(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 590 266 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
07.04.2010 Bulletin 2010/14

(21) Application number: **04708391.0**

(22) Date of filing: **05.02.2004**

(51) Int Cl.:
B65D 83/04 *(2006.01)*

(86) International application number:
PCT/GB2004/000451

(87) International publication number:
WO 2004/069688 (19.08.2004 Gazette 2004/34)

(54) **DISPENSER FOR PRODUCTS ENCLOSED IN A BLISTER PACK**

SPENDER FÜR IN EINER BLISTERVERPACKUNG ENTHALTENEN PRODUCKTE

DISTRIBUTEUR DE PRODUITS CONTENUS DANS UN BLISTER

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

(30) Priority: **05.02.2003 GB 0302545**
07.03.2003 GB 0305256
24.04.2003 GB 0309000

(43) Date of publication of application:
02.11.2005 Bulletin 2005/44

(73) Proprietor: **Tedham, Martin John**
Nailsworth,
Gloucester GL6 0DT (GB)

(72) Inventor: **Tedham, Martin John**
Nailsworth,
Gloucester GL6 0DT (GB)

(74) Representative: **Newell, William Joseph**
Wynne-Jones, Lainé & James LLP
Essex Place
22 Rodney Road
Cheltenham
Gloucestershire GL50 1JJ (GB)

(56) References cited:
WO-A-03/100738 **US-B1- 6 364 155**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 590 266 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] This invention relates to dispensing arrangements incorporating blister packs and also to dispensers for use with blister packs.

[0002] The use of blister packs to store and dispense various products such as, but not limited to, pharmaceutically active compositions in the forms of tablets, capsules, caplets, granules, fine powders, creams and liquids is well known. Blister packs are also used for healthcare products generally and also for products outside this field. The blister pack is a cost effective way of presenting a product in unit dose form. However blister packs containing pharmaceutically active products or other products capable of misuse pose a hazard because the packs are not child-resistant and there is a risk that young children may be attracted to the product and manage to dispense one or more products from the blister pack and consume them with potentially fatal consequences.

[0003] It is also known to store potentially hazardous products in containers such as bottles or jars with a child-resistant cap which requires strength and/or, dexterity beyond the range of that of most if not all young children to open the container. However there are several disadvantages; the cost of packaging in this way is greater than the cost of a blister pack, and presenting the product in bulk in a container means that the presentation of a unit dose (together with the possibility of identifying each dose with a day or time of day on the packaging) is lost.

[0004] In view of the risk posed by conventional blister packing of pharmaceutical products, the licensing authorities have laid down that, from a date in the near future, all blister packs containing pharmaceutical products must be rendered child-resistant. A number of solutions have been proposed to meet this need; in one proposal the blister pack is contained in a box which has some form of child-resistant closure; in another proposal a further child-resistant layer is laminated over the foil of the blister pack with child-resistant portions or flaps containing each pocket which have to be removed before the product can be dispensed in the normal way. Neither of these proposed solutions are particularly attractive and the second proposal, at least, suffers from the disadvantage that the application of a further layer to the blister pack means that the pack must undergo extensive testing to see whether the proposed layer will compromise the stability of the packaging.

[0005] US Patent 5,110,007 discloses a rotary blister pack dispensing arrangement in which a rigid circular plate is fitted over the dispensing side of the blister pack and defines a dispensing window to facilitate one-handed operation; there is no teaching of a child-resistant blister pack dispenser.

[0006] US Patent 4,627,432 discloses an inhaler device in which the medicament to be inhaled is stored in the pockets of a rotary blister pack, to be dispensed by a plunger, but again there is no teaching of a child resistant arrangement.

[0007] Various devices have been proposed which comprise an outer housing, an inner rotatable platform for supporting a blister pack and a mechanism for turning the platform. US-A-6,098,835, WO 00/43287 US-A-6,364,155 (on which the preamble of appended claim 1 is based) and US 2002/0166791A describe such arrangements. These arrangements suffer from the disadvantage that a separate rotatable platform is required, which increases the manufacturing and assembly costs.

[0008] Accordingly, there is a need for an arrangement which allows product to be made available to the public in blister pack form, thereby obviating the problems of container storage discussed above, and which incorporates child-resistant safety features to prevent or substantially reduce the possibility of young children accidentally delivering and ingesting the product.

[0009] According to one aspect of this invention there is provided a dispenser for dispensing a product in use from a blister pack of the type comprising a support member defining a plurality of pockets arranged in a circle around a blister pack axis, and a cover sheet provided on a dispensing side of said blister pack having rupturable portions which close each of said pockets, said dispenser comprising:-

a housing,
means for locating in use a blister pack for rotation within said housing,
a dispensing window disposed in said housing such that in use a blister pack may be rotated to bring each pocket of a blister pack into registration therewith to allow ejection of the contents of a blister pocket therethrough;
an access aperture provided in the housing through which in use a user may manually engage an exposed portion of the circumference of the blister pack to apply rotation thereto; and
manually releasable locking means adapted to cooperate with the blister pack in use and manually moveable against a bias from a locking position in which the blister pack is prevented from rotation, to a release position in which in use the blister pack may be turned to present a next pocket adjacent the dispensing window.

[0010] Preferably said housing comprises a base portion and a lid portion which together generally enclose said blister pack in use, with the dispensing window being provided in the base portion.

[0011] Preferably said base portion and said lid portion connect together through at least one snap-fitting.

[0012] Preferably said base portion and said lid portion are integrally formed and joined by a hinge portion.

[0013] Preferably said locating means comprises a central boss portion provided in one of said lid portion and said base portion.

[0014] Said snap fitting is conveniently between said boss portion and a facing element provided on the other

of said lid portion and said base portion.

[0015] In one arrangement, said locking means comprises at least one rockable arm having a locking end biased into engagement with the periphery of the blister pack in use, and the exposed end externally accessible from outside the housing, whereby in use pressure on the exposed end urges said locking end out of engagement with the circumference of said blister pack.

[0016] Said locking means may comprise two rockable arms spaced apart on the periphery of the housing, and each lockable arm may be formed integrally with said housing.

[0017] The housing may include an ejector means disposed opposite said dispensing window and operable in use to eject an item contained in an adjacent blister pack through said dispensing window.

[0018] In the above aspect the invention also extends to a dispenser' in combination with a blister pack.

[0019] The invention may be performed in various ways and, by way of example only, various embodiments will now be described, reference being made to the accompanying drawings in which Figures 1 to 10 illustrate embodiments of the invention and Figures 11 to 36 show embodiments which do not fall within the scope of the invention as claimed.

Figure 1 is a top plan view of a first embodiment of a dispensing device in accordance with this invention, with the housing open;
Figure 2 is a view of the embodiment of Figure 1 but with the housing closed and with the blister pack in a non-dispensing position;
Figure 3 is an underneath view of the embodiment of Figure 1 with the housing open;
Figure 4 is a view of the top of the housing of the first embodiment but with the blister pack with a pocket ready to dispense;
Figure 5 is a section view on lines V - V of Figure 4 of the first embodiment with the blister pack with a pocket ready to dispense;
Figure 6 is a perspective view of a second embodiment of the invention with the clam-shell cover open;
Figure 7 is a perspective view of the second embodiment with the clam-shell cover closed;
Figure 8 is an top plan view of the second embodiment with the clam-shell cover closed;
Figure 9 is a top plan view of the second embodiment with the clam-shell cover open;
Figure 10 is an underneath plan view of the second embodiment with the clam-shell cover open;
Figure 11 is a plan view of a cover of a third embodiment;
Figure 12 is a plan view of the dispensing side of a blister pack for being assembled with the cover of Figure 6;
Figure 13 is a side view of the cover and blister pack of the third embodiment when assembled;
Figure 14 is a plan view of a cover of a fourth embodiment;
Figure 15 is a plan view on the dispensing side of a blister pack of the fourth embodiment for being assembled with the cover;
Figure 16 is a side view of the blister pack and cover of the fourth embodiment, when assembled;
Figure 17 is a view of a fifth embodiment with the clam-shell cover open;
Figure 18 is a plan view of the dispensing side of the blister pack of the fifth embodiment;
Figure 19 is a diametrical cross-section through the blister pack of Figure 18;
Figure 20 is a section view taken on lines XX to XX of Figure 17; and
Figure 21 is a cross-sectional view similar to Figure 20 but showing the housing in its locked, closed or "safe" position;
Figure 22 is a view of a sixth embodiment with the clam-shell cover open;
Figure 23 a plan view of the dispensing side of the blister pack of the sixth embodiment;
Figure 24 is a diametrical cross-section through the blister pack of Figure 22;
Figure 25 is a section view taken on lines XXV to XXV of Figure 22;
Figure 26 is a cross-sectional view similar to Figure 25 but showing the housing in its locked, closed or "safe" position;
Figure 27 is a view of a seventh embodiment with the clam-shell cover open;
Figure 28 is a plan view of the dispensing side of the blister pack of the fifth embodiment;
Figure 29 is a diametrical cross-section through the blister pack of Figure 18;
Figure 30 is a section view taken on lines XXX to XXX of Figure 27;
Figure 31 is a cross-sectional view similar to Figure 30 but showing the housing in its locked, closed or "safe" position;
Figure 32 is a perspective view of a eighth embodiment in its assembled condition;
Figure 33 is a perspective view from below of the eighth embodiment;
Figure 34 is a section view through the eighth embodiment, and
Figures 35 and 36 are detailed plan views showing the orientation of various components of the eighth embodiment in a rest, "safe" state and a state ready for dispensing a tablet, respectively.

[0020] The various embodiments of child-resistant blister pack dispenser illustrated in the Figures are made up of a circular blister pack with the blister pockets disposed concentrically about a central axis at equal angular increments save for an empty "starter" pocket. In each embodiment the dispensing side of the blister pack is substantially wholly shielded by a cover or closure member, apart from at a dispensing window. The blister pack

may be moved incrementally with respect to the cover to present successive product-containing pockets to the dispensing window, but the blister pack and/or the cover is designed to prevent or resist rotation thereof by young children. In this way, if the dispenser is left unattended and picked up by a small child, the risk of the child gaining access to the product in the blister pack is considerably reduced.

[0021] Referring to the first embodiment of Figures 1 to 5, in this arrangement the blister pack 200 includes peripheral notches 202 between each blister pocket 204. The blister pack 200 is provided with a central circular aperture which fits around a hub 206 which upstands from the base portion 208 of an integral, injection moulded, clam shell housing arrangement made up of the base portion 208 and a lid 210 hinged to the base portion by an integral hinge region 212. The clam shell housing may be hinged from the open position shown in Figure 1, to the closed position shown in Figure 2, and locked in the closed position by means of a series of sprung teeth 214 which releasably engage an inwardly directed rim on the hub 206 in a snap-fit. The tightness of the snap-fit is selected so as to make opening of the cover child-resistant. The base portion 208 of the housing includes two rockable locking members 216 integral with the base 208 on opposite sides of the base. Each locking member 216 comprises an arm 218 attached adjacent its mid point by a flexible strut 220 to a projection 222 of the floor of the base unit. The locking arm 218 also includes a stub shaft 224 which, when the lid portion is closed, is rotatably received in a respective blind bore 226 in the lid portion 210, so that the locking arm 218 may be rotated about an axis concentric with the stub shaft 224 against the resilient biass afforded by the flexible strut 220. The locking arm 218 is disposed relative to the housing such that, when in a locking position (i.e. as shown in Figure 1) an actuating end 228 projects from the housing as seen in Figure 2. At the other end of the locking arm is a locking wedge 230 which, when the device is in a rest position, engages a respective notch 202 in the blister pack 200 thereby preventing rotation thereof within the casing. It will be noted therefore that, in order to rotate the blister pack, both locking members 216 must be externally engaged and pressed to withdraw the locking wedges 230 from the respective notches 202.

[0022] The lid portion 210 has a slot 231 formed therein so as to provided a flexible tongue 232 on the end of which is provided an ejection projection 234. Referring particularly to Figure 3, the base portion 208 has a dispensing aperture 236 through which the contents of an aligned blister pocket 204 may be ejected. The lid portion 210 and the base portion 208 each have respective cut away regions 240 and 242 so that, when the housing is closed as shown in Figure 4, there is manual access to the periphery of the blister pack.

