IGE | IPI
ip-search

Validity Search

Metered Dose Inhaler

Bern, 26 February 2021

John Smith
Maplestreet 1
1234 Virginia

Our reference
20-15005
Your reference
Test_Sample

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Chapter 1 Report

1.1 Search Task

This subject search is aimed at providing an overview of metered dose inhalers that have mechanical technical solutions for counting the applied doses. Two different approaches are of specific interest:

A The counting wheel is in the form of a ring with numbers embossed on the radial surface.

B The counting wheel is in the form of a disc with numbers embossed on the upper/lower surface.

1.2 Summary of results

The documents selected are listed in section 2 in the following order:

Features AB (ring and disc) page 5

Patent document, where both features are disclosed in combination. A 1st counting unit is driving a 2nd unit, one being ring-shaped and the other disc-shaped.

MOST RELEVANT DOCUMENTS (SHORTLIST) 1 OUT OF 1 DOCUMENTS

Publication Nr.	Pub. Date	Titel
EP3127048 A1	08/02/2017	DOSE INDICATOR FOR A METERED DOSE INHALER [EPODOC / EPO]

Feature A (ring) page 5

Patent documents disclosing a disc-shaped counting unit.

MOST RELEVANT DOCUMENTS (SHORTLIST) 5 OUT OF 10 DOCUMENTS

Publication Nr.	Pub. Date	Titel
WO2015114337 A1	06/08/2015	DOSE COUNTER AND DISPENSING APPARATUS [EPODOC / EPO]
WO2014096814 A1	26/06/2014	COUNTER [EPODOC / EPO]
WO2014039367 A1	13/03/2014	IMPROVEMENTS IN OR RELATING TO DOSE INDICATORS [EPODOC / EPO]
WO2008121459 A1	09/10/2008	DOSE COUNTER [EPODOC / EPO]
WO2008025087 A1	06/03/2008	COUNTER MOUNTING TO AN EXISTING PMDI [EPODOC / EPO]

Feature B (disc)

page 9

Patent documents disclosing a ring-shaped counting unit.

MOST RELEVANT DOCUMENTS (SHORTLIST) 3 OUT OF 7 DOCUMENTS

Publication Nr.	Pub. Date	Titel
EP3091485 A1	09/11/2016	(A1 B1) DOSE INDICATOR DEVICE [EPODOC / EPO]
EP2509666 A1	17/10/2012	(A1 B1) DOSE INDICATOR [EPODOC / EPO]
FR2869708 A1	04/11/2005	(A1) Indicator for fluid or powdered product dispenser has counter with elastic element in form of two flexible tongues engaging with counter teeth [EPODOC / EPO]

1.3 Conclusions, Remarks

PLEASE NOTE:

THIS IS NOT A COMPREHENSIVE SEARCH, IT IS A SAMPLE REPORT ONLY.

For both types of counting wheels, exemplary documents disclose different technical solutions. Major differences are the location of the wheel on the housing as well as the related drive mechanism.

An additional strategic patent analysis is suggested to identify the most common drive mechanisms (technical solutions) disclosed and the related corporate identities behind.

Search concluded on

26 February 2021

Researched by

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ip-search

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Stauffacherstrasse 65/59g
CH-3003 Bern
www.ip-search.swiss

Chapter 2 Results

2.1 Features AB (ring and disc)

Nach oben

OVERVIEW TABLE

Nr.	Publication Nr.	Pub. Date	Titel	Page
1	EP3127048 A1	08/02/2017	DOSE INDICATOR FOR A METERED DOSE INHALER [EPODOC / EPO]	5

1. EP3127048 A1

Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT 3M INNOVATIVE PROPERTIES CO [US]

TITLE DOSE INDICATOR FOR A METERED DOSE INHALER [EPODOC / EPO]

COMMENT **[EP3127048] combination of both, ring and disc**

IMAGE

Bild öffnen

2.2 Feature A (ring)

Nach oben

OVERVIEW TABLE

Nr.	Publication Nr.	Pub. Date	Titel	Page
1	WO2015114337 A1	06/08/2015	DOSE COUNTER AND DISPENSING APPARATUS [EPODOC / EPO]	6
2	WO2014096814 A1	26/06/2014	COUNTER [EPODOC / EPO]	6
3	WO2014039367 A1	13/03/2014	IMPROVEMENTS IN OR RELATING TO DOSE INDICATORS [EPODOC / EPO]	6
4	WO2010023233 A1	04/03/2010	DRIVE UNIT FOR DOSAGE COUNTER [EPODOC / EPO]	7
5	WO2008121459 A1	09/10/2008	DOSE COUNTER [EPODOC / EPO]	7
6	WO2008025087 A1	06/03/2008	COUNTER MOUNTING TO AN EXISTING PMDI [EPODOC / EPO]	7
7	EP2146763 A1	27/01/2010	(A1 A4 B1) METERED DOSE DISPENSING DEVICES [EPODOC / EPO]	8

8	EP1991295 A2	19/11/2008	(A2 B1) APPARATUS FOR METERED DOSED DISPENSING (A4) METHOD AND APPARATUS FOR METERED DOSED DISPENSING [EPODOC / EPO]	8
9	EP0674533 A1	04/10/1995	(A1) INHALER FOR POWDERED MEDICATIONS. (B1) INHALER FOR POWDERED MEDICATIONS [EPODOC / EPO]	8
10	EP2570149 A1	20/03/2013	(A1 B1) Counter [EPODOC / EPO]	9

1. WO2015114337 A1

Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT CONSORT MEDICAL PLC [GB]

TITLE DOSE COUNTER AND DISPENSING APPARATUS [EPODOC / EPO]

COMMENT **[WO2015114337] synchronized with additional priming counter**

IMAGE

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2. WO2014096814 A1

Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT EURO CELTIQUE SA [LU]; GORDON KIRSTEEN [GB]

TITLE COUNTER [EPODOC / EPO]

IMAGE

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3. WO2014039367 A1

Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT 3M INNOVATIVE PROPERTIES CO [US]; STUART ADAM J [GB]; HODSON PETER D [GB]

TITLE IMPROVEMENTS IN OR RELATING TO DOSE INDICATORS [EPODOC / EPO]

IMAGE

Bild öffnen

4. WO2010023233 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT BOEHRINGER INGELHEIM INT [DE]; HOCHRAINER DIETER [DE]

