EUROPEAN PATENT SPECIFICATION

A CONTAINER FOR A BLISTER PACKAGE

BEHÄLTER FÜR EINE BLISTERVERPACKUNG

CONTENANT D’EMBALLAGE SOUS BLISTER

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INTRODUCTION

[0001] The present invention relates to a container for a blister package e.g. containing doses of a pharmaceutical composition, the container comprising a housing forming a compartment for the blister package, means for indicating towards a user an appropriate time of taking a dose of the pharmaceutical composition, and means for detecting a user’s access to the blister package and thereby access to the pharmaceutical composition.

BACKGROUND OF THE INVENTION

[0002] A blister package is typically a transparent, moulded piece of plastic forming a cavity or a plurality of cavities which are sealed with a peelable or breakable foil or a sheet of cardboard. Blister packages are typically used to package and display an item of merchandise or for packing doses of pharmaceutical compositions, sweets, chewing gum etc. A blister package is sometimes referred to as a bubble pack.

[0003] In connection with blister packages with pharmaceutical compositions, dispensers and containers exist with timer means for noticing the user when to take a dose. Some of the existing systems automatically record the removal of a dose from a blister package, or record compliance of the removed doses with a prescribed medication plan for the pharmaceutical composition in question. The user may e.g. receive a signal which indicates when to take a dose of the medical composition, or which indicates how much overdue the last dose is.


[0005] Document DE3514312 discloses a container comprising all the technical features of the preamble of claim 1.

DESCRIPTION OF THE INVENTION

[0006] It is an object of the present invention to improve the existing containers for blister packages. The invention provides a container of the kind mentioned in the introduction in which the container further comprises an ejection structure or rejection structure to which the blister package can be fixed as claimed in claim 1. Ejection structure and rejection structure are to be understood as interchangeable expressions in the following specification. The ejection structure is movable towards an open position for moving the blister package in an outward direction out of the compartment and movable towards a closed position for moving the blister package in an inward direction into the compartment.

[0007] Since the blister package is moved into, and out of the compartment by the ejection structure which forms part of the container, sliding contact between the container and the blister package during insertion or removal of the blister package from the compartment may be avoided completely. This enables enhanced functioning of the container, e.g. with an improved guiding of the blister package into and out of the compartment and in particular with respect to the use of blister packages of various kinds, sizes and conditions. Due to the guided insertion of the blister package into the compartment, the user may feel more certain about correct positioning of the blister package in the compartment, and sensors for detecting presence of a blister package or a user’s access to a blister package may operate more reliably. Furthermore, the avoidance of direct sliding contact between the blister package and the container may increase the protection of the blister package, and unwanted opening and exposure of a dose of a pharmaceutical compound due to wear can be avoided.

[0008] The ejection structure may be guided by sliding contact between a surface of the ejection structure and a surface of the housing, and to improve the ease of movement, matching surfaces could form a sliding bearing or a linear roller bearing. The ejection structure may preferably be guided in the housing by a linear slide allowing a linear movement of the ejection structure relative to the housing, and the position of the ejection structure may preferably be supported by friction between a surface of the ejection structure and a surface of the housing. In one embodiment, the ejection structure moves back and forth in a slot which is dimensioned to receive the blister package - i.e. the compartment is formed by a slot in the housing. To facilitate insertion of the blister package into the slot, the slot may form an opening with a bevelled or chamfered edge which guides the blister package into the slot.

[0009] The linear slide may define an end-stop beyond which further movement of the ejection structure relative to the housing is prevented. Separation of the ejection structure from the housing is thereby prevented.

[0010] User-access to the blister package may be detected e.g. by surveillance of the blister package itself in the device, e.g. by mechanical, optical or other means which is triggered by movement of the blister package itself. Blister packages may, however, be of varying size, type and condition. As an example, the size or shape of the blister packages may be different from blister package to blister package, and some users may already have removed a portion of a blister package before inserting the remaining portion into the compartment. The varying conditions of blister packages
render detection of movement of the blister package difficult and inaccurate. In one embodiment of the invention, the
user-access is detected by detection of movement of the ejection structure rather than by surveillance of the blister
package itself. Accordingly, increased safety in the detection of the user-access may be obtained independent on the
type, size and condition of the blister package. The user-access may be detected by any mechanical switching means,
by an optical detector, by a magnetically triggered switch or by magnetic-inductive means arranged to detect movement
of the ejection structure relative to the housing. As an example, user-access may be determined by a mechanical switch
which is embedded in the linear guide, or which is located along the linear guide to be triggered when the ejection
structure is moved in the outward or inward direction.

[0011] The user-access may also be detected optically, e.g. by interruption of a beam of electromagnetic radiation,
by a magnetically sensitive switch located on one of the housing and the ejection structure or by electrical induction
triggered by the movement of the ejection structure relative to the housing.

[0012] User-access may also be registered by manual activation of an alternative registration structure, e.g. a com-
pliance button switch etc.

[0013] To provide a clear indication to the user that the user-access has been recorded, the switch may provide a
tactile indication, or indication may be given by means of an electrically or mechanically generated sound.

