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(54) Automatic sanitary film dispensing system for toilet

(57) An automatic sanitary film dispensing system includes a supply barrel and a take-up barrel respectively mounted on the front and rear sides of the toilet seat of a toilet, a DC motor mounted in one end of the take-up barrel, a take-up reel pivotally mounted in the other end of the take-up barrel and rotatable manually through a crank handle, a roll of sanitary film rotatably mounted in the supply-barrel and having a slat fixedly fastened to the lead end and connectable between the output shaft of the DC motor and the take-up spindle of the take-up reel for rotation by the DC motor to take up the sanitary film, the sanitary film having cut line portions equally spaced along the length, each cut line portion being tearable to define an oval hole in the sanitary film corresponding to the cavity of the bowl of the toilet in which the toilet seat is installed, and a sensor for detecting the presence of a human being and controlling the DC motor to rotate through a predetermined number of turns when detected a signal.

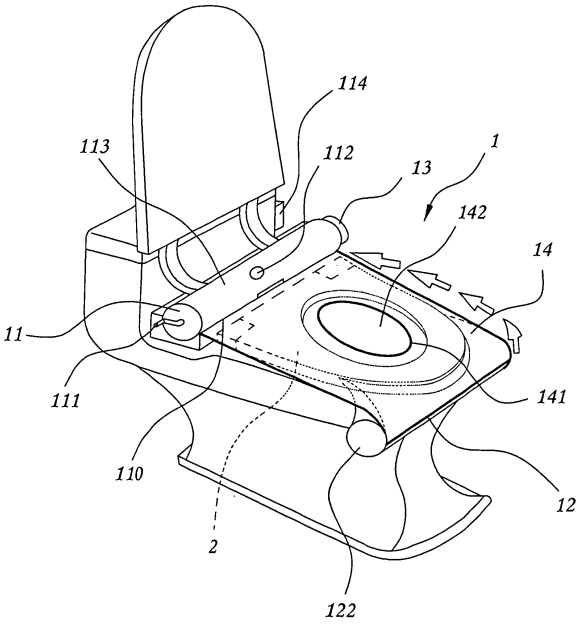

FIG. 1

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Description

BACKGROUND OF THE INVENTION

(a) Technical Field of the Invention

[0001] The present invention relates to toilet technology and more particularly, to an automatic sanitary film dispensing system for toilet that automatically dispense a new sanitary film to the toilet seat for each new user.

(b) Description of the Prior Art

[0002] When using a public toilet, people may be afraid of touching the toilet seat directly with the hips. When using a toilet, some people may step on the toilet seat in a half squat position without actually letting the hips make contact with the toilet seat. However, not all people can use a toilet in this manner. When a person who cannot sit in a half squat position is going to use a public toilet, he (she) may use many pieces of sanitary tissues to clean the toilet seat before sitting on it. It wastes much time and tissue resource to use a toilet in this manner. The toilets in certain hotels, department storesplaces and some other high-class places may provide sanitary seat films. A user can pick up one sanitary seat film and cover it on the toilet seat to prevent direct contact of the hips with the toilet seat. It is still inconvenient to manually arrange a sanitary seat film on the toilet seat before each use of the toilet. There are commercially available toilet seat sanitary film dispensing systems. However, these designs of toilet seat sanitary film dispensing systems are still not satisfactory in function. During the use, the user may touch the border edge of the toilet seat accidentally. During the use, the wrinkled sanitary film may cause a user's hips to feel uncomfortable. Further, the sanitary film still cannot completely protect the user's hips from splashes of toilet dirty fluid.

SUMMARY OF THE INVENTION

[0003] The primary purpose of the present invention is to provide an automatic sanitary film dispensing system for toilet, which automatically dispenses the sanitary film before each use, preventing direct contact of the user's hands with the any part of the toilet. It is another object of the present invention to provide an automatic sanitary film dispensing system for toilet, which allows the user to sit on the toilet seat comfortably without actually letting the hips make contact with any part of the toilet seat.

