care system of Claim 8, wherein the vibration treatment is selected from constant vibration or pulsed vibration.

10. The skin care system of any one of Claims 1-9, wherein the dispenser is further configured to control the intensity of the vibration treatment.

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

selecting an applicator filled with a formula;

placing the applicator into the dispensing device;

identifying a vibration treatment to apply based on the applicator;

applying the formula;

administering light therapy; and

administering the vibration treatment.

12. The method of Claim 11, wherein the method further comprises removing the applicator and placing a second applicator into the dispensing device to administer a second vibration treatment or a second formula.

13. The method of Claim 11 or Claim 12, wherein the method further comprises:

applying voltage to a coil inside an applicator; and

agitating a ball magnet in a roller ball of the applicator to administer vibration treatment.

14. The method of any one of Claims 11-13, wherein the method further configures adjusting the intensity of the vibration treatment with the dispensing device.

15. The method of any one of Claims 11-14, wherein the method further comprises applying the vibration treatment for a specific time amount based on the microcontroller of the applicator.

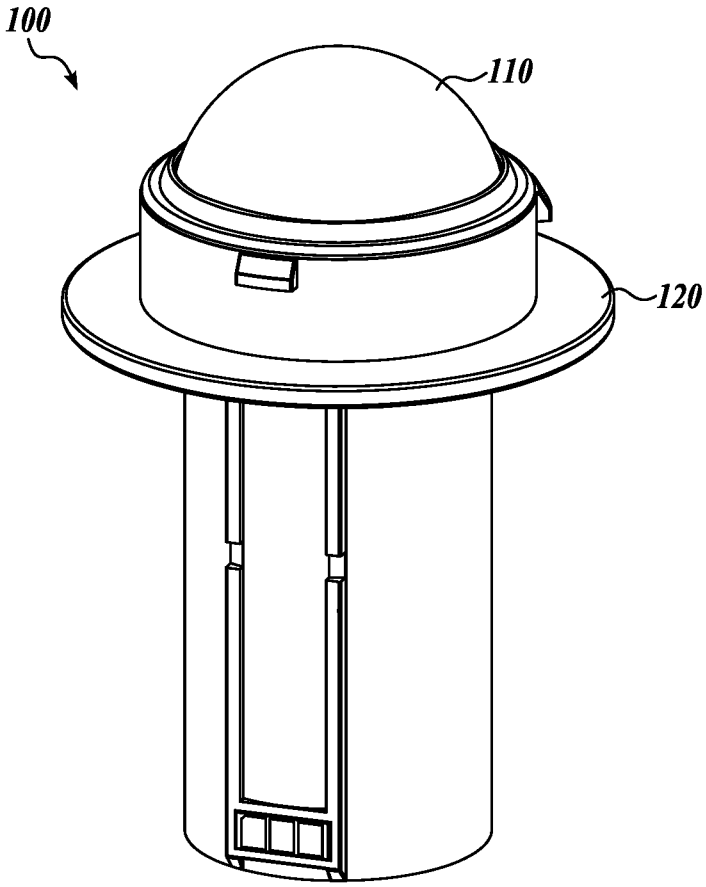

FIG. 1

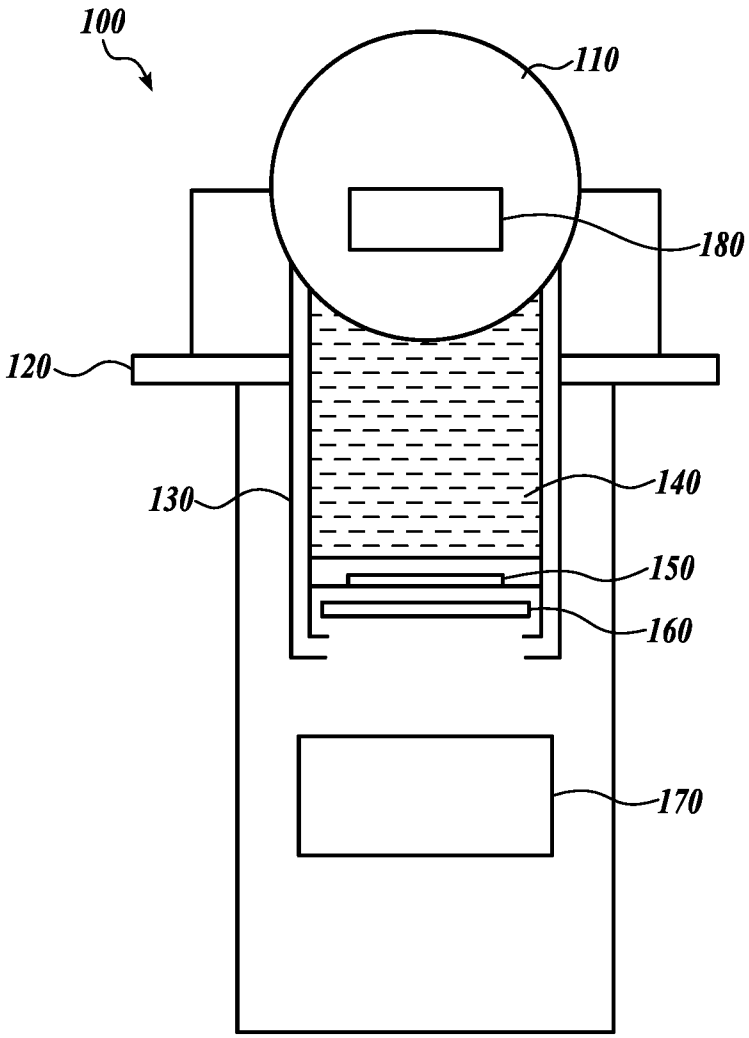

FIG. 2

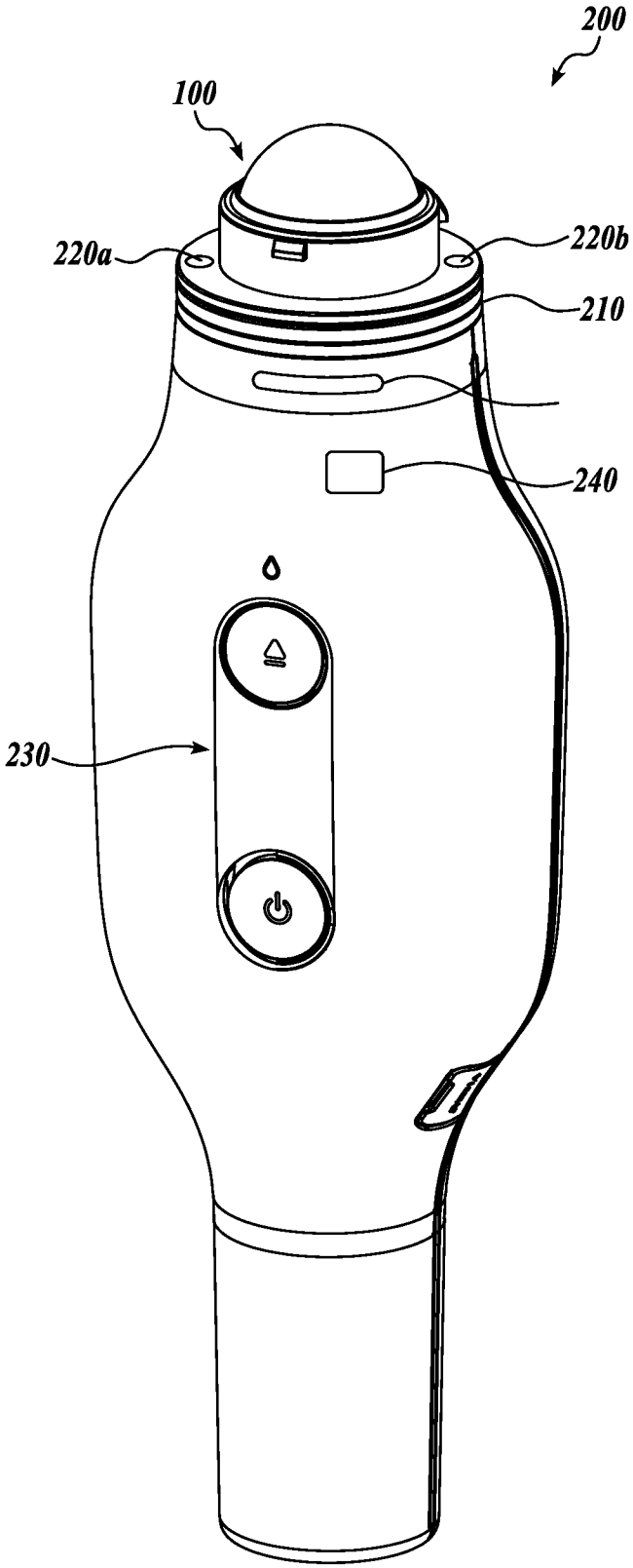

FIG. 3

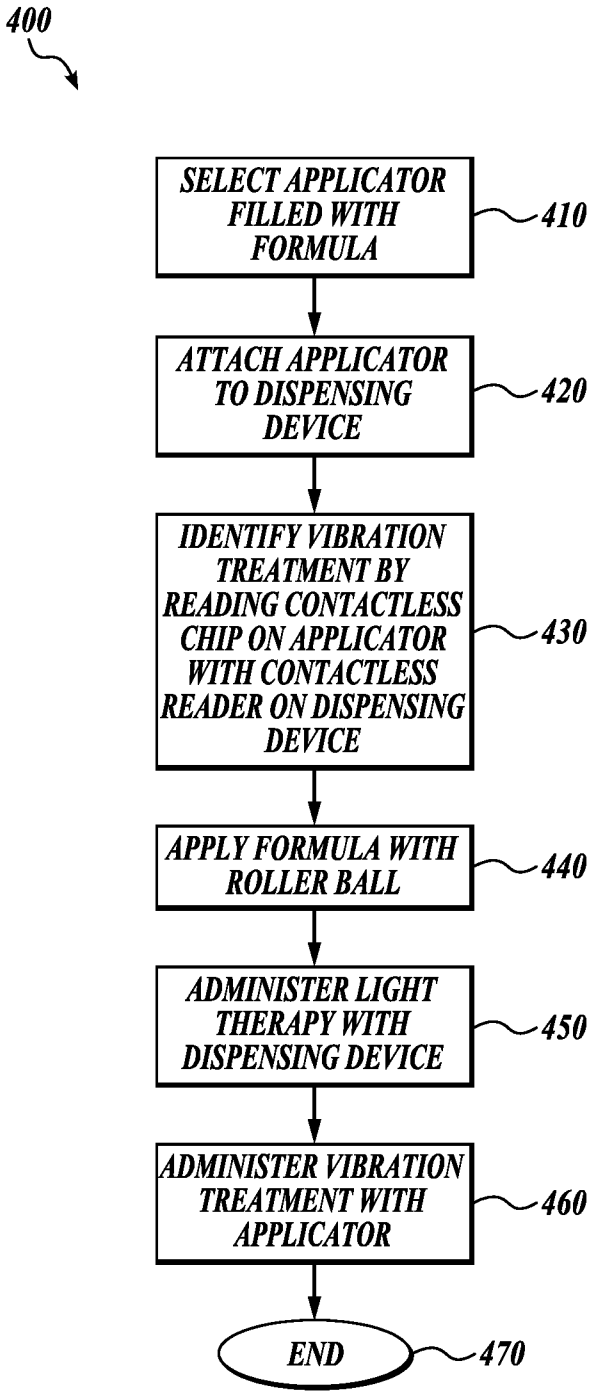
400
SELECT APPLICATOR FILLED WITH FORMULA
410
ATTACH APPLICATOR TO DISPENSING DEVICE
420
IDENTIFY VIBRATION TREATMENT BY READING CONTACTLESS CHIP ON APPLICATOR WITH CONTACTLESS READER ON DISPENSING DEVICE
430
APPLY FORMULA WITH ROLLER BALL
440
ADMINISTER LIGHT THERAPY WITH DISPENSING DEVICE
450
ADMINISTER VIBRATION TREATMENT WITH APPLICATOR
460
END
470

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2023/017607

A. CLASSIFICATION OF SUBJECT MATTER
INV. 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

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)	1-3,6,10
Y	column 4, line 25 - column 7, line 24; figures 1-4	4,5
X	KR 102 084 761 B1 (PHARMACAL INT CO LTD [KR]; LEE SOON JONG [KR]) 5 March 2020 (2020-03-05)	1-3,6-10
Y	paragraphs [0013] - [0050]; figures 1-5	4,5
Y	FR 3 002 148 A1 (OREAL [FR]) 22 August 2014 (2014-08-22) page 1 - page 2; figures 1-2 page 6, line 30 - page 7, line 6 page 10, lines 1-4	4,5
Y	WO 2021/206244 A1 (MCURE CO LTD [KR]) 14 October 2021 (2021-10-14) paragraphs [0031] - [0075]; figures 1-4	4,5

☐ 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	Date of mailing of the international search report
20 June 2023	30/06/2023

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2023/017607

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. [X] Claims Nos.: 11-15
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

2. [ ] Claims Nos.:
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:

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2023/017607

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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