

Jan. 21, 1969

OD W. CHRISTENSSON

3,423,007

PACKAGE

Filed Sept. 7, 1966

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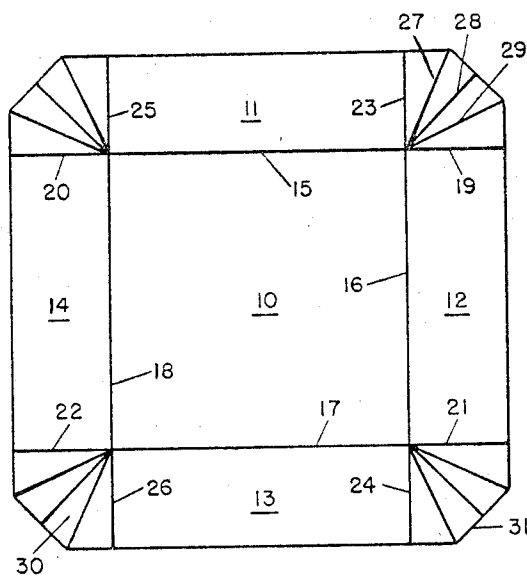


Fig. 1

Fig. 2 A

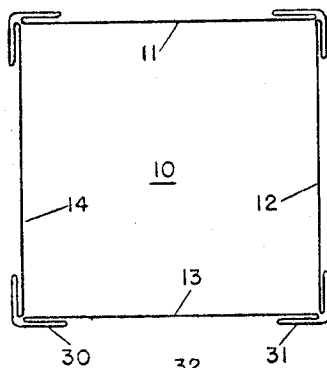


Fig. 2

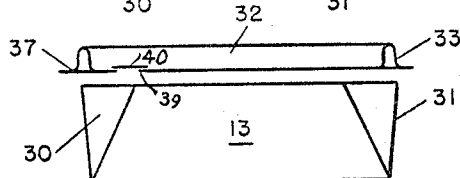
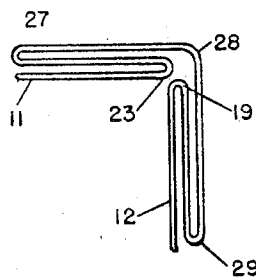


Fig. 3

INVENTOR

OD WIKAR CHRISTENSSON

BY *Larson and Daylor*
ATTORNEYS

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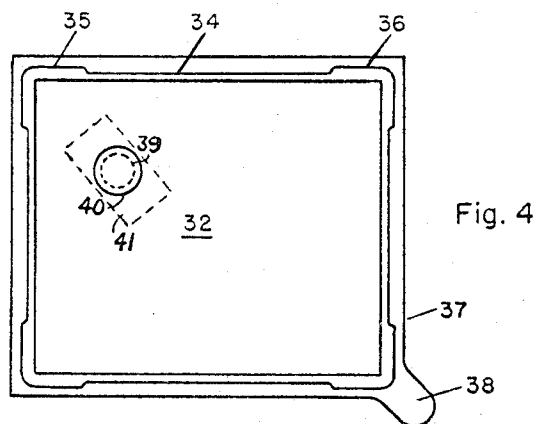
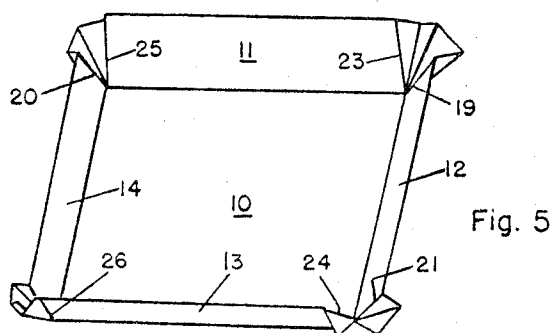
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Sheet 2 of 2



INVENTOR

OD WIKAR CHRISTENSSON

BY

Larson and Daylor

ATTORNEYS

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PACKAGE

Od W. Christensson, Ekbacksvagen 32-34,
Stockholm-Ulvsunda, Sweden

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11 Claims

Int. Cl. B65d 4/24, 5/64, 43/00

ABSTRACT OF THE DISCLOSURE

A food package having a lower part formed by folding a blank along crease lines to form a cup-shaped container, the said shape being retained by a cooperating upper part having a channel which fits over the sides of, and preferably seals the lower part. The crease lines are sufficiently resilient to urge the sides of the lower part outwardly into plate-like form when the upper part is removed.

The present invention refers to a package, especially for foodstuffs. In later times one has in a continuously higher degree turned over to packing foodstuffs in ready prepared form by deep-cooling so that one had thereafter only to heat the product in the package in order that this should be ready for consumption. Simultaneously, it has been still more usual to pack such products in ready adapted portion quantities, so that one package with the product contained therein is given to each person in quick-lunch places, canteens, serving-out localities for school breakfasts and the like. The packages, which were used hitherto for all of these purposes, however, often have been rather little suitable. Thus, it has proved that it may be difficult to open a package which is still deep-cooled, containing a wetting medium, because the formation of ice from this medium attached so well to the package, which was usually made of paper or card-board, that it would not get free from the packed medium. When the package is used for heating the packed product in the package, this has thereafter to be transferred to a plate or other suitable vessel, because the package is not in itself suitable as an eating vessel.

