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(54) ARRANGEMENT FOR DISPENSING THE CONTENTS OF A PACKET

(57) The claimed technical solution relates to devices installed on packages in order to unload the package contents.

The device for unloading of package contents arranged above the package outlet hole includes a tray with flanges, an outlet valve and a supporting element; at that, when folded, the tray is located under the outlet valve and is retained on the supporting element; and the outlet valve is equipped with flaps allowing to retain the tray flanges and form an opening when the tray is put into an open position. At that, the tray is designed so that it can be opened at an angle exceeding 90°, and the edges of the tray flanges are free from any attachments on three sides thereof. The tray has a pulling element with slots made on the supporting element. When folded, the tray is retained by the tray flanges located in slots made on the supporting element. Moreover, the flaps of the outlet valve retain the tray in a closed position on the supporting element.

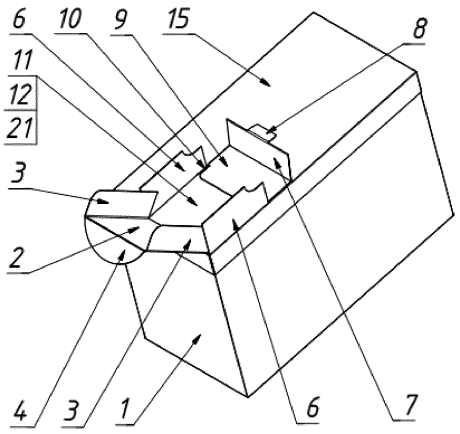

FIG. 1

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Description

Field of invention

[0001] The claimed technical solution relates to devices arranged on container packages in order to unload the package contents.

Background

[0002] The prior art discloses numerous packages manufactured from flexible materials, such as boxes, bags for storage of free-running granulated or powder products, including tea, coffee, cereal, etc. Such container packages can contain a device for unloading of package contents. Those were described in patents US1847028A, US2064029A, US2593778A, US2946496A, US3426955A and others.

[0003] Accordingly, patent US 2,069,281 published on 02.02.1937, cl. B65D 33/36, discloses a device for unloading package contents, which is installed on the package, more specifically, above the opening located on the top flap of the package. On the middle part of the top flap, weakened lines are made to form the device for unloading package contents, and the said device contains a tray with a pulling element and flanges with edge elements providing fixation of the tray on the surface of the package top flap when the tray is open.

[0004] However, there are disadvantages to this structure of device for unloading of package contents, for instance, in the open position, the edge elements of the tray flanges only allow putting the tray into a position where the opening angle is less than 90°. This position of the tray considerably limits the user's visibility of the area for unloading of the package contents into the tray. In conditions of limited visibility, the user is forced to resort to additional manipulations with the package in order to force the contents out. When folding the tray back into the package, the former can fall inside the package as the tray is retained only by the thin edge part of the package top flap and the thin edge part of the device for unloading, which provide an unreliable means of retaining. Moreover, the device for unloading is located on the middle part of the package top flap, which leads to appearance of "blind spots" on both sides of the device, considerably obstructing the unloading of contents from those spots.

[0005] The prior art also discloses a device for unloading package contents described in patent US 2,064,029 published on 15.12.1936, cl. B65D 33/36 (being the closest analogue), containing a tray with flanges and a pulling element. The device for unloading package contents is made on the narrow side wall of the package, as the continuation thereof, and includes a tray for unloading with side flanges providing retaining of the tray in open position, and a pulling element providing a protruding part of the unloading tray.

[0006] The said device, however, also presents structural disadvantages, such as the tray width being equal to the package side wall width. Due to this fact, there is a possibility of unloading into the tray of much more of the package contents than the user needs. Consequently, the process of unloading can become uncontrollable. Moreover, the device for unloading package contents is retained in a position where the opening angle cannot exceed 90°. This forces the user to make additional efforts in order to force the package contents from the tray into a container, that is, make additional movements requiring perfect coordination. When folding the tray back into the package, the coarse edge of the tray shall frictionally cling to the contiguous coarse edge of the prominent part of the package, retaining the device in a closed position without the use of additional means of retaining. However, this way of retaining the device in a closed position is not completely reliable: if the package is turned sideways (or over), the package contents can spill as affected by their own weight.

Concept of the claimed solution

[0007] The technical problem solved by the claimed device is related with correction of disadvantages known from the prior art.

