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(54) Benævnelse: **INDRETNING TIL ANVENDELSE I EN LÆGEMIDDELADMINISTRATIONSANORDNING**

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DESCRIPTION

[0001] The present invention relates to an assembly for use in a drug delivery device.

[0002] Drug delivery devices are generally known for the administration of a medicinal product, for example insulin, but also for other medicinal products for self-administration by a patient. Therefore, the drug delivery devices should be safe and comfortable in use and should dispense an exact dose of a medicinal product. Most of the drug delivery devices are pen-type injectors which can dispense a pre-set dose of a medicinal product.

[0003] In some cases it is necessary for the patient to get an exact volume of a certain medicinal product. In most commercially available drug delivery devices there are many sources of error for dispensing inaccuracy. One is for example the dripping out of the needle after injection and therefore the need to keep the needle in the skin after injection.

[0004] EP 1 825 840 A1 discloses a minute quantity medicine administration set including an injection needle having a cannula and a needle hub ; a minute quantity administration device equipped with an injection needle connector having a connection part for connecting with the needle hub, a tube member connected to the injection needle connector, and a piercing needle connector having a tube member connection part for connecting with the tube member at its front end and having a hollow piercing needle connection part for connecting with a piercing needle of a transfer needle at its base end, the transfer needle in which the hollow piercing needle and a syringe connection part are provided respectively on opposite sides of a disc-like hub on the same axis, a cylindrical vial mounting part; extending concentrically with the piercing needle is provided at an outer edge of the disk-like hub beyond a front end of the piercing needle, the piercing needle communicating with the syringe connection part; and a syringe equipped with a connection part for connecting to the transfer needle, a barrel connected to the transfer needle connection part, and a plunger inserted into the barrel.

[0005] WO 2009/053464 A1 discloses a jet injection device comprising a base member, a load member, a resilient liquid chamber being in fluid connection with an outlet orifice in one end and an inlet channel in the other end, an impulse transferring member, and a coil spring suited for being rotationally pre-stressed by manipulation of the load member. When released the coil spring will rotate and undergo a radial contraction which activates the impulse transferring member to squeeze the resilient liquid chamber, thereby forcing the contents of the resilient liquid chamber out through the outlet orifice.

[0006] US 5,176,645 discloses a pneumatic powered, modular device, suitable for giving an adjustable dose of liquid medication to animals drawing the liquid from a bulk container. Modular design permits several ranges of dosage as well as methods of delivery such as hypodermic, oral or poured on skin. Compressed air enters handle at base through fitting, goes through passage into way valve normally closed. Depressing trigger allows air to enter chamber pushing piston forward. Liquid in front of piston is expelled past check valve into

chamber and out of hypodermic needle. Gasket holds liquid in. For oral delivery, terminal is substituted. Upon release of trigger 3 way valve permits air on chamber to exhaust via exit on valve, spring pulls piston back until fitting expansion stops against adjustable nut. This determines size of dosage. Liquid is suctioned from bulk tank not shown via tube through check ball and into front of piston chamber.

[0007] It is an object to the present invention to provide an assembly for use in a drug delivery device which helps to improve the accuracy of a dispensed dose.

[0008] According to a first aspect of the present disclosure an assembly for a drug delivery device is provided, the assembly comprising a dispensing container and a reservoir container for holding a fluid medicinal product, wherein the dispensing container and the reservoir container are connected to one another and are in fluid communication, and wherein the dispensing container is squeezable for dispensing a dose of a fluid medicinal product from the dispensing container, the dispensing container being refillable with the fluid medicinal product from the reservoir container.

[0009] In the assembly, the dispensing container has an inner volume that is equivalent to a dose, whereas the reservoir container is holding a plurality of doses. The dose which may be enclosed in the dispensing container can be dispensed in a single dispensing process or in several subsequent dispensing processes.

[0010] The dispensing container can be squeezed. While the dispensing container is squeezed the fluid medicinal product is dispensed.

[0011] The fluid medicinal product that may refill the dispensing container is contained in the reservoir container. The reservoir container and the dispensing container can have a permanent connection. This connection is constructed such that the dispensing container can be refilled with fluid medicinal product from the reservoir container.