The present invention refers to a package, by means of which these disadvantages are done away with. The package according to the invention should thus be easy to open, and it should have no tendency of ice-bond to the packed material. In its opened state it should have such a form that it is suitable as an eating vessel, which means that it should as to its form be similar to a plate. The last mentioned is of especially great importance from economical point of view in such cases, when the packed product consists in foodstuffs, intended to be given to persons by one such portion to each person. For instance, this is the case in so called school meals, in dining rooms within factories, bureau canteens for quick serving and in many similar cases.

In all of these cases, one has hitherto packed the product in a conventional package, which was opened at the table by the final consumer concerned. Thereby, one could not avoid such accidents, when the packed product flowed out from the package, got lost in part and caused soiling of table linen and the like, perhaps even the consumer's clothes. This shall be avoided by means of the present invention.

In the cases when the package has been opened quite regularly, the packed product has thereafter been transferred to a vessel for eating it, and it was regarded in agreement with this common kind of distribution of food to give to the direct consumer a plate of plastic lined

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paper of a type known per se. Also the cheapest plates of this type, however are relatively expensive, and investigations have proved that the total costs for the distribution package plus the plate concerned will usually amount to up to 20% of the total costs for the product inclusive of the package and the eating vessel. Then it is also obvious that if one could, at a reasonable price, provide a package which simultaneously forms a comfortable eating vessel of attractive appearance, then a substantial saving would be got, which may cause a cheaper price for the meal, or, if the price is retained, a higher quality of the meal. To this adds that in the earlier method personnel had, after the meal was finished, to collect for each person for whom meal had been provided one package and one one-time plate, but when the package according to the present invention is used, this collection work is decreased to half part because one single constructive part is used for both of the purposes.

It has also proved that the collection work in practice with the common methods has got more difficult by the packages usually being difficult to empty completely, and often they could not at all be emptied completely so that residues remaining from the package caused soiling and the collection of them was "dirty." On the other side it has proved in practice that the used plates are usually well cleaned by means of the eating tools, irrespectively if they consist in a knife and a fork or in a spoon. From this one may draw the conclusion that when using a package which functions simultaneously as eating vessel, this will be left by the eating person in an essentially less soiling state than the older packages.

In all packing of the type here concerned, it is also of the utmost importance, especially regarding spreading certain epidemic diseases, that any packing takes place preserving very high demands on hygienics. Preferably, the package should be of such a type that it is closed completely automatically without needing to be touched by human hands, until after it has been hermetically closed. Also in this respect, the packages hitherto existing have been imperfect, but also this disadvantage is effectively avoided by means of the present invention, because the package according to the invention is well adapted for a completely automatized closing work in a machine.

In accordance with this, the production of the package is also, according to the present invention, extremely simple, whereby the costs for the package as well as for its filling and closing is decreased to a minimum.

According to the invention, the package comprises a lower part, which is formed from a blank of card-board or similar material, said blank being creased at its corners so that a number of wedge-formed pieces are separated by the creasing lines, turned with their points onto the corner to be formed of the proper package. These wedge-formed pieces are so dimensioned that when the package is folded together they will in pairs be placed tightly on a piece of the side of the package formed in a corresponding way and with their upper edges level with the upper edge of the package. The package also comprises an upper part, provided with a groove, which on its inner and its outer side clasps the edge of the proper package sides as well as the wedge-formed pieces so that, when the upper part is mounted, the wedge-formed pieces will be kept together in tight contact against the proper package sides. The wedge-formed pieces are preferably not at all attached to the proper package sides, but they may be weakly attached to them, for instance by gluing, pasting or the like, so that they may easily be broken up without destruction of the package.

The consequence will be that when the upper part is removed the bond in the corners either immediately and by itself will be released or it will be possible to release

it by an easy motion. Thereby, the sides are kicked apart so that they are inclined outwardly mainly the same way as the border of a plate. The lower part of the package, however, will not return into its plane form due to the creasing.

One form of execution of the invention will be further described below in connection to the attached drawing, but it is understood that the invention shall not be limited to this specific form of execution, but that one may make all kinds of different modifications without therefore getting outside of the frame of the invention.

In the drawing, FIG. 1 shows the blank or making of card-board or some similar material, from which the lower part is produced, in its cut and creased state but not yet sized into cup-form. FIG. 2 shows same blank from above, after it has been sized into cup-form by bending of the creasing lines, and FIG. 3 shows same blank in cup-form from the side in so called exploded projection together with the lid, forming the upper part of the package. FIG. 4 shows from above the package according to FIG. 2 with the lid mounted on it, and FIG. 5 finally shows the package in the partly bent state, which the package will assume due to the resiliency in the creasing lines, after the lid has been removed.

The blank, of course, may be made from another material than card-board, for instance from a plastic. In an especially advantageous form of execution, the blank is formed from card-board, which has, at least on its inner side but preferably on both sides, been lacquered with a plastic lacquer, resistant against heat, which will form an exceedingly tight layer overall of the surface. Such a layer makes it possible, that the pack is subjected to heat of limited scale, which is nevertheless sufficient for heating food packed in the package to be formed, without the card-board being destroyed. