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(54) **TRANSPORT CONTAINER FOR PACKAGING A BEVERAGE-FILLED CUP**

(57) The group of inventions relates to technology for hermetically packaging cups filled with beverages or other liquid products and closed by a standard lid, which are intended for transportation of their contents prior to consumption. A transport container for packaging a beverage-filled cup comprises a cover made of aluminium foil and configured in the form of a truncated cone having a bottom on its small base, the size of which corresponds to the size of a standard lid of a sealable cup, wherein an integral tear-off strip with an outwardly protruding tongue is disposed on the inside surface of said cover, around the circumference thereof, at a distance of not less than the height of the lid of the cup, and the height of the cover is greater than the height of a cup sealed with a standard lid. The group of inventions also relates to an attachment for packaging a beverage-filled cup in a transport container, a method for packaging a beverage-filled cup for transportation, and a beverage-filled cup packaged in a transport container. The group of inventions makes it possible to partially maintain the initial temperature of the contents of a cup and to keep the cup hygienic during transportation

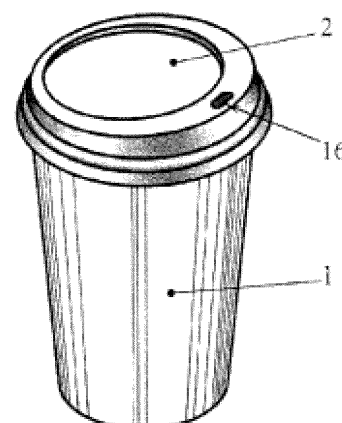


Fig. 1

Description

[0001] The group of inventions relates to technology for hermetically packaging cups filled with beverages or other liquid products and closed by a standard lid, which are intended for transportation of their contents prior to consumption.

[0002] Due to the recent prevalence of sale of a variety of food products, packaged in disposable transport containers, both hot and cold, and, in particular, beverages, the latter have a problem with transportation without loss of tightness of the standard package. The possibility to deliver beverages to the consumer, especially hot and sweet beverages, with minimum leakage is considered to be a serious competitive advantage - see <https://tjournal.ru/tech/89076-yandeks-eda-zapustila-dostavku-kofe-iz-makdonaldsa-kak-ona-ustroena-i-poc-11-em-u-poya-vilas-to-lko-seyc-has>.

[0003] Nowadays, the problem of tightness is solved by creating a quality connection between the lid and the cup. There are many inventions on this subject. In particular, the tightness is provided by means of formation of a linear contact of the connected elements along their perimeter with generation of tension [description of the invention to Russian patent No. 2345939 dd August 06, 2004, IPC B65D 51/24, B65D 43/08, B65D 81/00, published on February 10, 2009, Bulletin No. 4], due to geometric equivalence of the contact surface of the connected volumetric surfaces [description of the invention to the US patent No. 8196772 dd April 17, 2009, Nice Classification 220/669, IPC B65D 8/04, B65D 3/00, A47G 19/22, published on June 12, 2012], by means of snap buttons on the cup edge [description of the invention to Russian patent No. 2496698 dd October 13, 2008, IPC B65D 47/26, published on October 27, 2013, Bulletin No. 30] and other technical solutions for lids, including their hygienic versions [description of invention to U.S. Patent No. 8167162 dd March 07, 2008, Nice Classification 220/359.2, 220/212, 220/254.1, published on May 01, 2012].

[0004] In all the instances, the tightness of beverage cups, covered with lids, is questioned. For example, the fall of the sealed cup, even from a small height, as well as strong, even if involuntary shaking ensures not only leaking, but also spill of the beverage. This is due to the fact that, when the cup is dropped or shaken, a hydraulic shock is formed, which, for sure, breaks the integrity of its closure.

[0005] There are technical solutions, intended to ensure that a disposable cup, covered with a lid, is tight when it is shaken or even dropped. For example, the group of inventions for the method of sealing hermetically a disposable cup with a flanged edge and two embodiments of a lid for its implementation are known [description of invention to Russian Patent No. 2683652 dated December 28, 2017, IPC B65D 43/10, B65D 43/08, B65D 43/02, B65D 81/00, A47G 19/30, published on April 01, 2019].

[0006] According to the first embodiment, the lid includes a body with a seating surface and an outer overlap and a fixing rim, connected to the body, made with the possibility of fixed fixation to the body to generate a closed cavity for placing the flanged edge of the cup. The body contains, on its side surface, an open annular cavity with an annular wall, on which the fixing holes are located. The fixing rim is made with generation of two open branches, on which the fixing lugs are located for interaction with the fixing holes of the ring wall, and the fixing rim is connected to the body by means of a hinge connection.

[0007] According to the second embodiment, the fixing rim with the body is made in the form of a single part, the fragments of which are connected by a bridge with a straightline creasing groove, the open cavity of which is made on the side opposite to the location of the seating surface of the body.

[0008] The method for hermetic sealing of the cup includes the installation of one of the above-described lids on its open part and its hermetic fixation using the flanged edge of the cup. For this purpose, the cup is placed on a solid surface, and, after placing the lid on its open part, the lid is pressed to prevent the overturning of the cup, the elastic branches of the fixing rim are led, consistently or simultaneously, to the outer walls of the cup and brought on it with subsequent coverage, after which the elastic branches by their further rotation are fixed to the ring wall of the lid along its perimeter.

[0009] As a result, universal lids for hygienic and leak-proof closure of disposable cups were created. Once the lids are removed, they may be reused on other disposable cups.