TITLE DRIVE UNIT FOR DOSAGE COUNTER [EPODOC / EPO]

IMAGE

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5. WO2008121459 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT 3M INNOVATIVE PROPERTIES CO [US]; HOWGILL STEPHEN J [GB]

TITLE DOSE COUNTER [EPODOC / EPO]

IMAGE

Bild öffnen

6. WO2008025087 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT CAPITAL IDEA ACT PTY LTD A [AU]; FLOWER SCOTT [AU]

TITLE COUNTER MOUNTING TO AN EXISTING PMDI [EPODOC / EPO]

COMMENT **[WO2008025087] counter as add-on device**

IMAGE

Bild öffnen

7. EP2146763 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A1 A4 B1); 3M INNOVATIVE PROPERTIES CO [US]

TITLE (A1 A4 B1)

METERED DOSE DISPENSING DEVICES [EPODOC / EPO]

IMAGE

Bild öffnen

8. EP1991295 A2 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A2 A4 B1); 3M INNOVATIVE PROPERTIES CO [US]

TITLE (A2 B1)

APPARATUS FOR METERED DOSED DISPENSING (A4)

METHOD AND APPARATUS FOR METERED DOSED DISPENSING [EPODOC / EPO]

IMAGE

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9. EP0674533 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A1 B1); SCHERING CORP [US]

TITLE (A1)

INHALER FOR POWDERED MEDICATIONS. (B1)

INHALER FOR POWDERED MEDICATIONS [EPODOC / EPO]

COMMENT **[EP0674533] represents free state of the art**

IMAGE

Bild öffnen

10. EP2570149 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A1 B1); EURO CELTIQUE SA [LU]

TITLE (A1 B1)

Counter [EPODOC / EPO]

IMAGE

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2.3 Feature B (disc)

Nach oben

OVERVIEW TABLE

Nr.	Publication Nr.	Pub. Date	Titel	Page
1	EP3091485 A1	09/11/2016	(A1 B1) DOSE INDICATOR DEVICE [EPODOC / EPO]	9
2	EP2509666 A1	17/10/2012	(A1 B1) DOSE INDICATOR [EPODOC / EPO]	10
3	WO2012150427 A1	08/11/2012	A DOSE COUNTER [EPODOC / EPO]	10
4	EP1047467 A2	02/11/2000	(A2 B1) INDICATING DEVICE FOR USE WITH A DISPENSING DEVICE [EPODOC / EPO]	10
5	US2007277817 A1	06/12/2007	(A1 B2) Pressurized metered dose inhaler system [EPODOC / EPO]	11
6	FR2869708 A1	04/11/2005	(A1) Indicator for fluid or powdered product dispenser has counter with elastic element in form of two flexible tongues engaging with counter teeth [EPODOC / EPO]	11
7	EP0949584 A2	13/10/1999	(A2 A3) An indicator device [EPODOC / EPO]	11

1. EP3091485 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A1 B1); CONSORT MEDICAL PLC [GB]

TITLE (A1 B1)

DOSE INDICATOR DEVICE [EPODOC / EPO]

IMAGE

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2. EP2509666 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A1 B1); 3M INNOVATIVE PROPERTIES CO [US]

TITLE (A1 B1)

DOSE INDICATOR [EPODOC / EPO]

IMAGE

Bild öffnen

3. WO2012150427 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT CIPLA LTD; MALHOTRA GEENA [IN]; RAO XERXES [IN]; PURANDARE SHRINIVAS M [IN]; BENNETT ADRIAN ROBERT JAMES [GB]

TITLE A DOSE COUNTER [EPODOC / EPO]

IMAGE

Bild öffnen

4. EP1047467 A2 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A2 B1); 1263152 ONTARIO INC [CA]

TITLE (A2 B1)

INDICATING DEVICE FOR USE WITH A DISPENSING DEVICE [EPODOC / EPO]

COMMENT **[EP1047467] represents free state of the art**

IMAGE

Bild öffnen

5. US2007277817 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

TITLE (A1 B2)

Pressurized metered dose inhaler system [EPODOC / EPO]

IMAGE

Bild öffnen

6. FR2869708 A1 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A1 B1); VALOIS SAS [FR]

TITLE (A1)

Indicator for fluid or powdered product dispenser has counter with elastic element in form of two flexible tongues engaging with counter teeth [EPODOC / EPO]

IMAGE

Bild öffnen

7. EP0949584 A2 Patent DWPI Detail

COPYRIGHTS © EPODOC / EPO

APPLICANT (A2 A3); BASON NEIL PETER [GB]

TITLE (A2 A3)

An indicator device [EPODOC / EPO]

COMMENT **[EP0949584] represents free state of the art**

IMAGE

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Chapter 3 Detailed Search Strategy

3.1 Search Terms

The following keyword concepts in German, English, French, Russisch were used for this search. Synonymous words and phrases were also used for this search, and spelling variations of the keywords were taken into account by using appropriate truncation.

English

metered dose, inhaler, count, indicate, wheel, ring, disc

German

Inhalator

3.2 Patent Classification

The patent classes of the following classification systems were targeted for this search.

Cooperative Patent Classification (CPC)

A61M15/0071; A61M15/0073; A61M15/0075

International Patent Classification (IPC)

A61M15/00

Japanese File Index (FI)

A61M15/0071

The complete description of the IPC classes with CPC and FI concordances can be found in the Internet here.

Japanese F-Terms Classification

A61M15/00

The complete description of the F-Terms can be found in the Internet here.

3.3 Search Strategy

Within the scope of the research, the following main steps were carried out:

Identify closest relevant patent classes

Keyword search in abstract databases with limitation to closest patent classes

Appendix

A. Description of databases

EPODOC (EPOQUEnet)

EPODOC is the systematically classified collection of research documents of the European Patent Office. This bibliographic database contains more than 110 million patent documents (published applications and granted patents) from more than 90 countries. In addition to the national patent documents, there are also applications with regional and international organisations (PCT, ARIPO and OAPI patents). Detailed information about patent data coverage can be found at https://www.epo.org/searching-for-patents/technical/espacenet.html.

