



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

(13) **A1**

(86) Date de dépôt PCT/PCT Filing Date: 2018/05/24
(87) Date publication PCT/PCT Publication Date: 2018/11/29
(85) Entrée phase nationale/National Entry: 2019/11/19
(86) N° demande PCT/PCT Application No.: US 2018/034486
(87) N° publication PCT/PCT Publication No.: 2018/218082
(30) Priorité/Priority: 2017/05/25 (US62/511,088)

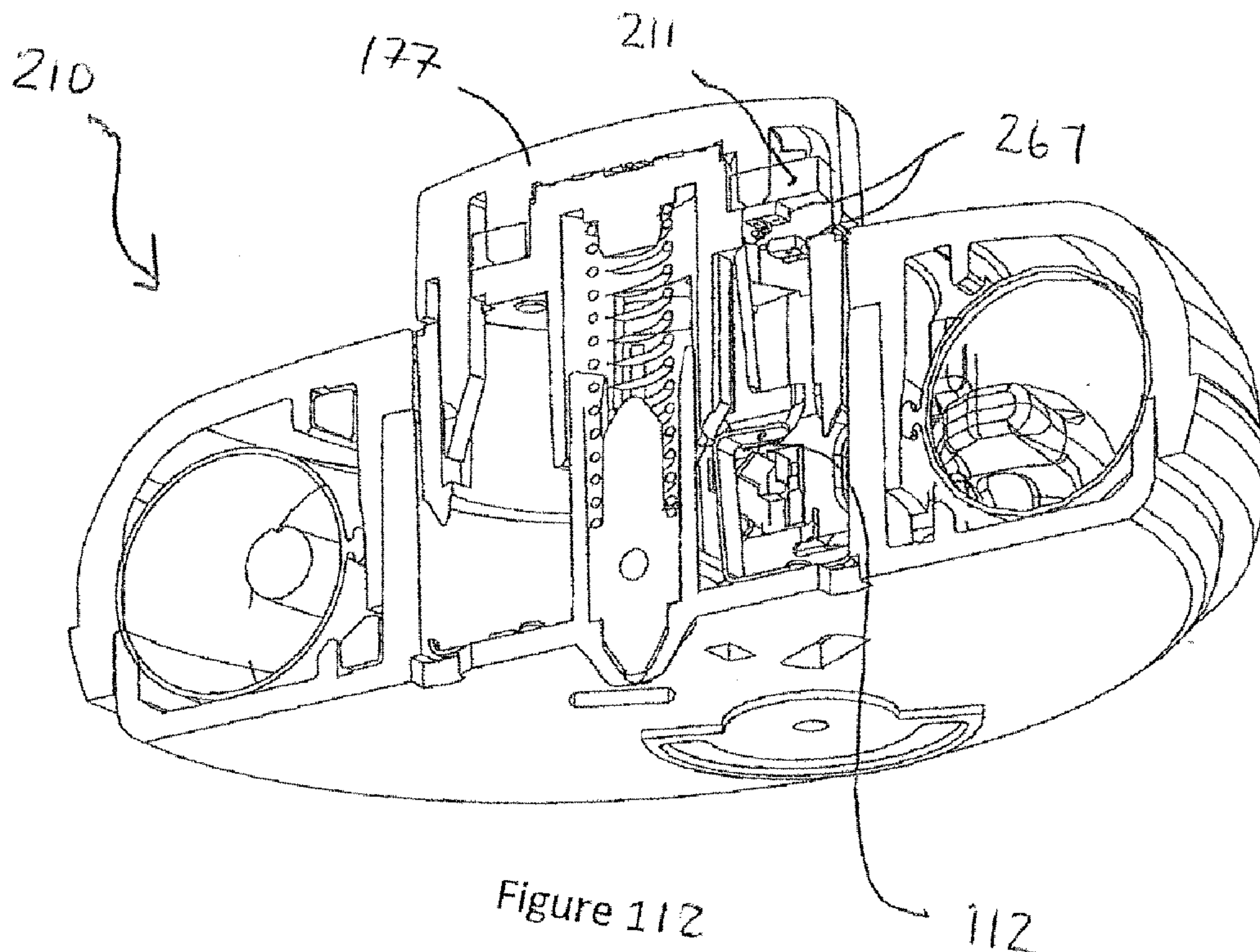
(51) Cl.Int./Int.Cl. *A61J 1/20* (2006.01),
A61M 5/178 (2006.01), *A61M 5/42* (2006.01),
A61M 5/44 (2006.01), *A61M 5/46* (2006.01)

(71) Demandeur/Applicant:
ENABLE INJECTIONS, INC., US

(72) Inventeurs/Inventors:
HOOVEN, MICHAEL D., US;
HUDDLESTON, MATTHEW J., US;
PALMER, JOETTA RENEE, US;
STEFANCHIK, DAVID, US;
MAROUS, JAMES, US

(74) Agent: DEETH WILLIAMS WALL LLP

(54) Titre : APPAREIL ET PROCEDE D'INJECTION ET DE TRANSFERT DE FLUIDE MEDICAL AVEC SURVEILLANCE DE L'OBSERVANCE
(54) Title: MEDICAL FLUID TRANSFER AND INJECTION APPARATUS AND METHOD WITH COMPLIANCE MONITORING



(57) Abrégé/Abstract:

Drug delivery system, injection device, transfer apparatus, vial holder and method of administering and transferring are disclosed which provide for radio frequency tracking and monitoring features for tracking patient compliance.