[0010] It may be said that this is one of the few solutions that ensure the tightness of the contents of the cups during transportation, where there may be cases of involuntary loss of balance - so called tilting of the cup, and even its drop from a small height. However, the both embodiments of the lid are a rather complex spatial structure with moving parts, which, in terms of production costs, cannot compete in material intensity and simplicity of design with the known disposable lids.

[0011] As is evident, there is a public need to create technical solutions to ensure the possibility to transport beverages or other liquid products without loss of tightness of transport containers, the most common variant of which, as a rule, is a disposable cup sealed with a disposable lid.

[0012] There are no solutions in the state of the art that enable to satisfy this need in a fairly simple way.

[0013] Thus, the task, solved by the group of inventions, and the achieved technical result consist in creation of a technology for sealing of cups, filled with a variety of beverages and closed with standard lids, which are intended for transportation before consuming their contents, for example, for takeaway sales or for long-distance delivery by order.

[0014] Besides, the initial temperature of the contents

of a cup is partially maintained and the cup hygienic state during transportation is ensured.

[0015] The group of technical solutions, connected by a single inventive idea, is intended to solve the assigned task to tighten a cup, sealed with a standard lid, and to achieve the claimed technical result:

A transport container for packaging a beverage-filled cup, comprising a cover made of aluminium foil and configured in the form of a truncated cone having a bottom on its small base, the size of which corresponds to the size of a standard lid of a sealable cup, wherein an integral tear-off strip with an outwardly protruding tongue is disposed on the inside surface of said cover, around the circumference thereof, at a distance of not less than the height of the lid of the cup, and the height of the cover is greater than the height of a cup sealed with a standard lid. Additionally, the bottom of the cover is made blind.

[0016] A device for packaging a beverage cup in the above-mentioned transport container, including a mandrel in the form of a rotating solid with flat bases, made with the possibility of fixed placement on a plane, with the upper base having the diameter not exceeding the diameter of the bottom of the cup.

[0017] In addition:

- in its upper part, the mandrel is provided with a cylindrical section;
- in its lower part, the mandrel is provided with a cylindrical section;
- the mandrel is made of metal.

[0018] The method of packaging a cup with a beverage for transportation includes the installation of the cup, sealed with a standard lid, on the fixed device, the design of which is described in detail above, after which the transport container, the design of which is also described in detail above, is put on the cup, and the cup is compressed from top to bottom to contact with the lid, with the walls of the cup and then with the mandrel, after which the cup is removed from the mandrel, and the edges of the transport container are wrapped onto the bottom of the cup.

[0019] In addition:

- the edges of the transport container, wrapped onto the bottom of the cup, are pressed against the mandrel with the possibility of its partial rotation to overcome the friction forces;
- the mandrel's immobility is ensured by the friction forces from its own weight.

[0020] The beverage-filled cup, packaged in the transport container, includes the transport container, described above, which is placed on the cup, sealed with a standard lid, fixed to its lid, side walls and bottom in the manner described above.

[0021] The group of inventions is explained by the figures, where:

- Fig. 1 shows a general axonometric view of a beverage-filled cup, sealed with a standard lid;
- Fig. 2 shows an axonometric view of a device for packaging a beverage-filled cup in a transport container;
- Fig. 3 shows an axonometric view of a transport container for packaging a beverage-filled cup;
- Fig. 4 shows cross-section of the transport container from Fig. 3 in the front view;
- Fig. 5 shows a cup with a moulded bottom, sealed with a standard lid, which is prepared for packaging;
- Fig. 6 shows a cup with a conditionally flat bottom, which is prepared for packaging;
- Fig. 7 shows a cup from Fig. 5 or Fig. 6, without detailing the design of the bottom, with the transport container, crimped around the walls and the mandrel, which is prepared for packaging;
- Fig. 8 shows a fragment of Fig. 7: the lower part of the cup with the moulded bottom, prepared for packaging, in section;
- Fig. 9 shows a fragment of the lower part of the cup from Fig. 8 with edges of the transport container, wrapped on the moulded bottom;
- Fig. 10 shows a fragment of Fig. 7: the lower part of the cup with the conditionally flat bottom, prepared for packaging, in section;
- Fig. 11 shows a fragment of the lower part of the cup from Fig. 10 with edges of the transport container, wrapped on the conditionally flat bottom;
- Fig. 12 shows a beverage-filled cup from Fig. 7, without detailing the design of the bottom, which is prepared for transportation - a general front view;
- Fig. 13 shows a strip with a tongue, torn from the transport container prepared for transportation of the beverage-filled cup from Fig. 12;
- Fig. 14 shows the upper part of the cover, torn from the transport container prepared for the transportation of the beverage-filled cup from Fig. 12;
- Fig. 15 shows a general view of the packaged cup from Fig. 12 with the tear strip and the upper part of the cover removed;
- Fig. 16 shows a general axonometric view of the beverage-filled cup from Fig. 15 opened for consumption.

[0022] General note to the drawings:

The images of the transport container for a beverage-filled cup, especially the views of its contact with the lid, with the walls of the cup and the edges of the transport container, wrapped onto the bottom, are shown with a large share of conditionality - the so-called ideal (theoretical) version. In practice, the packaged beverage-filled cup in the transport container looks more prosaic: it is randomly deformed transport container, which depends on the skill of the packing operator and in no way affects the consumer properties of the product as a whole.