Other than the bibliographical data, the citations from EPODOC contain the documents cited (patent and scientific literature) from search reports as well as the titles and abstracts of the documents. References usually include more than one version. For example, the original data will be cited as well as an English translation. The EPODOC data set can be searched on the internet via the Espacenet site.

Derwent World Patents Index (DWPI)

The DWPI Clarivate Analytics' database contains patent citations with information from the 47 most important countries. The most up-to-date list of countries and the time periods they cover can be found at their web site (http://clarivate.com/?product=derwent-world-patents-index-dwpi). Every document in the DWPI indicates the corresponding patent family i.e. patents registered in other countries which belong together. Currently, the database contains over 33 million patent families from among approximately 70 million patent numbers.
Clarivate Analytics interprets the information in the patent documents themselves, and prepares their own very useful and insightful titles and abstracts. The documents are classified according to DWPI's own system. DWPI is a value-added database, which complements patent information from bibliographical and full-text databases.

NPL

The NPL database is an EPO internal database and contains the bibliographic data for non-patent literature documents. Each document is identified by a so called XP number whose format is similar to the one used for patent documents. A XP number is assigned to a non-patent literature document either when the latter is issued from the full-text XPESP database (Elsevier publications) or when it has been cited in an EPO search report or classified by the EPO examiners.

Database of the Swiss Federal Institute of Intellectual Property (BAGIS)

The BAGIS database provides access to data recorded in the Swiss Register of Patents. Since 1978, all applications for patents and patents issued with validity for Switzerland have been electronically administered in this database.

Researchable information in BAGIS includes the register data available 2 days after submission of a patent application.

Swiss patents are published as a full text 18 months after submission of the patent application. Once published, the data recorded in the register is freely accessible and can be consulted via Swissreg (www.swissreg.ch).

Disclosure of information concerning unpublished register data is restricted and is only available to authorised persons.

GenomeQuest

GQ-IP is the web-based sequence information platform collated by GenomeQuest, used for searching public and commercial bio-sequence data. Data from various patent offices, publicly available sequence databases and web resources is loaded biweekly and processed in a proprietary automated pipeline to make the sequences and all of the annotations searchable and browsable. Its large annotated sequence patent database “GQ-PAT” comprises more than 190 million nucleotide and protein sequences. The major data sources include: USPTO, EPO, WIPO, SIPO, and patent sequences from GenBank, EMBL and DDBJ. RefSeq, SwissProt, and GenPept. Public non-patent sequence data is included from GenBank, RefSeq, SwissProt, and GenPept. GQ-IP search algorithms include the BLAST and the motif search algorithm, designed to find biologically relevant sequence similarity; as well as the IP-oriented GenePAST and fragment search algorithm, which are non-heuristic algorithms that report the percentage of identity over the entire length of the query or the subject sequence.

CASREACT

The CASREACT File (The Chemical Abstracts Reaction Search Service) is a chemical reaction database with reaction information derived from journal and patent documents from 1907 to date. The CA Abstract Number is the Accession Number in the file. The document-based file contains both single-step and multistep reactions. The records contain reaction information consisting of structure diagrams for reactants and products, CAS Registry Numbers® for all reactants, products, reagents, solvents, and catalysts, yields for many products, and textual reaction information. The reactants, reagents, and products are structure-searchable with a single reaction query. Roles, reaction sites, and mapping of atoms between reactants and products are also structure-searchable. The CAS Registry Numbers for all reaction participants, their roles, the textual reaction information, and yields are also searchable. Common Functional Groups found in reactants, reagents, and products are searchable. The records also contain bibliographic information, in-depth substance and subject indexing, and abstracts. These are all searchable and displayable. CAS roles, patent family data, and cited references are only displayable in CASREACT. They can be searched in the CA and CAplus files.

B. Conditions, limitations and scope of search

The Institute maintains complete confidentiality with regard to all searches.

The Institute applies due diligence in the selection of information sources and the carrying out of the search. However, no guarantee can be given for the accuracy and completeness of the retrieved data and the search results. The Institute shall be liable only in cases of gross negligence and intent.

The search only includes documents that have already been published. As patent applications are usually published 18 months after filing, it is possible that further relevant patent applications exist that are not contained in the database at the time of this search.

The search results always refer to the query made at the time of the search. If the customer subsequently changes the search objective, documents may be found that are not included in the present search report.

The information contained in this search report does not constitute legal advice nor is it intended as a recommendation for investment. We recommend consulting an appropriately qualified person, such as a patent attorney, for further analyses and interpretation.

C. Citation-Details

Features AB (ring and disc)

ZITAT-NR. 1 VON 1

1. EP3127048 A1 Nach oben

COPYRIGHTS	
PUB. DATE	08.02.2017
DERWENT WEEK	2020025
APPLICANT	(MINN) 3M INNOVATIVE PROPERTIES CO
TITLE	Dose indicator i.e. dose counter, for use in actuator in pressurized metered dose inhaler for patient, has indexable display unit comprising drive pawl including socket to engage indexing tooth of display unit during indexing
ABSTRACT	NOVELTY : The indicator i.e. dose counter (1), has a first indexable display unit mounted on a chassis, where the first display unit is indexable about a first display axis. The first indexable display unit comprises a drive pawl (6) connected to a proximal part to a displacement portion i.e. displacement plate. The drive pawl comprises a socket at a distal part, where the socket engages an indexing tooth (38a) of the first display unit during indexing. A second indexable display unit is indexable about a second display axis, where the second display axis is transverse to the first display axis. DETAILED DESCRIPTION : The first display unit is a unit display unit (33). The second display unit is an optional tens display unit (42). USE : Dose indicator i.e. dose counter, for use in an actuator in an inhaler (all claimed) i.e. pressurized metered dose inhaler (pMDI), for a patient. ADVANTAGE : The drive pawl and indexing teeth are adapted, so that an angle between a resetting surface and a trajectory of the proximal part of the drive pawl during resetting is small, thus improving robustness and consistency of counting and resetting of the dose counter. The indicator allows a chassis component to be designed, so that the chassis component can be injection molded without requirement for a side action in a molding tool, thus reducing capital cost of tooling and reducing risk of flash on components. DESCRIPTION OF DRAWINGS : The drawing shows a side perspective view of a dose indicator. 1 : Dose counter 6 : Drive pawl 33 : Unit display unit 38a, 38b : Indexing teeth 42 : Optional tens display unit POLYMERS : The chassis comprises polyoxymethylene.

