

System For Self-administering Liquid Medicine For Visually Impaired

Field of Invention

[0001] The present invention relates to a system for self-administering liquid medicine for a visually impaired person.

Background

[0002] To assist visually impaired to self-administer liquid medicines, measuring tools ranging from standard medicine spoons with tactile markings to voice output weighing machines are used to help deliver the medicine. The delivery process involves retrieving the medicine from a medicine bottle and dispensing the medicine for administering, either orally or subcutaneously. Some of these existing measuring tools are rather difficult to handle and costly to maintain.

[0003] For example, US 5,385,559, by Mannix Gerald, discloses a filling and metering assembly to fill syringes accurately by a sightless person. The assembly has a base. The base has an interior surface that is specifically configured to removably position and hold a syringe and a medicine container. An audible indicator is also provided to help determine an accurate and desired amount of medicine being passed from the medicine bottle to the syringe. This assembly is complex and difficult to handle.

[0004] In another approach, US 4,466,426, by Blackman, discloses a syringe with a metal plunger. The plunger has a number of circumferential measuring grooves. Two such grooves allow subdivision of the syringe contents into two portions; three such grooves allow subdivision of the syringe contents into three portions; and so on. Such a plunger is not meant to be retrofitted with a commercially available barrel.

[0005] In yet another approach, US 2002/0014028, by Campeau, discloses a label for attaching to a container of a pharmaceutical product. The label has raised information to provide dosage and time information.

[0006] US 6,951,353, by Kozlowski, et al, discloses a label having a plurality of raised tabs. The raised tabs are depressed upon taking a medication and provides a tactile and visual record of medication use. An underlying label is provided with a plurality of raised tabs that correspond to the number of doses to be taken a day and the number of days for which the medication is to be taken.

[0007] Despite the above development, it can thus be seen that there exists a need for a new system and method for self-administering liquid medicine by a visually impaired person.

Summary

[0008] The following presents a simplified summary to provide a basic understanding of the present invention. This summary is not an extensive overview of the invention, and is not intended to identify key features of the invention. Rather, it is to present some of the inventive concepts of this invention in a generalised form as a prelude to the detailed description that is to follow.

[0009] The present invention seeks a to provide a system and method for delivering liquid medicine for a visually impaired person. Cost of manufacture, simplicity and ease of use are some of the motivating factors behind the present invention.

[0010] In one embodiment, the present invention provides a system for self-administering liquid medicine by a visually impaired person. The system comprises: forming projections or notches on a rib of a plunger of a syringe such that the projections or notches are spaced apart according to a major graduation scale on a cylinder associated with the plunger and the number of projections/notches that are felt on the rib of the plunger, which is extended outside the cylinder, indicates the amount of medicine drawn into the cylinder; and applying a dosage sticker and a frequency sticker on a container of the medicine; wherein unused dosage and frequency stickers are operable to be torn along a selected perforated line so that the dosage sticker on the container

conveys the prescribed dosage of the medicine before or after food whilst the frequency sticker conveys the prescribed number of times a day for administering the medicine.

[0011] In another embodiment, the present invention provides a method for self-administering liquid medicine by a visually impaired person. The method comprises: tearing a medicine dosage sticker along a selected perforated line and sticking the torn portion onto the medicine container so that the dosage sticker has an end section and a number of intermediate sections, wherein the end section denotes A for taking the medicine "After food" or B "Before food" and the number of intermediate sections represents the dose of the medicine in multiples of one cm³; tearing an intake frequency sticker along a selected perforated line and sticking the torn portion onto the medicine container so that the frequency sticker has an end section and a number of intermediate sections, wherein the end section denotes T for the daily prescribed intake frequency as represented by the number of intermediate sections or the end section denotes C for taking the complete course of the medicine according to the frequency represented by the number of intermediate sections; dipping a tip of a syringe into the medicine; drawing a plunger of the syringe; determining the amount of medicine drawn into the syringe by feeling the number of notches or projections on the plunger; and administering the medicine according to the prescription denoted by the dosage and frequency stickers.

[0012] In yet another embodiment, the present invention provides a kit for a medicine dosage sticker; and an intake frequency sticker; wherein: the dosage sticker comprises twelve sections, which include two end sections and ten intermediate sections, with the sections being defined by perforated lines, with each of the two end sections carrying alphabet A or B, together with letters in Braille, and each intermediate section has an embossed or raised dot near the respective centre; the intake frequency sticker comprises six sections, which includes two end sections and four intermediate sections, with the sections being defined by perforated lines, with each of the two end sections carrying alphabet T or C, together with letters in Braille, and each intermediate section has an embossed or raised dot near the respective centre; and the dosage and frequency stickers are operable to be torn along a selected perforated line so that the end section and the number of intermediate sections of the dosage and frequency stickers encode the prescription of the medicine.

[0013] In another embodiment, the kit further comprises a syringe, wherein an associated plunger of the syringe has a series of projections or notches formed thereon and are spaced according a major graduation scale on the syringe.

[0014] In one embodiment, the projections or notches on the plunger are formed on a separate scaling strip, which is mountable on a rib of the plunger. In another embodiment, the projections are sawtooth in shape. The sawtooth projections may be forward pointing or rearward pointing with respect to a tip of the syringe. In yet another embodiment, the sawtooth projections have a lateral profile so that the sawtooth projections are sharp when touched by one's finger.

Brief Description of the Drawings

[0015] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0016] FIG. 1 illustrates a system to self-administer liquid medicine by a visually impaired person according to an embodiment of the present invention;

[0017] FIG. 2 illustrates a tactile scaling strip for attaching to a plunger of a syringe according to another embodiment of the present invention;

[0018] FIG. 3A illustrates a profile of the scaling strip shown in FIG. 2;
FIG. 3B illustrates a lateral profile of the scaling strip shown in FIG. 2 according to another embodiment of the present invention;

[0019] FIG. 4 illustrates a dosage sticker shown in FIG. 1 according to another embodiment of the present invention;

[0020] FIG. 5 illustrates an intake frequency sticker shown in FIG. 1 according to another embodiment of the present invention;

[0021] FIG. 6 illustrates notches on the plunger of a syringe according to another embodiment of the present invention; and

[0022] FIG. 7 illustrates lateral projections on the plunger of a syringe according to yet another embodiment of the present invention.

Detailed Description

[0023] One or more specific and alternative embodiments of the present invention will now be described with reference to the attached drawings. It shall be apparent to one skilled in the art, however that this invention may be practised without such specific details. Some of the details may not be described at length so as not to obscure the invention. For ease of reference, common reference numerals or series of numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0024] FIG. 1 shows a system **10** for self-administering liquid medicine by a visually impaired person according to the present invention. For self-administering medicine, the ability to handle the medicine independently and to remember intake instructions are two aspects of the system **10**. As shown in FIG. 1, the system **10** is made up of a tactile scaling strip **20** for attaching to a plunger **13** of a syringe **12**, a dosage sticker **50** and a frequency sticker **70** for conveying or encoding the medicine intake instructions. FIG. 2 shows the tactile scaling strip **20** according to one embodiment of the present invention, whilst FIG. 4 shows the dosage sticker **50** and FIG. 5 shows the frequency sticker **70** according to another embodiment.

[0025] As shown in FIG. 2, the tactile scaling strip **20** is made from a plastic material and it has a number of projections **22**. The projections **22** are linearly spaced according to the major scale on a corresponding cylinder or barrel **14** of the syringe **12**. When a user puts the syringe **12** into a bottle **18** of medicine such that the tip **15** of the syringe dips into the medicine, pulling the plunger **13** draws the medicine into the cylinder **14** of

the syringe 12 and a corresponding number of projections 22 are exposed. For example, the scale on the cylinder 14 of the syringe may show a fine graduation steps of 0.2 cm^3 whilst the major scale may show a graduation steps of 1, 2, 3 cm^3 and so on, and when 2 cm^3 of the medicine is drawn, two projections 22 are exposed from the cylinder 14. The exposed projections 22 are felt by a finger of the user.

[0026] In one embodiment of the tactile scaling strip 20, the projections 22a are sawtooth in shape. In another embodiment, the sawtooth projections 22a are non-symmetrical in shape; in other words, the slopes forming the sawtooth projections 22a have different gradients on the left and right hand edges. In one embodiment, the sawtooth projections 22a has a steeper gradient on the right hand edge than that on the left hand edge. These sawtooth projections 22a are thus backward pointing with respect to the tip 15 of the syringe 12. In another embodiment, the left hand edge has a steeper gradient than that on the right hand edge and the projections 22a are thus forward pointing. In another embodiment, each sawtooth projection 22b is symmetrical in shape.

[0027] In one embodiment of the sawtooth projections 22a, FIG. 3A shows the profile of each sawtooth projection 22a across the thickness of the tactile scaling strip 20 is flat or straight; in another embodiment, FIG. 3B shows a side profile of each projection 22c across its thickness has a gradient so that the tip of each projection is relatively sharp to the touch of a user's finger. It is also possible that the side profile of each projection 22c across its thickness is curved.

[0028] As shown in FIG. 2, adjacent projections 22 are linked by straight portions 30. It is also possible that adjacent projections 22 are linked by curved portions 32.

[0029] In another embodiment of the tactile scaling strip 20a, the first projection has a round tip 24. Such first round tip projection 24 provides a contrast in feeling with the other projections 22, 22a, 22b, 22c and helps minimise error in determining the number of projections on the plunger 13 that extends out from the associated cylinder 14.

[0030] In yet another embodiment of the tactile scaling strip 20, a front face of the strip 20 is embossed with graduation marks near the tip of the projections 22, 22a, 22b, 22c.

The graduation marks provide additional tactile feedback to the user on the amount of extension of the plunger 13 from the associated cylinder 14 and the corresponding amount of medicine drawn into the syringe 12 for administering. Further, a difference in extensions of the plunger 13 from the associated cylinder 14 corresponds to an amount of medicine additionally drawn into or dispensed from the syringe 12.

[0031] FIG. 4 shows the medicine dosage sticker 50 whilst FIG. 5 shows the medicine intake frequency sticker 70. The dosage sticker 50 and intake frequency sticker 70 are made from adhesive strips. As shown in FIG. 4, the dosage sticker 50 has 12 sections. The end section 52 on the left hand side is longer than the intermediate sections 56 and has alphabet A and its accompanying letter in Braille. The right hand end section 54 is also longer than the intermediate sections 56 and has alphabet B and its accompanying letter in Braille. There are altogether ten intermediate sections 56. Each intermediate section 56 has a raised or embossed dot 58 near the centre of the respective section and adjacent sections are defined by perforated lines 60.

[0032] To indicate a dose of “5 cc after meal”, for example, a user or nurse would count from the left hand end section 52 five dots or sections to the right before severing the sticker 50. The severed left hand end section 52 and the five intermediate sections representing a dosage of “5 cc after meal” is then put on the medicine container or bottle 18. In addition, the upper edge 62 of each intermediate section is formed with a convex shape. The convex upper edge 62 allows a user additional feel in determining the perforated line 60 to sever. As an example of the present invention, each intermediate section is ergonomically sized to about 8 mm in length and each raised or embossed dot 58 has a height of about 0.8 mm.

[0033] Likewise, to indicate “5 cc before meal”, for example, a user would count from the right hand end section 56 five dots or sections to the left before severing the sticker 50. The severed right hand end section 54 and the five intermediate sections representing a dosage of “5 cc before meal” is then put on the medicine container/bottle 18.

[0034] As shown in FIG. 5, the intake frequency sticker 70 has six sections. The left hand end section 72 is longer than the intermediate section 76 and has alphabet T and its

accompanying letter in Braille; the right hand end section 74 is also longer than the intermediate section 76 but has alphabet C and its accompanying letter in Braille. There are altogether four intermediate sections 76. As on the dosage sticker 50, each intermediate section 76 has raised or embossed dot 78 near the centre of each section. As in the dosage sticker 50, adjacent intermediate sections 76 are also defined by perforated lines 80.

[0035] To indicate an intake frequency of “3 times a day”, for example, a user counts three dots or sections to the right of left hand end section 72, severs at the perforated line 80 and places the severed intake frequency sticker on the medicine container. However, to indicate an intake frequency of “complete course, 3 times a day”, for example, the user counts three dots or sections to the left from the right hand section 74, severs at the perforated line 80 and places the severed intake frequency sticker on the medicine container/bottle 18.

[0036] FIG. 6 shows another embodiment of the system 10a to provide a tactile feedback on the position of the plunger 13. As shown in FIG. 6, the system 10a includes a syringe 12a, which has notches 35 on ribs at the plunger 13a. The notches 35 are spaced apart at regular interval like the major graduation scale on the cylinder 14. In another embodiment, rings 37 are snapped into the notches 35 to form a series of spaced apart rings so that the number of rings extending out of the cylinder 14 indicates the amount of medicine drawn into the syringe 12a.

[0037] FIG. 7 shows another embodiment of the system 10b to provide a tactile feedback on the position of the plunger 13. As shown in FIG. 7, the system 10b includes a syringe 12b, which has a series of lateral projections 40 at the top of a rib of the plunger 13b. Like in the previous embodiments, the lateral projections 40 are spaced apart at regular interval like the major graduation scale on the cylinder 14. The number of lateral projections that can be felt on the plunger indicates the amount of medicine that is drawn into the syringe 12b.