[0023] In use, a blister pack is loaded into the housing and the housing closed for a snap-fit action generally enclosing the blister pack apart from the access slot afforded by cut-away regions 240 and 242. The blister pack will normally be loaded into the housing with the blank starter pocket adjacent the dispensing aperture 236. In this condition, the locking wedges 230 engage respective notches 202 in the blister pack to prevent rotation. In this position the tongue 232 is flush with the remainder of the external surface of the lid 210. When it is desired to dispense the contents of a blister pocket, the user must depress the operating ends 228 of each of the locking members 218 so as to withdraw the locking wedges 230 from the notches and, whilst holding the ends depressed, the user must increment the blister pack to bring the next pocket into alignment with the dispensing aperture 236, by engaging the periphery of the blister pack through the slot 240/242. As shown in Figures 4 and 5, as the next, uncrushed, blister pocket moves towards the dispensing aperture, the blister portion engages the ejection projection 234 and pushes it upwardly so that the tongue 232 is pushed slightly clear of the surface of the lid portion 210. This gives a useful indicator that the device is ready to dispense. The user then depresses the tongue 232 thus ejecting the contents of the pocket through the dispensing aperture 236. This operation is repeated at intervals until the blister pack is empty.

[0024] Referring now to the second embodiment illustrated in Figures 6 to 10, this embodiment comprises a clam-shell cover 130 comprising upper and lower portions 132 and 134 respectively connected by an integral hinge 136. In the lower portion 134 is an upstanding hub 138 designed to snap fit with a complementary toothed male fitting 140 in the upper portion 132. A disc-shaped blister pack 142 is provided with a central aperture 144 which fits over the hub 138 so that the blister pack 142 is rotatably carried by the hub 138. The blister pack 142 carries a number of equally spaced pockets 146 together with a "blind" starter position 148. Between each pocket, in the rim of the blister pack 142 is provided a notch 150 as can be seen more particularly in Figure 9. The outer peripheral wall of the lower portion 134 is provided with two spaced levers 152 which carry a tooth 154 at one end and which are each integrally hinged to the lower portion 134 by integral hinges 156. As can be seen in Figure 9, the teeth of the levers 152 are pitched so that they engage in respective notches in the blister pack 142 and normally prevent rotation of the blister pack within the housing. The teeth 154 may be withdrawn radially outwardly from the notches 150 by pressing the other end of the levers so that each rotates about the hinge 156.

[0025] The upper portion 132 has a dispensing projection or anvil 158 protruding internally and the lower portion 134 has a dispensing aperture 160 which is angularly aligned with the dispensing anvil 158.

[0026] In use, a blister pack 142 is loaded into the clam-shell cover with the blind position 148 in registration with the dispensing aperture 160, as shown in Figure 9. The cover is then hinged closed with the two portions snap fitting together. The lower portion 134 of the cover is cut away at a location adjacent the dispensing aperture 160

as seen in Figure 10 to provide an access slot 162 through which the periphery of the blister pack 142 is externally accessible. In the rest condition, however, although the rim is accessible it is not possible to rotate the blister pack to bring a blister pocket 146 into alignment with the anvil 158 and the aperture 160, and so the device is child-resistant in this condition. In order to be able to rotate the blister pack 142 to bring a pocket into alignment with the dispensing aperture 160, it is necessary to depress both levers 152 simultaneously so as to withdraw the teeth 154 from the peripheral notches on the blister pack to allow the pack to be rotated. The pack is rotated to bring the next pocket into alignment, whereupon the teeth 154 snap into the notches to lock the wheel. The tablet is then dispensed by squeezing the upper and lower portions 132, 134 together so that the product is ejected from the blister pack through the dispensing aperture 160.

[0027] Referring now to the third embodiment illustrated in Figures 11 to 13 (which does not form part of the claimed invention), a cover 10 or closure member is generally of disc form, having a generally sector-shaped dispensing window 12 extending inwardly from the circumference thereof and subtending an angle of approximately 30°. At the radially inner end of the dispensing window 12 are provided two stops, a fixed stop 14 and a resiliently movable stop 16. These cooperate with projections on the blister pack to be described below.

[0028] The blister pack 18 is of generally conventional construction comprising a vacuum-drawn or otherwise suitably formed plastic support member 20 defining (in this particular embodiment) twelve pockets 22, with the dispensing side of.the support member being covered by a frangible membrane 24 of foil or the like. The blister pack is disc-shaped with a central aperture 26.

[0029] The support member includes, radially inwardly of each pocket, a projecting bubble 28 which projects from the dispensing side of the blister pack and is designed to be received with clearance in the apex of the sector-shaped dispensing window 12.

[0030] The cover 10 has a projecting annular hub 30 with an externally directed rib 32 and the outer edge of the cover likewise has a projecting rim 34 with an internally directed rib 36.

[0031] In manufacture, the pockets 22 of the support member 20 are filled with product apart from the "starter" pocket 23 which is left empty, and the pockets then sealed in the usual manner by laminating a foil or membrane 24 to close the pockets. The dispenser is assembled by offering the dispensing side of the blister pack 18 to the cover 10 so that the annular hub snap fits through the central aperture 26 and the rim 34 of the cover snap-fits around the circumference of the blister pack, so that the blister pack is rotatably supported with respect to the cover, and can only be disassembled with extreme difficulty. The blister pack 18 is oriented such that the empty "starter" pocket 23 is presented at the dispensing window 12. Rotation of the blister pack 18 relative to the cover is prevented by cooperation of the projecting bubble 28 and the fixed and movable stops 14 and 16. In order to present the next (clockwise) pocket at the dispensing window, the bubble 28 must be depressed, so that it plastically crumples out of the way of the path of travel of the fixed stop 14 and allows the blister pack to be rotated relative to the cover. As this happens, the next, uncrumpled bubble 28 moves past the movable stopper 16 which moves resiliently and acts like a detent to sit between the next two uncrumpled bubbles 28 and to hold the blister pack against further rotation until the next bubble has been crumpled.

[0032] Referring now to the fourth embodiment of Figures 14 to 16 (which does not form part of the claimed invention), this embodiment is of generally similar form, but uses pairs of projecting pips on the dispensing side of the blister pack which cooperate with a lug on the cover. In this embodiment child resistance is provided by designing the pips and the lug so that the blister pack cannot be rotated by a small child. Accordingly, in this embodiment the cover 40 has a dispensing window 42 at the apex of which is provided a projecting lug 44. The cover has a central annular hub 50 with an externally directed rib 52, and a peripheral rim 54 with an internally directed rib 56 similar to those of the previous embodiment. The blister pack 46 comprises a support member defining pockets 48 as before which are covered by a membrane. Radially inwardly of each pocket 48 is a pair of pips 58 which project from the dispensing side of the blister pack. In use, the blister pack and cover are assembled as before by snap fitting together, with the empty pocket 49 aligned with the dispensing window 42. In this position, the lug 44 sits between the associated pair of pips 58 and resists rotational movement of the blister pack relative to the cover thereby resisting access to the full pockets by small children, but being movable by an adult.

[0033] Referring now to the fifth, sixth and seventh embodiments (which do not form part of the claimed invention), these make use of a clam shell housing which generally encloses the blister pack, with the two halves of the clam shell housing being squeezable together to eject a product from the blister pocket. The fifth to seventh embodiments have various ways of inhibiting rotation of the blister pack and/or ejection of the product by young children.

[0034] Referring initially to the fifth embodiment illustrated in Figures 17 to 21, this comprises a two-piece cover made up of an upper half 60 hingedly attached to a lower half 62; the hinge may be of conventional pin and lug construction or it may be an integral "live" hinge whereby the upper and lower halves of the closure can be hingeably moulded in a single operation. The lower half 62 corresponds generally to the covers 10 and 40 of the previous two embodiments. It has a central hub 64 which snap fits through a central aperture in the blister pack 68. It also includes a dispensing window 70 through which product ejected from a pocket in the blister pack may be presented. The upper half 60 of the enclosure includes a dispensing anvil 72 which is designed to co-

operate with an aligned pocket in the blister pack, and a dispensing window 70 to eject product from the pocket when the device is armed and the upper and lower halves squeezed together.

[0035] The blister pack is provided with a ratchet surface 74 on its outer circumference. A lever mechanism 76 is mounted in the lower half 62 of the enclosure and is designed so that, when slid in the appropriate sense, it rotates the blister pack to bring the next pocket into alignment with the dispensing window 70.

[0036] The upper and lower halves 60, 62 of the enclosure incorporate a locking arrangement including two diametrically opposed locking spring clips 78 provided on the upper half 60. The locking clips are received in respective diametrically opposed locking recesses 80 on the lower half 62. The locking arrangement engages and locks automatically at the end of the stroke when the upper and lower halves have been pushed together to eject a product from the pocket aligned with the dispensing window, and so locks the device in the position shown in Figure 21, otherwise referred to as the "safe" position. In this position the anvil 72 projects through the emptied pocket, thus preventing rotation of the blister pack to bring a new pocket into alignment. The enclosure can only be released from the "safe" position to an "armed" position by releasing the locking arrangement to allow the anvil to be withdrawn out of the pocket and out of the path of movement of the next blister. Release of the locking device requires the locking spring clips 78 to be moved out of the locking recesses 80 by pressing the edges of the upper half of the enclosure inwardly adjacent the spring clips 78. Once this has been done, the upper half 60 may be lifted to bring the anvil 72 out of engagement with the empty pocket and to allow the lever 76 to index the blister pack round to bring a next, filled, pocket into engagement with the dispensing window. If required, the upper and lower halves may have a bias arrangement which urges them apart once the locking arrangement has been released.

[0037] Referring now to the sixth embodiment illustrated in Figures 22 to 26, this is of generally similar construction to that of the fifth embodiment and so like parts will be given like references and will not be described again. The difference here is that the blister pack is rotated by means of a thumb wheel 90 rotatably mounted on the lower half 62 of the enclosure and having a cogged drive surface designed to mesh with a complementary cogged drive surface 92 provided on the circumference of the blister pack. Operation of the device is substantially the same as that of the fifth embodiment except that the thumb wheel 90 is used to index the blister pack. In this embodiment there is preferably an escapement mechanism or the like (not shown) designed to ensure that the blister pack stops with the next full pocket adjacent the dispensing window. The design and implementation of such a mechanism is well within the competence of one skilled in the art.

[0038] Referring now to the seventh embodiment illustrated in Figures 27 to 31, as previously the outer enclosure is in the form of an upper half 100 hinged to a lower half 102. In the lower half 102 there is provided a rotatable hub 104 with a toothed cog or drive surface and an outer drive flange 106 with upstanding location pins 108. The lower half 102 includes a dispensing window 110 as previously. The blister pack 112 is similar to those previously being of disc form but with a plain outer circumference and an enlarged central aperture 114 with four equally spaced holes 116 designed such that the blister pack 112 can fit over the rotatable hub 114 with the pins 108 locating in the holes 116. In the upper half of the housing 100 is rotatably mounted a drive member 118 having an externally accessible hand wheel 120 and an internally directed drive surface 103.

[0039] As previously, the upper cover and lower cover are connected by a child-resistant locking device comprising locking spring clips 122 which engage in locking recesses 124 and the lower half 102. This means that the device is resistant to opening by small children. When in the normal closed position as shown in Figure 31, the drive surfaces 103 and 104 are held out of engagement by a spring 126. The drive wheel 118 is however mounted so that it can be urged downwardly to bring the drive surfaces into engagement so that the hand wheel 120 can be turned to index the next pocket of the blister pack into alignment with the dispensing window 110. In this device product may be dispensed from the blister either manually, by providing a thumb aperture or the like in the upper half 100 of the enclosure or the upper half of the enclosure may include a dispensing anvil similar to those of previous embodiments which serves both to restrict rotation of the blister pack when the enclosure is in its "safe" configuration and to dispense product from the blister when it has been released from its safe position to its "armed" position.

[0040] It will of course be appreciated that, whilst in the above embodiments one pocket at a time is dispensed, the device may be readily modified to allow two or more adjacent pockets to be dispensed at the same time, by suitable enlargement of the dispensing window and the dispensing anvil where provided. Furthermore, the blister pack and/or enclosure may be designed so as to identify each dose by day or time of day. For example the blister pack may have printed thereon the day of the week adjacent each of the pockets and this may be viewable through a window.