Feature A (ring)

ZITAT-NR. 1 VON 10

1. WO2015114337 A1 Nach oben

COPYRIGHTS	© WPI / 2017 Clarivate Analytics.
PUB. DATE	06.08.2015
DERWENT WEEK	2018023
APPLICANT	(CONS-N) CONSORT MEDICAL PLC
TITLE	Dose counter for displaying count indication of quantity of dose dispensed from container in e.g. pressurized metered dose inhaler, has priming indicator moved after completion of priming actuations into disposition
ABSTRACT	NOVELTY : The counter has a priming indicator (90) for prompting a user to carry out priming actuations of a container, where the priming indicator is initially arranged to partially over an indicator unit to partially obscure viewing of dose indicia (86) of the indicator unit until completing the priming actuations of the container. The priming indicator is movable after completion of the priming actuations into a disposition in which obscures viewing of the dose indicia of the indicator unit is not possible, where the indicator unit comprises a rotatable part. DETAILED DESCRIPTION : An INDEPENDENT CLAIM is also included for a dispensing apparatus. USE : Dose counter for displaying a count indication of number or quantity of doses dispensed from or remaining in a container in a dispensing apparatus e.g. pharmaceutical dispensing apparatus such as pulmonary, nasal or sub-lingual delivery device e.g. pressurized metered dose inhaler (pMDI) (all claimed), for delivering a pharmaceutical in an aerosol form. Uses include but are not limited to antiallergics, analgesics, bronchodilators, antihistamines, therapeutic proteins and peptides, antitussives, anginal preparations, antibiotics, anti- inflammatory preparations and salbutamol. ADVANTAGE : The priming indicator can be initially coupled to the indicator unit and moved with the indicator unit during the priming actuations, so that the priming indicator and the indicator unit can be arranged to move in-synchronous with each another during the priming actuations, thus enabling a mechanism to achieve movement of the indicator unit to move the priming indicator without a need for separate source of motive force. The counter allows notches or indentations to be formed in an edge of the indicator unit for allowing easier decoupling of the priming indicator as decoupling can be achieved with a greater degree of choice of the direction of movement of the priming indicator relative to the indicator unit. The counter allows a ring to be formed with a set of teeth provided with an extended portion that is positioned to enable covering of markings on another ring when the pressurized dispensing container located in the dispensing apparatus is empty, so that the extended portion provides a clear indication to a user that the dispensing apparatus is provided with full quota of dispensations. DESCRIPTION OF DRAWINGS : The drawing shows a perspective view of a priming indicator in an initial position before priming.

40 : Notches

86 : Dose indicia

90 : Priming indicator

180 : Elongated portion

310 : Projections

500 : Teeth

ZITAT-NR. 2 VON 10

2. WO2014096814 A1 Nach oben

COPYRIGHTS	
PUB. DATE	26.06.2014
DERWENT WEEK	2020083
APPLICANT	(EURC) EURO CELTIQUE SA (EURC) EUROCELTIQUE SA (DUIG-I) DUIGNAN C (GORD-I) GORDON K
TITLE	Counter for use with dispenser e.g. metered-dose inhaler, has limiting mechanism comprising engaging portion arranged to act radially with respect to ring portion for contacting ring portion to limit free rotation of ring portion
ABSTRACT	NOVELTY : The counter has a ring portion (1610) which is provided with indicia and is rotatable in increments about main counter. The indicia are configured to indicate a count. A limiting element (1602) is provided with a limiting mechanism (1606). The limiting mechanism is provided with an engaging portion (1620) which is arranged to act radially with respect to ring portion for contacting the ring portion to limit free rotation of ring portion relative to the limiting element about the axis. DETAILED DESCRIPTION : An INDEPENDENT CLAIM is included for a dispenser. USE : Counter for use with dispenser (claimed) such as metered-dose dispenser such as metered-dose inhaler (MDI). ADVANTAGE : The limiting mechanism acts radially on the ring portion in order to alleviate the issue associated with manufacturing tolerances in the vertical direction. Hence, the tolerances in vertical dimension have little effect on the action of limiting mechanism so as to enable reliable operation of the limiting mechanism is enabled. DESCRIPTION OF DRAWINGS : The drawing shows a perspective view of the limiting element coupled with counter ring portion. 1602 : Limiting element 1606 : Limiting mechanism 1610 : Ring portion

1614 : Display cover portion

1620 : Engaging portion

ZITAT-NR. 3 VON 10

3. WO2014039367 A1 Nach oben

COPYRIGHTS	
PUB. DATE	13.03.2014
DERWENT WEEK	2019011
APPLICANT	(MINN) 3M INNOVATIVE PROPERTIES CO (HODS-I) HODSON P D (STUA-I) STUART A J
TITLE	Dose indicator for pressure-actuated metered fluid dispensing device, has chassis element having viewing portion, display element at chassis element, and through-holes are molded using injection molding tool that opens along axis
ABSTRACT	NOVELTY : The dose indicator comprises a chassis element having a viewing portion. A display element is located in the chassis element. An indexing element has an axis, where translation of the indexing element along axis from a position to another position causes deformation of a resilient deformable element in the same direction as translation of the indexing element. The through-holes are molded using an injection molding tool that opens along an axis substantially perpendicular to an axis defined by the centers of the through-holes. DETAILED DESCRIPTION : An INDEPENDENT CLAIM is included for a pressure-actuated metered dispensing device has an actuator portion. USE : Dose indicator for a pressure-actuated metered fluid dispensing device. ADVANTAGE : The dose indicator has a chassis element having a viewing portion, and display element is located in the chassis element, thus reduces the cost of a dose indicator for use with pressure actuated metered dose inhaler, and provides a dose indicator that includes breath coordination functionality without increasing the overall cost of the dose indicator. The through-holes are molded using an injection molding tool that opens along an axis substantially perpendicular to an axis defined by the centers of the through-holes, thus reduces molding tool complexity and cost and minimizing molding cycle times. DESCRIPTION OF DRAWINGS : The drawing shows a top view of an actuator for a pressure actuated metered dose inhaler without a dose indicator. 100 : Actuator 110 : Tubular housing portion 120 : Tubular mouthpiece portion 170 : Viewing window