[0014] In one embodiment, user-access is only registered by movement of the ejection structure in one of the outward
and inward directions. As an example, user-access may not be registered upon movement of the ejection structure out
of the compartment but only when the ejection structure and thus also the blister package are moved into the compartment.

[0015] In one embodiment, the container is adapted to store a blister package containing doses of a pharmaceutical
composition, e.g. pills, tablets, capsules, suppositories, dragées, chewing gums, powder, granule, gels, a liquid etc.,
e.g. for parenteral use, such as adapted for buccal or sublingual administration. If such a composition is designed for
administration at a fixed time interval, in the following referred to as "in accordance with a medication plan", i.e. not too
often or seldom, support may be provided to the user by a compliance structure adapted to indicate a time at which the
latest user-access occurred, i.e. when the user gained access to the blister package latest. The compliance structure
may further be adapted to provide the duration since last user-access.

[0016] In a more advanced embodiment, the compliance structure contains information relating to a medication plan
and automatically alerts the user when it is time to take a dose of the pharmaceutical composition. As an example, the
compliance structure could be adapted to switch between an attentive state in which the user is supposed to take a dose
of the drug compound, and a non-attentive state in which the user is supposed to wait for the state to change to the
attentive state before taking further doses. The switching from the non-attentive state to the attentive state could be
triggered by a timer which is programmed in accordance with medication plan for the drug compound in question. The
switching from the attentive state to the non-attentive state could be triggered by user-access, e.g. by registration of
movement of the ejection structure. User-access may thereby reset the timer which once again counts when the next
dose of the pharmaceutical composition is due and switches the container to the attentive state.

[0017] In one embodiment, user-access is only registered when the compliance structure is in the attentive state.
When the compliance structure is in the non-attentive state, i.e. when it is not time for the next dose of the pharmaceutical
composition, neither movement of the ejection structure, nor manual operation of a push button switch resets the timer
which counts the time until the next dose of the pharmaceutical composition is due. In another embodiment, user-access
may only be registered, and the timer thus be reset, by manual operation of the push button switch when the compliance
structure is in the attentive state. I.e. movement of the ejection structure does not reset the timer. This reduces the
electrical consumption of the device if the user moves the blister package into or out of the container when the compliance
structure is in the non-attentive state, and the feature thus saves battery and further allows replacement of the blister
package without resetting the timer.

[0018] In a more advanced embodiment, the compliance structure is adapted to read a medication plan from the blister
package, e.g. by means of any technique for electronic reading known in the art, e.g. magnetically, optically etc. In one
embodiment, the container comprises a plurality of reading sensors, e.g. adapted to read individual medication plans
for a plurality of doses included in a blister package. In this embodiment, the sensors could also be utilised for recording
the history of the medication, e.g. that dose no. 1 was taken at a specific point in time, dose no. 2 at another point in
time etc. This feature facilitates documentation of a medication which is based on a number of different doses included
in a single blister package.

[0019] The user may indicate a desire for obtaining information relating to the compliance in a very simple way by use
of a push button switch. As an example, the user may push a pre-specified number of times, e.g. three times to request
information about the state of the compliance structure, i.e. if it is time for a new dose of the pharmaceutical composition
or optionally - when it is time for the next dose.

[0020] To indicate towards the user if the ejection structure and thus also the blister package are not in the closed
position, the container may further comprise a second timer adapted to determine a period of time in which the ejection
structure has not been in the closed position. The compliance structure may be adapted only to switch from the attentive
state to the non-attentive state if the timer has determined that the ejection structure has not been in the closed position.
in a time interval which is longer than a pre-specified time interval.

[0021] The attentive state may be indicated to the user by a notification signal such as a light, sound, or vibration signal, or a combination there between, or the container may even transmit a notification signal by wireless communication, e.g. via Bluetooth™ communication to an external device. Wireless communication of the notification signal facilitates remote surveillance of a patient, e.g. at a hospital or at a home for people who require care.

[0022] The user may not notice the notification signal, e.g. due to noise or other circumstances. In order to save battery or in order not to disturb unnecessarily, the notification signal may be transmitted as repeated signals at pre-specified periods of time after the shift of the compliance structure from the non-attentive state to the attentive state. In one embodiment, the pre-specified period of time increases between each transmission. As an example, one notification signal lasting e.g. 15 seconds may be transmitted once the compliance structure switches to the attentive state, after 5 minutes a subsequent notification signal may be transmitted if the container is still in the attentive state. After e.g. 15 minutes yet another notification signal could be transmitted etc.

[0023] If the user ignores the signal, the container may be adapted, e.g. after a pre-selected number of repeated signals, to shift automatically back to the non-attentive state. In this case, the container may record a non-compliance insignia for that period. According to medication instructions for a specific pharmaceutical composition, a number of subsequent "correct" points in time at which a dose of the pharmaceutical composition is to be taken, i.e. a specific interval between "correct" user-accesses. The container may be adapted for each interval to determine if user-access has been established, i.e. e.g. if the ejection structure has been moved. If the ejection structure has been moved, the container registers "compliance" for the interval, and if not, it registers "non-compliance" for the interval. After a certain amount of intervals, the number of compliances or non-compliances out of a number of intervals may be presented to the user or transmitted via an interface to an external device.