[0041] In yet further embodiments, which are not illustrated but which follow the concept of a two-part enclosure of the fifth to seventh embodiments, the enclosure and blister pack may be designed so that a programmed relative movement of the upper and lower half of the enclosure is used to cause the blister pack to be indexed to its next position. Thus, for example, where in use the enclosure is released or moved from a "safe" position to an "armed" position, the separating movement of the parts of the enclosure may be harnessed to drive the blister pack to its next position. Alternatively, a stored

energy device may be provided whereby separating movements of the upper and lower halves of the enclosure release the blister pack so that it may be driven to its next position by means of the stored energy device.

[0042] Referring now to the eighth embodiment of Figures 32 to 36 (which does not form part of the claimed invention), this comprises a cover made up of an upper part 170 and a lower part 172 which are snap fitted together through central hub portions 174 and 176 respectively. As previously, the upper cover 170 has a dispensing projection or anvil 178 and the lower portion 172 has a dispensing aperture 180. However it is to be noted that, in the equilibrium position, the dispensing anvil 178 is not aligned with the dispensing aperture 180. The upper and lower portions 170, 172 are urged angularly towards this position by means of a central tension spring (not shown) acting between the upper and lower portions and disposed in the hub region 174, 176. The upper portion and lower portion are provided with co-operating castellated portions 177, 178 disposed concentrically with the hub region and arranged such that, when the cover is in its equilibrium position, with the dispensing anvil 178 out of alignment with the dispensing aperture 180, the castellated portions co-operate to prohibit movement of the upper portion 170 and lower portion 172 towards each other. However, when the upper portion 170 has been rotated relative to the lower portion 172, against the bias of the tension spring, to bring the anvil 178 into alignment with the dispensing aperture 180 (that is to the "armed" position shown in Figure 34), the castellated portions co-operate to allow the upper portion 170 to be squeezed towards the lower portion 172 to cause the anvil 178 to expel a product from a blister pocket, through the dispensing aperture 180.

[0043] Figure 35 shows a configuration where the castellated portions are co-operating to prevent movement of the upper portion 170 and the lower portion 172 towards each other, and Figure 36 shows the angularly displaced position where the castellated portions allow movement of the upper and lower portions towards each other. The castellated portions also function to limit the extent of angular rotation of the upper portion with respect to the lower portion so that this is the same angular extent as the pitch between adjacent pockets in the blister pack. The blister pack is provided with a circularly extending set of ratchet teeth 182 which co-operate with a flexible ratchet finger (not shown) such that when the upper part 170 is rotated in a clockwise sense relative to the lower part at the start of a dispensing cycle, the blister pack rotates with the upper part to be driven round to present the next pocket adjacent the dispensing aperture 180 ready for expulsion by the anvil 178. The upper and lower covers are then pushed together to dispense the product from the pocket and then released so that the upper part 170 moves away from the lower part and also returns to its angular rest position, with the flexible ratchet finger moving over the inclined plane of the ratchet tooth without rotating said blister pack.

Claims

1. A dispenser for dispensing a product in use from a blister pack (200)comprising a support member defining a plurality of pockets (204) arranged in a circle around a blister pack axis, and a cover sheet provided on a dispensing side of said blister pack having rupturable portions which close each of said pockets, said dispenser comprising:-

   a housing (208, 210);
   means (206) for locating in use a blister pack (200) for rotation within said housing (208, 210),
   a dispensing window (236) disposed in said housing such that in use a blister pack may be rotated to bring each pocket (204) of a blister pack into registration therewith to allow ejection of the contents of a blister pocket therethrough;

   characterised in that said dispenser further includes an access aperture (240, 242) through which in use a user may manually engage an exposed portion of the circumference of the blister pack (200) to apply rotation thereto; and
   manually releasable locking means (216) adapted to cooperate with the blister pack in use and manually moveable against a bias from a locking position in which the blister pack is prevented from rotation, to a release position in which in use the blister pack may be turned to present a next pocket adjacent the dispensing window.

2. A dispenser according to Claim 1, wherein said housing comprises a base portion (208) and a lid portion (210) which together generally enclose said blister pack in use, with the dispensing window being provided in the base portion.

3. A dispenser according to Claim 2, wherein said base portion (208) and said lid portion (210) connect together through at least one snap-fitting (206, 214).

4. A dispenser according to Claim 2 or Claim 3, wherein said base portion (208) and said lid portion (210) are integrally formed and joined by a hinge portion (212).

5. A dispenser according to any of Claims 2 to 4, wherein said locating means comprises a central boss portion (206) provided in one of said lid portion and said base portion.

6. A dispenser according to Claim 5 when dependent on 3, wherein the snap fitting is between said boss portion (206) and a facing element (214)provided on the other of said lid portion and said base portion.

7. A dispenser according to any of the preceding Claims, wherein said locking means comprises at

least one rockable arm (218) having a locking end (230) biased into engagement with the periphery of the blister pack (200) in use, and the exposed end (228) externally accessible from outside the housing, whereby in use pressure on the exposed end (228) urges said locking end (230) out of engagement with the circumference of said blister pack.

8. A dispenser according to Claim 7, wherein said locking means comprises two rockable arms (218) spaced apart on the periphery of the housing.

9. A dispenser according to Claim 8, wherein each lockable arm (218) is formed integrally with said housing.

10. A dispenser according to any of the preceding Claims wherein the housing includes an ejector means (234) disposed opposite said dispensing window and operable in use to eject an item contained in an adjacent blister pack through said dispensing window.

Patentansprüche

1. Spender zum Spenden eines Gebrauchsproduktes aus einer Blisterverpackung, die einen Tragkörper aufweist, der mehrere Taschen (204) bildet, welche auf einem Kreis rund um eine Blisterverpackungsachse angeordnet sind, sowie ein Deckblatt, das auf einer Spenderseite dieser Blisterverpackung vorgesehen ist und abreißbare Teile besitzt, die jede der Taschen verschließen, wobei der Spender folgendes aufweist:

ein Gehäuse (208, 210);
eine Einrichtung (206) zur Anordnung zwecks einer Blisterverpackung (200), um diese in dem Gehäuse (208, 210) zu drehen;
ein Spenderfenster (236), das in dem Gehäuse so angeordnet ist, daß bei Benutzung eine Blisterverpackung gedreht werden kann, um jede Tasche (204) einer Blisterverpackung mit dem Fenster in Überdeckung zu bringen und **dadurch** das Auswerfen des Inhalts einer Blisterverpackung durch das Fenster hindurch zu ermöglichen;

dadurch gekennzeichnet, daß der Spender des weiteren eine Zugangsöffnung (240, 242) aufweist, durch die hindurch im Falle der Benutzung ein Benutzer mit der Hand einen freiliegenden Teil des Umfangs der Blisterverpackung (200) ergreifen kann, um ihn in Drehung zu versetzen, und daß eine von Hand lösbare Verriegelungseinrichtung (216) vorhanden ist, die mit der benutzten Blisterverpackung zusammenarbeiten kann und von Hand gegen eine Federkraft aus einer Verriegelungsstellung, in der die Blisterverpackung gegen Drehen gesichert ist, in eine Freigabestellung bringbar ist, in der die in Benutzung befindliche Blisterverpackung gedreht werden kann, um eine nächste Tasche an das Spenderfenster zu bringen.

2. Spender nach Anspruch 1, **dadurch gekennzeichnet, daß** das Gehäuse einen Basisteil (208) und einen Deckelteil (210) aufweist, die im allgemeinen die benutzte Blisterverpackung umschließen, wobei das Spenderfenster in dem Basisteil vorgesehen ist.

3. Spender nach Anspruch 2, **dadurch gekennzeichnet, daß** der Basisteil (208) und der Deckelteil (210) durch wenigstens einen Schnappsitz (206, 214) verbunden sind.

4. Spender nach Anspruch 2 oder 3, **dadurch gekennzeichnet, daß** der Basisteil (208) und der Deckelteil (210) einteilig ausgebildet und durch einen Gelenkteil (212) verbunden sind.

5. Spender nach einem der Ansprüche 2 bis 4, **dadurch gekennzeichnet, daß** die Anordnungseinrichtung einen zentralen Nabenteil (206) aufweist, der in einem der Teile, also im Deckelteil und im Basisteil vorgesehen ist.

6. Spender nach Anspruch 5, in Abhängigkeit vom Anspruch 3, **dadurch gekennzeichnet, daß** der Schnappsitz zwischen dem Nabenteil (206) und einem gegenüberliegenden Element (214) ausgebildet ist, das sich auf dem anderen Teil, also entweder dem Deckelteil oder dem Nabenteil, befindet.

7. Spender nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Verriegelungseinrichtung wenigstens einen hin- und herbeweglichen Arm (218) aufweist, der ein Verriegelungsende (230) besitzt, das mit dem Umfang der in Benutzung befindlichen Blisterverpackung (200) in Eingriff gedrückt wird, und daß das freiliegende Ende (228) von der Außenseite des Gehäuse zugänglich ist, um **dadurch** bei Benutzung auf das freiliegende Ende (228) Druck auszuüben, der das Verriegelungsende (230) mit dem Umfang dieser Blisterverpackung außer Eingriff bringt.

8. Spender nach Anspruch 7, **dadurch gekennzeichnet, daß** die Verriegelungseinrichtung zwei hin- und herbewegliche Arme (218) aufweist, die auf dem Umfang des Gehäuses mit Abstand nebeneinander angeordnet sind.

9. Spender nach Anspruch 8, **dadurch gekennzeichnet, daß** jeder hin- und herbewegliche Arm (218) mit dem Gehäuse ein einheitliches Ganzes bildet.

10. Spender nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** das Gehäuse eine Auswerfereinrichtung (234) aufweist, die gegenüber dem Spenderfenster angeordnet und bei Benutzung betätigbar ist, um ein in einer benachbarten Blisterverpackung enthaltenes Produktteilchen durch das Spenderfenster auszuwerfen.

Revendications

1. Distributeur pour distribuer un produit, lors de l'utilisation, à partir d'une plaquette alvéolaire (200) comprenant un élément de support définissant une pluralité de pochettes (204) disposées en cercle autour d'un axe de la plaquette alvéolaire, et une feuille de protection disposée sur un côté de distribution de ladite plaquette alvéolaire ayant des parties déchirables qui ferment chacune desdites pochettes, ledit distributeur comprenant : un boîtier (208, 210) ;
un moyen (206) pour positionner, lors de l'utilisation, une plaquette alvéolaire (200) en vue d'une rotation à l'intérieur dudit boîtier (208, 210),
une fenêtre de distribution (236) située dans ledit boîtier de telle sorte que, lors de l'utilisation, une plaquette alvéolaire peut pivoter pour amener chaque pochette (204) d'une plaquette alvéolaire en coïncidence avec celle-ci pour permettre l'éjection du contenu d'une plaquette alvéolaire à travers celle-ci ;
caractérisé par le fait que ledit distributeur comprend en outre une ouverture d'accès (240, 242) à travers laquelle, lors de l'utilisation, un utilisateur peut engager manuellement une partie exposée de la périphérie de la plaquette alvéolaire (200) pour y appliquer une rotation ; et
des moyens de verrouillage (216) libérables manuellement, aptes à coopérer avec la plaquette alvéolaire lors de l'utilisation et déplaçables manuellement à l'encontre d'une sollicitation d'une position de verrouillage dans laquelle la plaquette alvéolaire est empêchée de tourner, à une position de libération dans laquelle, lors de l'utilisation, on peut faire tourner la plaquette alvéolaire pour présenter une pochette suivante adjacente à la fenêtre de distribution.

2. Distributeur selon la revendication 1, dans lequel ledit boîtier comprend une partie base (208) et une partie couvercle (210) qui enferment ensemble d'une manière générale ladite plaquette alvéolaire lors de l'utilisation, la fenêtre de distribution étant disposée dans la partie base.

3. Distributeur selon la revendication 2, dans lequel ladite partie base (208) et ladite partie couvercle (210) sont reliées ensemble par au moins un système de fermeture (206, 214) par encliquetage.

4. Distributeur selon la revendication 2 ou la revendication 3, dans lequel ladite partie base (208) et ladite partie couvercle (210) sont formées d'un seul tenant et réunies par une partie charnière (212).