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
29 November 2018 (29.11.2018)



(10) International Publication Number
WO 2018/218082 A1

(51) International Patent Classification:

A61J 1/20 (2006.01) *A61M 5/42* (2006.01)
A61M 5/178 (2006.01) *A61M 5/46* (2006.01)
A61M 5/44 (2006.01)

(21) International Application Number:

PCT/US2018/034486

(22) International Filing Date:

24 May 2018 (24.05.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/511,088 25 May 2017 (25.05.2017) US

(71) Applicant: **ENABLE INJECTIONS, INC.** [US/US];
2863 E. Sharon Road, Cincinnati, OH 25241 (US).

(72) Inventors: **HOOVEN, Michael, D.**; 7778 Bennington Drive, Cincinnati, OH 45241 (US). **HUDDLESTON, Matthew, J.**; 6629 Saddlebrook Court, Loveland, OH 45140 (US). **PALMER, Joetta, Renee**; 3849 Cherry Brook Lane, Mason, OH 45040 (US). **STEFANCHIK, David**; 5792 Cabernet Court, Morrow, OH 45152 (US).

(74) Agent: **JOHNSTON, Blake R.**; Cook Alex Ltd., 200 West Adams, Suite 2850, Chicago, IL 60606 (US).

(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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, 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))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- with information concerning one or more priority claims considered void (Rule 26bis.2(d))