[0008] The technical result that can be obtained from implementation of the claimed technical solution consists in provision of a reliable, iterative retaining of the unloading device, both in folded (closed) position, when the opening for unloading is covered, and in open position, at any opening angle of the device selected by the user, and consequently, in increased controllability of the process of package contents unloading.

[0009] This technical result is achieved by creation of a device for unloading of package contents arranged above a package outlet hole, including a tray with flanges, an outlet valve and a supporting element, at that, when folded, the tray is located under the outlet valve and is retained on the supporting element, wherein the outlet valve is equipped with flaps designed with the possibility to retain the tray flanges and form an opening when the tray is put into an open position.

[0010] At that, the tray is designed with the possibility of opening at an angle exceeding 90°, and the edges of the tray flanges are free from any attachments on three sides thereof. The tray has a pulling element and slots made on the supporting element. When folded, the tray is retained by the tray flanges located in slots made on the supporting element. Moreover, the flaps of the outlet valve retain the tray in a closed position on the supporting element.

[0011] In a particular embodiment of the device for unloading, the elements thereof such as the tray with flanges, the outlet valve, and the supporting element, can be designed as parts of the package and formed from a single blank.

[0012] In another particular embodiment of the device for unloading, the tray with flanges, the outlet valve, and

the supporting element are designed as separate elements with the possibility of installing those on the package, above the outlet hole made on the package.

[0013] In yet another particular embodiment of the device for unloading, the tray with flanges, outlet valve, and supporting element can represent a single structure, with the possibility of installing it on the package, above the outlet hole made on the package.

[0014] In yet another particular embodiment of the device for unloading, the tray with flanges, outlet valve, and supporting element can be designed as a combination of elements partly installed on the package and partly manufactured separately, with the possibility of attaching those to the package, above the outlet hole made on the package.

[0015] The advantage of the claimed solution for the device for unloading of the package contents is the possibility to deflect the device tray at an angle exceeding 90° as well as retention of possibility to deflect the device tray at an angle less than 90°. This is achieved by the fact that the tray flanges are not attached to the package on which the device for unloading is located, but are only attached to the tray by their only edge, along the long lateral sides of the tray, so that the user can deflect the tray at a necessary angle. This position of the tray allows the user to control the area of visibility of the package outlet hole in order to unload the package contents freely and without any additional manipulations with the package, due to the possibility to install the tray at an angle exceeding angle of friction of the unloaded package contents on the tray surface.

[0016] At that, the tray position chosen by the user is reliably retained as the tray flanges are supported from outside by the outlet valve flaps. In addition, such angle of unloading of the package contents ensures that the device area is fully visible to the user, consequently, the user can fully control the process of contents unloading through the package outlet hole.

[0017] After unloading of the package contents, the package outlet hole can be reliably closed as the tray can be freely returned into its initial position through the outlet valve, the package outlet hole can be covered with the tray, and the tray flanges can be retained in slots made on the supporting element. The tray can also be additionally covered from above by the outlet valve flaps, as the junction line for the outlet valve flaps can be made as a curve, so that the protruding elements of one flap would be placed between the protruding elements of the opposite flap, forming a junction similar to a flat «zip fastener» and being held together by the friction of the edging surfaces of the flap's protruding elements, which are placed into each other, providing additional countermeasure against spontaneous opening of the package outlet hole.

[0018] Thus, the claimed device for unloading of package contents is different from other devices for unloading of package contents known from the prior art.

Brief description of drawings

[0019]

Fig. 1 shows the device for unloading of the package contents located on the package;

Fig. 2 illustrates the outlet valve in a folded position;

Fig. 3 illustrates an embodiment of the device for unloading of package contents made from a single unfolding;

Fig. 4 illustrates an embodiment of the device for unloading of the package contents from separate elements;

Fig. 5 illustrates an embodiment of the device for unloading of the package contents when the package is not represented by a box;

where the following numbers designate the following structural elements of the claimed device:

1. Package.
2. Tray.
3. Tray flange.
4. Pulling element.
5. Outlet valve.
6. Longitudinal flap.
7. Edge flap.
8. Tag.
9. Supporting element.
10. Supporting element slot.
11. Outlet valve opening.
12. Package outlet hole.
13. Tag cutout.
14. Package side wall.
15. Package top flap.
16. Package bottom flap.
17. Device for unloading.
18. Weakened line of the pulling element.
19. Weakened line of the longitudinal flaps.
20. Weakened line of the edge flap.
21. Supporting element hole.