[0004] To achieve these and other objects of the present invention, the automatic sanitary film dispensing system comprises a supply barrel and a take-up barrel respectively mounted on the front and rear sides of the toilet seat of a toilet, a DC motor mounted in one end of the take-up barrel, a take-up reel pivotally mounted in the other end of the take-up barrel, a roll of sanitary film rotatably mounted in the supply-barrel and having a slat fixedly fastened to the lead end and connectable between the output shaft of the DC motor and the take-up spindle of the take-up reel for rotation by the DC motor to take up the sanitary film, the sanitary film having cut line portions equally spaced along the length, each cut line portion being tearable to define an oval hole in the sanitary film corresponding to the cavity of the bowl of the toilet in which the toilet seat is installed, and a sensor for detecting the presence of a human being and controlling the DC motor to rotate through a predetermined number of turns corresponding to the distance between two cut line portions when detected a signal.

[0005] When a person is stilling on the sanitary film being covered on the toilet seat, the pressure from the person's hips forces to cut line portion to break, leaving an oval opening in the sanitary film through which discharged waste matters fall to the cavity of the bowl of the toilet.

[0006] Further, a crank handle is connected to the take-up reel and extended out of the take-up reel for operation by hand to rotate the take-up reel and the slat in taking up the sanitary film manually

[0007] Further, the take-up barrel has a hinged cover that can be opened for the mounting of a new roll of sanitary film or removal of a used roll of sanitary film.

[0008] Further, a switch is provided for switching on/off the sensor manually, preventing a repeat driving of the DC motor.

[0009] The foregoing object and summary provide only a brief introduction to the present invention. To fully appreciate these and other objects of the present invention as well as the invention itself, all of which will become apparent to those skilled in the art, the following detailed description of the invention and the claims should be read in conjunction with the accompanying drawings. Throughout the specification and drawings identical reference numerals refer to identical or similar parts.

[0010] Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG 1 is schematic drawing showing an automatic sanitary film dispensing system installed in a toilet and operated.

FIG 2 is an exploded view of the automatic sanitary film dispensing system according to the present invention.

FIG 3 is a left side plain view of FIG. 1.

FIG 4 is a right side plain view of FIG. 1.

FIG 5 is a schematic drawing showing the hinged

cover of the take-up barrel opened before mounting of the slat of the sanitary roll film.

FIG 6 corresponds to FIG 5, showing the slat of the sanitary roll film connected between the take-up spindle of the take-up reel and the output shaft of the DC motor.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] The following descriptions are of exemplary embodiments only, and are not intended to limit the scope, applicability or configuration of the invention in any way. Rather, the following description provides a convenient illustration for implementing exemplary embodiments of the invention. Various changes to the described embodiments may be made in the function and arrangement of the elements described without departing from the scope of the invention as set forth in the appended claims.

[0013] Referring to FIG 1, an automatic sanitary film dispensing system in accordance with the present invention is shown comprising a toilet seat **1**, a take-up barrel **11**, a supply barrel **12**, and a sanitary roll film **14.**

[0014] Referring to FIG 2 and FIG 1 again, the toilet seat 1 is installed in the bowl of a toilet, having two mounting holes **21** symmetrically disposed at two opposite lateral sides. The take-up barrel **11** is provided at the rear side of the toilet seat **2**. The supply barrel **12** is provided at the front side of the toilet seat **2**, having two arms **121** respectively extending from the periphery near the two opposite open ends and respectively fastened to the mounting holes **21** of the toilet seat **1**, a longitudinal crevice **120** cut through the periphery and extending through the length, and two end caps **122** detachably capped on the two opposite open ends. Each end cap **122** has a center pivot pin **1221** respectively suspending in the supply barrel **12.**

[0015] The roll film **14** is a spool-wound sanitary film **14A** pivotally coupled between the pivot pins **1221** of the end caps **122,** having one end extending out of the supply barrel **12** through the longitudinal crevice **120** and fixedly mounted with a slat **143** and cut line portions **141** equally spaced along the length. Each cut line portion **141** can easily be tom, forming an oval hole **142** in the sanitary film **14A** corresponding to the cavity of the bowl of the toilet. The sanitary film **14A** can be made of tough paper, nonwoven fabric, or plastic material.