[0023] The beverage-filled cup 1, sealed with the standard lid 2, is packed in the transport container 3,

including the cover 4, made of aluminium foil in the form of a truncated cone, with preferably the blind bottom 5 on a smaller base, which corresponds to the size, which usually means equal to or slightly larger than the size, of the standard lid 2 of the sealed cup 1; in this instance, the tear-off strip 6 with the outwardly protruding tongue 7 is inseparably placed on the inner surface of the cover 4 on its circumference at the distance, not less than the height of the lid 2 of the cup 1, and the height of the cover 4 exceeds the height of the standard lid 2 of the cup 1, while the transport container 3 is fixed on its lid 2, the side walls of the cup 1 and its moulded bottom 8 or conditionally flat bottom 9 with compression of the listed elements.

[0024] This packaging of the beverage-filled cup 1 for subsequent transportation, as a sequence of necessary actions, is made as follows.

[0025] The method for packaging the beverage-filled cup 1 for transportation includes placing the cup 1, sealed with the standard lid 2, on the device 10, placed fixedly on some plane, including the mandrel 11 in the form of a rotating solid with flat bases 12 and 13, with the upper base 12 having the diameter, not exceeding the bottom diameter 8 or 9 of the cup 1, with the mandrel 11 having cylindrical sections 14 and 15 in its upper and/or lower portions. The specific feature of the mandrel 11 is that it is made massive, preferably metal, desirably all-metal - without internal cavities and releases reducing its weight. The friction force from its own weight of the mandrel 11 provides its immobility, for example, on a table of a catering outlet, on a specialized table of a gas station, selling, for example, hot coffee, etc., which eliminates the unintentional overturning of the beverage-filled cup 1.

[0026] After placing the cup 1, sealed with the lid 2, the transport container 3, the design of which is described above, is put on it, and it is consistently compressed from top to bottom to contact with the lid 2, with the walls of the cup 1 and then with the mandrel 11 or its cylindrical section 14, after which the cup 1 is removed from the mandrel 11 and, in suspension, the lower edges of the transport container 3 are wrapped onto its bottom 8 or 9.

[0027] The edges of the transport container, wrapped onto the bottom 8 or 9 of the cup 1, are pressed to the upper base 12 of the mandrel 11 with the possibility of its partial rotation to overcome the friction forces. Thus, the edges of the aluminium transport container 3, chaotically wrapped (bended) onto the bottom 8 or 9, are rolled (deformed) until an almost flat state on the bottom 9 and with the formation of an almost flat ring on the bottom 8. In all the instances, the flatness of the bottom of the cup 1, the packaged in the transport container 3, is ensured, which enables not to lay it down, but put it on any flat horizontal surface.

[0028] Let us analyze the essential features of the group of inventions.

[0029] The creation of the transport package 3 eliminates the need to design special lids and independent mechanisms for their attachment to the walls of cups. No

matter how precisely lids and cups are made, this does not save you from spilling the contents if the cup, sealed with the lid, is tilted over suddenly or if it drops accidentally out of the hands. The specially deformed transport container 3 fixes reliably the regular disposable lid 2 on the disposable cup 1 and, in addition, ensures their hygiene, taking on it any possible contamination when tilting and dropping. In addition, aluminium foil reflects actively thermal radiation, which fact enables partially, at least for a short time designed for transportation, to keep the heat of the poured hot beverage or the cool of the cooled beverage, and this makes it possible to keep their original taste and useful properties until the time of delivery to the consumer.

[0030] To implement the claimed method of packaging the beverage-filled cup 1, sealed with the standard lid 2, for transportation, it is necessary to use the special device 10, which should have an extremely streamlined shape and be massive enough to ensure the safe performance of any possible manipulations with the cups 1, filled with hot or cold beverages. Assuming that the standard lid 2 has already been fixed on the cup 1, it remains to install it on the upper base 12 of the mandrel 11, put on the aluminium transport container 3, perform its compression from top to bottom to contact with the lid 2, with the walls of the cup 1 and with the mandrel 11 (its cylindrical part 14), with some force necessary to deform the foil. All these manipulations can be provided by a massive, preferably metallic, for example, made of food-grade corrosion-resistant steel, structurally simple device 10, the mandrel 11 of which, despite its rather small dimensions, must be securely fixed on the plane of the table due to the friction forces of its lower base 13, which does not exclude the possibility of its rearrangement to another place, if necessary, by applying the necessary efforts for this. Of course, the mandrel 11 may be made of materials, which are lighter and less demanding to machining, but then the device 10 should be securely fixed on the table in a way other than the friction force, for example, mechanically, with the possibility to perform an unobstructed periodic aseptic treatment of its surface.

[0031] The cup 1, sealed with the standard lid 2, with the transport container 3, put on and compressed from top to bottom, is removed from the mandrel 11, and the hanging edges of the transport container 3 are wrapped, in suspension, onto the bottom 8 or 9 of the cup 1. This is already enough to ensure that the lid 2 is fixed on the cup 1 to guarantee the protection of its liquid contents from leakage. However, after wrapping the edges of the transport container 3, they should be pressed to the upper base 12 of the mandrel 11 to deform the edges of the foil to ensure flatness of the bottom of the cup 1, regardless of the embodiment of the bottom 8 or 9. For this purpose, the cup 1 is partially rotated clockwise and counterclockwise several times by overcoming friction forces. Calibrated to a conditionally flat state, the bottom part of the packaged cup 1 enables to install it on any horizontal surface such as a table, car seat, etc. without fear of

spontaneous overturning (tilting) or falling.

[0032] To ensure the stated capabilities of the packaging container, the transport container 3 for packaging the beverage-filled cup 1 has its own specific features. It includes the cover 4, made of aluminium foil. Aluminium foil may be replaced by other deformable materials, but their excessive elastic properties, compared with aluminium, do not provide a guaranteed and sufficient fixation of the transport container 3 on the cup 1, which requires the use of additional fixation measures, such as the use of adhesive or other technologies, due to which the labour intensity of the packaging process will be increased much.