180 : Thumb grip

ZITAT-NR. 4 VON 10

4. WO2010023233 A1 Nach oben

COPYRIGHTS	© WPI / 2017 Clarivate Analytics.
PUB. DATE	04.03.2010
DERWENT WEEK	2016071
APPLICANT	(BOEH) BOEHRINGER INGELHEIM INT GMBH (BOEH) BOEHRINGER INGELHEIM PHARMA GMBH & CO KG
TITLE	Sprayer for dispensing aerosol for medical aerosol therapy, has counter for counting actuation of sprayer or dispensed aerosol-cans, and drive unit is provided, which has guiding path, inclination plane, and assigned guide element
ABSTRACT	NOVELTY : The sprayer has a counter (12) for counting actuation of the sprayer or dispensed aerosol-cans. A drive unit (16) is provided, which has a guiding path (27), an inclination plane (28), and an assigned guide element (23) for partial conversion of an axial movement into a rotary movement for actuating a counting ring (14) and a cogwheel (15). A drive element (17) is provided, which is formed in circular manner with an axial cogging (18). USE : Sprayer for dispensing an aerosol, particularly for medical aerosol therapy. ADVANTAGE : The drive unit is provided, which has a guiding path, an inclination plane, and an assigned guide element for partial conversion of an axial movement into a rotary movement for actuating the counting ring or cogwheel, where a drive element is provided, which is formed in circular manner with an axial cogging, and thus enables simple and easy handling of the sprayer. DESCRIPTION OF DRAWINGS : The drawing shows an exploded perspective view of a counter. 12 : Counter 14 : Counting ring 15 : Cogwheel 16 : Drive unit 17 : Drive element 18 : Axial cogging 23 : Guide element 27 : Guiding path 28 : Inclination plane

ZITAT-NR. 5 VON 10

5. WO2008121459 A1 Nach oben

COPYRIGHTS	© WPI / 2017 Clarivate Analytics.
PUB. DATE	09.10.2008
DERWENT WEEK	2017071
APPLICANT	(MINN) 3M INNOVATIVE PROPERTIES CO (HOWG-I) HOWGILL S J
TITLE	Dose counting device for medicinal metered dose dispensing device, has drive nut having rib engaged with drug segment on drive wheel in which rotation of drive nut above drive wheel results in rotation movement of drive wheel
ABSTRACT	NOVELTY : The dose counting device has a drive nut (6) having an internal medical rib engaged with a helical drug segment on a drive wheel (4) in which rotation of the drive nut above the circumferential arc of the drive wheel results in rotational movement of the drive wheel. The outer surface of the drive nut comprises one or more driving surface for engaging by one finger on the actuator during reciprocal movement to cause rotation of the drive nut. USE : Dose counting device for medicinal metered dose dispensing device such as inhaler device. ADVANTAGE : Since the interaction between the drive nut and the drive wheel is designed to ensure accurate and robust location of each component, the accurate counting of doses is ensured. DESCRIPTION OF DRAWINGS : The drawing shows an exploded perspective view of the dose counter. 4 : Drive wheel 6 : Drive nut 8 : Indexing arm base 10 : Flexible element 12 : Indicator ring

ZITAT-NR. 6 VON 10

6. WO2008025087 A1 Nach oben

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PUB. DATE	06.03.2008
DERWENT WEEK	2008025
APPLICANT	(ACAP-N) A CAPITAL IDEA ACT PTY LTD

TITLE

Mechanical sit-on-top dosage counter for pressurized metered dose inhaler, has indicator driven in response to operation of button portion to provide visual indication related to accumulated number of actuations of inhaler

ABSTRACT

NOVELTY :

The counter (10) has a mounting portion (12) for mounting the counter to a pressurized metered dose inhaler (14), and a button portion (16) movable relative to the mounting portion for actuating the inhaler when the counter is mounted to the inhaler. An indicator (20) is driven in response to operation of the button portion to provide a visual indication related to an accumulated number of actuations of the inhaler. The mounting portion fits relative to a body of the inhaler, and the button portion pushes an aerosol canister (28) of the inhaler into the body to actuate the inhaler. USE :

Mechanical sit-on-top dosage counter for a pressurized metered dose inhaler utilized for dispensing medication for asthma. ADVANTAGE :

The counter effectively counts the dosage that remains in order for a drug user to accurately determine when his or her medication has run out and a new inhaler/canister needs to be purchased. The counter is stand-alone solution that fit onto pre-existing inhalers, and avoids re-engineering of the inhalers. The counters are mechanical, thus avoiding electrical power to operate. The counter is mounted to the inhaler with a pen for size reference, thus reducing overall height of the counter from the top of the canister to the top of the button portion, and hence facilitating the use of the counter by children and adults. DESCRIPTION OF DRAWINGS :

The drawing shows a perspective view of a counter mounted to a pressurized metered dose inhaler and transparent to show inner working parts.

10 : Mechanical sit-on-top dosage counter

12 : Mounting portion

14 : Pressurized metered dose inhaler

16 : Button portion

20 : Indicator

28 : Aerosol canister

ZITAT-NR. 7 VON 10

7. EP2146763 A1

Nach oben

PUB. DATE 27.01.2010

DERWENT WEEK 2017071

APPLICANT	(MINN) 3M INNOVATIVE PROPERTIES CO (BISH-I) BISHOP C J
TITLE	Medicinal dispensing device i.e. metered dose inhaler, for treating asthma, has merlons positioned around counter actuation button near sidewalls, where axially and outwardly facing surfaces of merlons to extend outwardly beyond plane
ABSTRACT	NOVELTY : The device has a dose counter device (10) operated by application of a force in an axial direction to the device. Merlons are positioned around a counter actuation button (60) near sidewalls (82), where axially and outwardly facing surfaces of the merlons extend outwardly beyond a plane. The dose counter device is mounted to a closed end of a dispensing canister (30). An end of the dispensing canister is equipped with a dispensing nozzle and the closed end. A parapet is mounted on a canister housing. An external end of the housing is opposite to the closed end of the canister. USE : Medicinal dispensing device i.e. metered dose inhaler, for treating asthma and respiratory condition. ADVANTAGE : The device effectively reduces the potential for unintentional actuation of the dose counter, while allowing the user better access to the counter actuation button, thus ensuring proper and convenient operation during routine use of the dispenser. DESCRIPTION OF DRAWINGS : The drawing shows an exploded view of a dose counter device of a medicinal dispensing device. 10 : Dose counter device 30 : Dispensing canister 60 : Counter actuation button 66, 68 : Counter rings 70 : Transfer gear 82 : Side wall

ZITAT-NR. 8 VON 10

8. EP1991295 A2 Nach oben

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PUB. DATE	19.11.2008
DERWENT WEEK	2017070
APPLICANT	(MINN) 3M INNOVATIVE PROPERTIES CO (BREW-I) BREWER R D (HODS-I) HODSON P D (PURK-I) PURKINS G R (STEV-I) STEVEN D J C
TITLE	Dose counter device for monitoring release of dose of aerosol medication from aerosol dispensing assembly, has aerosol dispensing assembly base in which cap with peg is coupled to base

ABSTRACT

NOVELTY : The device (55) has a cap (60) with a peg coupled to a base (58) and a spring (72) is located between the base and the cap to bias the cap axially from the base. The base and cap are mounted in an aerosol dispensing assembly. A slider (64) having projecting fingers (120,122) from opposite ends is attached to the sliding surface of the peg so that the axial movement of the cap is relative to the slider. A ring (66) having inner surface comprising teeth (108) is engaged with the fingers of the slider to cause indexed rotation of the ring with respect to the base. DETAILED DESCRIPTION : INDEPENDENT CLAIMS are included for the following:

(1) method of counting doses of an aerosol medication;

(2) mechanical dose counter device; and

(3) housing. USE : For monitoring release of dose of aerosol medication from aerosol dispensing assembly (claimed). ADVANTAGE : The need for aligning and reliably affixing the dose counter base is not required. The dose counter cannot interfere with the emerging medicament spray. DESCRIPTION OF DRAWINGS : The figure shows an exploded view of the dose counter device.

55 : Device

58 : Base

60 : Cap

64 : Slider

66 : Ring

72 : Spring

108 : Teeth

120,122 : Fingers

ZITAT-NR. 9 VON 10

9. EP0674533 A1 Nach oben

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PUB. DATE	04.10.1995
DERWENT WEEK	2008051
APPLICANT	(SCHE) SCHERING CORP (GALL-N) GALLOPING HILL ROAD
TITLE	Powder dispenser with metering plate and inhalation conduit - has rotatable counter rings providing visual count of number of doses dispensed or remaining, and nozzle to break up agglomerates

ABSTRACT

A powder dispenser has a powder housing (22) with an inhalation conduit extending through it. A metering plate (180) holds a metered amt. of the powder in a dosehole and is positioned below the housing. The two are spring-biased (230) towards each other and are bidirectionally rotatable with respect to each other within a restricted predetermined angle so that the hole can be placed selectively in communication with the supply of powder or the inhalation conduit.

A counter provides visual indication of either the number of doses that have been dispensed or the number remaining in response to relative rotation of the housing and metering plate. Counter rings (590,620) rotatable about a common central axis have indicia for displaying the count.
USE/ADVANTAGE : For inhalation of a metered dose of a powdered medicament. The dispenser gives an accurate indication of doses administered or remaining. Additionally, it gives improved micronisation of the powder and improved mixing of the powder with suction air.

ZITAT-NR. 10 VON 10

10. EP2570149 A1 Nach oben

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PUB. DATE

20.03.2013

DERWENT WEEK

2020063

APPLICANT

(EURC) EURO CELTIQUE SA (EURC) EUROCELTIQUE SA (BACO-I) BACON R (MCDE-I) MCDERMENT I G

TITLE

Medicament dose counter for use in .g. pressurized metered-dose inhaler, has drive mechanism rotating rings about common axis, and coupling mechanism releasably coupling rings with each other

ABSTRACT

NOVELTY : The counter (203) has a drive mechanism (205) i.e. pawl-and-teeth mechanism, rotating a pair of rings (201, 202) about a common axis and comprising a pawl-bearing member (204) extended around a teeth-bearing member, where the counter is made of aluminum. A coupling mechanism releasably couples the rings with each other. A pair of arms (212a, 212b) is extended downwardly from the pawl-bearing member. An engagement unit is integrally connected with one of the rings. A set of protrusions is equally spaced-apart from each other on the engagement unit. DETAILED DESCRIPTION : An INDEPENDENT CLAIM is also included for a dispenser comprising a body. USE : Medicament dose counter for use in a dispenser e.g. pressurized metered-dose inhaler (all claimed), that is utilized for dispensing medicament e.g. aerosol, to lungs. ADVANTAGE : The counter is designed such that count information is displayed to children and adults in an easily readable format. The counter is manufactured in a cost effective manner. DESCRIPTION OF DRAWINGS :

The drawing shows a Figure 2 is a perspective view of a dispenser including a medicament dose counter.

200 : Dispenser

201, 202 : Rings

203 : Medicament dose counter

204 : Pawl-bearing member

205 : Drive mechanism

212a, 212b : Arms

Feature B (disc)

ZITAT-NR. 1 VON 7

1. EP3091485 A1 Nach oben

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PUB. DATE	09.11.2016
DERWENT WEEK	2021002
APPLICANT	(CONS-N) CONSORT MEDICAL PLC (HARM-N) HARMONIOUS MEDICAL INC
TITLE	Dose indicator device for e.g. pressurized metered dose inhaler, has flexible drive arm that is intermittently deflected by deflector to rotate annular outer wheel about axis of rotation, when inner wheel is rotated
ABSTRACT	NOVELTY : The device (9) has an actuator (13) that is movable in a plane perpendicular to a longitudinal axis of rotation to engage a primary indexing teeth of an inner wheel (11) to rotate the inner wheel. A housing (70) which has a deflector is fixed relative to the longitudinal axis of rotation. The flexible drive arm which is brought into contact with the secondary indexing teeth is intermittently deflected by the deflector to rotate an annular outer wheel (12) about the axis of rotation, when the inner wheel is rotated. DETAILED DESCRIPTION : An INDEPENDENT CLAIM is included for a pressurized metered dose inhaler. USE : Dose indicator device for e.g. pressurized metered dose aerosol inhaler (claimed) and pharmaceutical dispensing device such as pulmonary, nasal and sub-lingual delivery device, in treatment of chronic or acute symptoms and asthmatic reaction. ADVANTAGE : The need for transmission cog to transfer the motive force from the inner wheel to the annular outer wheel is avoided. The restrain movement of the inner wheel and annular outer wheel minimizes the chances of changing the displayed indication of the dose if the device is dropped, shaken or otherwise knocked. By arranging the inner wheel within the annular outer wheel the depth of the device measured in a direction

along the longitudinal axis of rotation can be minimized and stacking of the wheels one upon the other is avoided. The device comprises a relatively small number of separate components to form a compact and space-saving design. The need for displaying the numerical count of dose is avoided and the user is indicated about the end of the useful life of the pressurized metered dose inhaler. DESCRIPTION OF DRAWINGS : The drawing shows an exploded perspective view of the pressurized metered dose inhaler.