Description of the invention

[0020] This invention relates to the device used for unloading of contents of the package on which it is located, such as powdered or granulated products, for example, tea, coffee, grain, cereal. The package itself can take different forms and be made from a flexible material, like cardboard.

[0021] The invention is further disclosed in more details, with references to the accompanying drawings that provide a schematic representation of the device structural elements and application embodiments.

[0022] More specifically, fig. 1 provides a schematic representation of the device for unloading of the package contents.

[0023] The device for unloading of the package 1 contents is located above the outlet hole 12 of the package 1 and includes the unloading tray 2 on both lateral sides of which there are flanges 3 limiting the unloading of package 1 contents outside of the tray 2. The shape of flanges 3 can differ (they can be rectangular, rounded, or figurate) in order to provide fulfilment of their function. The flanges 3 are attached with one edge to the tray 2, all other edges of the flange 3 being unattached. On yet another side of the tray 2, a weakened line 18 is made by creasing (for instance) (not shown on fig. 1), in order to connect the tray 2 with the pulling element 4. The pulling element 4 is a lip on the edge of the tray 2, and the weakened line 18 provides the possibility to bend the pulling element 4 in the plane of the tray 2. At that, the weakened line 18 can be made as a curve, thus increasing the stiffness of the pulling element 4 after it was bent.

[0024] Another important element of the device for unloading of package 1 contents is the outlet valve 5 (see fig. 2) formed by longitudinal flaps 6 and an edge flap 7 with a tag 8.

[0025] Fig. 2 illustrates the outlet valve 5 in a closed position. The outlet valve 5 is located above the tray 2 (not shown on fig. 2) and is used for unloading of the package 1 contents. In the medium part of the outlet valve 5 a weakened line 19 is made by creasing. The weakened line 19 can be made straight or in zigzag, forming zigzag elements of the flaps that are placed into each other. When tearing the line 19, longitudinal flaps 6 are formed on the outlet valve 5, and their separation from each other allows forming an opening 11 of the outlet valve 5. The outlet valve 5 also includes an edge flap 7 attached to the edge sides of the longitudinal flaps 6, that has a tag 8 with a cutout 13 of the tag 8. By turning the tag 8 through the cutout 13, the edge flap 7 is separated from the outlet valve 5 and longitudinal flaps 6 by bending along the weakened line 20, providing access to the pulling element 4 of the tray 2. This creates a possibility to pull on the pulling element 4 and divide the longitudinal flaps 6 along the weakened line 19 of the outlet valve 5, forming an opening 11 through which the tray 2 can be put into an open position in order to unload the package 1 contents (see fig. 1). When open, the tray 2 is retained by the forces of friction between flanges 3 of the tray 2 and longitudinal flaps 6 of the outlet valve 5 providing a resilient support for the flanges 3 of the tray 2. As mentioned earlier, an advantage of this structure is the fact that the tray 2 of the device for unloading of package 1 contents is reliably retained in an open position because flanges 3 of the tray 2 are supported from both sides by the longitudinal flaps 6 of the outlet valve 5, and the tray 2 can remain open and deflected from the package 1 at an angle exceeding 90°(> 90°) while flanges 3 of the tray 2 are not attached to the package 1, as opposed to the structures known from the prior art. Outside surfaces of flanges 3 of the tray 2 and the surfaces of contiguous longitudinal flaps 6 of the outlet valve 5 can be textured, so that the prominences of the surface of flanges 3 correspond with the cavities on the surface of longitudinal flaps 6 in order to provide reliable contact of those surfaces.

[0026] For each specific product contained in the package 1, well-visible lines showing the best angle of deflection proposed for the tray 2 and allowing unloading of the optimal quantity of the package contents, can be additionally drawn on the surface of longitudinal flaps. For the same purpose, special prominences and cavities can be made on contiguous surfaces of flanges 3 of the tray 2 and longitudinal flaps 6 of the outlet valve 5, providing the user with a tactile indication that the optimal angle of turning of the tray 2 has been reached for the specific product contained in the package 1.

[0027] Fig. 1 illustrates another structural element of the claimed device, more specifically, the supporting element 9. The supporting element 9 can be both a part of the package 1 or a separate element that can be attached to the package 1 in a known way. The supporting element 9 is designed so that the edge part of the tray 2 is supported by the surface of the supporting element 9, preventing falling of the tray 2 inside the package 1 when the device is folded after being used. The supporting element 9 also carries slots 10 that are made on its free edge (see fig. 3-4); these slots can be straight or rounded. The slots 10 are used to reliably retain flanges 3 of the tray 2 of the device for unloading of the package 1 contents by wedging open flanges 3 on slots 10 when folding the tray into the package after the former has been used; they retain the said flanges 3 from spontaneous withdrawal thereof from the slots 10 under the weight of the contents pressing from inside the package on the tray 2 during different manipulations with the closed package or in case the closed package is turned over.