5. Distributeur selon l'une quelconque des revendications 2 à 4, dans lequel ledit moyen de positionnement comprend une partie protubérance centrale (206) disposée dans l'une de ladite partie couvercle et de ladite partie base.

6. Distributeur selon la revendication 5 lorsqu'elle est dépendante de la revendication 3, dans lequel le système de fermeture par encliquetage se situe entre ladite partie protubérance (206) et un élément frontal (214) disposé sur l'autre de ladite partie couvercle et de ladite partie base.

7. Distributeur selon l'une quelconque des revendications précédentes, dans lequel ledit moyen de verrouillage comprend au moins un bras pouvant se balancer (218) ayant une extrémité de verrouillage (230) sollicitée en engagement avec la périphérie de ladite plaquette alvéolaire (200) lors de l'utilisation, et l'extrémité exposée (228) extérieurement accessible depuis l'extérieur du boîtier, ce par quoi, lors de l'utilisation, une pression sur l'extrémité exposée (228) sollicite ladite extrémité de verrouillage (230) hors d'engagement avec la périphérie de ladite plaquette alvéolaire.

8. Distributeur selon la revendication 7, dans lequel ledit moyen de verrouillage comprend deux bras pouvant se balancer (218) espacés l'un de l'autre sur la périphérie du boîtier.

9. Distributeur selon la revendication 8, dans lequel chaque bras verrouillable (218) est formé d'un seul tenant avec ledit boîtier.

10. Distributeur selon l'une quelconque des revendications précédentes, dans lequel le boîtier comprend un moyen éjecteur (234) disposé à l'opposé de ladite fenêtre de distribution et actionnable, lors de l'utilisation, pour éjecter un article contenu dans une plaquette alvéolaire adjacente à travers ladite fenêtre de distribution.

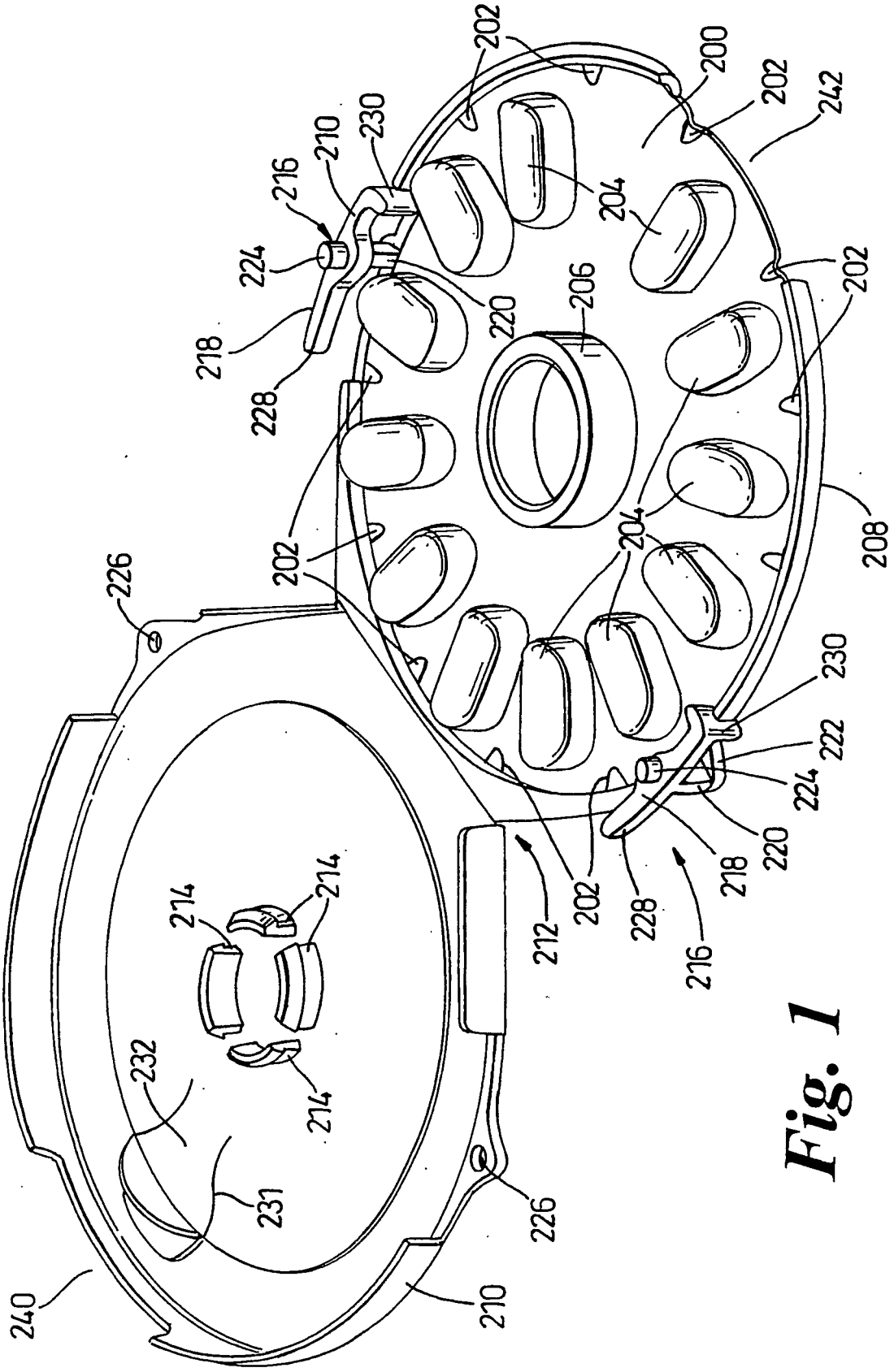

202
200
202
242
230
210
216
224
218
228
204
220
206
202
202
208
226
204
230
222
224
220
218
212
202
228
216
214
214
214
232
231
226
240
210