[0024] The number of compliances within a period could be transformed into a more easily understandable identifier of the compliance, e.g. numeral score, or into a signal given by illumination of a light emitting diode (LED) or similar light on an outer surface of the container, e.g. in a accordance with a colour code, or a sound signal may be transmitted in accordance with a code which indicates the number of compliances or non-compliances for a period involving a certain number of intervals.

[0025] As an example, more than one registration of non-compliance out of five may result in a red light signal or a warning tone to be transmitted to the user, whereas one or less non-compliances out of five may result in a green colour, or no warning tone being transmitted to the user. The container could be adapted always to calculate the compliance from a period comprising a fixed number of intervals. I.e. each time a new interval is started, the evaluation of compliance is based on the latest interval and a fixed number of previous intervals. This provides a moving average, i.e. an average over a fixed preceding period of time.

[0026] In one embodiment, the container comprises an interface structure e.g. based on an USB interface etc by which the container may communicate with an external computer system. As an example, the compliance data may be communicated to a computer, e.g. at health centre, in order to monitor the medication and compliance. Alternatively, or additionally, the container could be adapted for wireless communication or it may comprise a memory module which is replaceable, e.g. an SD-memory module of the kind known from electronic appliances. This would allow the user to forward the compliance date to an external computer system e.g. by regular mail.

[0027] To increase the area of visual appearance of a light signal on an outer surface of the container, the light may be generated by illuminating means such as an LED which is arranged to transmit the light transversely into a prism, e.g. a prism which forms part of a front cover of the container. The prism may spread the light and make the signal more easily detectable.

[0028] In one embodiment, the prism may form a shape which indicates the type of drug substance for which the medication instructions are provided and which is comprised in the blister package.

[0029] The blister package is fixed to the ejection structure by a gripping means comprising two parts forming a slot into which the blister package is inserted. The gripping means comprises a back member and an adjacent front member located relative to each other so that a blister card can be received there between. The back member and front member may e.g. be movable relative to each other in a direction towards and away from each other in a manner corresponding to a clip or clothes-pin. The clip-like gripping means may be dimensioned relative to the slot into which the blister package is received so that the back and front members are pressed together by the inner surfaces of the slot.

[0030] In one embodiment, the gripping means is adapted to support a blister package of the kind wherein a number of doses, e.g. tablets or pills are located in individual bulges or cavities in a surface of the blister package. In this embodiment, at least one of the back and front members may comprise a gripping structure adapted at least partly to encircle a portion of one of the bulges in the surface of the blister package. The gripping means may in particular prevent rotation of the blister package during the movement of the ejection structure into and out of the container. As an example, the gripping means may comprise one or more support profiles which extend along one or more outer edges of the blister package and thus prevent rotation of the blister package relative to the ejection structure. The support profiles may e.g. comprise grooves in which the edges of the blister package are received.
In one embodiment, the container comprises detection means capable of detecting presence of a blister package which is fixed to the ejection structure. As an example, the detection means may alert the user if no blister package is present in the container for a certain amount of time. In another embodiment, the container may comprise detection means capable of determining the content, e.g. the number of doses which remains in a blister package, and to inform the user when a certain level is reached. This will allow the user to procure a new blister package in due time. The detection means could form part of the gripping means. In one embodiment, the detection means is divided into two separate sensors which register the contents of a blister with two rows of doses. In this embodiment, the sensors may e.g. determine the number and locations of doses in each of the two rows of doses.

The container may be adapted to accommodate further blister packages, e.g. in separate compartments.

The container may comprise a tearing-off edge along which a portion of the blister package may be torn off. This may e.g. facilitate removal of one single dose or one row of doses from the blister package. For this purpose, the ejection structure moves between different locations which are determined by tactile indications. By movement between two of these locations, one row of doses is moved across the tearing off edge whereby that row of doses may be torn off.

In one embodiment, the container is shaped so that it can be located in an upright position on a table, e.g. as a frame for a picture with an un-foldable stand on a back surface or like a book which can be unfolded. In the embodiment wherein the container is opened like a book, the opening of the container may register the user-access.

In one embodiment, the container comprises one single operation button by which various functions may be controlled depending on a number of times the button is operated. As an example, a single activation may indicate user-access, three activations within a certain time, e.g. three activations within 5 seconds may indicate that the user requests data concerning compliance, and a larger number of activations, e.g. 5 may indicate a desire of switching the compliance structure off. In this case, the container may be used as a regular container for storing blister packages.

In one example, cover means for covering an opening of the container in a closed condition of the container are provided, the cover means being movable between a closed end position and an open end position, the cover means in the open end position having been rotated about a longitudinal axis of the container in order to form a stand for positioning of the container in an inclined position on a horizontal surface. Preferably, at least part of the movement of the cover means from the closed end position to the open end position actuates movement of the ejection structure from an idle position to an ejected position, and vice versa. These features provide an easy-to-use, very functional and aesthetically appealing container with a cheap structure that can be easily manufactured.