[0028] Fig. 1 also illustrates the outlet hole 12 made on the package 1, through which pass the contents of the package 1 while being unloaded. The package outlet hole 12 coincides with the hole 21 of the supporting element and the opening 11 of the outlet valve. The hole 21 of the supporting element 9 serves for the package 1 contents to pass through it while being unloaded. At that, the length of the hole 21 of the supporting element 9 must be smaller than the length of the tray 2, and the width of the hole 21 of the supporting element 9 must be equal to the width of the tray 2 measured along the outside dimensions of its flanges 3. The length of the hole 21 of the supporting element 9 determines the maximum consumption that can be reached when unloading the contents from the package 1. At that, the decrease of the length of the hole 21 provides a pro-rata decrease of the maximum consumption reached when unloading the contents from the package 1; and on the contrary, the increase of the hole 21 length increases the said maximum consumption.

[0029] The claimed device for unloading of package 1 contents can be used as follows.

[0030] The device for unloading of package 1 contents consisting of a tray 2 with flanges 3 and a pulling element 4, an outlet valve 5 with longitudinal flaps 6 and edge flap 7, and a supporting element 9, is installed above the outlet hole 12 located on the package 1. In order to unload a portion of contents from the package 1, the user opens the edge flap 7 along the weakened line 20, wherein the edge flap 7 has a preliminarily made tag slot 13 at the tag 8. The user picks up the tag 8 by the tag slot 13 and uses power to bend the edge flap 7, providing access to the pulling element 4 of the tray 2. After bending the pulling element 4 of the tray 2 and picking up on it, the user uses power to change the tray 2 position from folded into a position for unloading. When pulling out and turning the tray 2 by the pulling element 4, the linkers at the weakened line 19 are torn and the longitudinal flaps 6 bend, forming an opening 11 of the outlet valve 5. The width of the opening 11 of the outlet valve 5 corresponds to the width of the tray 2. As the flanges 3 of the tray 2 are separated from the sides of the package 1, the user can, while unloading the package 1 contents, deflect the tray 2 at an angle exceeding 90° and reliably hold it in the same position due to forces of friction between the flanges 3 of the tray 2 and longitudinal flats 6 of the outlet valve 5 that provide a resilient support to flanges 3 of the tray 2 and do not require additional means of retaining. This all allows to reliably put the tray 2 into an open position and hold it in the same position for the time necessary for unloading. The position of the tray 2 deflected at an angle exceeding 90° provides the user with maximum visibility of the area of hole 21 of the supporting element 9 located under the tray 2 and allows organizing a fully-controlled unloading of a measured portion of the package 1 contents into a container, without any additional manipulations with the package, by deflecting the package 1 and unloading its contents into a container through the tray 2. Flanges 3 of the tray 2 provide reliable protection from spilling of unloaded measured portion of the package 1 contents.

[0031] After unloading a necessary portion of the package 1 contents, the tray 2 can be returned into its initial (folded) position inside the package 1. To do that, the user holds on to the pulling element 4 and lowers the tray 2 through the opening 11 of the outlet valve 5 until the tray 2 rests against the surface of the supporting element 9. The pulling element 4 of the tray 2 allows the user to not touch the surface of the tray 2 itself, providing observance of the sanitary standards. At that, the user fixes flanges 3 of the tray 2 in slots 10 of the supporting element 9. The slots 10 are made so that when the tray 2 is folded inside the package 1, the flanges 3 are inserted into the slots 10 along the whole length of the flanges 3, wedge open and reliably hold the tray 2 in a folded position; at the same time, the tray 2 also covers the hole 21 of the supporting element 9 and the hole 12 of the package 1, thus preventing spontaneous unloading of the package 1 contents through the opening 11 of the outlet valve 5 and through the hole 21 of the supporting element 9 during different spatial manipulations of the package 1. To facilitate insertion of flanges 3 of the tray 2 into slots 10 of the supporting element 9, the lead -in parts of slots 10 can carry chamfers or curves.

[0032] Thus, the claimed invention described by the total of listed features allows to reliably and iteratively open the outlet hole for unloading of the package contents and to close it after unloading a part of the contents, while also increasing controllability and facilitating the process of unloading.

[0033] The following examples of device implementation provide non-limiting illustrations of implementation of the claimed invention.

Example 1.

[0034] Device for unloading of package contents can be made on the container package manufactured from cardboard, in the form of a box with an outlet hole, representing a single blank when unfolded (fig. 3). This package 1 has side walls 14, top flaps 15 and bottom flaps 16. Elements of the device 17 for unloading of package 1 contents are made together with the blank, out of its essential parts.

[0035] Thus, the tray 2 with flanges 3 and a pulling element 4 are made on one of the top flaps 15 of the package 1.

[0036] Longitudinal flaps 6 and edge flap 7 with the tag 8 of the outlet valve 5 are also made on the adjacent top flap 15 of the package 1, so that the longitudinal flaps 6, when folded, are connected by the weakened line 19 that can be made as a straight or curved line in order to provide reliable retention of the longitudinal flaps 6 with each other, while folded, and to increase the effect of their adherence to each other. The separation of flaps 6 and 7 allows forming an opening 11 of the outlet valve 5.

[0037] The supporting element 9 is made from yet another top flap 15 of the package 1 carrying the hole 21 for unloading of package 1 contents and slots 10 for retaining flanges 3 of the tray 2 when the tray 2 is folded.

[0038] After connecting lateral sides 14, top flaps 15 and bottom flaps 16 of the blank, the user obtains a package in the form of a box (see fig. 1-2), where the elements, such as the tray with flanges, the outlet valve and the supporting element of the device 17 for unloading of package contents are located above each other and above the outlet hole 12 of the package 1. The unloading of contents of this box can be done by using the device 17 to unload the package contents in a way described earlier.

Example 2.

[0039] Fig. 4 illustrates another embodiment of the device for unloading of package contents, where the tray 2 with flanges 3 and the pulling element 4, the outlet valve 5 formed by longitudinal flaps 6 and the edge flap 7 with tag 8, the supporting element 9 with slots 10 and the hole

21 represent separate structural elements of the said device for unloading that are consequently installed above each other and above the outlet hole 12 made on the package 1. Connection of the said elements of the device for unloading of package contents is done in a known way, and the unloading of package contents can be done by using the said device for unloading in a way described earlier.

Example 3.

[0040] Fig. 5 illustrates yet another embodiment of the device for unloading of package contents, where the tray 2 with flanges 3 and the pulling element 4, the outlet valve 5 formed by longitudinal flaps 6 and the edge flap 7 with tag 8, the supporting element 9 with slots 10 and the hole 21 represent a preliminarily assembled device installed above the outlet hole 12 made on the package 1. The unloading of the package contents can be done by using the said device for unloading in a way described earlier.

Example 4.

[0041] Yet another embodiment of the said device for unloading of package contents (not shown on figures) suggests that the tray 2 with flanges 3 and the pulling element 4, the outlet valve 5 formed by longitudinal flaps 6 and the edge flap 7 with tag 8, the supporting element 9 with slots 10 and the hole 21 can be designed as a combination of elements partly installed on the package 1 and partly separated from it, with the possibility to connect them to the package 1 above the outlet hole 12 made on the package 1. The unloading of the package contents can be done by using the said device for unloading in a way described earlier.

Claims

1. A device for unloading of package contents arranged above a package outlet hole, including a tray with flanges, **characterized in that** it also includes an outlet valve and a supporting element, wherein when folded, the tray is located under the outlet valve and is retained on the supporting element, where the outlet valve has flaps designed with the possibility to retain the tray flanges and to form an opening when the tray is brought into an open position.

2. The device according to claim 1, **characterized in that** the tray is designed so that it is possible to deflect it, when open, at an angle exceeding 90°.

3. The device according to claim 1, **characterized in that** the edges of the tray flanges are not attached to anything on three sides thereof.

4. The device according to claim 1, **characterized in that** the tray is designed with a pulling element.

5. The device according to claim 1, **characterized in that** the supporting element has slots.

6. The device according to claim 5, **characterized in that** when folded, the tray is retained by the tray flanges located in slots made on the supporting element.

7. The device according to claim 1, **characterized in that** when folded, the tray is retained on the supporting element by the flaps of the outlet valve.

8. The device according to any of claims 1 to 7, **characterized in that** the elements thereof, such as the tray with flanges, the outlet valve and the supporting element, can be designed together with the package and formed from a single blank.

9. The device according to any of claims 1 to 7, **characterized in that** the tray with flanges, the outlet valve and the supporting element are made as separate elements, with the possibility of installing the said elements on the package, above the outlet hole made on the package.

10. The device according to any of claims 1 to 7, **characterized in that** the tray with flanges, the outlet valve and the supporting element can represent a single structure, with the possibility of installing them on the package, above the outlet hole made on the package.

11. The device according to any of claims 1 to 7, **characterized in that** the tray with flanges, the outlet valve and the supporting element can be made as a combination of elements partly installed on the package and partly separated from it, with the possibility of attaching them to the package, above the outlet hole made on the package.

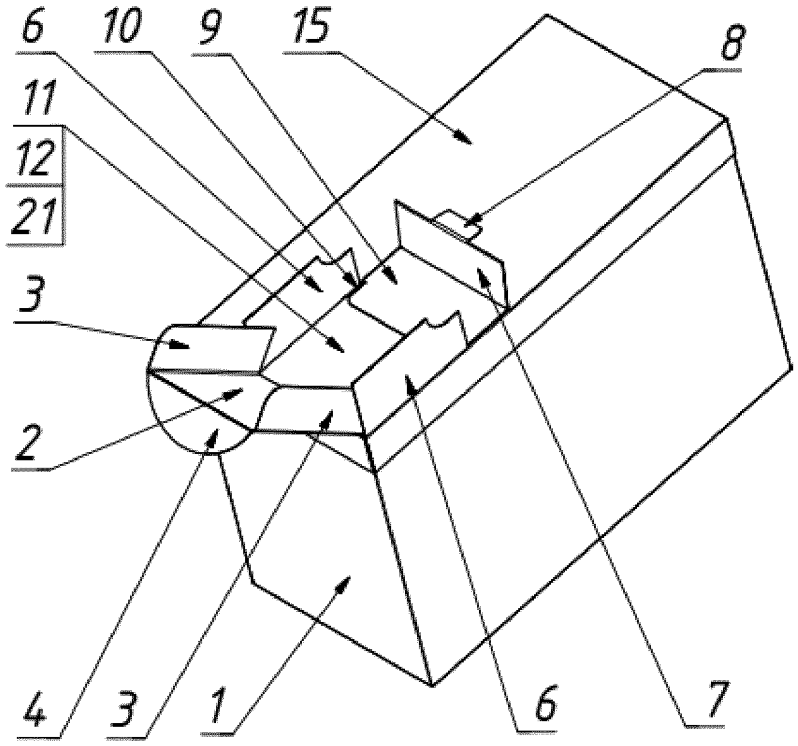

FIG. 1

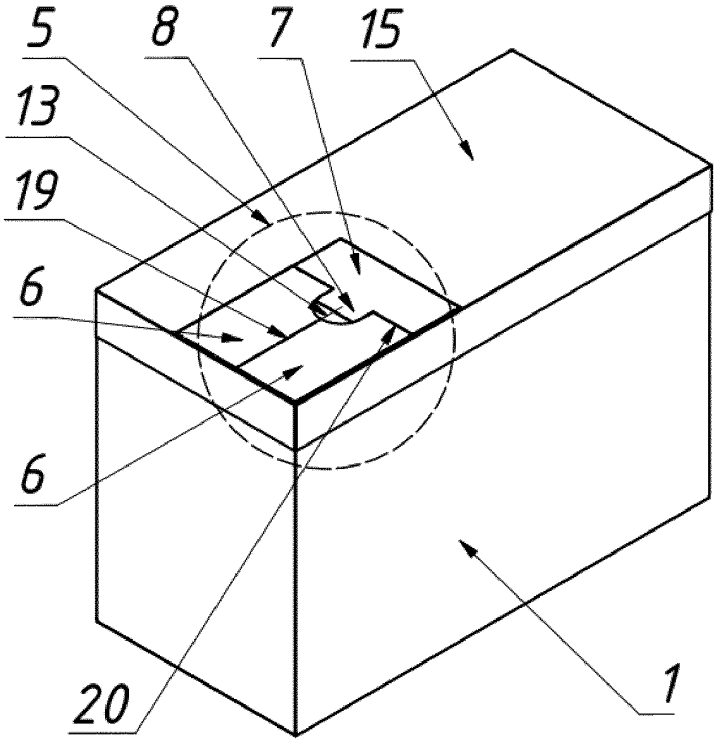

FIG. 2

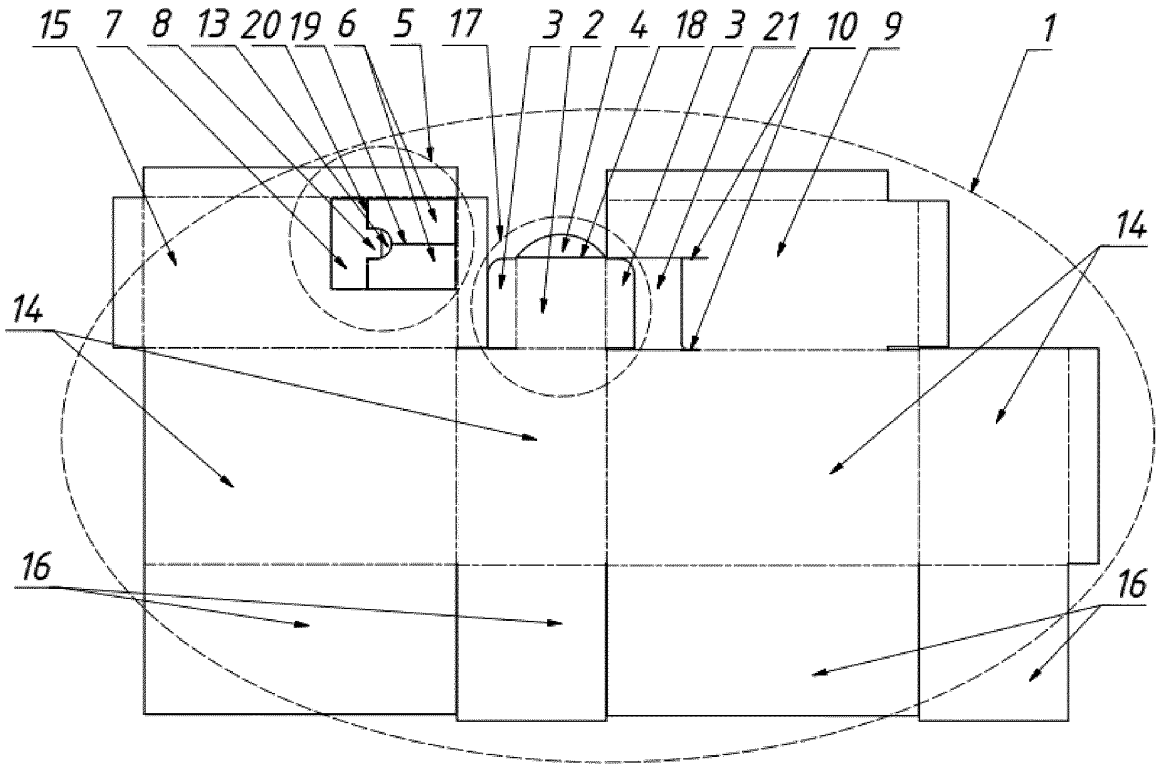
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FIG. 3

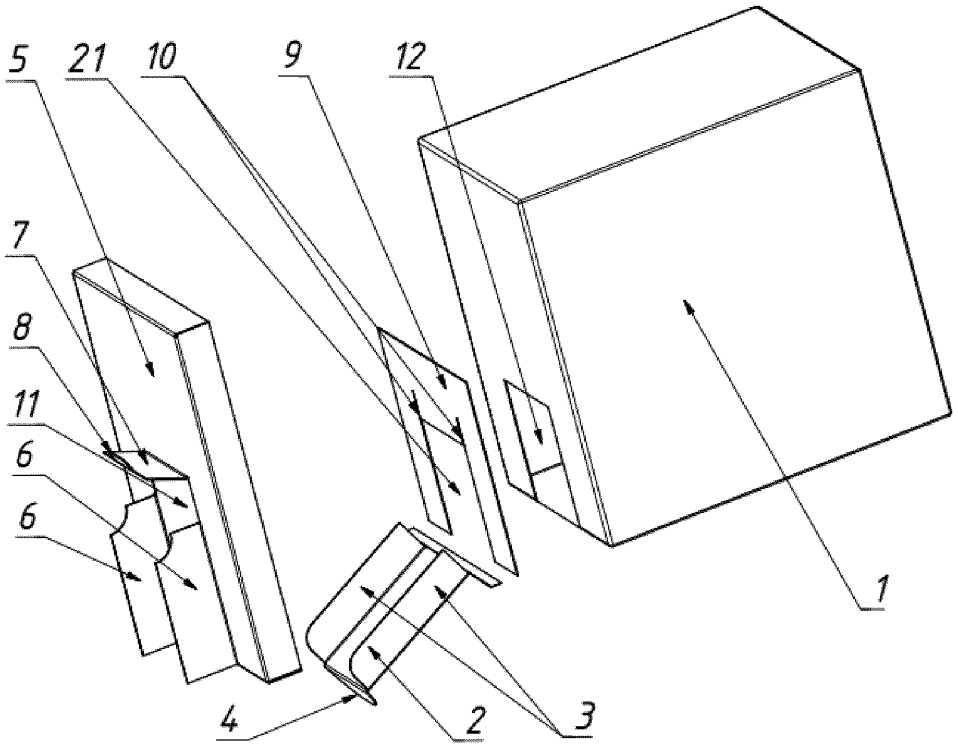
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FIG. 4