[0012] Some parts of the assembly, like for example the dispensing container, the reservoir container or the connecting means are in direct contact with the fluid medicinal product. These parts have an appropriate chemical resistance towards the fluid medicinal product that is contained. These materials can comprise PVC, silicone rubber or fluoropolymer.

[0013] In a preferred embodiment a connecting means is connecting an inlet of the dispensing container with a first outlet which is located at the reservoir container.

[0014] The connecting means can for example be a tube. A tube allows a fluid communication between the reservoir container and the dispensing container.

[0015] The connecting means can be flexible. In case that the connecting means is flexible it can provide a durable connection even if the distance between the dispensing container and the reservoir container varies during the dispensing process.

[0016] In another preferred embodiment, a first control member is located in a connecting flow path between the dispensing container and the reservoir container.

[0017] The first control member may be a check valve. This check valve can regulate the flow of the fluid medicinal product.

[0018] This regulation may affect the amount of fluid medicinal product, the time frame in which the fluid medicinal product can flow through the connecting means and the direction in which the fluid medicinal product can flow.

[0019] The control member may be located at the first outlet of the reservoir container or at the inlet of the dispensing container. Alternatively, the control member can be located somewhere between the first outlet of the reservoir container and the inlet of the dispensing container.

[0020] In one embodiment the first control member allows the fluid medicinal product to flow only from the first outlet which is located at the reservoir container in the direction of the inlet of the dispensing container.

[0021] In this embodiment a check valve may find use, wherein the medicinal product can flow through an opening in the check valve. The fluid medicinal product can only flow through the opening in a certain direction after a certain pressure is applied to the check valve.

[0022] Due to the one-way behavior of the check valve a reflow of medicinal product from the dispensing container into the reservoir container can be effectively avoided. This leads to an improved accuracy of the dosage dispensed from the dispensing container because the enclosed volume of the fluid medicinal product in the dispensing container is exactly defined.

[0023] In another embodiment a second control member is located in a dispensing flow path of a second outlet which is located at the dispensing container.

[0024] The dispensing flow path of the second outlet which is located at the dispensing container is directed towards the dispensing end of the assembly. A needle unit can be attached to this dispensing end.

[0025] The second control member may be a check valve which allows the fluid medicinal product to flow only in the dispensing direction which means from the dispensing container in the direction where the needle unit might be attached to the assembly.

[0026] In another preferred embodiment the second control member is preventing intake of air or fluid or tissue into the dispensing container via the dispensing flow path.

[0027] Intake of air or of tissue through the second outlet would lead to a dose inaccuracy for

the next dose which is dispensed from the assembly. Only the fluid medicinal product from the reservoir container should refill the dispensing container, therefore the second control member should prevent that dispensed fluid or blood flows back into the dispensing container.

[0028] One advantage of having a second control member is that the same volume of fluid medicinal product is enclosed inside the dispensing container before a dispensing process is started and after the fluid medicinal product dispensed during this dispensing process is refilled from the reservoir container.

[0029] In one preferred embodiment the second control member allows the fluid medicinal product to be dispensed through the second outlet which is located at the dispensing container.

[0030] The second outlet can be located diametrically opposed to the inlet of the dispensing container. In particular, a pen-type injector can be formed through a linear alignment of the components of the assembly.

[0031] While dispensing the fluid medicinal product the second control member opens the flow path in direction of a needle unit which might be attached. The injection takes place by means of the attached needle unit.

[0032] In another preferred embodiment the dispensing container comprises a hollow body.

[0033] The hollow body can for example be formed as a hollow sphere. The inner volume of this hollow body is equivalent to the maximum volume that can be dispensed at a time.

[0034] The dispensing container can also be pear-shaped.

[0035] In one preferred embodiment the dispensing container is elastically deformable for dispensing a dose of the fluid medicinal product.

[0036] To dispense the fluid medicinal product, a force is applied by a means that deforms the dispensing container. This force leads to an increasing deformation of the dispensing container and therefore to an increasing dispensed volume of the fluid medicinal product.

[0037] Due to the elastic condition of the dispensing container this deformation is reversible. As the force is no longer applied to the dispensing container, it returns to its original shape and size.