9 : Dose indicator device

11 : Inner wheel

12 : Outer wheel

13 : Actuator

70 : Housing

ZITAT-NR. 2 VON 7

2. EP2509666 A1 Nach oben

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PUB. DATE	17.10.2012
DERWENT WEEK	2019010
APPLICANT	(MINN) 3M INNOVATIVE PROPERTIES CO (MINN) 3M INNOVATIVE PROPERTIES CORP (MINN) 3M INNOVATIVE PROPERTIES
TITLE	Dose counter for use with inhaler, has indicator, which is rotatable about axis forming obtuse angle with respect to axis of actuation of inhaler, performing count-indicating motion when one or more doses of medicament are dispensed
ABSTRACT	NOVELTY : A dose counter (200) has an indicator (270), which is rotatable an about an axis (271) forming an obtuse angle with respect to the axis of actuation (A) of the inhaler, performing a count-indicating motion when one or more doses of medicament are dispensed. A worm (30) rotates about a worm axis (W) to drive the indicator. The worm axis and the indicator axis of rotation do not intersect and run in perpendicular alignment relative to each other. DETAILED DESCRIPTION : An INDEPENDENT CLAIM is also included for an actuator. USE : Dose canister for use with inhaler. Can also be used in an actuator for use with a canister (claimed) or in a dispenser (claimed), particularly a pressurized metered dose inhaler (claimed). ADVANTAGE : The indicator axis of rotation forms an obtuse angle with respect to the axis of actuation and does not intersect and perpendicularly align with the worm axis, realizing a small dose counter construction which is robust in manufacture and or effective in use and is capable of counting and indicating usage of 200-plus doses in easily readable manner. The dose counter overall length along the axis of rotation is minimized, reducing use

of space occupied by the counter. Effective and efficient driving of the indicator by the worm can be realized by preferably making the cross-sectional radius of the worm from the worm axis to the outer edge of the worm flight increase along the worm axis. The counter is also compact enough for arrangement within the actuator beneath the aerosol container and in the space near and around the nozzle block, realizing provision of an inhaler free of structural change. DESCRIPTION OF DRAWINGS : The drawing shows the exploded perspective view of a dose counter.

30 : Worm

200 : Dose counter

270 : Indicator

271 : Axis of rotation of indicator

A : Axis of actuation

W : Worm axis

ZITAT-NR. 3 VON 7

3. WO2012150427 A1 Nach oben

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PUB. DATE	08.11.2012
DERWENT WEEK	2018073
APPLICANT	(CPLA) CIPLA LTD (BENN-I) BENNETT A R J (MALH-I) MALHOTRA G (PURA-I) PURANDARE S M (RAOX-I) RAO X
TITLE	Dose counter for tracking number of doses expelled from metered dose inhaler that is utilized by asthma patient, has actuator comprising shaped part that is moved out of engagement with counting element by movement of actuator to position
ABSTRACT	NOVELTY : The counter has an actuator (2) moving relative to a rotary counting element (26) from one position to another position. The actuator comprises a shaped part e.g. free edge, engaged with a complementary feature (33) e.g. inlet, of the counting element when the actuator is in the former position to resist rotation of the counting element. The shaped part is moved out of engagement with the counting element by movement of the actuator, toward the latter position. A non-return unit i.e. simple ratchet mechanism, prevents rotation of a drive wheel (18) in a direction opposite to another direction. USE : Dose counter for tracking number of doses expelled from a metered dose inhaler (MDI) (claimed) that is utilized by an asthma patient. ADVANTAGE : The actuator allows translating linear movement of an MDI canister into rotational movement of the counter in a simple and reliable manner for counting the number of actuations of the canister easily. The actuator comprises two separate resiliently deformable parts, which

work together to return the actuator to starting position after each actuation of the MDI without the risk of reversing or interrupting the rotational movement of the counter. The counter comprises a display to display the count in an easy to read form. DESCRIPTION OF DRAWINGS : The drawing shows a perspective view of a dose counter.

2 : Actuator

4 : Central beam of actuator

18 : Drive wheel

26 : Rotary counting element

33 : Complementary feature of rotary counting element

ZITAT-NR. 4 VON 7

4. EP1047467 A2 Nach oben

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PUB. DATE	02.11.2000
DERWENT WEEK	2018045
APPLICANT	(TMED) TRUDELL MEDICAL INT (ONET-N) 1263152 ONTARIO INC (BLAC-I) BLACKER R (ENGE-I) ENGELBRETH D K (SCHM-I) SCHMIDT J N
TITLE	Indicator for use with a dispensing device that dispenses metered dosages of a medicament from a container
ABSTRACT	NOVELTY : Indicator comprises a module housing shaped to be received within a dispenser housing cavity. DETAILED DESCRIPTION : Indicator comprises a module housing shaped to be received within a dispenser housing cavity. An indicator member (50) is moveably mounted in the module housing. The indicator member comprises an indicia indicating the number of metered dosages dispensed from or remaining in the container. The indicator member is adapted to be moved within the module housing in response to the successive dispensation of metered dosages of medicament so as to indicate the number of metered dosages dispensed from or remaining in the container. Preferably the indicator comprises a worm rotatably mounted in the housing about an axis transverse to the longitudinal axis and responsive to the movement of the container within the housing such that the longitudinal movement of the container relative to the housing causes the worm to rotate about its axis. A circular gear engages the worm. INDEPENDENT CLAIMS are included for the following: (1) a delivery system for delivering a medicament to a user;

(2) methods of dispensing metered dosages of a substance; and

(3) a kit that can be assembled into a dispensing device. USE : Indicator for indicating the number of metered dosages of a medicament dispensed from or remaining in a container disposed within a dispenser housing having a cavity. ADVANTAGE : The worm provides for a compact drive component that does not occupy excess space within the housing. The worm provides for high gear reduction ratios while maintaining a continuous engagement with the circular worm gear. The continuous engagement of the worm and circular gear ensures that the accuracy of the counting device is maintained, while simultaneously simplifying the manufacturing and assembly processes. The circular gear provides for a compact single cycle device that fits easily into the housing and which maintains continuous engagement with the worm gear for improved and accurate indexing of the indicator members. DESCRIPTION OF DRAWINGS : The drawings show the dispensing device and indicator.