(54) Title: MEDICAL FLUID TRANSFER AND INJECTION APPARATUS AND METHOD WITH COMPLIANCE MONITORING

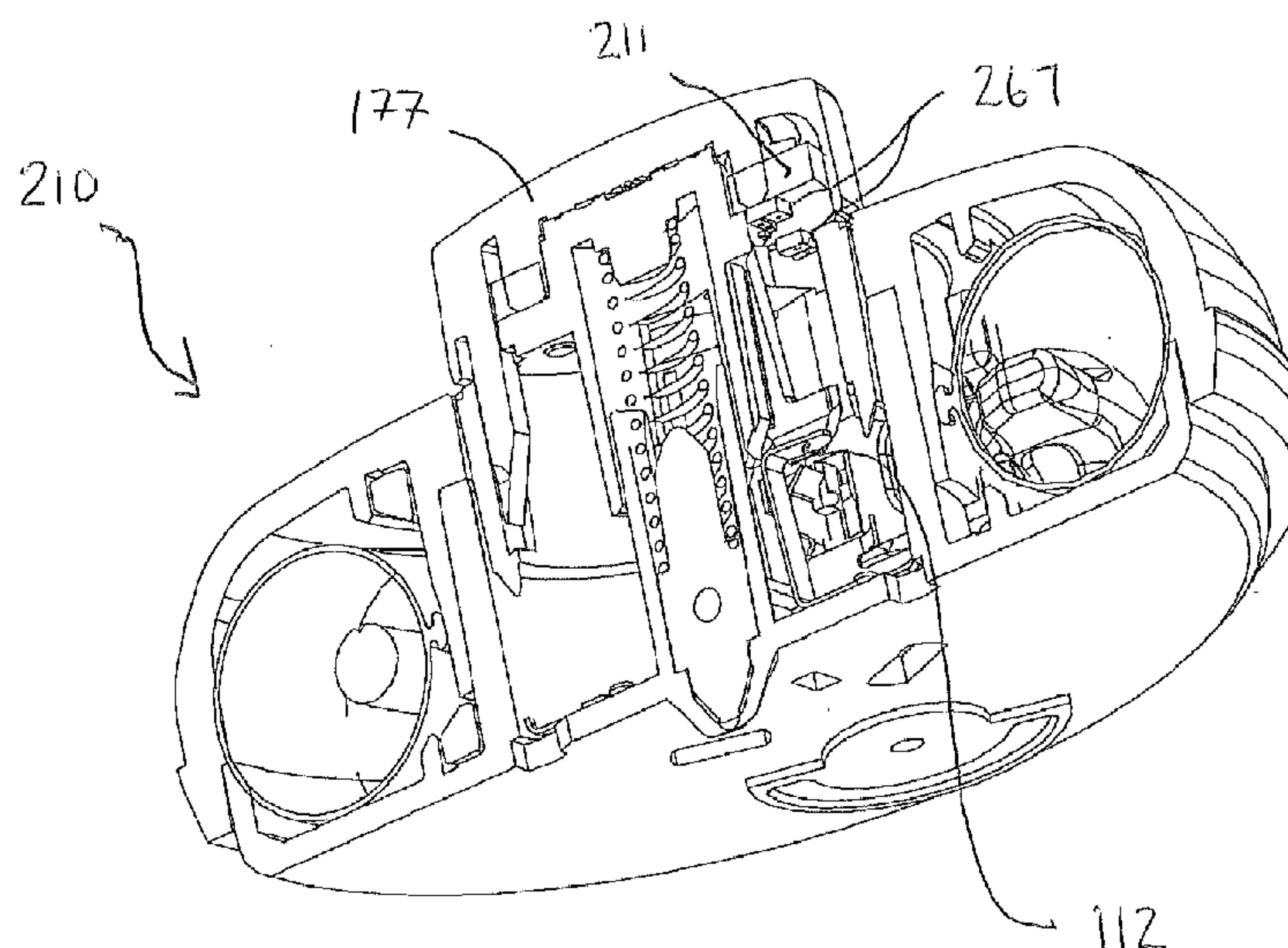


Figure 11Z

(57) Abstract: Drug delivery system, injection device, transfer apparatus, vial holder and method of administering and transferring are disclosed which provide for radio frequency tracking and monitoring features for tracking patient compliance.



WO 2018/218082 A1

CLAIMS

What is claimed is:

- 5 1. An injection device comprising;
 - a. a housing;
 - b. a medicament reservoir provided in the housing;
 - c. an injection cannula moveable within the housing between a pre-dispense position and a dispense position in fluid communication with the reservoir;
 - 10 d. a microprocessor mounted on or within the housing;
 - e. a sensor system in communication with the microprocessor, said sensor system configured to detect when the injection cannula is in the pre-dispense position and when the cannula is in the dispense position;
 - f. a transmitter in communication with the microprocessor, said transmitter
 - 15 configured to transmit data to a remote receiver indicating a position of the cannula.
2. The injection device of claim 1 further comprising a mechanism positioned within the housing and configured to move the cannula between the pre-dispense position and the dispense position and wherein the sensor system is operatively connected to the mechanism.
3. The injection device of claim 2 wherein the mechanism includes a push button configured so that when the push button is pressed, the cannula is moved from the pre-dispense position to the dispense position and wherein the sensor is operatively connected to the push button.
4. The injection device of claim 3 wherein the sensor system includes an infrared transmitter and an infrared receiver mounted to the push button and a reflecting member mounted to the housing so as to be fixed in relation to a position of the button.

5. The injection device of claim 4 wherein the infrared transmitter and the infrared receiver are mounted to an underside of the push button.

6. The injection device of either one of claims 4 and 5 wherein the push button moves between a extended position with respect to the housing when the cannula is in the pre-dispense position and a retracted position with respect to the housing when the cannula is in the dispense position.

7. The injection device of claim 6 wherein the mechanism is configured to automatically return the push button to the extended position when dispensing of a drug is completed.

- 5 8. The injection device of claim 1 further comprising:
- f. an electronic chip, wherein the electronic chip includes the microprocessor, a battery and a contact and the battery provides power to the microprocessor when electrical contact is made between the battery and the contact; and
 - 10 g. a pull tab removably positioned between the battery and the contact so that electrical contact between the battery and contact is avoided.

9. The injection device of claim 1 wherein the microprocessor and the transmitter are combined into a single component.

10. The injection device of claim 1 wherein the transmitter is a Bluetooth transmitter.

11. A medicament delivery system for the transfer and administration of an injectable liquid drug into a subject, comprising a transfer apparatus and an injection device; the transfer apparatus including an injection device docking station; and
- 15 a wireless signal sending unit carried by the transfer apparatus and/or the injection device.

12. The delivery system in accordance with claim 11, the sending unit further comprising a radiofrequency tag containing data identifying such system wherein the radiofrequency tag is an active radiofrequency tag configured to signal activation of the injection device and completion of injection by the injection device.
13. The delivery system in accordance with claim 11 wherein the wireless signal sending unit is configured for low power transmission in accordance with the Bluetooth Low Energy specification.
14. The delivery system in accordance with claims 11 further comprising a coin-cell battery and circuitry configured so that the coin-cell battery powers the wireless signal sending unit.
15. The delivery system in accordance with claim 11 wherein the injection device includes a push button to activate the injection device and wherein the wireless signal sending unit is positioned within the push button.
16. The delivery system in accordance with claim 11 wherein the wireless signal sending unit includes a microprocessor.
17. The delivery system in accordance with claim 11 wherein the wireless signal sending unit is less than approximately 3/8-inch or 9.5 mm in diameter.
18. A method for monitoring use of an injection device comprising the steps of:
- sensing a position of a cannula of the injection device;
 - transmitting data indicating the position of the cannula to a remote receiver.
19. The method of claim 18 further comprising the step of detecting when electrical power has been provided to circuitry of the device, wherein the circuitry includes a microprocessor and a transmitter.

20. The method of claim 18 wherein step a. includes monitoring a position of a push button used to actuate the injection cannula of the injection device.