[0038] In another embodiment the assembly comprises a housing and an actuator which is moveable with respect to the housing.

[0039] Inside the housing, a base frame can be located which is moveable with respect to the housing. The actuator can be located at the distal end of that base frame. This actuator can be

located between the reservoir container and the dispensing container. However, any other suitable position for the actuator is possible.

[0040] The housing forms a good protection for the dispensing container and for the reservoir container. The reservoir container can be attached to the base frame.

[0041] In one preferred embodiment the actuator is located at the dispensing container for dispensing the fluid medicinal product.

[0042] The actuator applies a force to the dispensing container. Due to the applied force the fluid medicinal product is dispensed. Therefore a mechanical contact is needed between the actuator and the dispensing container to apply the force to the dispensing container.

[0043] In another preferred embodiment the actuator squeezes the dispensing container and is dispensing the fluid medicinal product.

[0044] The actuator applies a force to the dispensing container as it is pushed towards the dispensing container. The container is deformed and the fluid medicinal product which is contained inside the dispensing container can be dispensed through an outlet.

[0045] The force which is applied to the dispensing container can be generated mechanically or electrically. Therefore, a dispensing means comprising a spring can be located at the distal end of the base frame. The dispensing means may be connected to the base frame. The actuator can be moved electrically or by being actuated by the user. The actuator can be moved back to the starting position by means of the spring.

[0046] The dispensing container can dispense a predefined dose of the fluid medicinal product.

[0047] In another preferred embodiment the assembly comprises a dispensing container which is expanding after dispensing the fluid medicinal product. Through the expansion a depression is created in the dispensing container which is able to intake fluid medicinal product from the reservoir container.

[0048] After the fluid medicinal product is dispensed, a depression is created inside the dispensing container. As no air can be taken in by the second outlet located at the dispensing container by means of a check valve, only fluid medicinal product from the dispensing container can flow into the dispensing container.

[0049] The depression is formed by means of the elastically deformable dispensing container. After being deformed the material tends to return to its original shape and size. The fluid from the reservoir container flows into the dispensing container because of the low pressure inside the dispensing container. During this re-shaping and refilling process the actuator and therefore the base frame may be pushed back to its starting position.

[0050] Another advantage of the depression is that the dripping time of a needle after the injection is reduced.

[0051] In another preferred embodiment the assembly comprises additional means adapted to refill the dispensing container after dispensing the fluid medicinal product.

[0052] The additional means may for example be a pump. The pump is attached to refill the dispensing container.

[0053] In the following, the invention is described in further detail with reference to the drawings, wherein

Figure 1
shows a view of the assembly in a starting position.

[0054] In Figure 1, identical reference numerals denote identical or comparable components.

[0055] Figure 1 shows an assembly according to the present disclosure. The assembly is surrounded by a housing 10. The housing 10 comprises a right side member 12, a left side member 14, a distal bar 16, a first bar 18, a second bar 20 and a proximal bar 22. All of these bars 16, 18, 20, 22 comprise a central bore.

[0056] A base frame 30 is arranged inside the housing 10 which comprises a bearing in which the base frame 30 is movable in axial direction with respect to the housing 10. The base frame 30 comprises a right longitudinal bar 32, a left longitudinal bar 34, a front face 36 of the right longitudinal bar, a front face 38 of the left longitudinal bar, an actuator bar 40, a support bar 42 and a proximal bar 44 of the base frame.

[0057] The actuator bar 40 comprises a bore. A tube 64 is arranged inside this bore. A check valve is arranged inside the tube 64. The tube 64 is connecting the reservoir container 70 and the dispensing container 60.

[0058] A needle unit 52 is adapted to the distal end 50 of the assembly. The needle unit 52 is seated over a second control member 54.

[0059] The second control member 54 is located in the flow path between an intermediate member 56 and the needle unit 52. The first bar 18 of the housing 10 is located between the intermediate member 56 and the outlet 58 of the spherical body of the dispensing container 60. The center of the first bar 18 comprises a bore to allow for a flow path between the dispensing container 60 and the needle unit 52 passing through the first bar 18.