In a second aspect, the invention provides a container with a compartment for a blister package, and a blister package as claimed in claims 1, said blister package forming at least one row of cavities with doses, the row extending between a first end portion and a second end portion, characterized in that at least one of the end portions and an adjacent cavity cooperate with gripping means of the container to facilitate movement of the blister package into the compartment and out of the compartment. In one embodiment, the blister package comprises a plurality of weakening lines facilitating division of the blister package between each of the cavities whereby the user may tear off a used portion of the blister package when removing a dose. In this embodiment, it is an object not to provide the weakening line between at least one of the end portions and an adjacent cavity. This facilitates that the user can not, by accident, remove that end portion from the blister package, and that end portion may thus serve for engagement with the gripping means of the container.

DETAILED DESCRIPTION OF THE INVENTION

In the following, preferred embodiments of the invention will be described in further details with reference to the drawing in which:

Fig. 1 shows three different views of a first embodiment of a container according to the present invention,

Fig. 2 shows a variant of the container of Fig. 1 with a removable stand,

Fig. 3 shows a logic flow diagram of the container of Fig. 1,

Fig. 4 shows another variant of the container of Fig. 1 wherein the second compartment is opened,

Fig. 5 shows the slots into first and second compartments of the container of Fig. 1,

Fig. 6 shows yet another variant of the container of Fig. 1 with a tear-off edge for separation of one row of doses from a blister package in the container,

Figs 7 to 9 show three different views of an example of a container, Fig. 10 shows a partial cross section of parts
of the example of Figs 7 to 9, and

Fig. 10a shows a detail of Fig. 10.

Figs 1, 2 and 4 - 6 show a first embodiment of a container 1 according to the invention.

[0039] As shown in Fig. 1, the container 1 of the first embodiment comprises a first slot 2 forming an opening into a first compartment and a second slot 3 forming an opening into a second compartment. The first compartment is for storing a first blister package and the second compartment is for storing a second blister package. The first blister package is an active blister package from which a pharmaceutical composition is consumed, and the second blister package is a "spare" blister package which can be moved to the first compartment when the blister package stored in the first compartment is empty. The container comprises a housing 4, means for indicating towards a user an appropriate time of accessing the blister package, e.g. by means of a sound signal, fixing means 5 for holding the blister package, and means for detecting a users access to a blister package in the compartment.

[0040] Insertion and withdrawal of the blister into an out of the first compartment is facilitated by an ejection structure which is operated by the handle 6 which can slide back and forth on the outer surface of the container and thereby moves the blister package into and out of the compartment. The rejection structure is movable towards an open position for moving the package in an outward direction out of the first compartment and movable towards a closed position for moving the package in an inward direction into the first compartment. When the user moves the rejection structure, the movement is registered as being a users access to the blister package in the first compartment. The rejection structure is attached to the housing via a linear guide providing linear sliding of the rejection structure relative to the housing.

[0041] The container comprises a single compliance push button switch 7 by which the user may activate various functions depending on the number of activations of the switch within a pre-specified period of time.

[0042] The container comprises signal transmitting means 8 which transmits a coloured light signal where the colour indicates the compliance of the user, i.e. how many times within a specified period the user has complied with a medication plan. In addition, the container comprises a transmitter to transmit a sound signal which indicates when it is time for a user to take a dose of the pharmaceutical composition in the blister package. In this embodiment, the container shifts from a non-attentive to an attentive state. When the user moves the rejection structure out of the closed position and back into the closed position, i.e. when moving the blister package back into the first compartment after having taken the dose, the container shifts back from the attentive state to the non-attentive state and compliance is registered for the interval in which the dose is taken in accordance with the medication plan.

[0043] To support correct medication, the container has a timer, and the following functions are performed by processing means in the container:

- A time which is counted by the timer is reset by registration of user-access to the blister package. In practise this registration is achieved either by moving the rejection structure to an open position and back to the closed position or by a users activation of compliance button 7.

- Alarm is transmitted after a specific period, e.g. after 24 hours when the medication plan prescribes a dose of the pharmaceutical composition once a day.

- Snooze function if dose is not taken after 15 minutes and 30 minutes from the first alarm

- Remind alarm if dose is not taken within 6 hours after first alarm.

- Remind alarm if dose is not taken within 12 hours after first alarm.

- If dose is not taken later within 24 hours+ 12 hours, a count is set to “out of compliance”

[0044] In addition, the container is adapted to determine interactive compliance as follows:

"Adherence" is defined as the sum of compliance and persistence

"Compliance" is taking the medication as prescribed by the medication plan, e.g. once daily.

"Persistence" is staying on treatment over the whole treatment regiment

"Compliance time" is defined as 24 hours plus reminder time, max 12 hours (total 24+12=36 hours). Compliance
time starts always from default time (start time set by user when resetting the device). "Default time" is defined as the time the user sets as alarm time by pressing compliance button > 5 seconds. "Compliance time frame" = "compliance time" - 6 hours to "compliance time" +12 hours.