[0033] The height of the conical cover 4 exceeds the height of the cup 1, sealed with the standard lid 2, which is necessary for further fixation of the edges of the transport container 3 onto the bottom 8 or 9. Only this will enable to pull and secure the lid 2 on the cup 1, limiting its involuntary displacement, for example, as a result of possible sudden movements.

[0034] The shape of the cover 4 in the form of a truncated cone is not the only one, but it is preferable. The cover 4 may have the shape of a cylinder with the diameter slightly larger than the diameter of the lid 2, this is the most economical form in terms of material consumption. However, the truncated cone shape is preferable for compact storage and, therefore, transportation. The side surface of such a cone on the side of its smaller base and at the distance from it, exceeding the height of the lid 2, may be either smooth or corrugated. The presence of corrugations will provide a more aesthetic compression of the transport container 3 on the side surface of the cup 1.

[0035] The smaller base of the cone of the cover 4 is equipped with the blind bottom 5, the size of which is equal to or slightly larger than the size of the standard lid 2 of the sealed cup 1 and which not only restricts the further movement of the cover 4 on the cup 1 with the lid 2 when being compressed, but also, after packaging the cup 1, the blind bottom 5 ensures the hygiene of the package and prevents leakage of the condensate, generated in it, or accidental drops of the beverage outside the transport container 3.

[0036] On the inner surface of the cover 4, along its circumference, at the distance not less than the height of the lid 2 of the cup 1, the tear-off strip 6 with an outwardly protruding tongue 7 is inseparably placed. These elements enable to open access to the packaged beverage-filled cup 1 after it is delivered to the consumer. To do this, a force, sufficient to tear the foil, is applied to the tongue 7 and, circling it around the transport container 3, the strip 6 is torn off. After that, the upper part of the cover 4 is removed from the lid 2 and, in such a way, the cup 1 is released to access its contents. This ensures the hygiene of the sealed cup 1 in the state, corresponding to the state of its packaging for shipment, regardless of the conditions of transportation, including accidental fall out of hands.

[0037] As for the device 10 for packaging the beverage-filled cup 1 in the transport container 3, it includes the massive mandrel 11, streamlined on the sides, in the form of a rotating solid, with the flat bases 12 and 13.

5 The massiveness of the mandrel 11 ensures its guaranteed stationary placement on the working plane, for example, on a table, due to the friction forces with its lid. The light mandrel 11 will involuntarily shift from the application of the forces, necessary to compress the aluminium foil of the transport container 3, which may lead to the spilling of the contents of the cup 1. Also, in order to eliminate the imbalance of the packaged cup 1, the upper base 12 of the mandrel 10 must have the diameter not exceeding the diameter size of both the moulded bottom 8 of the cup 1 and its conditionally flat bottom 9. This is the only way to ensure smooth movements when packaging the cup 1, because any step, protrusion or unevenness will cause it unwanted shaking, which may provoke spilling of the contents.

20 **[0038]** The provision of the mandrel 10, in its upper part, with the cylindrical section 14 ensures an additional smoothness of movements when packaging the cup 1 and, in addition, eliminates the need for repeated deformation of the foil during compression of the lower edges of the transport container 3. The height of the cylindrical section should be slightly greater than the length of the edges of the transport container 3, which are pre-formed as a result of compression of the walls of the cup 1 and hang from the lower level of the bottom 8 or 9, which are to be further wrapped onto the bottom 8 or 9. Also, the presence of a cylindrical section 14 on the mandrel 10 contributes to its more reliable compression with fingers for displacement or transfer to another location. This is also facilitated by the presence of the cylindrical section 15 in the lower part of the mandrel 10. Assuming that there are no cylindrical sections 14 and/or 15 on the massive mandrel 10, then this will significantly complicate manipulations with it, because it will simply try to slip out of the hand, although the mandrel 10 can be given a shape, for example, with smooth transitions, which will neutralize the listed disadvantages, but this will reduce unreasonably its manufacturability and subsequent maintenance.

45 **[0039]** Thus, the use of the above group of inventions makes it possible to ensure the performance of its direct function by the cup 1, sealed with the standard lid 2: it can be transported without fear of losing its tightness in the event of tilting or accidental drop from a small height, for example, when slipping out of hands; in all the instances, the transport container 3 fixed securely the standard lid 2 on the cup 1.

50 **[0040]** Of course, the transport packaging for the beverage-filled cup 1, sealed with the standard lid 2, may be implemented at the request of the consumer and subject to availability in one place of the transport container 3 for packaging the cup 1 and the special device 10, using which the above technology of its packaging for further transportation will be implemented. As a rule, this can be

done in the most economical way in specialized catering outlets, gas stations, food delivery services, etc., where such actions will be produced en masse.

[0041] The group of inventions is illustrated by the following characteristic embodiments.

[0042] Embodiment 01. Packaging of the beverage-filled cup 1 with the moulded bottom 8, sealed with the standard disposable lid 2.

[0043] In a catering outlet on a place, equipped with a work table, the contents are poured into the disposable cup 1 and closed with the disposable lid 2, the design of which may include both the open drinking hole 16 and the closed one. If the drinking hole 16 of the lid 2 is open, it should be sealed with a hygienic sticker (not shown conditionally). Or, for example, a special "spout" should be broken to open the drinking hole, which should be closed with a special "stopper", which is located right there on the lid (also not shown conditionally), etc.