Fig. 1

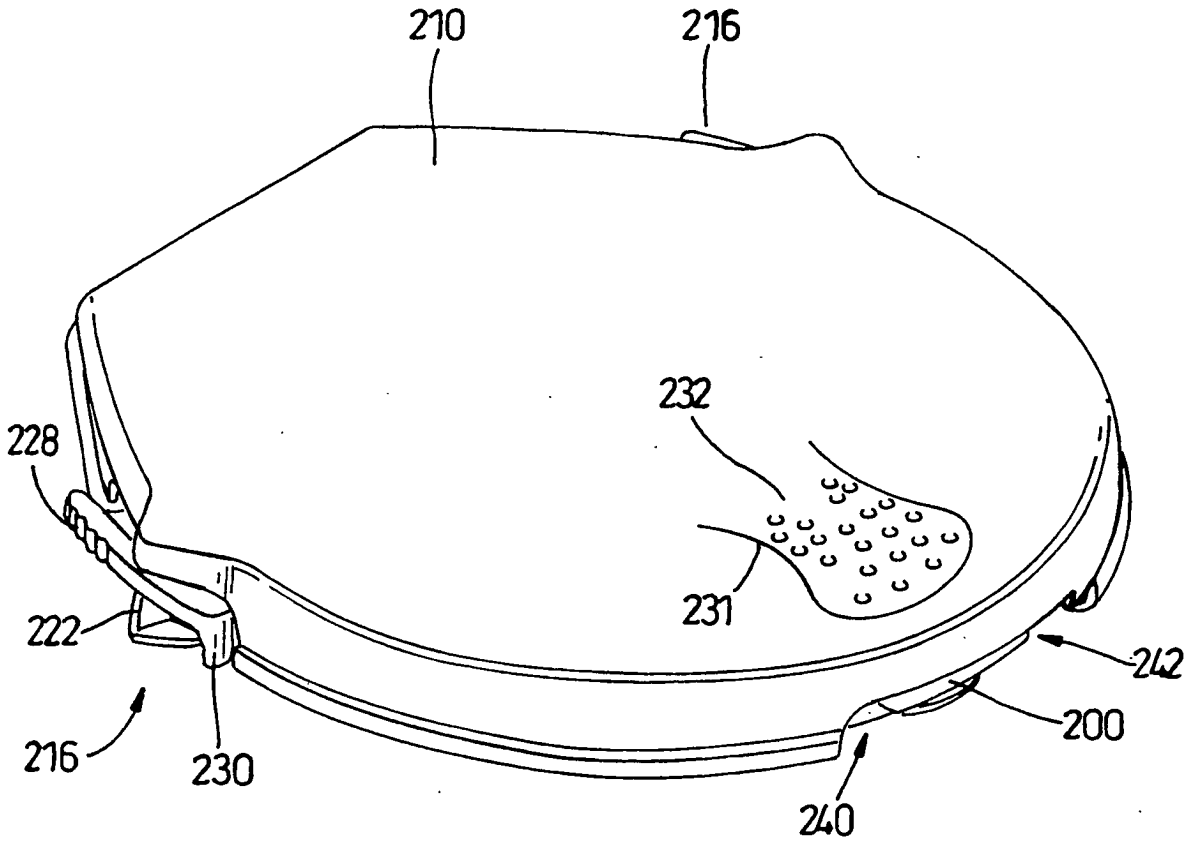


Fig. 2

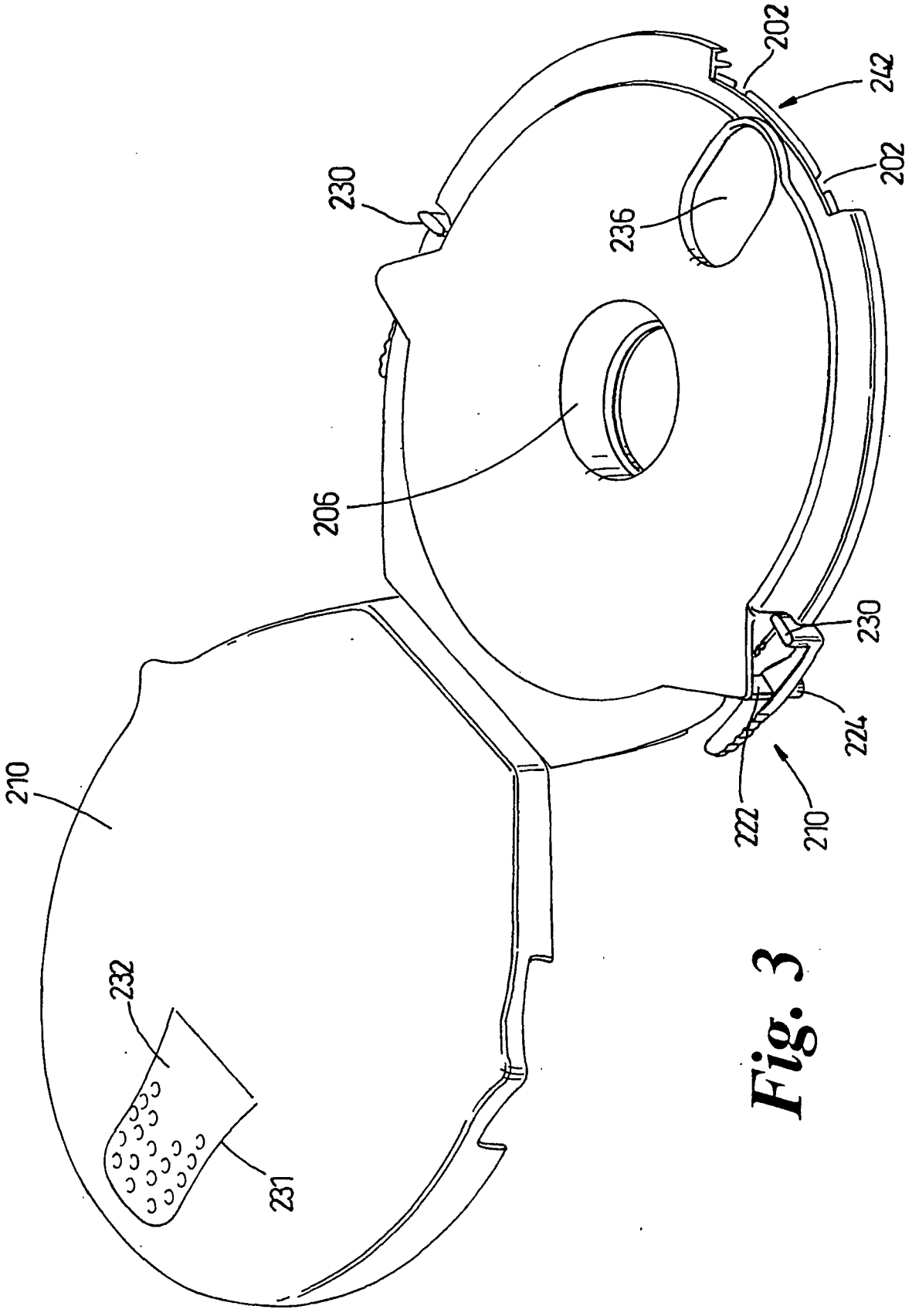


Fig. 3

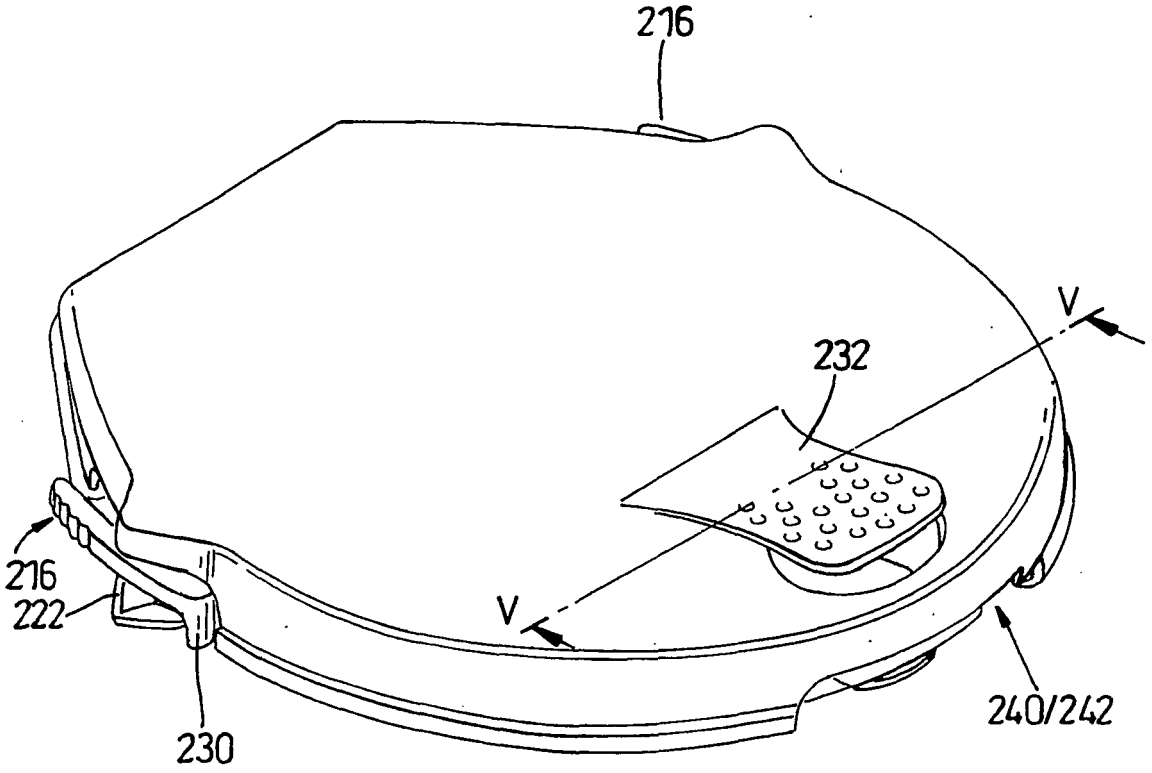


Fig. 4

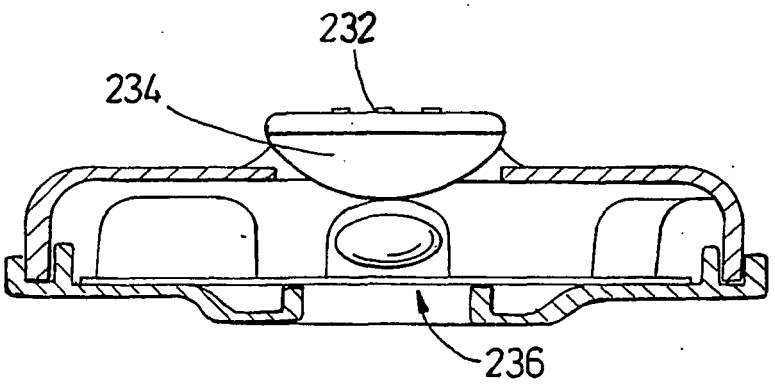


Fig. 5

Fig. 6

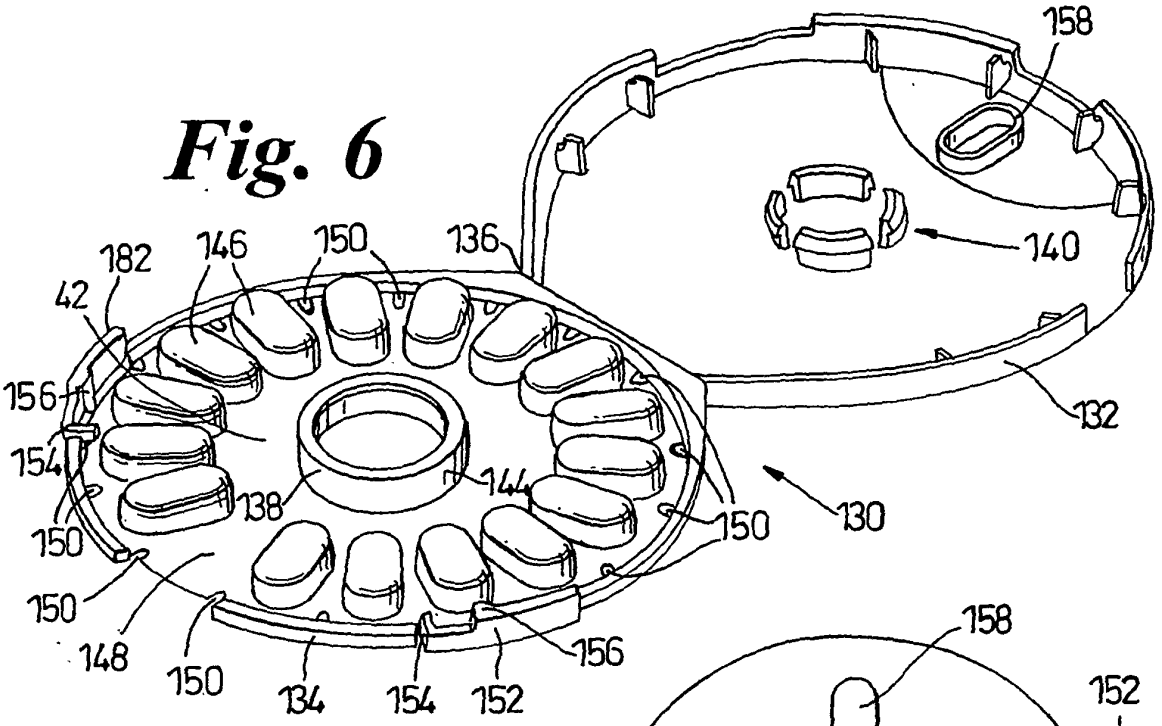
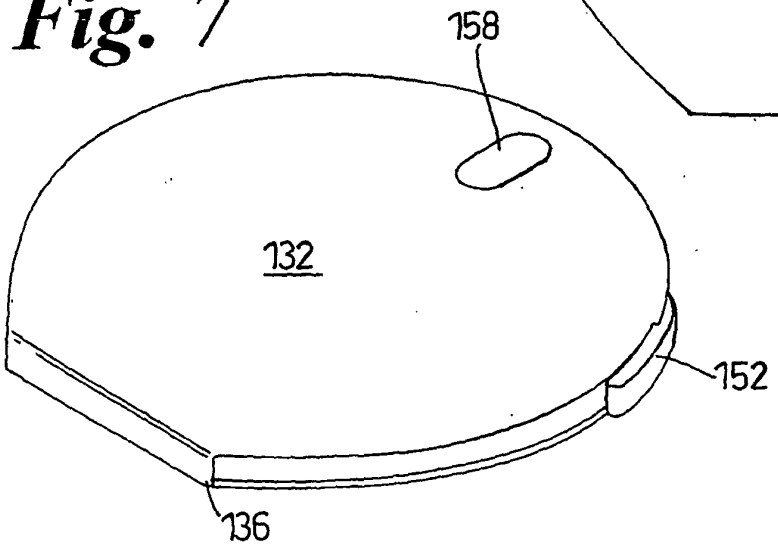