Example of alarm time (4 times reminding alarm after the first alarm for the worst case)

<table>
<thead>
<tr>
<th>First day XX:XX</th>
<th>Default time + Sound 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second day XX:XX</td>
<td>Alarm 2. Not taken (as example)</td>
</tr>
<tr>
<td>Second day, snooze XX:XX +15min</td>
<td>Alarm 2. Not taken (as example)</td>
</tr>
<tr>
<td>Second day, snooze XX:XX +30min</td>
<td>Alarm 2. Not taken (as example)</td>
</tr>
<tr>
<td>Second day XX:XX +12 hours</td>
<td>Alarm 2. Not taken (as example)</td>
</tr>
<tr>
<td>Third day XX:XX</td>
<td>Alarm 2. First alarm on default time.</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
</tr>
</tbody>
</table>

Example of compliance function

5 - 7 days inside compliance (Green)
3 - 4 days Attention compliance (Orange)
0 - 2 days Out of compliance (Red)
The signal transmitting means 8 comprises a light emitting diode (LED). The LED illuminates a prism with a shape which indicates the type of pharmaceutical composition for which the medication plan is programmed in the compliance structure. In the present embodiment, the shape indicates a straw, and the pharmaceutical compound is directed towards allergy against grass. Three-color codes shall be used to signalize compliance: Green, Orange and Red. Green means "inside compliance", Orange means "attention compliance", and Red means "out of compliance".

The transmitter to transmit a sound is adapted to transmit a sound level at 74 dB with background 65 dB.
measured 8 inches from the device. Alarm is activated in 30 seconds or recommended action is performed.

Following alarms/sounds shall be used:

<table>
<thead>
<tr>
<th>Alarm/sound</th>
<th>Sound description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>xx</td>
<td>&quot;Default time set&quot; Two short peeps within 0.5 seconds</td>
</tr>
<tr>
<td>2</td>
<td>xx-xx-xx-xx-xx-</td>
<td>&quot;Take a dose&quot;</td>
</tr>
<tr>
<td>3</td>
<td>xxx-xxx-xxx-xxx</td>
<td>&quot;Push blister package back into the compartment&quot;</td>
</tr>
<tr>
<td>4</td>
<td>xx-xx-xx-xx-xx-xx-</td>
<td>&quot;Press compliance button&quot;</td>
</tr>
</tbody>
</table>

The container is adapted to be operated on batteries 9.

The container is specifically made for a blister package 10 comprising two columns 11, 12 of doses in tablet form. Each column forms a row with 5 doses, and between each row, the blister package comprises a weekend line 13 at which the row may be torn off from the remaining portion of the blister package.

The gripping structure comprises a front member and a back member which is located on the opposite side of the blister package 10 (not visible in Fig. 1). The front member comprises two elements 14, 15, one of which comprises an arched portion which partly encircles a protruding portion of the blister package, i.e. partly encircles one of the portions in a last row in one of the columns.

Fig. 2 shows a variant of the container according to the first embodiment of the invention with a removable stand 16 which is attachable to the back surface of the container and allows the container to be positioned in an upright position on a table.

Fig. 3 shows a logic flow diagram.

Fig. 4 shows another variant of the container according to the first embodiment wherein a lid 17 is hinged to the housing 4 and enables complete opening of one of the compartments, in this case the second compartment.

Fig. 5 shows the slots 2, 3 into the first and second compartments. The first slot comprises first and second enlarged openings 18, 19 and an intermediate portion 20. The slot thus matches the shape of a blister package 10 of the kind disclosed in Fig. 1, i.e. with two rows with doses, e.g. tablets or pills.

Fig. 6 shows yet another variant of the container according to the first embodiment with a tear-off edge 21 for separation of one row 22 of doses from the blister package. In this variant, the handles 23, 24 for moving the rejection structure and thus the blister package into and out of the compartment is provided with a tactile indication of the locations at which the doses in the blister package is in a correct position relative to the tear-off edge 21, e.g. when a weakened line of the blister package is located adjacent the tear-off edge.

Figs 7 to 10a show an example of a container Similar reference numerals refer to similar elements or elements of the same function as in the embodiment of Figs 1 to 6.

The container 1 comprises a housing 4, which may on its front side shown in Fig. 7 comprise not shown indicating means such as an LED or LCD and/or a compliance structure such as has been described in the above, e.g. in the form of a push button or the like. The housing 4 is in the form of a sheet of material, such as plastic, bent to form a compartment for a blister package 10. An ejection structure in the form of an ejection sheet 30 is housed inside the housing 4 in a closed end position of the container 1 shown in Fig. 7. An intermediate position shown in Fig. 8 and an open end position shown in Fig. 9 the ejection sheet 30 has been ejected from the housing 4 to project from the side of the housing 4. Fig. 10 shows the ejection sheet 30 in the ejected position corresponding to Figs 8 and 9, and Fig. 10a shows a detail of the ejection sheet 30 of Fig. 10.

