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(54) **Title**: REMINDER DEVICE FOR DRUG DELIVERY DEVICES

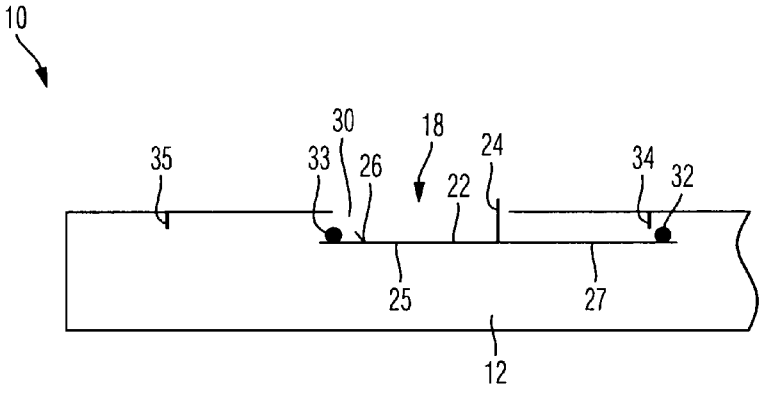

Fig. 1

(57) **Abstract**: The present invention relates to a reminder device for a drug delivery device (10), comprising: a base member (12, 14), - an adjusting element (22; 36) movably disposed with respect to the base member (12, 14) between at least two stop positions, and a display means (18; 28) comprising an information surface (26; 40) being only partially discernible through an aperture (30; 38), wherein at least two designated segments (25, 27) of the information surface (26; 40) become selectively discernible by a displacement of the adjusting element (22; 26) relative to the base member (12, 14).

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Description

Reminder Device for Drug Delivery Devices

Field of the Invention

The present invention relates to a reminder or indicator device particularly adapted for drug delivery devices for keeping a user of the device informed about a given time schedule to apply or to take a particular medicament.

Background and Prior Art

With patients suffering chronic diseases, such like diabetes, frequent and regular administering of a particular medicament, like e.g. insulin has to be conducted. Since the patients are highly accustomed to a regular or irregular administering of the medicament, it may occur, that a patient already shortly after taking or injecting the medicament is no longer aware of this event. Hence, there is a certain danger, that the patient takes the medicament repeatedly.

In practical use, also another scenario may take place, wherein a patient simply forgets to take the medicament at a particular time of the day, e.g. in the morning.

Hence, with drug delivery devices particularly adapted and designed for self-medication, e.g. in a home environment, there always exists a non-negligible risk and danger of underdosage or overdosage, respectively.

Document US 5 482 163 for instance discloses an indicator apparatus including a cylindrical support having a longitudinal axis, an outer surface and a tapered flange structure. There, an expandable indicator ring is disposed over the outer surface being axially displaceable along the longitudinal axis to engage the tapered flange structure and which causes expansion of an indicator ring. The expandable indicator ring is

rotatable about the longitudinal axis over the outer surface to each of a plurality of selected positions.

However, such an indicator apparatus has not been considered to be applicable on pen-shape medical delivery devices for ergonomic as well as for technical reasons.

Objects of the Invention

It is therefore an object of the present invention to provide a reminder device particularly adapted for a drug delivery device which is rather simple, both in construction as well as in regard of its handling.

The reminder device should be implemented in a space-saving and robust way. Moreover, the reminder device should be universally applicable and/or adaptable with various different types of drug delivery devices and medicaments to be administered therewith.

Summary of the Invention

The present invention provides a reminder device for a drug delivery device, such like a pen-type injector. The reminder device can be universally adapted and modified according to the shape and geometry of the drug delivery device. For instance, the reminder device can be integrated in the drug delivery device or can otherwise be provided as a separate device being interconnectable with the drug delivery device. The reminder or indicator device comprises a base member and an adjusting element which is moveably disposed with respect to the base member between at least two stop positions. Preferably, the adjusting element is moveably disposed in or on the base member, thereby serving as a guiding structure or guiding element along which the adjusting element can be moved. Hence, the base member may serve as a support or as a support structure allowing the adjusting element to be variably disposed between the two stop positions.

The reminder device further comprises a display means comprising an information surface. Display means and its information surface is arranged in such a way, that the information surface is only partially discernible through an aperture. Here, at least two designated segments or surface portions of the information surface become selectively discernible by a displacement of the adjusting element relative to the base member. For instance, when the adjusting element is in its first stop position, a first segment of the information surface is revealed while a second portion of the information surface remains concealed. With the adjusting element in its second stop position, the second surface portion of the information surface becomes discernible while the first surface portion is substantially concealed.

Consequently, the size of the aperture through which the information content is to be displayed typically matches with the size of the surface portion comprising a particular information, being typically related to a time schedule.

Therefore, the display means is particularly adapted to display time indicia or time information, like for instance morning, midday, evening, night. Further, depending on the type and characteristics of the medicament to be dispensed or to be injected by way of the drug delivery device, the display means preferably indicates a variety of time indicia that corresponds to the frequency, the particular medicament has to be administered.

The information surface may comprise symbols, words, particular abbreviations or numbers. Furthermore and depending on the type of information disposed on the information surface, the aperture may be designed as a through opening in the base member, e.g. allowing to haptically detect the information disposed underneath on the information surface. This way, the information provided on the information surface can be read by simply touching the information surface, which is generally considered beneficial for patients suffering impaired vision. In the case of visible information, such like printed information it is also conceivable to implement the aperture by way of a transparent surface portion in the base member.

According to a preferred embodiment, the base member is an integral housing component of the drug delivery device. Hence, the reminder device can be designed as an integral component of the drug delivery device.

Furthermore it is intended, that the patient after each application or usage of the drug delivery device manually moves the adjusting element to one of said at least two stop positions. This way, the reminder device can be indicative on whether a particular dose of the medicament has already been taken. By integrating the reminder device into the drug delivery device it can almost be guaranteed, that the configuration of the reminder device exactly matches with the temporal schedule according to which the medicament is to be administered.

According to another preferred aspect, the aperture is formed in the base member. With the adjusting element movably disposed inside the base member, at least one of the at least two designated segments of the information surface becomes discernible through the aperture. By having the aperture integrally formed in the base member or even in a housing component of the drug delivery device, construction and design of the reminder device can be kept on a rather simple and cost-efficient level.

According to another preferred embodiment, the information surface is disposed on the adjusting element. Correspondingly, the base member and its aperture are substantially fixed and by moving the adjusting element relative to the base member, a designated segment of the information surface can be displaced to the region defined by the aperture, this way revealing or concealing respective portions of the information surface of the adjusting element.

According to another preferred embodiment, the adjusting element is slidably disposed in or on the base member in an axial direction between at least a distal and a proximal stop position. In this context, the distal end of the drug delivery device faces towards the skin of the patient, whereas the proximal end of the drug delivery device faces away from an area of injection. The adjusting element can comprise a slider being

slidably guided in or on the base member between at least its distal and its proximal stop position. Depending on whether the slider is in its proximal or distal stop position or in various designated positions therebetween, a respective and corresponding portion of the information surface is positioned in an overlapping manner with the aperture of the base member and can be thus displayed or sensed through touching.

In a further preferred embodiment, the adjusting element comprises a sliding element or a slider having a gripping member protruding through the aperture. In a longitudinal cross-sectional view, the slider or sliding element may comprise a T-structure and related to a substantially cylindrically shaped base member, the slider may feature an information surface substantially extending in axial direction, whereas the gripping member substantially extends radially outwardly. Preferably, the gripping member extends substantially perpendicular from the centre of the information surface, such that a distal and/or proximal margin of the aperture of the base member may eventually serve as an effective stopper for the gripping member.

Hence, since the gripping member radially outwardly or orthogonally protrudes from the display means and its information surface, axial displacement of the adjusting element in proximal and distal direction is limited by the gripping element hitting a respective proximal or distal margin of the aperture.