Fig. 7



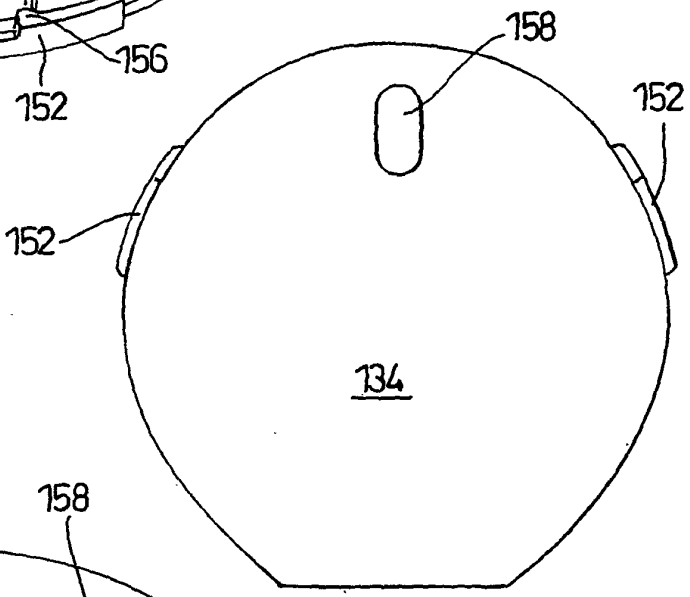


Fig. 8

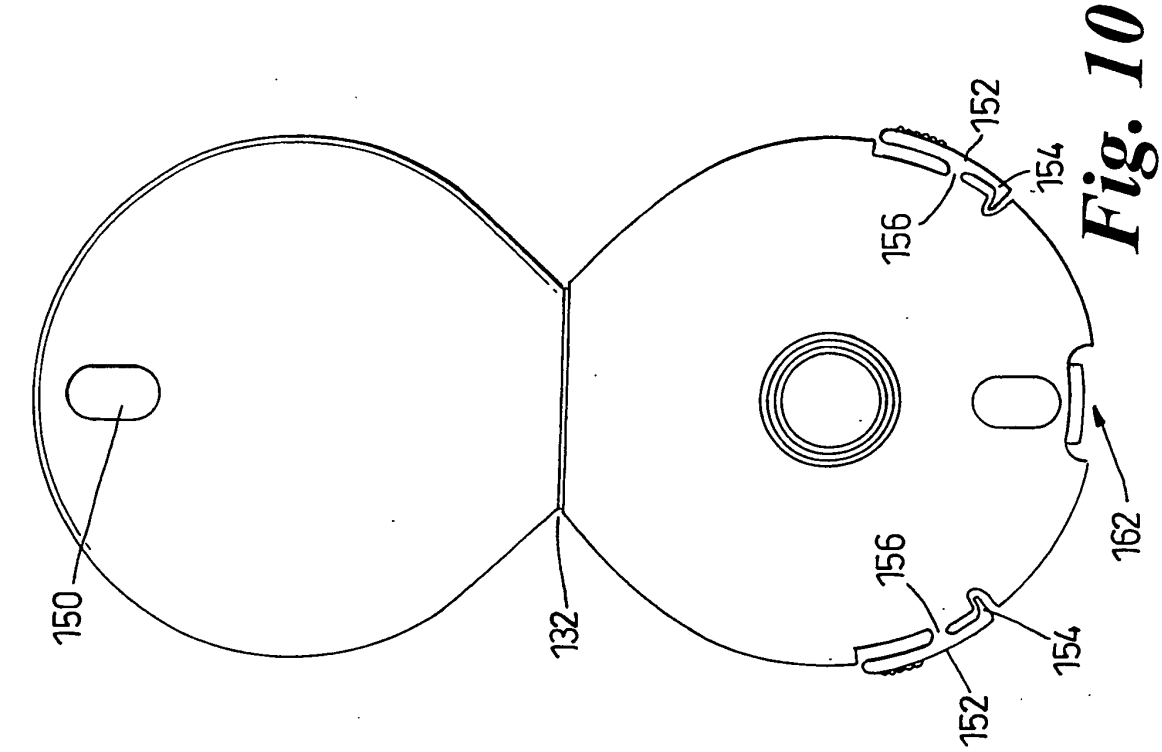

150
132
156
152
154
162

Fig. 10

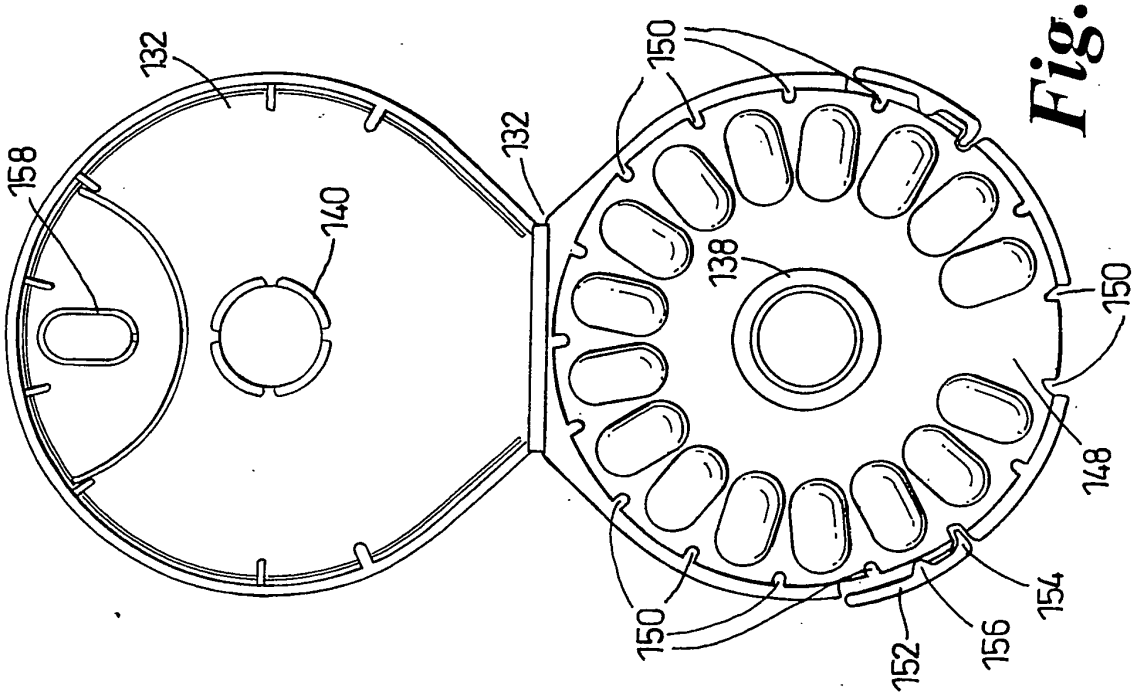

158
132
140
132
150
138
150
148
154
156
152
150

Fig. 9

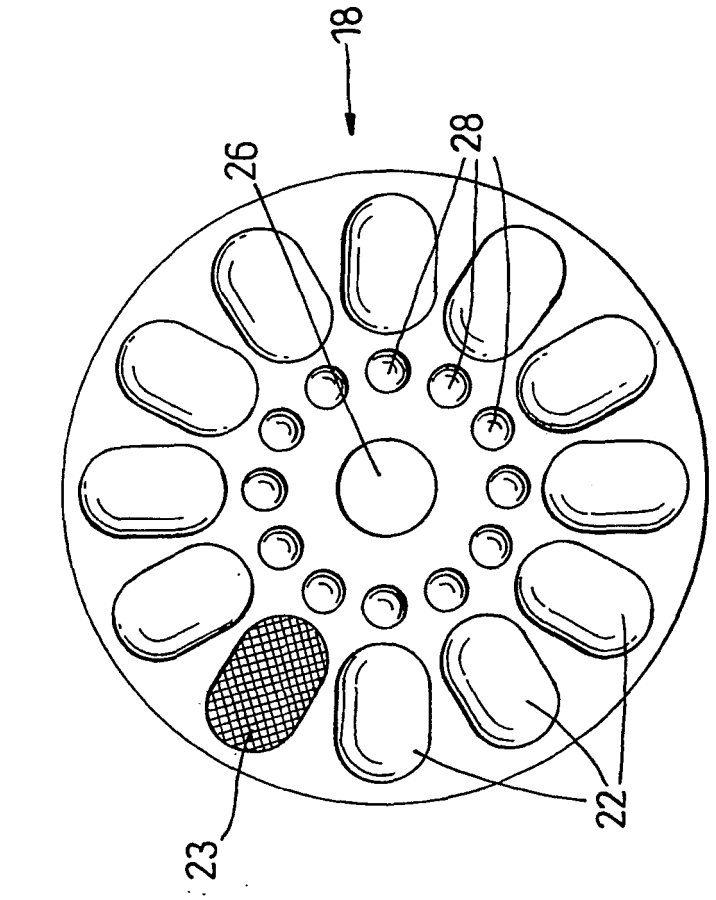


Fig. 12

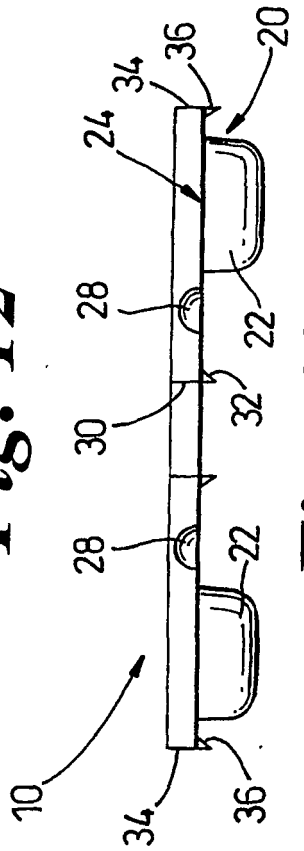


Fig. 13

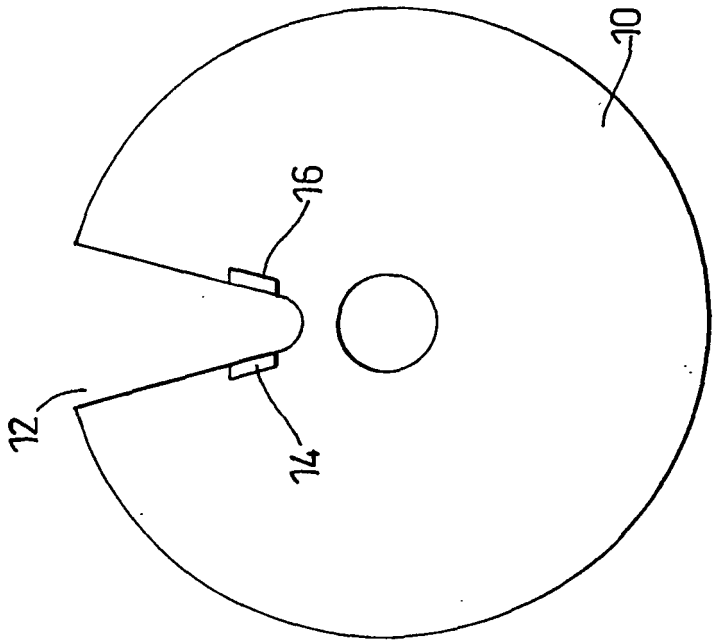


Fig. 11

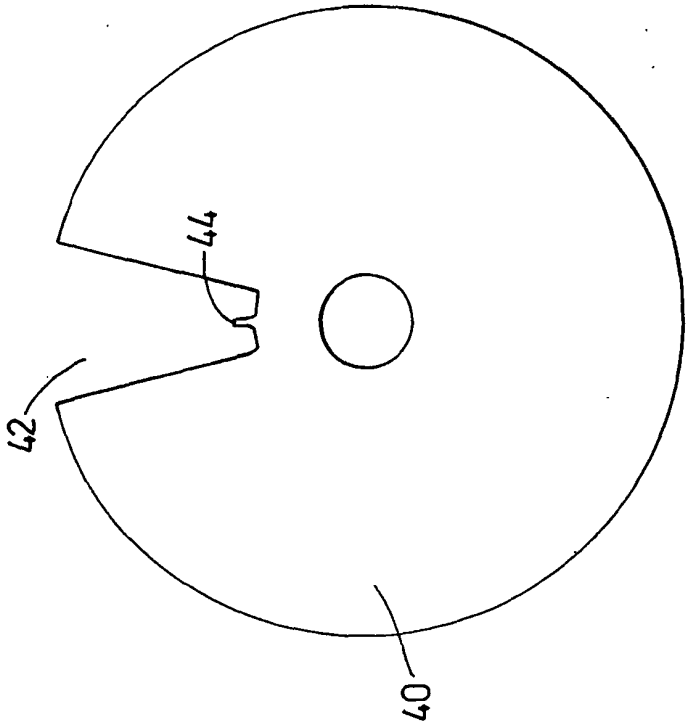


Fig. 14

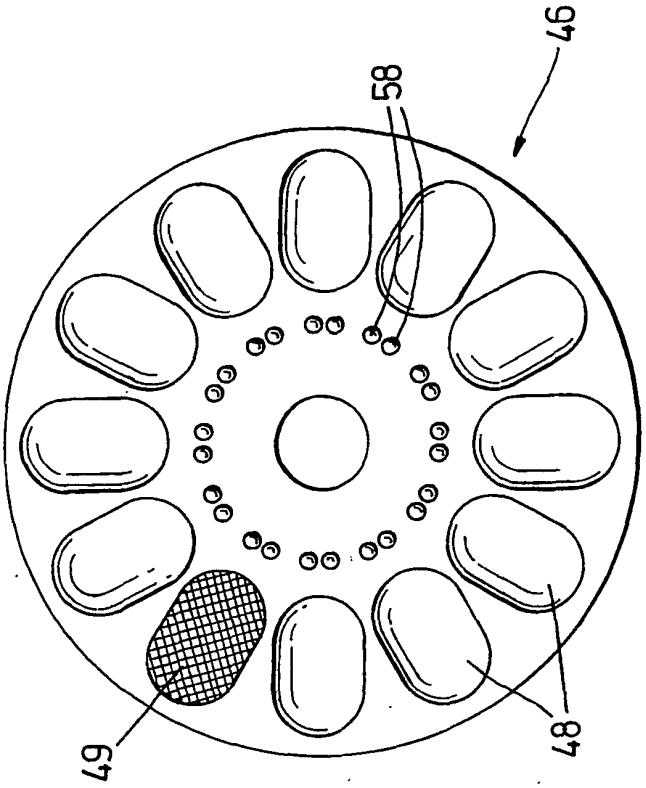


Fig. 15

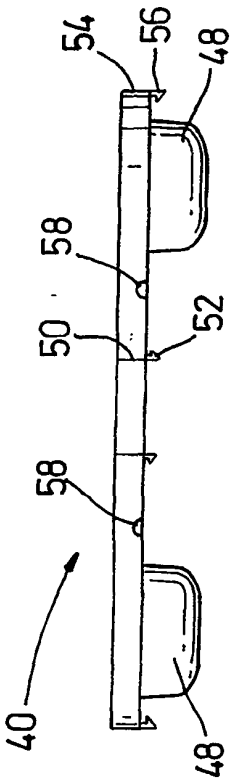


Fig. 16

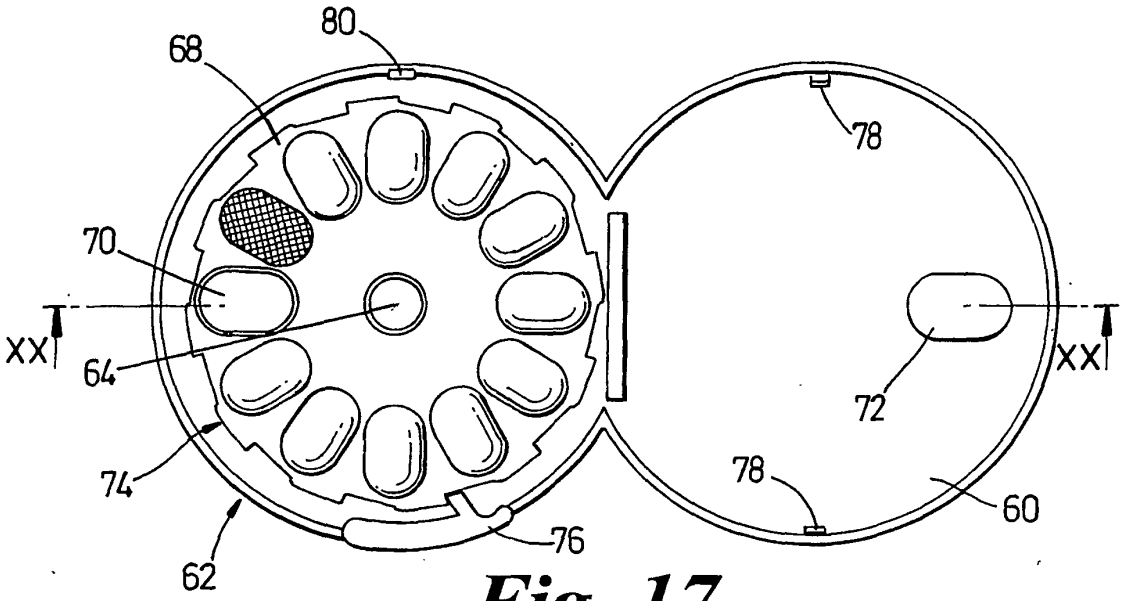