The ejection sheet 30, which is seen best in Figs 9 and 10, has been bent such that a front side 30b and a back side 30c lie substantially coplanar with a front side 4b and a back side 4c, respectively, of the housing 4. A curved connection portion 30a of the ejection sheet 30 abuts a similarly shaped connection portion 4a of the housing 4 in the closed end position of the container 1 shown in Fig. 7. The ejection sheet 30 comprises a linear slide in the form of a slot 31 engaging a inward facing projection 32 of the front side 4b of the housing 4 to ensure a smooth and linear movement of the ejection sheet 30 between the open and closed end positions of the container 1. The projection 32 may form a stop, e.g. in the form of a wider portion (not shown), to ensue that the ejection sheet 30 at all times remains attached to the housing 4.

The ejection sheet 30 further comprises fixing means in the form of an insert 33 for securing the blister package 10 to the ejection sheet 30. As is shown in Fig. 10a the insert 33 comprises two projections, which are able to hold a blister package 10 inserted as shown by means of the arrow of Fig. 10a, i.e. a sheet portion of the blister package 10 is forced to enter a secured or fixed position. In the secured or fixed position of the blister package the projections push against each other on either side of the sheet portion of the blister package 10. In a not shown variant of the second embodiment of the invention two blister packages are held in the insert 33, the second blister package for example being
A container (1) for a blister package (10), the container (1) comprising:

- a housing (4) forming a compartment for the blister package (10),
- means for indicating towards a user an appropriate time of accessing the blister package (10), and
- means for detecting a user's access to a blister package (10) in the compartment,

wherein the container (1) further comprises an ejection structure to which the blister package (10) may be fixed, the ejection structure being movable towards an open position for moving the package (10) in an outward direction out of the compartment and movable towards a closed position for moving the package in an inward direction into the compartment,

characterized in that

i) the blister package (10) can be fixed to the ejection structure by a gripping means comprising two parts forming a recess 35, which provides a better grip on the blister package 10.

ii) the back side 30c of the ejection sheet 30 may as an alternative or supplement comprise further fixing means in the form of apertures (not shown) corresponding to tablet projections 10a of the blister package 10 in order to provide an even better attachment of the blister package 10 on the ejection sheet 30.

iii) the container 1 may as examples be provided as a sensor in the insert 33 or at an end of the projection 32.

iv) Means for detecting when a user gains access to the container 1 may as examples be provided as a sensor.

v) In a not shown variant of the example not part of the invention the ejection structure does not comprise the front and back sides 30b, 30c. In this variant the insert 33 in itself pushes the blister package 10 out of the housing during the ejecting movement.

vi) The container 1 preferably comprises spring means (not shown) or other suitable retaining means known to the skilled person for retaining the cover 34 in the rotated position shown in Fig. 9 such as to not collapse when positioned on said horizontal surface.
a slot into which the blister package (10) is inserted, wherein the gripping means (5, 14, 13) for fixing the blister package (10) to the ejection structure comprises a back member and an adjacent front member, the gripping means being adapted to receive a blister card between the back member and the front member, wherein the back member and front member are movable relative to each other in a direction towards and away from each other and

ii) the container (1) further comprises a handle (6) for operating the ejection structure, wherein the handle (6) can slide back and forth on the outer surface of the container (1) and thereby move the blister package (10) into and out of the compartment.

2. A container (1) according to claim 1, wherein the user’s access to the blister package (10) in the compartment is detected by detection of movement of the ejection structure relative to the housing (4).

3. A container (1) according to claims 1-2, wherein the ejection structure is attached to the housing (4) via a linear slide (31) allowing a linear movement of the ejection structure relative to the housing (4).

4. A container (1) according to claims 1-3, wherein separation of the ejection structure from the housing (4) is prevented.

5. A container (1) according to any of the preceding claims, further comprising detection means capable of detecting presence of a blister package (10) fixed to the ejection structure.

6. A container (1) according to any of the preceding claims, further comprising a compliance structure adapted to indicate a time at which the user latest gained access to the blister package (10) in the compartment.

7. A container (1) according to any of the preceding claims, further comprising processing means adapted to determine a compliance level indicating a difference between a desired consumption frequency for the substance and a frequency of receipts of the registration signal.

8. A container (1) according to any of the preceding claims, further comprising a timer adapted to determine a period of time in which the ejection structure has not been in the closed position.

9. A container (1) according to claim 8, wherein the compliance structure is adapted only to switch from the attentive state to the non-attentive state if the timer has determined that the ejection structure has not been in the closed position in a time interval which is longer than a pre-specified time interval.

10. A container (1) according to any of claim 9, wherein at least one of the back and front members comprises a gripping structure adapted at least partly to encircle a protruding portion of the blister package (10).

11. A container (1) according to any of the preceding claims, further comprising a supplementary compartment for an additional blister card.

12. A combination comprising a container (1) according to any of claims 1-11 with a compartment for a blister package (10) and a blister package (10), said blister package (10) forming at least one row of cavities with doses of a pharmaceutical composition, the row extending between a first end portion and a second end portion, at least one of the end portions and an adjacent cavity cooperate with gripping means of an ejection structure adapted to move the blister package (10) into or out of the container (1).