[0060] At the proximal end 74 of the dispensing container 70, an actuator bar 40 is located

which comprises a small bore to define an aperture for a tube 64 which is connecting the dispensing container 60 with a reservoir container 70. On the right and on the left side of the actuator bar 40 the front faces 36, 38 of two longitudinal bars are shown. These front faces 36, 38 are not flush with the surface of the actuator.

[0061] A first control member 66 is arranged at a first outlet 68 located at the reservoir container 70. The reservoir container 70 is surrounded and connected to a support bar 42 of the base frame 30 which comprises a central opening. This ensures a secure connection of the reservoir container 70 to the housing 10.

[0062] At the proximal bar 44 of the base frame 44, dose dispensing means 76 are shown which comprise a spring 72.

[0063] By pressing the dose dispensing means 76, the base frame 30 is pushed towards the distal end 50 of the housing 10. This movement causes a compression of the dispensing container 60 and liquid medicinal product is dispensed through the needle unit 52.

[0064] The distal movement is stopped by the abutment of the front faces 36, 38 of the longitudinal bars of the base frame 30 with the first bar 18 of the housing 10. The abutment indicates that the maximum dosage of the medicinal product is dispensed. This is the final position of the base frame during the dispensing process.

[0065] Due to the elastic behavior of the dispensing container 60, the dispensing container 60 is withdrawing fluid medicinal product from the reservoir container 70 by suction. This process ends after the dispensing container 60 has reached its original shape.

[0066] The check valve 54 ensures that just the fluid medicinal product from the reservoir container 70 is flowing into the dispensing container 60 by closing the dispensing flow path in proximal direction 74. This is an effective method to prevent the intake of air, tissue or blood into the dispensing container 60.

[0067] The spring 72 at the proximal end 74 of the assembly together with the elastic behavior of the dispensing container 60 after dispensing the fluid medicinal product enables the base frame 30 to be pushed back in proximal direction 74. After the dispensing container 60 is refilled, the movement of the base frame 30 ends in its starting position.

[0068] The term "drug" or "medicament", as used herein, means a pharmaceutical formulation containing at least one pharmaceutically active compound,
wherein in one embodiment the pharmaceutically active compound has a molecular weight up to 1500 Da and/or is a peptide, a proteine, a polysaccharide, a vaccine, a DNA, a RNA, a antibody, an enzyme, an antibody, a hormone or an oligonucleotide, or a mixture of the above-mentioned pharmaceutically active compound,
wherein in a further embodiment the pharmaceutically active compound is useful for the treatment and/or prophylaxis of diabetes mellitus or complications associated with diabetes

mellitus such as diabetic retinopathy, thromboembolism disorders such as deep vein or pulmonary thromboembolism, acute coronary syndrome (ACS), angina, myocardial infarction, cancer, macular degeneration, inflammation, hay fever, atherosclerosis and/or rheumatoid arthritis,
wherein in a further embodiment the pharmaceutically active compound comprises at least one peptide for the treatment and/or prophylaxis of diabetes mellitus or complications associated with diabetes mellitus such as diabetic retinopathy,
wherein in a further embodiment the pharmaceutically active compound comprises at least one human insulin or a human insulin analogue or derivative, glucagon-like peptide (GLP-1) or an analogue or derivative thereof, or exedin-3 or exedin-4 or an analogue or derivative of exedin-3 or exedin-4.

[0069] Insulin analogues are for example Gly(A21), Arg(B31), Arg(B32) human insulin; Lys(B3), Glu(B29) human insulin; Lys(B28), Pro(B29) human insulin; Asp(B28) human insulin; human insulin, wherein proline in position B28 is replaced by Asp, Lys, Leu, Val or Ala and wherein in position B29 Lys may be replaced by Pro; Ala(B26) human insulin; Des(B28-B30) human insulin; Des(B27) human insulin and Des(B30) human insulin.

[0070] Insulin derivates are for example B29-N-myristoyl-des(B30) human insulin; B29-N-palmitoyl-des(B30) human insulin; B29-N-myristoyl human insulin; B29-N-palmitoyl human insulin; B28-N-myristoyl LysB28ProB29 human insulin; B28-N-palmitoyl-LysB28ProB29 human insulin; B30-N-myristoyl-ThrB29LysB30 human insulin; B30-N-palmitoyl- ThrB29LysB30 human insulin; B29-N-(N-palmitoyl-Y-glutamyl)-des(B30) human insulin; B29-N-(N-lithocholyl-Y-glutamyl)-des(B30) human insulin; B29-N-(ω-carboxyheptadecanoyl)-des(B30) human insulin and B29-N-(ω-carboxyheptadecanoyl) human insulin.