Fig. 17

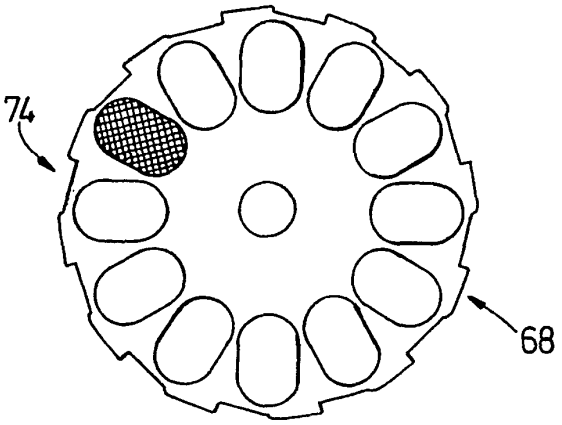


Fig. 18



Fig. 19

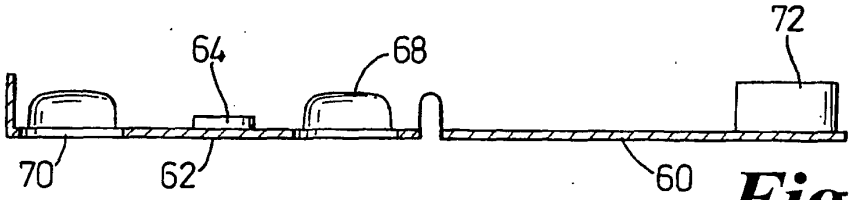


Fig. 20

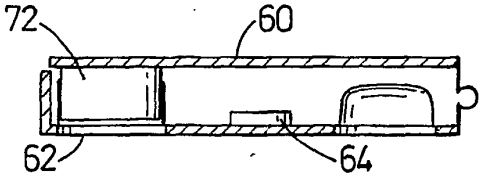


Fig. 21

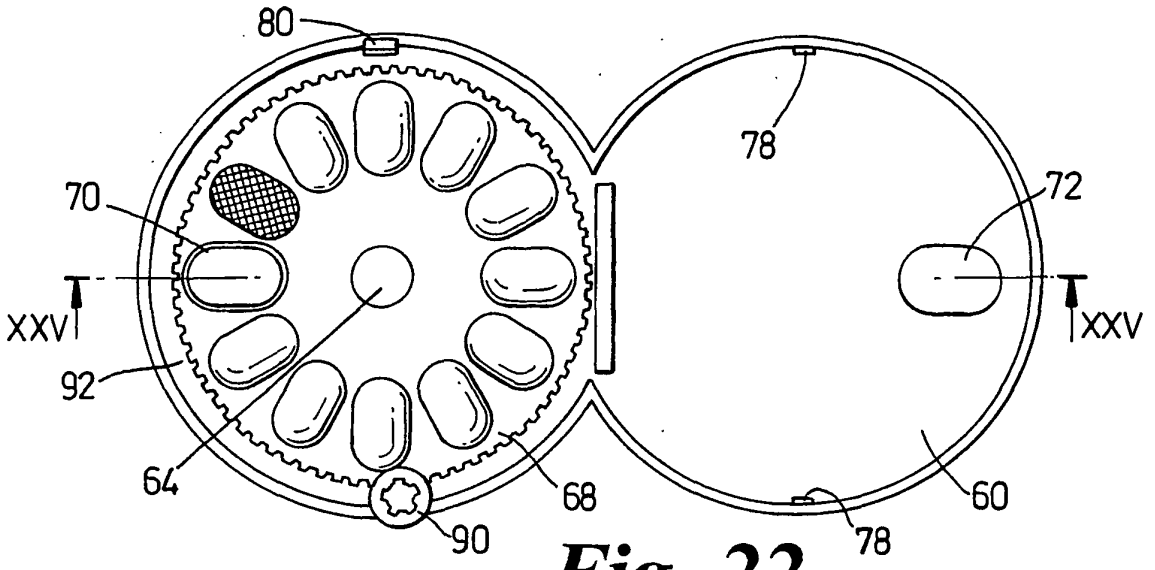


Fig. 22

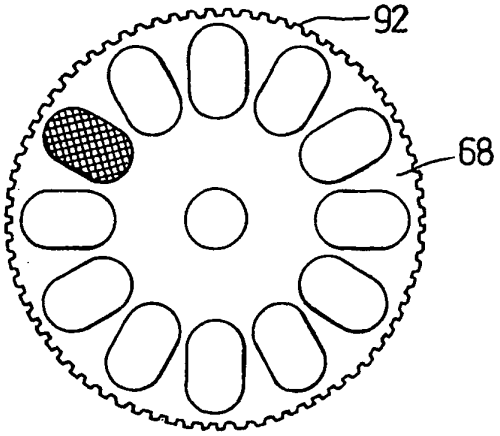


Fig. 23



Fig. 24

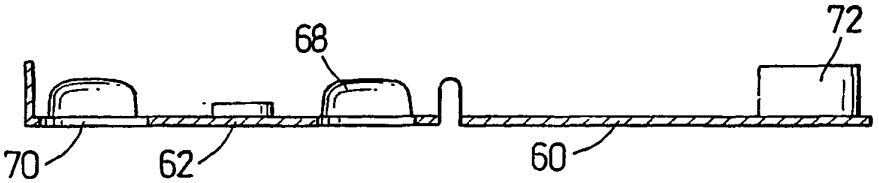


Fig. 25

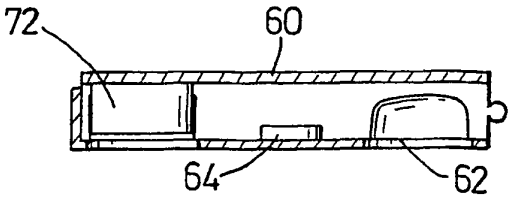


Fig. 26

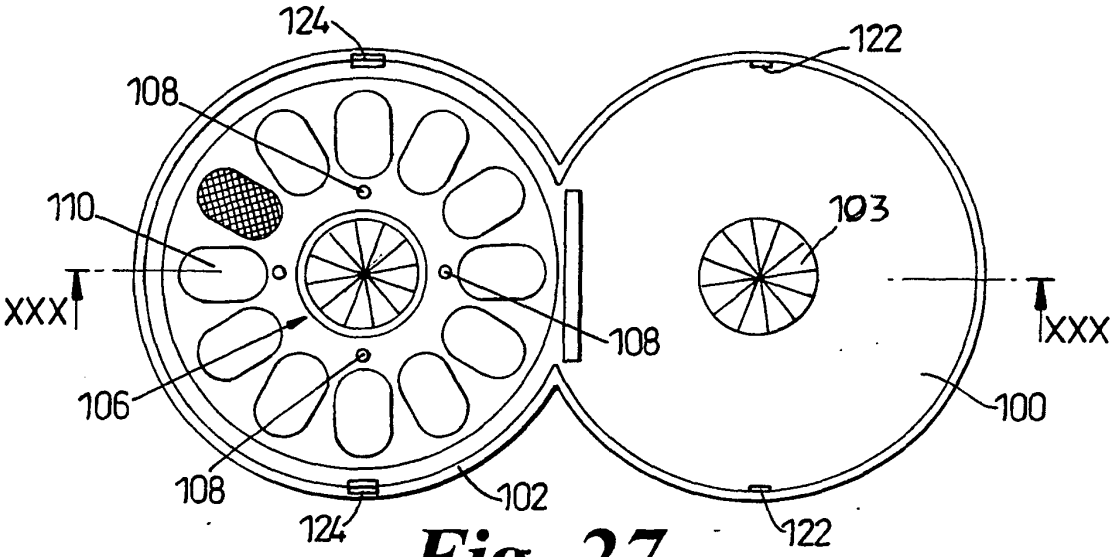


Fig. 27

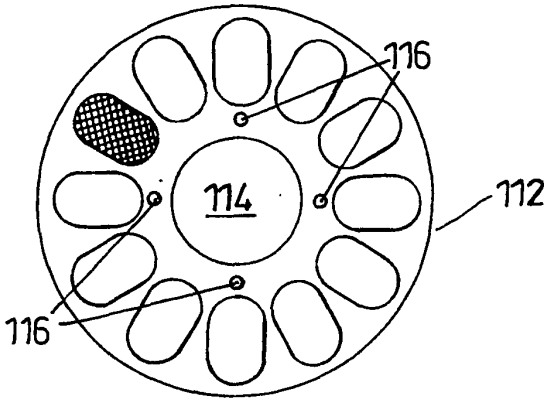


Fig. 28



Fig. 29

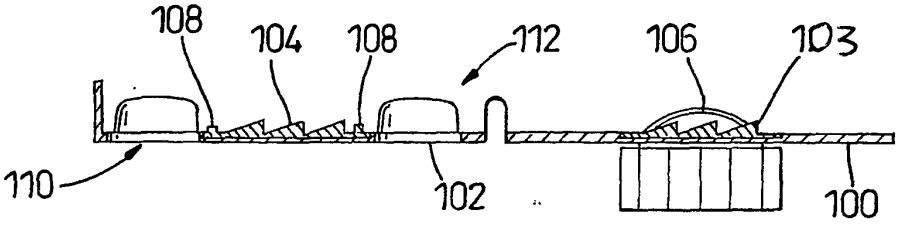


Fig. 30