[0044] Next, the sealed cup 1 is placed on the massive device 10, and the conical transport container 3, made of aluminium foil, is put on it. The transport container 3 is pressed down from above, pressing against the lid 2 with some deformation of the upper base - the blind bottom 5. After that, the forefingers and thumbs of the hands of both hands are put in the form of a circle, the diameter of which is comparable to the diameter of the lid 2, and the compression of the transport container 3 is started from top to bottom until the contact of the conical surfaces, forming it, with the walls of the cup 1 and further until its contact with the cylindrical section 14 of the upper part of the mandrel 11.

[0045] Depending on the packaging skills, the aluminium foil of the transport container 3 is deformed with a chaotic imitation of the shape of the pleat and corrugation. This is further facilitated by the presence (if necessary) of longitudinal ribs on the conical generatrix lines of the cover 4 of the transport container 3 (not shown conditionally), providing a more "correct" decorative form of these elements. However, it should be noted that the properties of aluminium foil are such that any chaotic compression of the transport container 3 looks quite aesthetically pleasing, with imitation of polished silver facets or thereabouts.

[0046] After compressing the transport container 3, the cup 1 is removed from the mandrel 11, and the edges of the transport container 3, hanging over the edges of the moulded bottom 8 of the cup 1, are sequentially wrapped until they contact directly with the bottom 8. These operations are sufficient for the transport container 3 for the beverage-filled cup 1 to perform its function. However, it is recommended to put the compressed cup 1 with its bottom 8 on the mandrel 11 again, press it against it with effort and perform reciprocating rotational movements for the so-called "calibration" of the bottom part of the packaged cup 1. This operation makes it possible to obtain an almost flat aluminum ring on the edges of the molded bottom 8 of the cup 1, which enables to place it on any flat surface without fear of loss of static equilibrium.

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[0047] As a result, the guaranteed fixed fixation of the standard lid 2 on the cup 1 is ensured. Spontaneous depressurization of the joint will not occur under any fluctuations of the packaging that do not exceed the typical transport fluctuations. Of course, this package cannot guarantee the tightness of the joints in the event of forced mechanical crushing of the lid 2 and the cup 1 beyond the elastic deformations of their materials.

[0048] The packaged beverage-filled cup 1 can be transferred or otherwise moved to the place of subsequent consumption of the contents, including with partial preservation of the temperature of the contents due to reflection of thermal radiation from the inner surface of the transport container 3, for example, for a hot beverage, and from the outside surface for a cold one. For this purpose, by observing the rules of hygiene, the cup 1 is taken in hand, its location is orientated by rotation, as a rule, relative to the protruding drinking hole 16 of the lid 2, then the walls are tightly compressed, and, with some effort, taking hold of the tongue 7 with the fingers of the free hand, the strip 6 around the circumference is torn off, and the released upper part of the cover 4 is taken and put aside. After releasing the drinking hole 16 on the lid 2, the beverage can be consumed. When some random drops run off the edges of the lid 2, they drain and collect inside the transport container 3, which prevents the possibility of accidentally getting dirty, for example, with a sweet and sticky beverage.

[0049] After the beverage is consumed, the cup 1, the lid 2 and fragments of the transport container 3 are disposed of as normal household wastage.

[0050] Embodiment 02. Packaging of the beverage-filled cup 1 with the conditionally flat bottom 9, sealed with the standard disposable lid 2.

[0051] All the manipulations with the cup 1 with the conditionally flat bottom 9 are similar to those described in Embodiment 01. The peculiarity is that the edges of the transport container 3, hanging over the border of the bottom 9 of the cup 1, are simply pressed against it to obtain a certain shapeless protrusion, which, in any case, will contribute to the loss of balance by the cup 1 when trying to put it on a horizontal surface. To eliminate this unpleasant event, the packaged cup 1 should certainly, without letting go of the hand, be installed on the mandrel 11 with some compression and perform reciprocating rotational movements on its upper flat base 12 to smooth out the shapeless protrusion of the bottom part from the wrapped edges of the transport container 3 until the guaranteed flat area is formed. After that, the cup 1 can be placed on any flat surface without fear of losing static equilibrium.

[0052] The remaining actions with the packaged cup 1, including its disposal, are similar to Embodiment 01.

[0053] The variability in the use of the claimed group of inventions may be associated with the possibility of giving the beverage-filled cup 1, packaged in the transport container 3, a more original appearance, which can

be fully provided with options of a decorative design of blanks for the transport container 3, skills of the service personnel in the technology of packaging, use of additional and, as a rule, individual specialized devices and appropriate manipulations by hands.

[0054] As a result of the implementation of the group of inventions, the technology for sealing of cups, filled with a variety of beverages and closed with standard lids, which are intended for transportation before consuming their contents, for example, for takeaway sales or for long-distance delivery by order, has been created. This has required a special transport container and an appropriate device to package the sealed cup. In addition, the initial temperature of the contents of a cup is partially maintained and the cup hygienic state during transportation is ensured.