[0071] Exendin-4 for example means Exendin-4(1-39), a peptide of the sequence H-His-Gly-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Leu-Ser-Lys-Gln-Met-Glu-Glu-Glu-Ala-Val-Arg-Leu-Phe-Ile-Glu-Trp-Leu-Lys-Asn-Gly-Gly-Pro-Ser-Ser-Gly-Ala-Pro-Pro-Pro-Ser-NH2.

[0072] Exendin-4 derivatives are for example selected from the following list of compounds:

H-(Lys)4-des Pro36, des Pro37 Exendin-4(1-39)-NH2,

H-(Lys)5-des Pro36, des Pro37 Exendin-4(1-39)-NH2,

des Pro36 [Asp28] Exendin-4(1-39),

des Pro36 [IsoAsp28] Exendin-4(1-39),

des Pro36 [Met(O)14, Asp28] Exendin-4(1-39),

des Pro36 [Met(O)14, IsoAsp28] Exendin-4(1-39),

des Pro36 [Trp(O2)25, Asp28] Exendin-4(1-39),

des Pro36 [Trp(O2)25, IsoAsp28] Exendin-4(1-39),

des Pro36 [Met(O)14 Trp(O2)25, Asp28] Exendin-4(1-39),

des Pro36 [Met(O)14 Trp(O2)25, IsoAsp28] Exendin-4(1-39); or

des Pro36 [Asp28] Exendin-4(1-39),

des Pro36 [IsoAsp28] Exendin-4(1-39),

des Pro36 [Met(O)14, Asp28] Exendin-4(1-39),

des Pro36 [Met(O)14, IsoAsp28] Exendin-4(1-39),

des Pro36 [Trp(O2)25, Asp28] Exendin-4(1-39),

des Pro36 [Trp(O2)25, IsoAsp28] Exendin-4(1-39),

des Pro36 [Met(O)14 Trp(O2)25, Asp28] Exendin-4(1-39),

des Pro36 [Met(O)14 Trp(O2)25, IsoAsp28] Exendin-4(1-39),

wherein the group -Lys6-NH2 may be bound to the C-terminus of the Exendin-4 derivative;

or an Exendin-4 derivative of the sequence

H-(Lys)6-des Pro36 [Asp28] Exendin-4(1-39)-Lys6-NH2,

des Asp28 Pro36, Pro37, Pro38Exendin-4(1-39)-NH2,

H-(Lys)6-des Pro36, Pro38 [Asp28] Exendin-4(1-39)-NH2,

H-Asn-(Glu)5des Pro36, Pro37, Pro38 [Asp28] Exendin-4(1-39)-NH2,

des Pro36, Pro37, Pro38 [Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-(Lys)6-des Pro36, Pro37, Pro38 [Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-Asn-(Glu)5-des Pro36, Pro37, Pro38 [Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-(Lys)6-des Pro36 [Trp(O2)25, Asp28] Exendin-4(1-39)-Lys6-NH2,

H-des Asp28 Pro36, Pro37, Pro38 [Trp(O2)25] Exendin-4(1-39)-NH2,

H-(Lys)6-des Pro36, Pro37, Pro38 [Trp(O2)25, Asp28] Exendin-4(1-39)-NH2,

H-Asn-(Glu)5-des Pro36, Pro37, Pro38 [Trp(O2)25, Asp28] Exendin-4(1-39)-NH2,

des Pro36, Pro37, Pro38 [Trp(O2)25, Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-(Lys)6-des Pro36, Pro37, Pro38 [Trp(O2)25, Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-Asn-(Glu)5-des Pro36, Pro37, Pro38 [Trp(O2)25, Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-(Lys)6-des Pro36 [Met(O)14, Asp28] Exendin-4(1-39)-Lys6-NH2,