13. A combination according to claim 12, wherein the blister package (10) comprises a plurality of weakening lines facilitating division of the blister package (10) between each of the cavities whereby the user may tear off a used portion of the blister package (10) when removing a dose.

Patentansprüche

1. Behälter (1) für eine Blisterverpackung (10), wobei der Behälter (1) aufweist:

   ein Gehäuse (4), das ein Aufnahmefach für die Blisterverpackung (10) bildet,
   Mittel zum Anzeigen einer geeigneten Zeit zum Zugreifen auf die Blisterverpackung (10) an einen Benutzer, und
   Mittel zum Erfassen eines Zugriffs eines Benutzers auf eine Blisterverpackung (10) in dem Aufnahmefach,
wobei der Behälter (1) einen Auswurfaufbau aufweist, an dem die Blisterverpackung (10) befestigt werden kann, wobei der Auswurfaufbau in eine geöffnete Stellung beweglich ist, um die Verpackung (10) in eine nach außen weisende Richtung aus dem Aufnahmefach zu bewegen, und in eine geschlossene Stellung beweglich ist, um die Verpackung in eine nach innen weisende Richtung in das Aufnahmefach zu bewegen,

dadurch gekennzeichnet, dass

i) die Blisterverpackung (10) an dem Auswurfaufbau durch Greifmittel befestigt werden kann, die zwei Teile aufweisen, die einen Schlitze bilden, in die die Blisterverpackung (10) eingesetzt wird, wobei die Greifmittel (5, 14, 15) zum Befestigen der Blisterverpackung (10) an dem Auswurfaufbau ein hinteres Element und ein be- nachbartes vorderes Element aufweisen, wobei die Greifmittel angepasst sind, eine Blisterkarte zwischen dem hinteren Element und dem vorderen Element aufzunehmen, wobei das hintere Element und das vordere Element beweglich zueinander in einer Richtung aufeinander zu und weg voneinander sind, und

ii) der Behälter (1) ferner einen Griff (6) zum Betätigen des Auswurfaufbaus aufweist, wobei der Griff (6) vor und zurück an der äußeren Oberfläche des Behälters (1) gleiten und dabei die Blisterverpackung (10) in das Aufnahmefach hinein und heraus bewegen kann.

2. Behälter (1) nach Anspruch 1, wobei der Zugriff des Benutzers auf die Blisterverpackung (10) in dem Aufnahmefach durch Erfassung einer Bewegung des Auswurfaufbaus relativ zu dem Gehäuse (4) erfasst wird.

3. Behälter (1) nach Anspruch 1 bis 2, wobei der Auswurfaufbau an dem Gehäuse (4) über eine lineare Führung (31) angebracht ist, die eine lineare Bewegung des Auswurfaufbaus relativ zu dem Gehäuse (4) ermöglicht.

4. Behälter (1) nach den Ansprüchen 1 bis 3, wobei eine Trennung des Auswurfaufbaus von dem Gehäuse (4) ver- hindert wird.

5. Behälter (1) nach einem der vorhergehenden Ansprüche, ferner mit Erfassungsmitteln, die in der Lage sind, das Vorhandensein einer Blisterverpackung (10), die an dem Auswurfaufbau befestigt ist, zu erfassen.


7. Behälter (1) nach einem der vorhergehenden Ansprüche, ferner mit Verarbeitungsmitteln, die angepasst sind, ein Übereinstimmungsniveau zu bestimmen, das eine Differenz zwischen einer gewünschten Konsumierungs frequenz für die Substanz und einer Empfangsfrequenz des Registrierungssignals anzeigt.


10. Behälter (1) nach Anspruch 9, wobei wenigstens eines der hinteren und vorderen Elemente einen Greifaufbau aufweist, der angepasst ist, zumindest teilweise einen vorstehenden Abschnitt der Blisterverpackung (10) zum umschließen.


12. Kombination aufweisend einen Behälter (1) nach einem der Ansprüche 1 bis 11, mit einem Aufnahmefach für eine Blisterverpackung (10) und einer Blisterverpackung (10), wobei die Blisterverpackung (10) mindestens eine Reihe von Aussparungen mit Portionen einer pharmazeutischen Zusammensetzung bildet, wobei sich die Reihe zwischen einem ersten Endabschnitt und einem zweiten Endabschnitt erstreckt und mindestens einer der Endabschnitte und eine benachbarte Aussparung mit Greifmitteln eines Auswurfaufbaus zusammenwirken, der angepasst ist, die Blisterverpackung (10) in den Behälter hinein oder aus ihm heraus zu bewegen.
13. Kombination nach Anspruch 12, wobei die Blisterverpackung (10) eine Vielzahl von Schwächungslinien aufweist, die die Aufteilung der Blisterverpackung (10) zwischen jeder der Aussparungen ermöglichen, wobei der Benutzer beim Entnehmen einer Portion einen benutzten Abschnitt der Blisterverpackung (10) abreißen kann.