[0016] Referring to FIGS. 5 and 6 and FIG. 1 again, the automatic sanitary film dispensing system further comprises a DC motor **13** fixedly mounted in one end of the take-up barrel **11** and having an output shaft **131** suspending in the take-up barrel **11,** a take-up reel **115** rotatably mounted in the other end of the take-up barrel **11** and having a take-up spindle **1151** aimed at and axially aligned with the output shaft **131** of the DC motor **13,** a spring member **116** mounted in the take-up barrel **11** and stopped against the back side of the take-up reel **115** to force the take-up reel **115** in direction toward the DC motor . **13**, a crank handle **111** coupled to the take-up reel **115** and extending out of the take-up barrel **11** for operation by a person to rotate the take-up reel **115**, and a rechargeable battery **114** mounted in the toilet at a suitable location and electrically connected to the DC motor **13** to provide the DC motor **13** with the necessary working voltage. Further, the take-up barrel **11** has a hinged cover **113** that can be opened for allowing insertion of the slat **143** into the inside of the take-up barrel **11** and connection of the two distal ends of the slat **143** to the output shaft **131** of the DC motor **13** and the take-up spindle **1151** of the take-up reel **115.** The slat **143** has a polygonal cross section. The output shaft **131** of the DC motor **13** and the take-up spindle **1151** of the take-up reel **115** are made having a respective polygonal end hole (not shown) for the connection of the slat **143.** During installation, the slat **143** is obliquely inserted into the take-up barrel **11** to force one end of the slat **143** into the polygonal end hole of the take-up reel **115** and to move the take-up reel **115** backwards against the spring member **116**, and then the slat **143** is turned to horizontal to have the other end be aimed at the polygonal end hole of the output shaft **131** of the DC motor **13**, and then release the hand from the slat **143** for enabling the spring force of the spring member **16** to move the take-up reel **115** outwards (rightwards), forcing the other end of the slat **143** into the take-up spindle **1151** of the take-up reel **115.** When the hinged cover **113** of the take-up barrel **11** is closed, a longitudinal crevice **110** is left in the periphery of the take-up barrel **11** for the passing of the sanitary film **14A.** Further, a sensor, for example, infrared sensor **112** is installed in the hinged cover **113** and electrically connected to the DC motor **13** for detection the presence of a human being and controlling the DC motor **13** to rotate through a predetermined number of turns when detected a signal. The infrared sensor **112** is controlled to work by a manual switch (not shown). When a person is going to the use the toilet, operate the manual switch to switch on the infrared sensor **112**, and the approach the hand to the detection range of the infrared sensor **112,** causing the infrared sensor to start the DC motor **13** for a predetermined length of time. The number of turns of each operation of the DC motor **13** corresponds to the distance between each two cut line portions **141** so that one cut line portion **141** is suspending above the cavity of the bowl of the toilet when the DC motor **13** is stopped. When a person sits on the sanitary film **14A** at the toilet set **2**, the pressure from the person's hips forces the corresponding cut line portion **141** to break, leaving an oval hole **142** in the sanitary film **14A** corresponding to the cavity of the bowl of the toilet so that the person's body waste can be directly discharged into the cavity of the bowl of the toilet. Further, the user can operate the crank handle **111** to rotate the take-up reel **115,** taking up the sanitary film **14A** manually.

[0017] When the sanitary film **14A** is used up, it is received in the take-up barrel **11.** At this time, open the

hinged cover **113** of the take-up barrel **11,** and then take the waste sanitary film **14A** out of the take-up barrel **11** for a replacement.

[0018] It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

[0019] While certain novel features of this invention have been shown and described and are pointed out in the annexed claim, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

Claims

1. An automatic sanitary film dispensing system comprising:

a toilet seat pivoted to the bowl of a toilet for the sitting of a person using the toilet, said toilet seat having a plurality of mounting holes symmetrically disposed at two opposite lateral sides thereof;

a supply barrel mounted on a front side of said toilet seat, said supply barrel having a plurality of arms extending from the periphery thereof and respectively fastened to the mounting holes of said toilet seat, a longitudinal crevice cut through the periphery and longitudinally extending through two opposite open ends thereof, and two end caps detachably capped on the two opposite open ends;

a take-up barrel mounted on a rear side of said toilet seat, said take-up barrel having a hinged cover, said hinged cover defining with the periphery of said take-up barrel a longitudinal crevice when said hinged cover is closed;

a DC motor mounted in one end of said take-up barrel, said DC motor having an output shaft suspending in the associated end of said take-up barrel;

a take-up reel pivotally mounted in an opposite end of said take-up barrel, said take-up reel having a take-up spindle suspending in the associated end of said take-up barrel;

a crank handle connected to said take-up reel and extending out of said take-up reel for operation by a person to rotate said take-up reel;