des Met(O)14 Asp28 Pro36, Pro37, Pro38 Exendin-4(1-39)-NH2,

H-(Lys)6-desPro36, Pro37, Pro38 [Met(O)14, Asp28] Exendin-4(1-39)-NH2,

H-Asn-(Glu)5-des Pro36, Pro37, Pro38 [Met(O)14, Asp28] Exendin-4(1-39)-NH2,

des Pro36, Pro37, Pro38 [Met(O)14, Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-(Lys)6-des Pro36, Pro37, Pro38 [Met(O)14, Asp28] Exendin-4(1-39)-(Lys)6-NH2,
H-Asn-(Glu)5 des Pro36, Pro37, Pro38 [Met(O)14, Asp28] Exendin-4(1-39)-(Lys)6-NH2,

H-Lys6-des Pro36 [Met(O)14, Trp(O2)25, Asp28] Exendin-4(1-39)-Lys6-NH2,

H-des Asp28 Pro36, Pro37, Pro38 [Met(O)14, Trp(O2)25] Exendin-4(1-39)-NH2,

H-(Lys)6-des Pro36, Pro37, Pro38 [Met(O)14, Asp28] Exendin-4(1-39)-NH2,
H-Asn-(Glu)5-des Pro36, Pro37, Pro38 [Met(O)14, Trp(O2)25, Asp28] Exendin-4(1-39)-NH2,

des Pro36, Pro37, Pro38 [Met(O)14, Trp(O2)25, Asp28] Exendin-4(1-39)-(Lys)6-NH2,
H-(Lys)6-des Pro36, Pro37, Pro38 [Met(O)14, Trp(O2)25, Asp28] Exendin-4(S1-39)-(Lys)6-NH2,

H-Asn-(Glu)5-des Pro36, Pro37, Pro38 [Met(O)14, Trp(O2)25, Asp28] Exendin-4(1-39)-(Lys)6-NH2;

or a pharmaceutically acceptable salt or solvate of any one of the afore-mentioned Exedin-4 derivative.

[0073] Hormones are for example hypophysis hormones or hypothalamus hormones or regulatory active peptides and their antagonists as listed in Rote Liste, ed. 2008, Chapter 50, such as Gonadotropine (Follitropin, Lutropin, Choriongonadotropin, Menotropin), Somatropine (Somatropin), Desmopressin, Terlipressin, Gonadorelin, Triptorelin, Leuprorelin, Buserelin, Nafarelin, Goserelin.

[0074] A polysaccharide is for example a glucosaminoglycane, a hyaluronic acid, a heparin, a low molecular weight heparin or an ultra low molecular weight heparin or a derivative thereof, or a sulphated, e.g. a poly-sulphated form of the above-mentioned polysaccharides, and/or a pharmaceutically acceptable salt thereof. An example of a pharmaceutically acceptable salt of a poly-sulphated low molecular weight heparin is enoxaparin sodium.

[0075] Pharmaceutically acceptable salts are for example acid addition salts and basic salts. Acid addition salts are e.g. HCl or HBr salts. Basic salts are e.g. salts having a cation selected from alkali or alkaline, e.g. Na+, or K+, or Ca2+, or an ammonium ion N+(R1)(R2)(R3)(R4),

wherein R1 to R4 independently of each other mean: hydrogen, an optionally substituted C1-C6-alkyl group, an optionally substituted C2-C6-alkenyl group, an optionally substituted C6-C10-aryl group, or an optionally substituted C6-C10-heteroaryl group. Further examples of pharmaceutically acceptable salts are described in "Remington's Pharmaceutical Sciences" 17. ed. Alfonso R. Gennaro (Ed.), Mark Publishing Company, Easton, Pa., U.S.A., 1985 and in Encyclopedia of Pharmaceutical Technology.

[0076] Pharmaceutically acceptable solvates are for example hydrates.