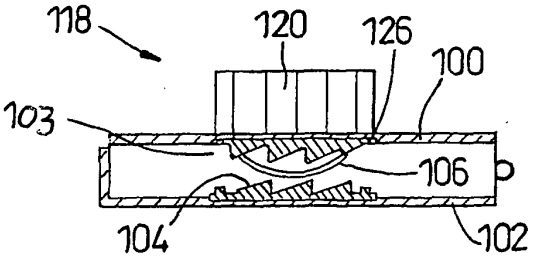


Fig. 31

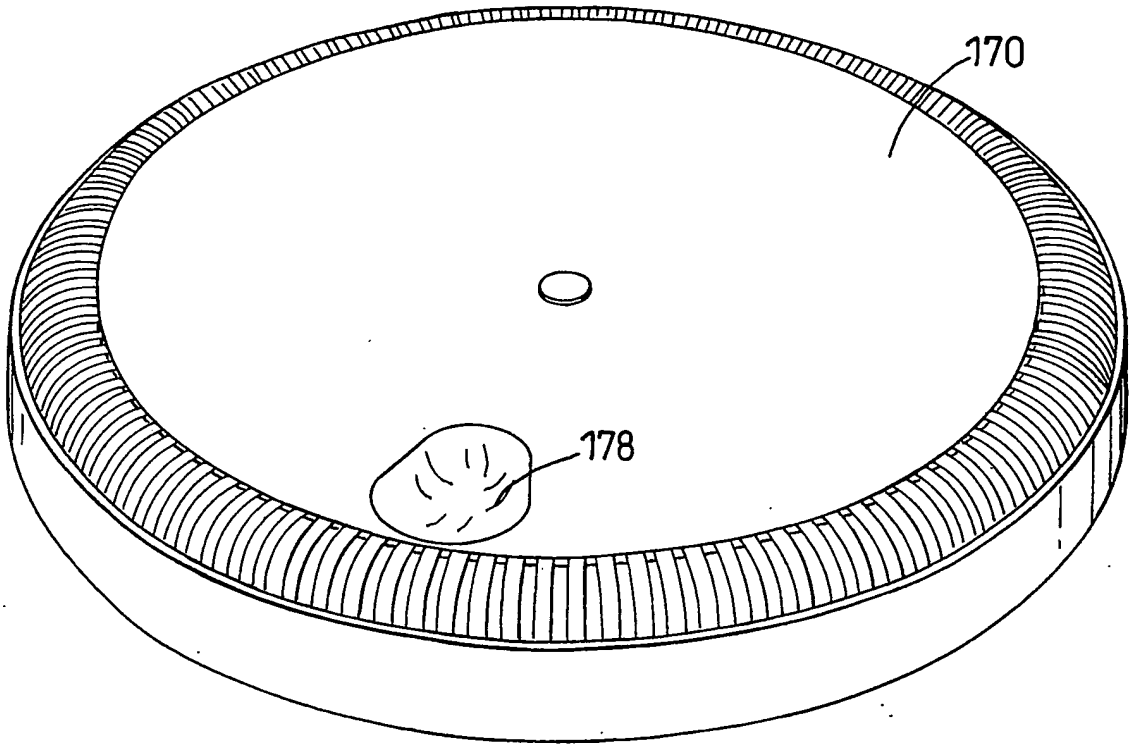


Fig. 32

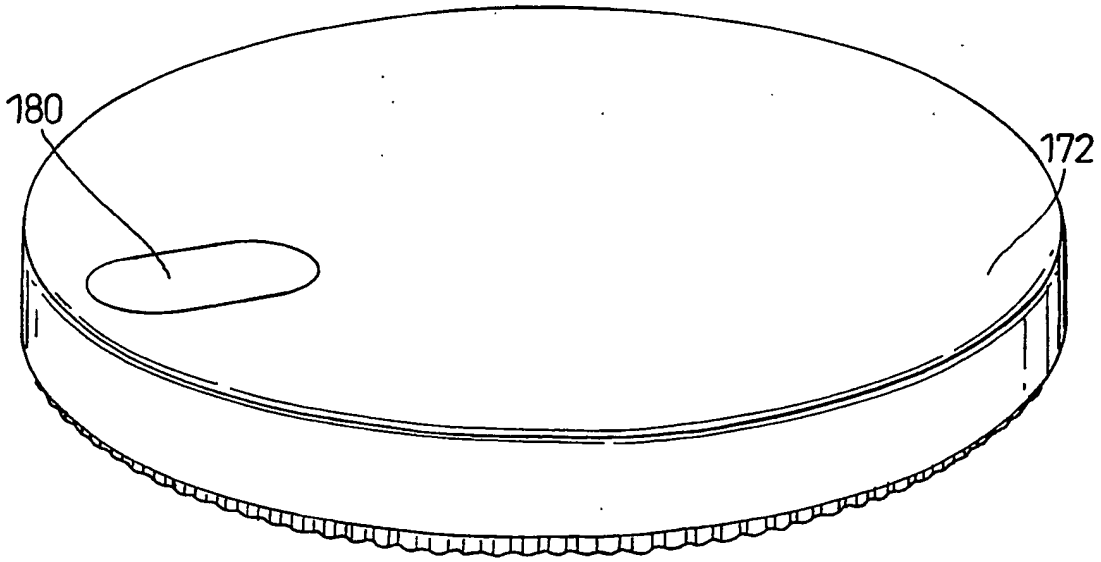


Fig. 33

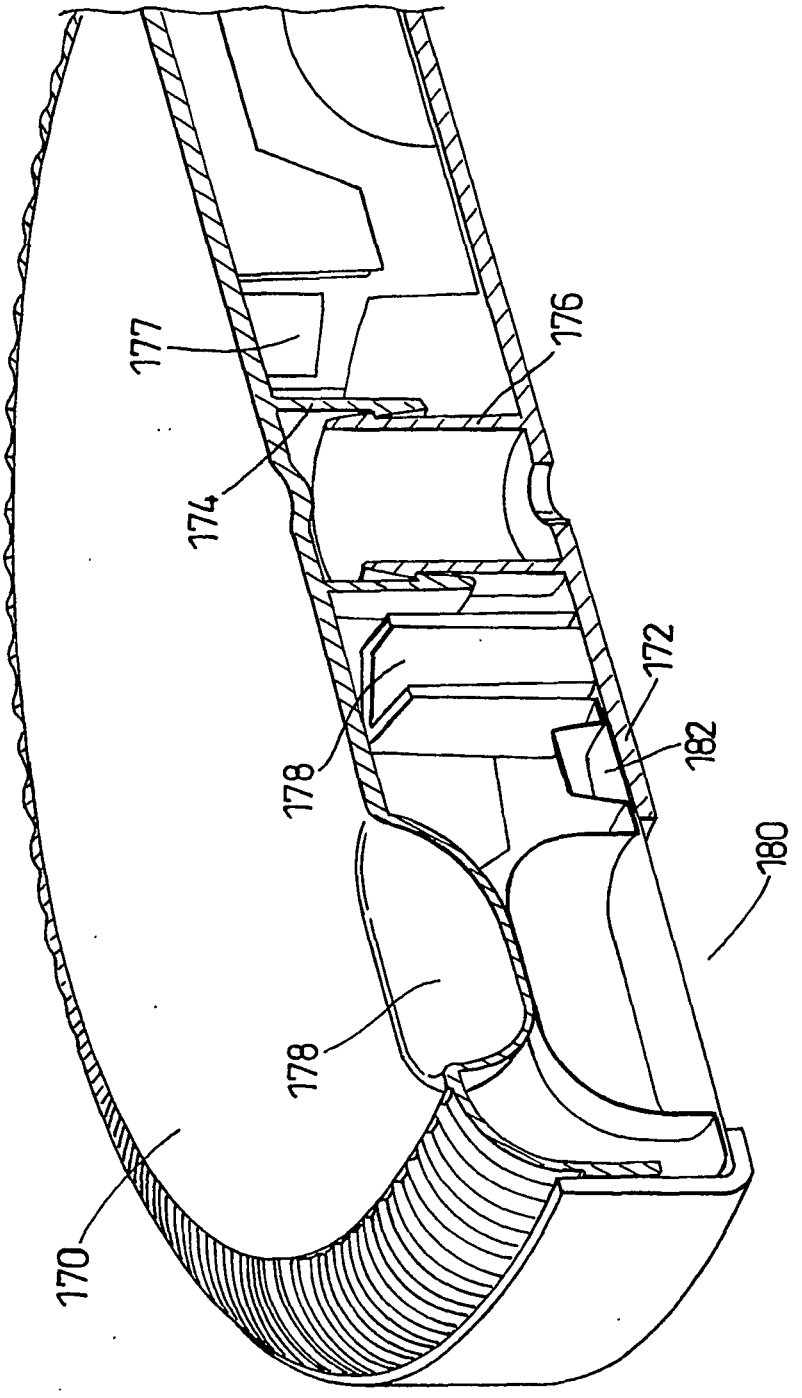


Fig. 34

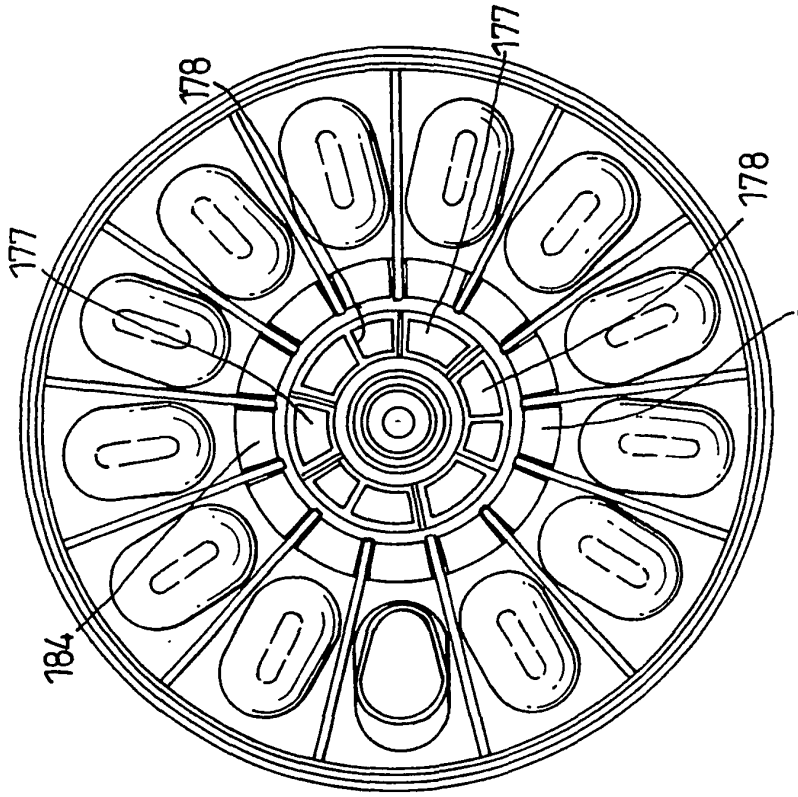


Fig. 36

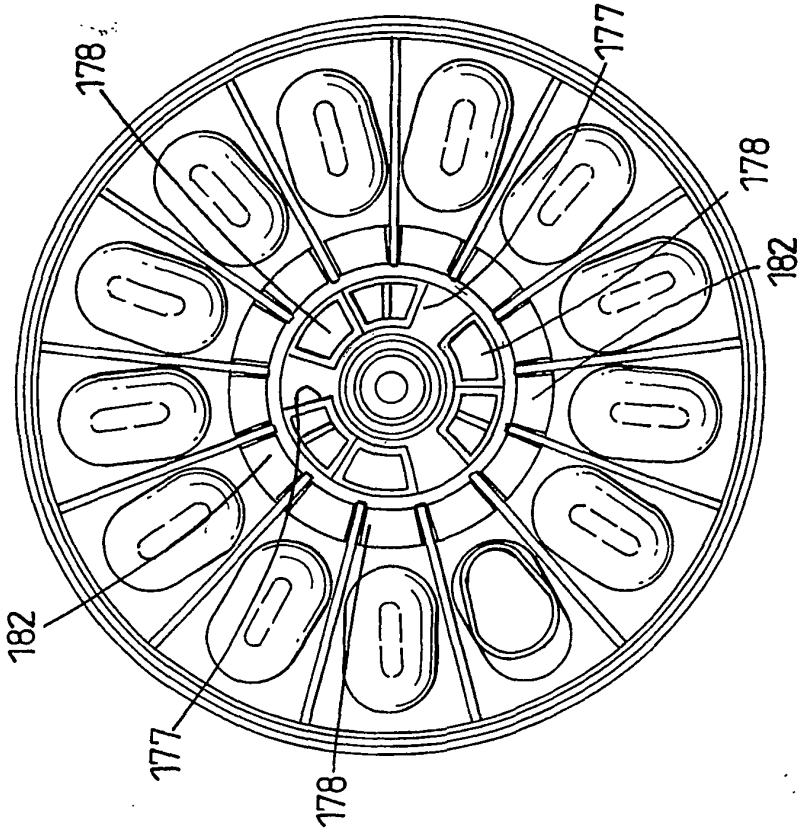


Fig. 35

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.

Patent documents cited in the description

- US 5110007 A **[0005]**
- US 4627432 A **[0006]**
- US 6098835 A **[0007]**
- WO 0043287 A **[0007]**
- US 6364155 A **[0007]**
- US 20020166791 A **[0007]**