a roll of sanitary film rotatably mounted in said supply-barrel between said end caps, said sanitary film having a lead end extending out of the longitudinal crevice of said supply barrel and insertable through the longitudinal crevice of said take-up barrel, a slat fixedly fastened to said lead end and connectable between the output shaft of said DC motor and the take-up spindle of said take-up reel for rotation with said output shaft of said DC motor and the take-up spindle of said take-up reel to take up said sanitary film, and a plurality of cut line portions equally spaced along the length thereof, each said cut line portion being tearable to define an oval hole in said sanitary film corresponding to the cavity of the bowl of the toilet in which said toilet seat is installed; and

a sensor mounted in said take-up barrel and electrically connected to said DC motor and adapted for detecting the presence of a human being and controlling said DC motor to rotate through a predetermined number of turns when detected a signal.

2. The automatic sanitary film dispensing system as claimed in claim 1, wherein each said end cap has a center pivot pin suspending inside said supply barrel for supporting said roll of sanitary film in said supply barrel.

3. The automatic sanitary film dispensing system as claimed in claim 1, further comprising a rechargeable battery electrically connected to said DC motor and said sensor.

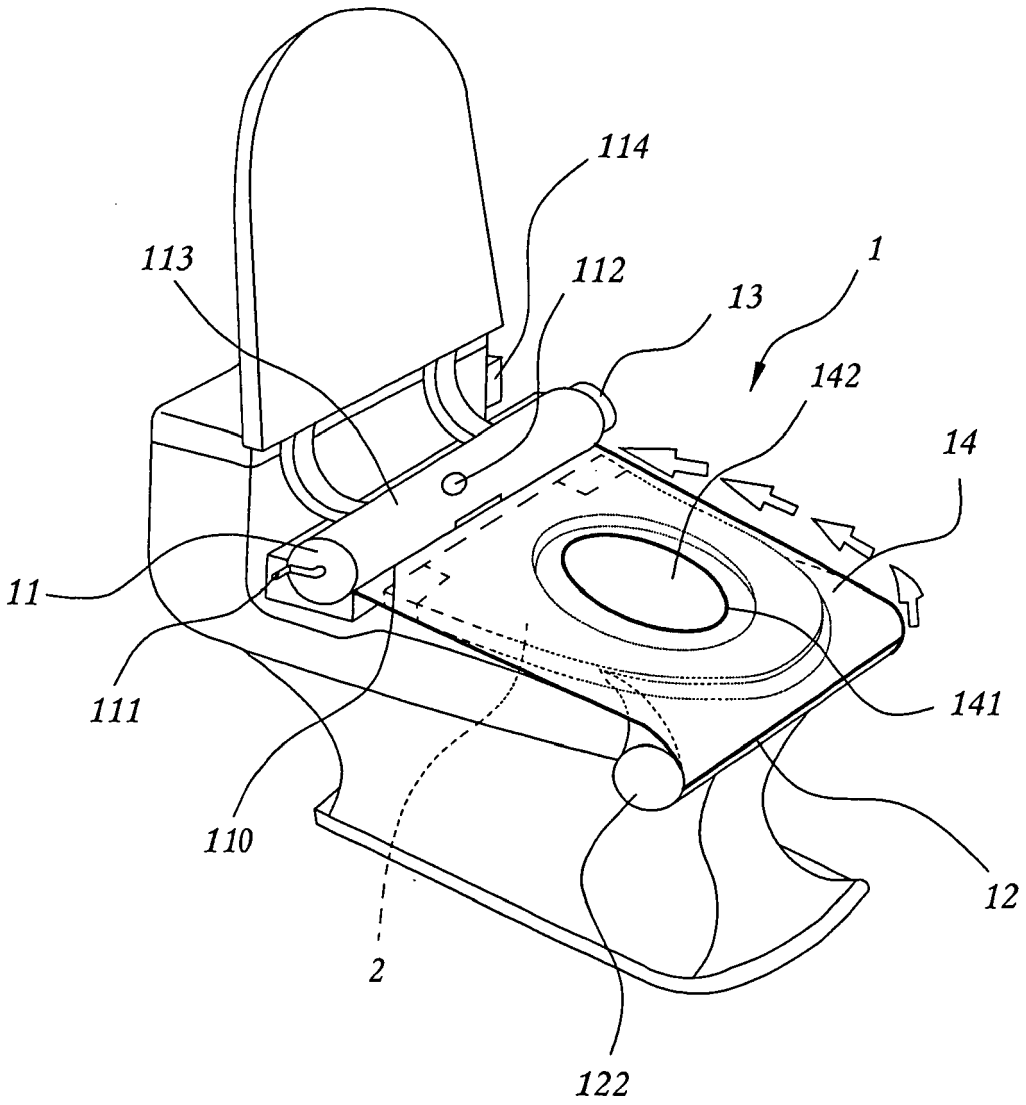

FIG. 1

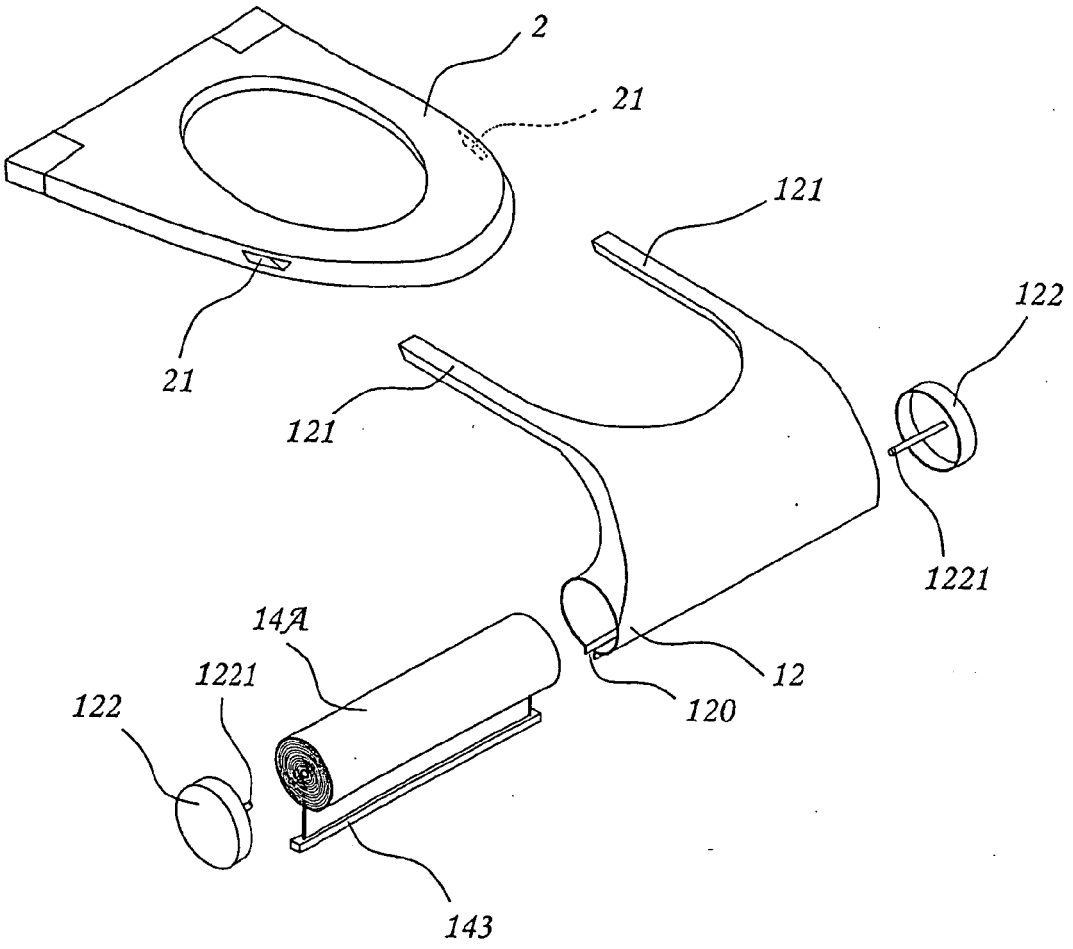

FIG. 2

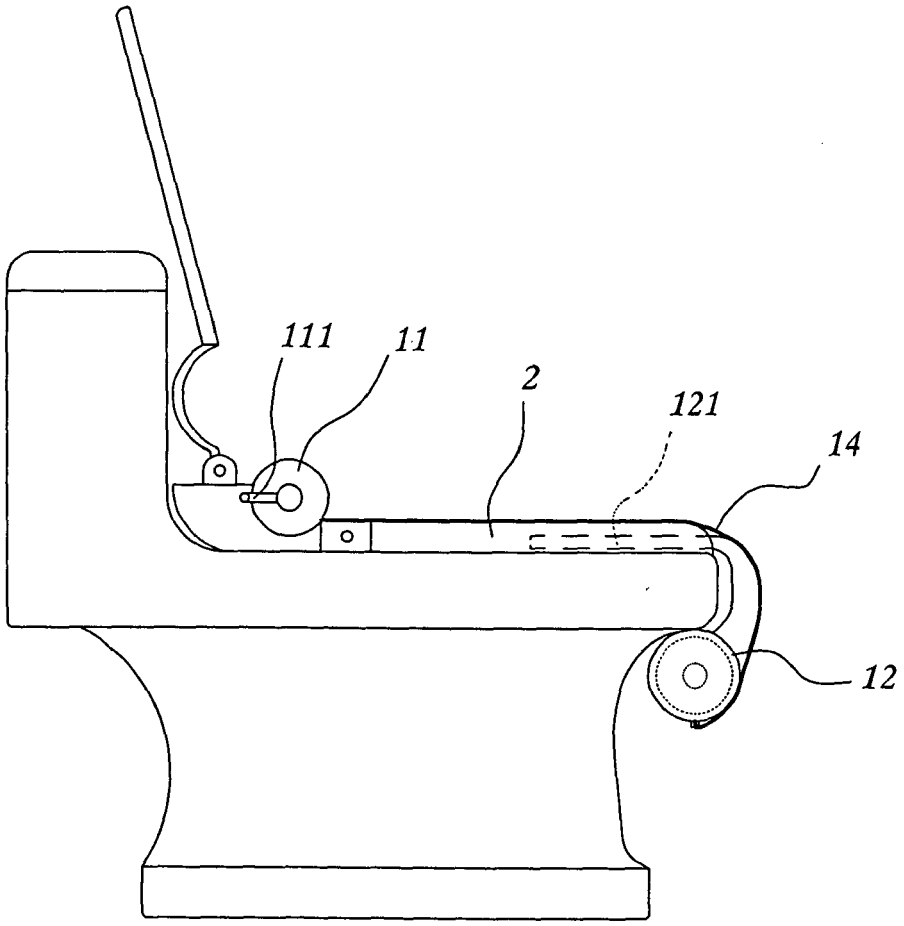

FIG. 3

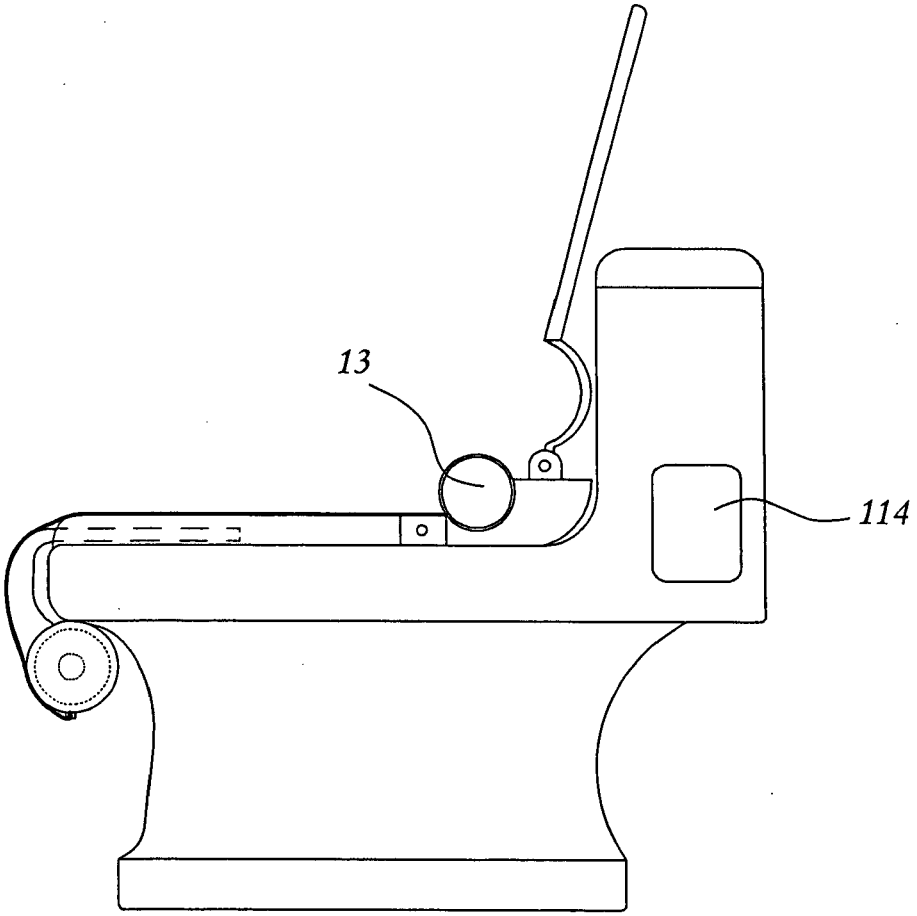

FIG. 4

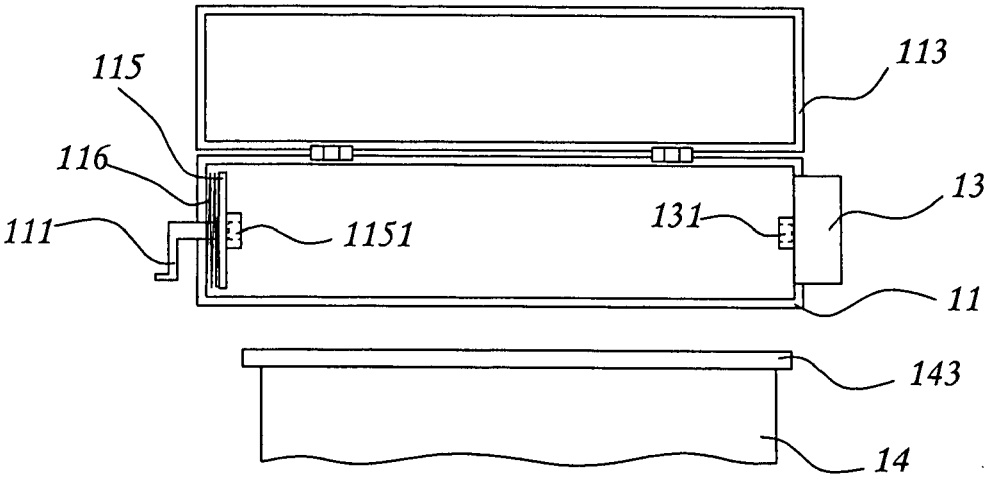

FIG. 5

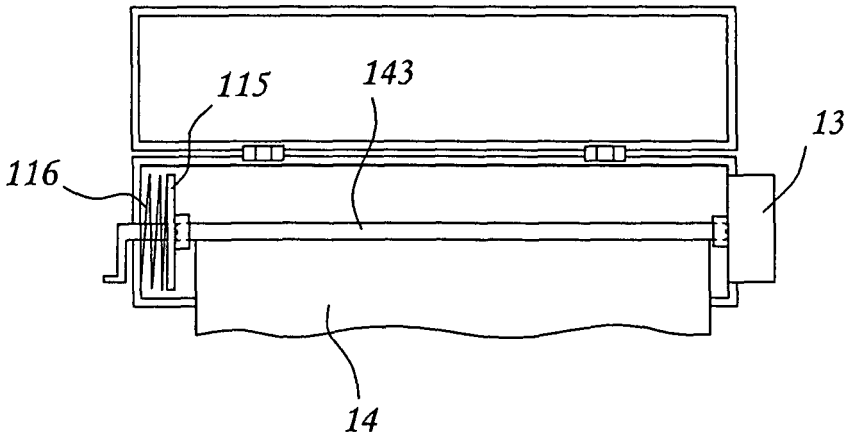

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 08 01 1180

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 5 561 867 A (ROGINSKY JACOB [US]) 8 October 1996 (1996-10-08) * column 2, line 22 - column 3, line 57; figures 1-5 *	1,3	INV. A47K13/22
Y	US 1 071 933 A (H. LUTHI) 2 September 1913 (1913-09-02) * page 1, line 30 - line 40; figure 1 *	1,3	
A	US 2002/162164 A1 (KAMYSZ MARK [US] ET AL) 7 November 2002 (2002-11-07) * paragraphs [0088], [0109]; figures 2,18 *	1	
A	DE 73 46 116 U (EBERT W) 12 September 1974 (1974-09-12) * figure 3 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

A47K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 November 2008	Porwoll, Hubert

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 1180

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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11-11-2008

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82