[0038] The above embodiments of the present invention are advantageous in that they help a visually impaired person to administer liquid medicine, for example, in one's

home or in a health care environment. Such medicine may be administered orally and the syringe according to the present invention allows a user to draw the medicine from a bottle and dispense the medicine with ease and confidence. Other types of medicine may be administered subcutaneously by attaching a hypodermic needle at the tip 15 of the syringe, for example, by a user having a diabetic condition. The present invention is simple and found to be reliable and easy to use by sensory touch. The simple components also means low manufacturing cost. In addition, the projections or notches on the plunger of a syringe serves an another graduation scale; this is advantageous when the medicine and/or the medicine bottle is/are dark coloured.

[0039] While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the invention. For example, the scaling strip that is mountable on a rib of a plunger can be made of other materials, such as metals, so long as the projections are semi-rigid and provide a tactile feel.

CLAIMS:

1. A system for self-administering liquid medicine by a visually impaired person, said system comprising:
 - forming projections or notches on a rib of a plunger of a syringe such that the projections or notches are spaced apart according to a major graduation scale on a cylinder associated with the plunger and the number of projections/notches that are felt on the rib of the plunger, which is extended outside the cylinder, indicates the amount of medicine drawn into the cylinder; and
 - applying a dosage sticker and a frequency sticker on a container of the medicine;
 - wherein unused dosage and frequency stickers are operable to be torn along a selected perforated line so that the dosage sticker on the container conveys the prescribed dosage of the medicine before or after food whilst the frequency sticker conveys the prescribed number of times a day for administering the medicine.
2. A system according to claim 1, wherein the projections or notches are formed on a separate scaling strip, which is mountable on a rib of the plunger.
3. A system according to claim 1 or 2, wherein the projections are sawtooth in shape.
4. A system according to claim 3, wherein the sawtooth projections are forward pointing.
5. A system according to claim 3, wherein the sawtooth projections are rearward pointing.
6. A system according to any one of claims 3-5, wherein the sawtooth projections have a straight or flat sectional profile.
7. A system according to any one of claims 3-5, wherein the sawtooth projections have a lateral profile such that the sawtooth projections are sharp.

8. A system according to any one of the preceding claims, wherein a first projection has a rounded profile to provide contrast in tactile feel from the other projections.
9. A system according to any one of the preceding claims, wherein the unused dosage sticker comprises twelve sections, which include two end sections and 10 intermediate sections, each of the two end sections has alphabet A or B, where A indicates that the medicine is taken "After food" whilst B indicates "Before food", and the alphabets A and B are accompanied with letters in Braille.
10. A system according to claim 9, wherein each intermediate section has an embossed or raised dot near the respective centre and the number of dots/sections accompanying either end section represent the dosage according to the major graduation scale on the cylinder.
11. A system according to any one of the preceding claims, wherein the frequency sticker comprises six sections, which include two end sections and four intermediate sections, each of the two end sections has alphabet T or C, where T indicates the daily prescribed number of times for taking the medicine whilst C indicates taking the complete course of the medicine.
12. A system according to claim 11, wherein each intermediate section has an embossed or raised dot near the respective centre and the number of dots/sections accompanying either end section represent the daily intake frequency.
13. A system according to any one claims 9-12, wherein an upper edge of each section of the dosage or frequency sticker is formed with a convex shape.

14. A kit comprising:

a medicine dosage sticker; and

an intake frequency sticker;

wherein:

the dosage sticker comprises twelve sections, which include two end sections and ten intermediate sections, with the sections being defined by perforated lines, with each of the two end sections carrying alphabet A or B, together with letters in Braille, and each intermediate section has an embossed or raised dot near the respective centre;

the intake frequency sticker comprises six sections, which includes two end sections and four intermediate sections, with the sections being defined by perforated lines, with each of the two end sections carrying alphabet T or C, together with letters in Braille, and each intermediate section has an embossed or raised dot near the respective centre; and

the dosage and frequency stickers are operable to be torn along a selected perforated line so that the end section and the number of intermediate sections of the dosage and frequency stickers encode the prescription of the medicine.

15. A kit according to claim 14, further comprising a syringe, wherein an associated plunger of the syringe has a series of projections or notches formed thereon and are spaced according a major graduation scale on the syringe.