Reference numerals:

[0077]

10 housing

12 right side member

14 left side member

16 distal bar

18 first bar

20 second bar

22 proximal bar

24 bearing

30 base frame

32 right longitudinal bar

34 left longitudinal bar

36 front face of the right longitudinal bar

38 front face of the left longitudinal bar

40 actuator bar

42 support bar

44 proximal bar of the base frame

50 distal end

52 needle unit

54 second control member

56 intermediate member

58 second outlet

60 dispensing container

62 inlet of the dispensing container

64 connecting means

66 first control member

68 first outlet

70 reservoir container

72 spring

74 proximal end

76 dose dispensing means

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

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Patentkrav

1. Indretning til en lægemiddeladministrationsanordning, hvilken indretning har en dispenseringsende, hvortil en kanyleenhed (52) kan fastgøres, hvilken indretning omfatter en dispenseringsbeholder (60) og en reservoirbeholder (70) til at indeholde et væskeformigt lægemiddel, hvor dispenseringsbeholderen (60) og reservoirbeholderen (70) er forbundet til hinanden og er i fluidforbindelse, hvilken dispenseringsbeholder (60) kan genpåfyldes med det væskeformige lægemiddel fra reservoirbeholderen (70), der er kendetegnet ved, at indretningen yderligere omfatter et forbindelsesmiddel (64), der forbinder et indløb (62) i dispenseringsbeholderen (60) med et første udløb (68), der er placeret i reservoirbeholderen (70), hvor en første kontroldel (66) er placeret i en forbindende strømningsbane mellem dispenseringsbeholderen (60) og reservoirbeholderen (70), hvor en anden kontroldel (54) er placeret i en dispenserende strømningsbane for et andet udløb (58), der er placeret i dispenseringsbeholderen (60), hvor indretningen er omgivet af et hus (10), hvor dispenseringsbeholderen (60) kan trykkes sammen til dispensering af en dosis af det væskeformige lægemiddel fra dispenseringsbeholderen (60).

2. Indretning til en lægemiddeladministrationsanordning ifølge krav 1, hvor den første kontroldel (66) åbner mulighed for, at det væskeformige lægemiddel kun kan strømme fra det første udløb (68), der er placeret i reservoirbeholderen (70), i retningen af indløbet (62) i dispenseringsbeholderen (60).

3. Indretning til en lægemiddeladministrationsanordning ifølge et af ovennævnte krav, hvor den anden kontroldel (54) forhindrer indtag af luft eller fluid eller væv i dispenseringsbeholderen (60) via den dispenserende strømningsbane.

4. Indretning til en lægemiddeladministrationsanordning ifølge et af ovennævnte krav, hvor den anden kontroldel (54)

åbner mulighed for, at det væskeformige lægemiddel kan dispenseres gennem det andet udløb (58), der er placeret i dispenseringsbeholderen (60).

5. Indretning til en lægemiddeladministrationsanordning ifølge et hvilket som helst af ovennævnte krav, hvor dispenseringsbeholderen (60) omfatter et hult legeme.

6. Indretning til en lægemiddeladministrationsanordning ifølge et hvilket som helst af ovennævnte krav, hvor dispenseringsbeholderen (60) er elastisk deformerbar til dispensering af en dosis af det væskeformige lægemiddel.

7. Indretning til en lægemiddeladministrationsanordning ifølge et hvilket som helst af ovennævnte krav, hvor indretningen omfatter et hus (10) og en aktuator (40), der kan bevæges i forhold til huset (10).

8. Indretning til en lægemiddeladministrationsanordning ifølge krav 7, hvor aktuatoren (40) er placeret i dispenseringsbeholderen (60) til dispensering af det væskeformige lægemiddel.

9. Indretning til en lægemiddeladministrationsanordning ifølge krav 7 eller 8, hvor aktuatoren (40) er indrettet til at sammenpresse dispenseringsbeholderen (60) og dispensere det væskeformige lægemiddel.

10. Indretning til en lægemiddeladministrationsanordning ifølge et hvilket som helst af ovennævnte krav, hvor dispenseringsbeholderen (60) ekspanderer efter dispensering af det væskeformige lægemiddel og ved hjælp af en nedtrykning, der frembringes i dispenseringsbeholderen (60), kan indsuge væskeformigt lægemiddel fra reservoirbeholderen (70).

11. Indretning til en lægemiddeladministrationsanordning ifølge et hvilket som helst af ovennævnte krav, hvor indretningen omfatter et yderligere middel, der er indrettet til

genpåfyldning af dispenseringsbeholderen (60) efter dispensering af det væskeformige lægemiddel.

DRAWINGS

Fig.1