Claims

1. A transport container for packaging a beverage-filled cup, comprising a cover made of aluminium foil and configured in the form of a truncated cone having a bottom on its small base, the size of which corresponds to the size of a standard lid of a sealable cup, wherein an integral tear-off strip with an outwardly protruding tongue is disposed on the inside surface of said cover, around the circumference thereof, at a distance of not less than the height of the lid of the cup, and the height of the cover is greater than the height of a cup sealed with a standard lid. 5
2. The transport container according to Claim 1, **characterized by** the fact that the bottom of the cover is blind. 10
3. A device for packaging a beverage-filled cup in the transport container according to Claim 1, including a mandrel in the form of a rotating solid with flat bases, made with the possibility of fixed placement on a plane, with the upper base having the diameter not exceeding the diameter of the bottom of the cup. 15
4. The device according to Claim 3, **characterized in that** in its upper part the mandrel is provided with a cylindrical section. 20
5. The device according to Claim 3, **characterized in that** in its lower part the mandrel is provided with a cylindrical section. 25
6. The device according to Claim 3, **characterized in that** the mandrel is made of metal. 30
7. A method of packaging a beverage-filled cup for transportation, including the installation of a cup, sealed with a standard lid, on the fixed device, made according to Claims 3-6, after which the transport 35

container, made according to Claims 1 and 2, is put on the cup, and the cup is compressed from top to bottom to contact with the lid, with the walls of the cup and then with the mandrel, after which the cup is removed from the mandrel, and the edges of the transport container are wrapped onto the bottom of the cup. 40

8. The method according to Claim 7, **characterized in that** the edges of the transport container, wrapped onto the bottom of the cup, are pressed against the mandrel with the possibility of its partial rotation to overcome the friction forces. 45
9. The method according to Claim 7, **characterized in that** the immobility of the mandrel is provided by the friction forces from its own weight. 50
10. A beverage-filled cup packaged in a transport container, including a transport container, placed on the cup sealed with a standard lid, which is made according to Claims 1 and 2, fixedly attached to its lid, side walls and bottom by the method according to Claims 7-9. 55