It is further of advantage, when the adjusting element and the base member comprise mutually corresponding latching elements for keeping the adjusting element in a selected position. By way of the latching elements disposed on the adjusting element as well as on or in the base member, inadvertent displacement of the adjusting element can be effectively prevented. For instance, the adjusting element may feature protruding pins at distal and/or proximal end sections of its display means. These pins may for instance project radially outwardly, hence towards an inside wall section of the base member. Correspondingly, the base member may feature respective radially inwardly protruding latching elements adapted to form a positive interlock or a snap-in feature with said radially outwardly protruding pins of the display means and/or of its adjusting element.

Axial position of mutually corresponding latching- or snap-in elements of the display means and the base member is chosen such, that the adjusting element is at least axially fixed in its at least two stop positions. Additionally, it is conceivable, that the display means comprises a toothed surface meshing with a flexible deformable ratchet member or the like.

In a further preferred embodiment and irrespective of the implementation of the base member as integral or separate part of the housing of the drug delivery device, the base member is of substantially cylindrical geometry. In such configuration, the adjusting element may, according to another preferred aspect, be rotatably mounted on the outer circumference of the base member. Hence, instead of slidably displacing the adjusting element, it is also conceivable to rotatably displace said adjusting element for selectively displaying designated segments of the information surface disposed underneath the adjusting element.

In this embodiment it is further of advantage, when the aperture is formed in the adjusting element while the information surface is disposed on the outer circumference of the base member. It may be also beneficial, when the information surface at least partially or entirely surrounds the circumference of the base member. Moreover, it is intended, that the adjusting element comprises a ring structure having an aperture and that by rotating the ring, a designated portion of the information surface becomes discernible through said aperture, either by way of visible perception or by way of tactile sensing.

Hence, the information surface may comprise visible and/or haptic information discernible either by way of visual perception or by way of touching.

In another independent aspect, the invention further relates to a drug delivery device for dispensing a dose of a medicament, preferably by way of injection. The drug delivery device comprises at least one housing component, e.g. a body component adapted to receive a drive mechanism and/or a cartridge holder component adapted to

receive a cartridge filled with a medicament to be injected by the drug delivery device. Additionally, the drug delivery device comprises a cartridge filled with the medicament and having a piston slidably disposed therein. The piston typically acts as a proximal seal of the cartridge. By displacing the piston in distal direction, e.g. by way of a piston rod of a drive mechanism, a respective pressure builds up in the cartridge and if appropriately connected with a respective injection needle, a defined dose of the medicament can be expelled and thus dispensed.

The drug delivery device therefore has a drive mechanism that comprises the piston rod to be operably engaged with the piston of the cartridge for dispensing of a dose of the medicament.

The drug delivery device, which is typically designed as pen-type injector further comprises a reminder device as described above.

According to a further preferred aspect, the housing component of the drug delivery device and the base member of the reminder device are integrally formed. In other words, the base member can be fully integrated in the housing component. Hence, the housing component may serve as the base member of the reminder device. This way, implementation of the reminder device does not require separate and additional components. Only a housing component of the drug delivery device has to be modified accordingly in order to receive e.g. a respective display means slidably or rotatably mounted to the base member.

In a further, alternative embodiment, the base member and/or the reminder device is detachably connectable with the housing component of the drug delivery device. Here, the reminder device can be separately put on the market and already existing drug delivery devices can be retrofitted by a respective reminder device.

The term „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.

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.

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-carboxyhepta¬decanoyl) human insulin.

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.

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.

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.

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.

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.

Pharmaceutically acceptable solvates are for example hydrates.

It will be further apparent to those skilled in the pertinent art that various modifications and variations can be made to the present invention without departing from the spirit and scope of the invention. Further, it is to be noted, that any reference signs used in the appended claims are not to be construed as limiting the scope of the present invention.

Brief Description of the Drawings

In the following, preferred embodiments of the invention are described in greater detail by making reference to the drawings in which:

Figure 1 illustrates a first embodiment of an integrated reminder device in cross-sectional illustration,

Figure 2 shows the reminder device according to Figure 1 in a top view illustration and

Figure 3 is illustrative of another embodiment of the reminder device with a rotatable ring.

Detailed Description

The reminder device as illustrated in Figures 1 and 2 is entirely integrated into a housing component 12, 14 of a drug delivery device 10. As particularly illustrated in Figure 2, the reminder device comprises a display means 18 positioned in a body 12 or main housing component of the drug delivery device. The drug delivery device further comprises a cartridge holder 14 at its distal end section and further has a dose button 16 at its proximal end for selecting and/or setting of a dose and eventually for initiating a dose dispensing procedure.

The housing component 12 of the drug delivery device 10 of pen-injector type comprises a rectangular aperture 30 in form of a through opening. Underneath the aperture 30, an adjusting element 22 comprising a sliding element is slidably disposed in axial direction. As illustrated in Figure 1, the adjusting element 22 comprises a distal surface segment 25 and a proximal surface segment 27. In the centre of the display means 18 or of the adjusting element 22 a radially upwardly, hence radially outwardly protruding gripping member 24 is provided allowing to manually displace the adjusting element 22 in either direction, hence distally, that is to the left in Figure 1 or proximally, that is to the right in Figure 2.

The adjusting element 22 can be displaced irrespective on the configuration of the drive mechanism of the drug delivery device 10 and/or independent of the filling level of the cartridge, being not further illustrated here. At its upper surface 26 facing towards the aperture 30 in the housing component 14, the adjusting element is provided with visible or haptic information for indicating when the drug delivery device has been used for the last time or when a next usage of the drug delivery is due. Accordingly, since the adjusting element 22 and its information surface 26 comprise two surface segments 25, 27, the illustrated display means 18 is adapted to indicate for instance a particular time or daytime, like morning or evening.

Prior to or after usage of the drug delivery device 10 the sliding element 22 can be translationally displaced in distal direction, such that the surface segment 27 becomes visible through the aperture 30 of the housing component 12.

Longitudinal displacement of the sliding element 22 can be conducted by the gripping member 24 radially protruding through the aperture 30. Preferably, the free end of the gripping member 24 at least slightly protrudes from the outer surface of the housing component 12, thus facilitating its gripping and a respective axial displacement thereof.

As can be further seen from Figure 1, adjusting element 22 and the base member 12 comprise mutually corresponding latching elements 32, 33, 34, 35. By way of said latching elements 32, 33, 34, 35, the sliding member 22 can be kept and secured in its

proximal or distal stop position, respectively. The latching elements 34, 35 of the base member 12 are for instance designed as radially inwardly protruding lugs being at least slightly deformable, thus allowing to displace a corresponding pin 32 of the adjusting element 22 into a position as depicted in Figure 1. Here, the radially outwardly protruding pin 32 of the adjusting or sliding element 22 is positioned proximal compared to the corresponding radially inwardly protruding lug 34.

This way, a form fitting or positive interlock of adjusting element 22 and base member 12 can be attained. Similarly, when moving the adjusting element 22 in distal direction, hence to the left in Figure 1, latching elements 32, 34 may disengage and upon reaching a distal stop position, oppositely located and mutually corresponding latching elements 33, 35 may engage. By providing a latching or fastening mechanism for the adjusting element 22 by elastically deforming at least one of the interengaging latching elements, a haptic feedback can be provided to the user, that a definite end position of the adjusting element 22 has been reached.

The various protruding or latching elements 32, 33, 34, 35 together with corresponding recesses can be integrally formed with the housing components 12, 14 and/or with the adjusting element 22. In particular, when the housing components 12, 14 and/or the adjusting element 22 are designed as injection moulded plastic components, formation of such protruding latching elements 32, 33, 34, 35 or corresponding recesses can be generated almost cost-neutral.

Additionally, also the radially protruding gripping member 24 may but against a proximal or distal margin of the rectangular aperture 30 thus preventing any further axial displacement in the respective direction.