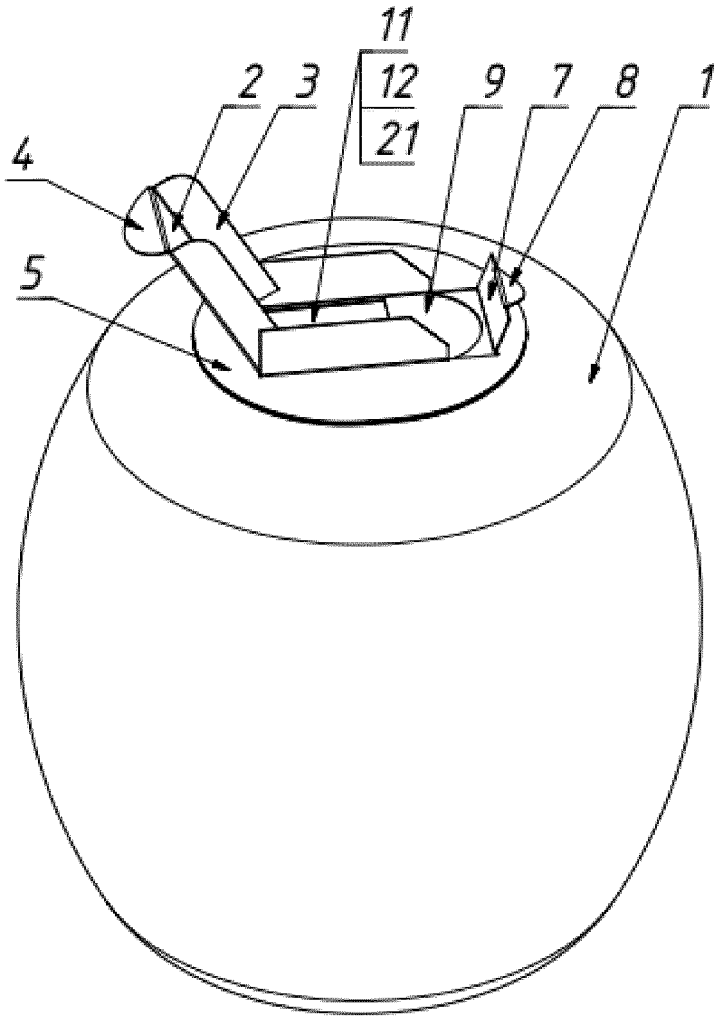

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 2021/000309

A. CLASSIFICATION OF SUBJECT MATTER

B65D 5/74 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D 5/74, 47/04, 47/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatSearch (RUPTO Internal), USPTO, PAJ, Espacenet, Information Retrieval System of FIPS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
D, A	US 2069281 A (CHICAGO CARTON COMPANY) 02.02.1937, figures 1-4, column 1, line 45 - column 4, lines 38	1-11
A	US 4194677 A (CHAMPION INTERNATIONAL CORP) 25.03.1980	1-11
A	RU 90047 U1 (LESEENKO NIKOLAI VIKTOROVICH) 27.12.2009	1-11

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search	Date of mailing of the international search report
15 October 2021 (15.10.2021)	18 November 2021 (18.11.2021)
Name and mailing address of the ISA/ RU	Authorized officer
Facsimile No.	Telephone No.

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- US 2946496 A **[0002]**
- US 3426955 A **[0002]**
- US 2069281 A **[0003]**