Revendications

1. Conteneur (1) destiné à un emballage sous blister (10), le conteneur (1) comportant :
- un logement (4) formant un compartiment destiné à l’emballage sous blister (10),
- des moyens pour indiquer à un utilisateur le moment approprié pour accéder à l’emballage sous blister (10), et
- des moyens pour détecter l’accès d’un utilisateur à l’emballage sous blister (10) dans le compartiment, dans lequel le conteneur (1) comporte, de plus, une structure d’éjection à laquelle l’emballage sous blister (10) peut être fixé, la structure d’éjection pouvant se déplacer vers une position d’ouverture permettant de déplacer l’emballage (10) dans une direction tournée vers l’extérieur du compartiment et pouvant se déplacer vers une position de fermeture pour déplacer l’emballage dans une direction tournée vers l’intérieur dans le compartiment,

caractérisé en ce que

i) l’emballage sous blister (10) peut être fixé à la structure d’éjection par des moyens de serrage comportant deux parties formant une fente dans laquelle l’emballage sous blister (10) est inséré, dans lequel les moyens de serrage (5, 14, 15) permettant de fixer l’emballage sous blister (10) à la structure d’éjection comporte un élément arrière et un élément avant adjacent, les moyens de serrage étant adaptés pour recevoir une carte sous blister entre l’élément arrière et l’élément avant, dans lequel l’élément arrière et l’élément avant peuvent se déplacer l’un par rapport à l’autre en direction de l’un vers l’autre et de l’un à distance de l’autre, et
ii) le conteneur (1) comprend, de plus, une manette (6) pour actionner la structure d’éjection, dans lequel la poignée (6) peut coulisser vers l’arrière et vers l’avant sur la surface extérieure du conteneur (1) et, de ce fait, déplacer l’emballage sous blister (10) dans le, et hors du, compartiment.

2. Conteneur (1) selon la revendication 1, dans lequel l’accès de l’utilisateur à l’emballage sous blister (10) dans le compartiment est détecté par la détection du déplacement de la structure d’éjection par rapport au logement (4).

3. Conteneur (1) selon les revendications 1-2, dans lequel la structure d’éjection est fixée au logement (4) par l’intermédiaire d’une glissière linéaire (31) permettant un déplacement linéaire de la structure d’éjection par rapport au logement (4).

4. Conteneur (1) selon les revendications 1 à 3, dans lequel une séparation de la structure d’éjection du logement (4) est empêchée.

5. Conteneur (1) selon l’une quelconque des revendications précédentes, comprenant, de plus, des moyens de détection capables de détecter la présence d’un emballage sous blister (10) fixé à la structure d’éjection.

6. Conteneur (1) selon l’une quelconque des revendications précédentes comprenant, de plus, une structure de conformité adaptée pour indiquer le moment auquel l’utilisateur a accédé pour la dernière fois à l’emballage sous blister (10) dans le compartiment.

7. Conteneur (1) selon l’une quelconque des revendications précédentes comportant, de plus, des moyens de traitement adaptés pour déterminer un niveau de conformité indiquant une différence entre une fréquence de consommation souhaitée concernant la substance et une fréquence des entrées du signal d’enregistrement.

8. Conteneur (1) selon l’une quelconque des revendications précédentes comprenant, de plus, une horloge adaptée pour déterminer une période de temps durant laquelle la structure d’éjection ne s’est pas trouvée dans la position de fermeture.

9. Conteneur (1) selon la revendication 8, dans lequel la structure de conformité est adaptée pour commuter de l’état de vigilance à l’état de non vigilance seulement si l’horloge a déterminé que la structure d’éjection ne s’est pas trouvée dans la position de fermeture dans un laps de temps qui est plus long que le laps de temps pré-spéciifié.
10. Conteneur (1) selon la revendication 9 dans lequel au moins l’un des éléments arrière et avant comporte une structure de serrage adaptée, au moins partiellement, pour encercler une partie en saillie de l’emballage sous blister (10).

11. Conteneur (1) selon l’une quelconque des revendications précédentes comportant, de plus, un compartiment supplémentaire pour une carte sous blister additionnelle.

12. Combinaison comprenant un conteneur (1) selon l’une quelconque des revendications 1 à 11 doté d’un compartiment pour un emballage sous blister (10) et d’un emballage sous blister (10), ledit emballage sous blister (10) formant au moins une rangée de cavités avec des doses d’une composition pharmaceutique, la rangée s’étendant entre une première partie d’extrémité et une seconde partie d’extrémité, l’une au moins des parties d’extrémité et une cavité adjacente coopèrent avec des moyens de serrage d’une structure d’éjection adaptée pour déplacer l’emballage sous blister (10) dans le, ou hors du, conteneur (1).

13. Combinaison selon la revendication 12, dans laquelle l’emballage sous blister (10) comprend une pluralité de lignes de fragilité facilitant la séparation de l’emballage sous blister (10) entre chacune des cavités de façon que l’utilisateur puisse déchirer une partie utilisée de l’emballage sous blister (10) lors du retrait d’une dose.
Fig. 2
**Fig. 3**

- Push the blister back to original position
- Press the "Compliance" button
REFERENCES CITED IN THE DESCRIPTION

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