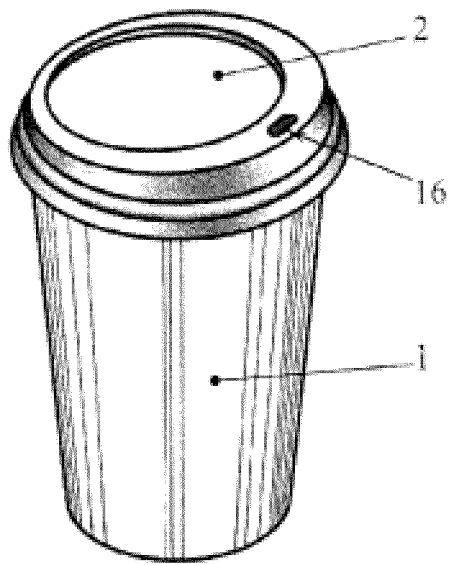


Fig. 1

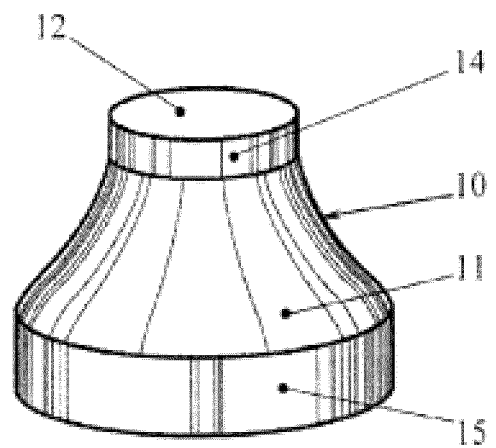


Fig. 2

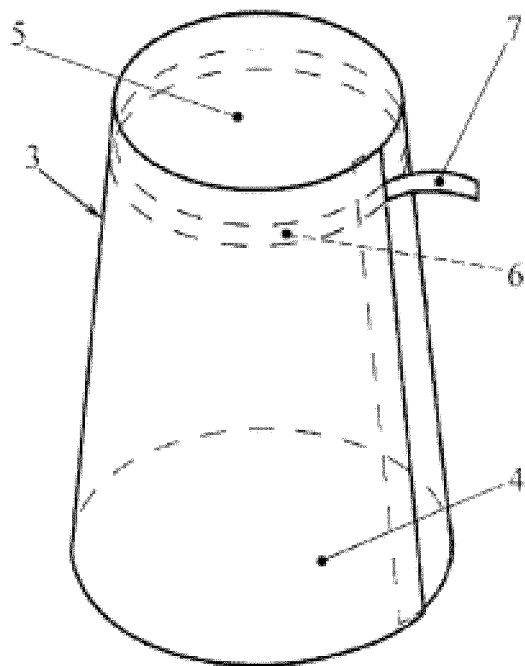


Fig. 3

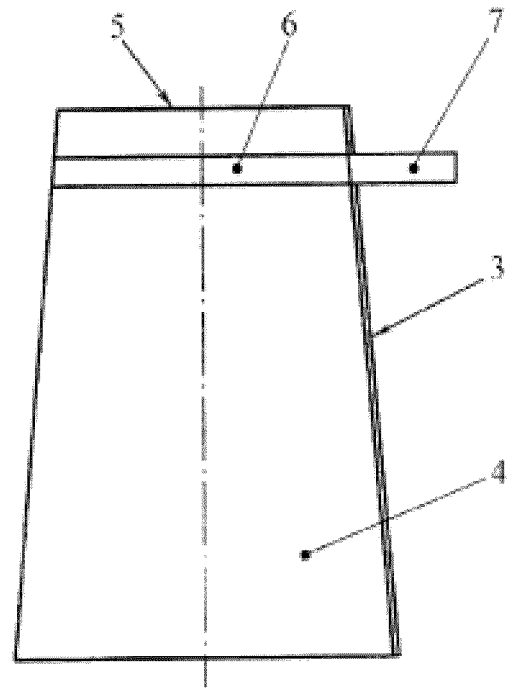


Fig. 4

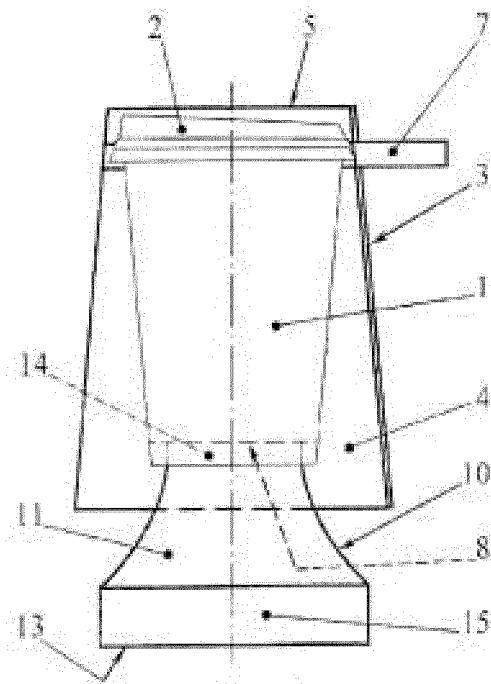


Fig. 5

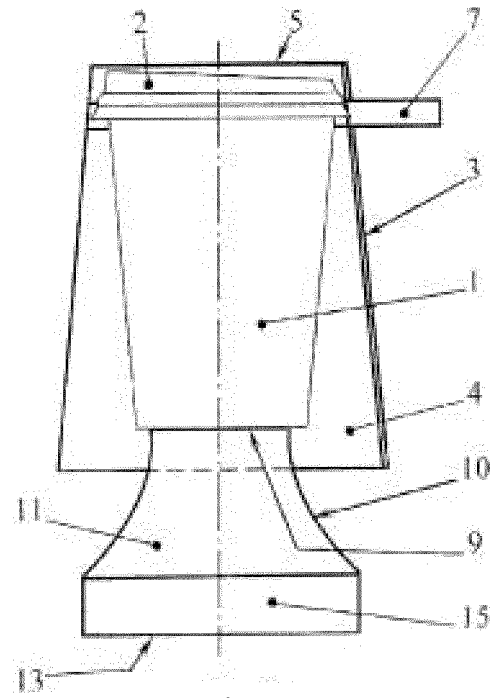


Fig. 6

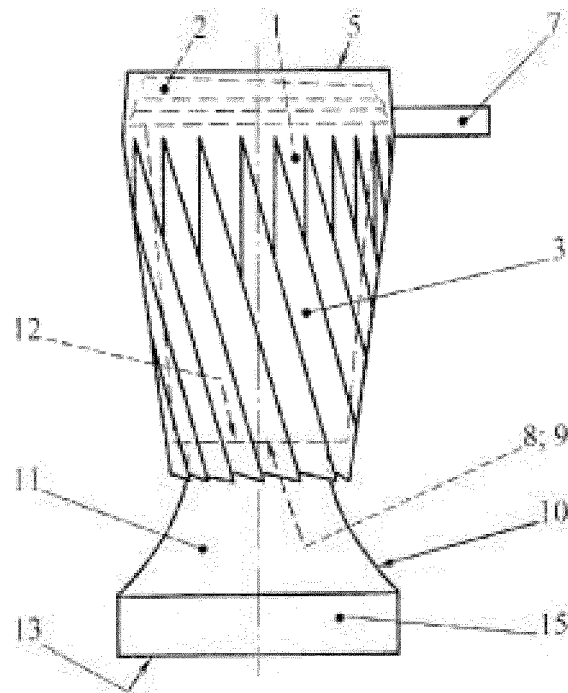


Fig. 7

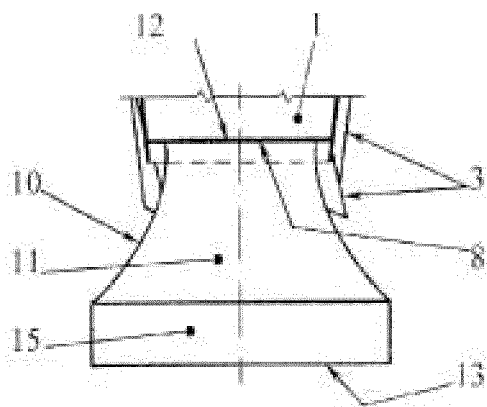


Fig. 8

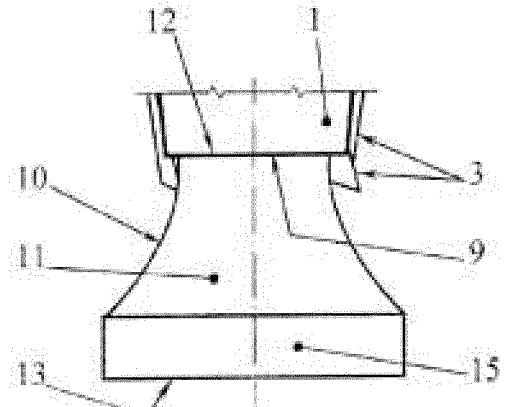


Fig. 10

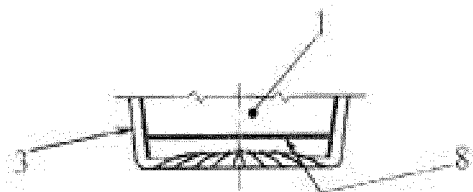


Fig. 9

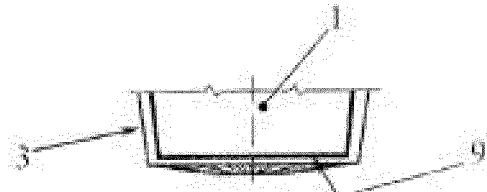


Fig. 11

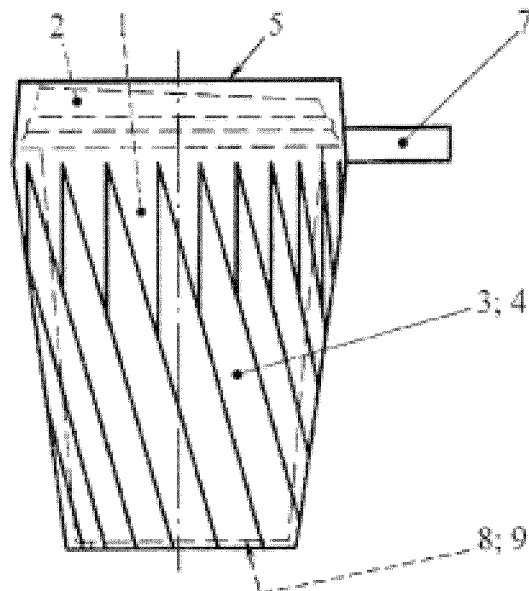


Fig. 12

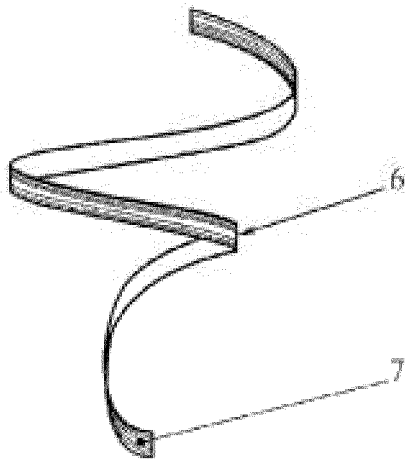


Fig. 13

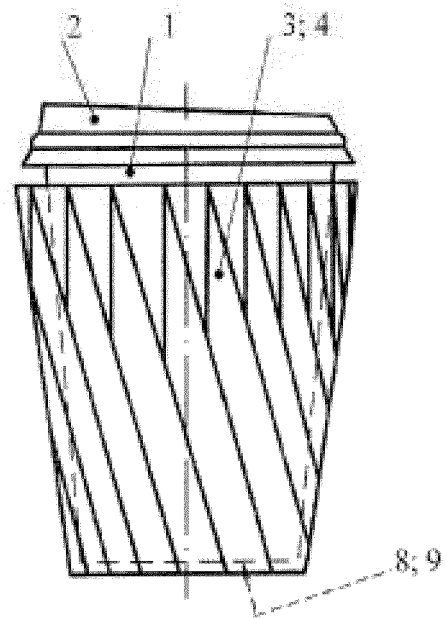


Fig. 15

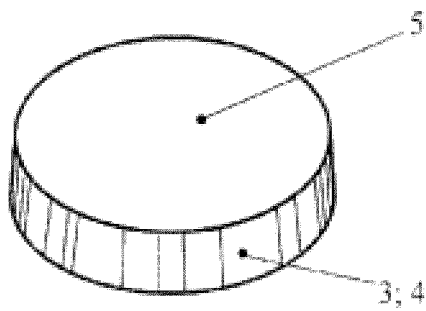


Fig. 14

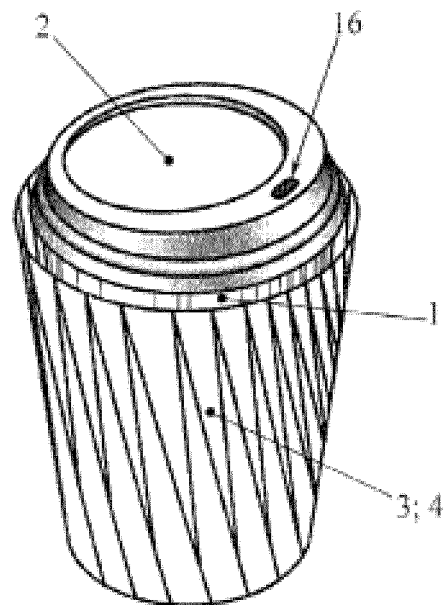


Fig. 16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 2021/000528

A. CLASSIFICATION OF SUBJECT MATTER

(see supplemental sheet)

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 1/00-1/10, 41/21, 41/32, 81/00-81/02, B65B 5/00-5/04, 11/00-11/56, 49/00-49/16