In a further embodiment according to Figure 3, the adjusting element 36 comprises a ring rotatably mounted on the outer circumference of a substantially cylindrical base member. In this embodiment, the adjusting element 36 comprises an aperture 38 for discerning or revealing a particular segment of an information surface 40 disposed underneath. With this display means 28 it is intended to rotate the ring-like adjusting

element 36 in order to reveal particular time-related information, like certain numbers, abbreviation or even written words.

Depending on the frequency of prescribed administering of a dose of the medicament, a plurality of surface segments can be arranged along the circumference of the base member 12. For instance, numbers revealed by the aperture 38 may indicate the time of the day, when a prescribed medication has to be taken. Also, if a medicament has to be taken only once a day, respective abbreviations of the day names will be illustrated in the aperture, indicating on whether the medicament has been taken that particular day.

As indicated in Figure 3, the adjusting ring-like element 36 is directly mounted on a housing component 12 of the drug delivery device 20. However, in particular with retrofitting embodiments it is also conceivable, that the base member is designed as a separate part that can be mounted on the outer circumference of the pen housing 12. This way, also such housing components 12 of drug delivery devices 20 being of non-circular cross-section can be provided with a respective reminder device, wherein the base member provides a respective compensation means for mounting a rotatable ring 36 onto a non-circular-shape pen housing 12.

List of Reference Numerals

10 drug delivery device
12 housing component
14 housing component
16 dose button
18 display means
20 drug delivery device
22 adjusting element
24 gripping member
25 surface segment
26 information surface
27 surface segment
28 display means
30 aperture
32 latching element
33 latching element
34 latching element
35 latching element
36 adjusting element
38 aperture
40 information surface

Claims

1. A reminder device for a drug delivery device, comprising:

- a base member (12, 14),

- an adjusting element (22; 36) movably disposed with respect to the base member (12, 14) between at least two stop positions, and

- a display means (18; 28) comprising an information surface (26; 40) being only partially discernible through an aperture (30; 38), wherein at least two designated segments (25, 27) of the information surface (26; 40) become selectively discernible by a displacement of the adjusting element (22; 26) relative to the base member (12, 14).

2. The reminder device according to claim 1, wherein the base member (12, 14) is an integral housing component of the drug delivery device.

3. The reminder device according to any one of the preceding claims, wherein the aperture (30) is formed in the base member (12, 14).

4. The reminder device according to any one of the preceding claims, wherein the information surface (26) is disposed on the adjusting element (22).

5. The reminder device according to any one of the preceding claims, wherein the adjusting element (22) is slidably disposed in the base member (12, 14) in an axial direction between at least a distal and a proximal stop position.

6. The reminder device according to any one of the preceding claims, wherein the adjusting element (22) comprises a sliding element having a gripping

member (24) protruding through the aperture (30).

7. The reminder device according to any one of the preceding claims, wherein the adjusting element (22, 36) and the base member (12, 14) comprise mutually corresponding latching elements (32, 33, 34, 35) for keeping the adjusting element (22; 36) in a selected position.

8. The reminder device according to any one of the preceding claims, wherein the base member (12, 14) is of substantially cylindrical geometry.

9. The reminder device according to any one of the preceding claims 1 or 2, wherein the adjusting element (36) is rotatably mounted on the outer circumference of the base member (12, 14).

10. The reminder device according to any one of the preceding claims 1, 2 and/or 7 to 9, wherein the aperture (38) is formed in the adjusting element (36).

11. The reminder device according to any one of the preceding claims 1, 2 and/or 7 to 10, wherein the information surface (26) is disposed on the circumference of the base member (12, 14).

12. The reminder device according to any one of the preceding claims, wherein the information surface (26; 40) comprises visible and/or haptic information.

13. A drug delivery device for dispensing a dose of a medicament by way of injection, comprising:

- at least one housing component (12, 14),

- a cartridge filled with the medicament and being disposed in the housing and having a piston slidably disposed therein,

- a drive mechanism comprising a piston rod to be operably engaged with the piston of the cartridge for dispensing of a dose of the medicament, and

- a reminder device according to any one of the preceding claims.

14. The drug delivery device according to claim 13, wherein the housing component (12, 14) and the base member (12, 14) of the reminder device are integrally formed.

15. The drug delivery device according to claim 13, wherein the base member (12, 14) and/or the reminder device is detachably connectable with the housing component.

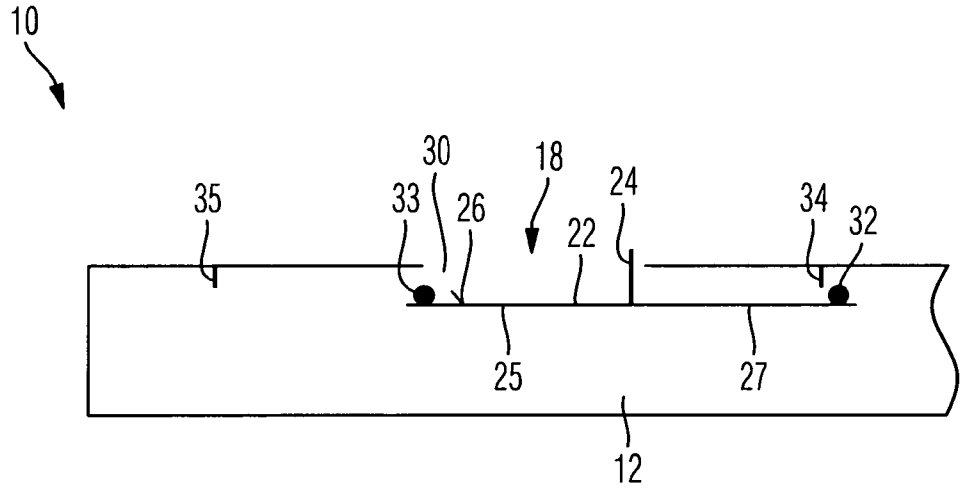

Fig. 1

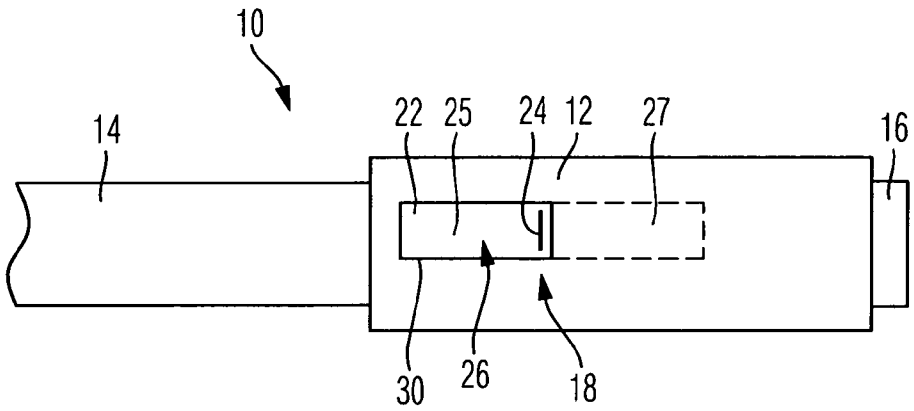

Fig. 2

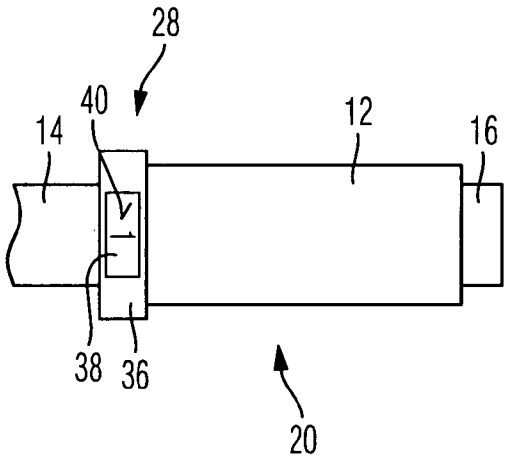

Fig. 3