50 : Indicator member

100 : Container

ZITAT-NR. 5 VON 7

5. US2007277817 A1 Nach oben

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PUB. DATE	06.12.2007
DERWENT WEEK	2010077
APPLICANT	(INNO-I) INNOCENZI K
TITLE	Pressurized metered dose inhaler system for dispensing multiple metered doses of e.g. albuterol, has transparent canister containing medicament, and dose counter with alpha-numeric characters advanced based on rotation of counter
ABSTRACT	NOVELTY : The system has a propellant gas e.g. tetrafluoroethane, and a transparent canister (10) for containing a medicament e.g. albuterol. A metered dose valve assembly (30) has a valve stem (40) to dispense a metered amount of the medicament when the assembly is actuated by moving the stem towards the canister. A dose counter e.g. count-up counter, has a wheel (90) with a set of gear teeth between inner and outer raised rails on a face of the wheel. A vertical rod (190) is joined with an angled flexible pawl (220). The counter has alpha-numeric characters advanced based on rotation of the counter. USE : Used for dispensing multiple metered doses of a medicament e.g. albuterol, albuterol sulfate, beclomethasone dipropionate, bitolterol mesylate,

cromolyn sodium, dexamethasone sodium or phosphate, epinephrine such as nitrate or hydrochloride, epinephrine bitartrate, flunisolide, fluticasone propionate, ipratropium bromide, isoetharine mesylate, isoproterenol hydrochloride, isoproterenol sulfate, metaproterenol sulfate, nedocromil sodium, pirbuterol acetate, salmeterol xinafoate, triamcinolone acetonide, and/or terbutaline sulfate, to a patient for providing for self-administered treatment of a respiratory disease such as asthma, chronic obstructive pulmonary disease (COPD), bronchitis, and emphysema. ADVANTAGE :

The transparent canister permits a patient to visualization of the amount of the medicament remaining in the system, thus providing an accurate assess of the amount of medication remaining in the canister. The dose counter monitors the number of dispensed doses of the medicament dispensed to a patient for treating a respiratory disease. DESCRIPTION OF DRAWINGS :

The drawing shows a partially broken away side elevational view enlarged to show a dose counter.

10 : Transparent canister

30 : Metered dose valve assembly

40 : Valve stem

90 : Wheel

190 : Vertical rod

220 : Angled flexible pawl CERAMICS AND GLASS :

The transparent canister is made of acrylic glass or Lexan(RTM: highly durable polycarbonate resin thermoplastic). The transparent canister is made from a double tough glass i.e. Double Tough Pyrex(RTM: heat-resistant borosilicate). POLYMERS :

The container is made of transparent plastic polymethyl methacrylate (PMMA), polystyrene, or polycarbonate.

ZITAT-NR. 6 VON 7

6. FR2869708 A1 Nach oben

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PUB. DATE	04.11.2005
DERWENT WEEK	2005079
APPLICANT	(VLOI) VALOIS SAS
TITLE	Indicator for fluid or powdered product dispenser has counter with elastic element in form of two flexible tongues engaging with counter teeth

ABSTRACT

NOVELTY : The indicator for a dispenser of a fluid or powdered product such as a metered dose inhaler has an actuator (1), a counter (5) with a ring of teeth (9), and a drive (6) with an elastic element that converts the axial movement of the actuator into a rotary movement of the counter. The elastic element is in the form of two flexible tongues (7, 8) with tips that engage with the counter teeth and rotate it in the same direction both when the actuator is depressed and when it returns to its initial position. USE : Indicating number of doses taken from a fluid or powdered product dispenser such as a metered dose inhaler. ADVANTAGE : The design ensures that the counter operates reliably independently of the length of the actuator movement. DESCRIPTION OF DRAWINGS : The drawing shows an exploded perspective view of the actuator and counter drive mechanism.

1 : Actuator

5 : Counter

6 : Drive

7, 8 : Flexible tongues

9 : Teeth

ZITAT-NR. 7 VON 7

7. EP0949584 A2 Nach oben

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PUB. DATE 13.10.1999

DERWENT WEEK 2017033

APPLICANT (BASO-I) BASON N P

TITLE Indicator device that serves as dose counter for metered dose inhalers

ABSTRACT

NOVELTY : First and second parts have inter-engaging spaced projection such that upon each linear movement of the first part of the first rotational ring is indexed in rotation, and such that upon a set number of linear movements of the first part, the second rotational ring is indexed in rotation. DETAILED DESCRIPTION : Concentrically disposed above and around the ring (4) is a second rotational ring (8) having a circumferential series of projections formed as outwardly directed curvilinear teeth (9) and a further series of angular teeth (10) is disposed on a reduced circumference of the ring. The base (1), the central bush (15), the ring (4) and the ring may be assembled in concentric relationship and surrounded by a cap (14) having a flat top and depending cylindrical wall, and having a central boss (11) which locates within the central bush. The upper circular part of the cap includes a window (13) of elongate rectangular form extending radially across one part of the top. USE : As an indicator device adapted to serve as a dose counter for metered dose inhalers (MDIs). ADVANTAGE : Indicates the number of

times the pressurized canister is depressed to dispense a dose of the drug. Such a counter must count down, typically from 200 to zero, progressively as doses are administered so that the user can readily see how many doses remain DESCRIPTION OF DRAWINGS : The drawing is a part cross-sectional view of a meter dose inhaler with an indicator device in accordance with the invention

1 : base

4 : ring

8 : rotational ring

9 : curvilinear teeth

10 : angular teeth

11 : central boss

13 : window

15 : central bush

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