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, K-PION, Esp@cenet, 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.
A	US 4658568 A (PHILIP L. REID et al.) 21.04.1987	1-10
A	US 2007/0189933 A1 (MONTE SOLAZZI) 16.08.2007	1-10
A	US 4199917 A (AMERICAN CAN COMPANY) 29.04.1980	1-10
A	US 3849972 A (EMC CORPORATIN) 26.11.1974	1-10
A	US 635143 A (C. A. MOFFITT) 17.10.1899	1-10

☐

Further documents are listed in the continuation of Box C.

☐

See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

07 February 2022 (07.02.2022)

Date of mailing of the international search report

17 February 2022 (17.02.2022)

Name and mailing address of the ISA/

RU

Authorized officer

Facsimile No.

Telephone No.

RAPPORT DE RECHERCHE INTERNATIONALE

Demande internationale n°

PCT/RU 2021/000528

A. CLASSIFICATION OF SUBJECT MATTER

B65D 1/02 (2006.01)
B65D 1/10 (2006.01)
B65D 81/00 (2006.01)
B65D 81/02 (2006.01)
B65D 41/32 (2006.01)
B65B 5/04 (2006.01)
B65B 11/14 (2006.01)
B65B 11/56 (2006.01)
B65B 49/00 (2006.01)

REFERENCES CITED IN THE DESCRIPTION

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- RU 2683652 [0005]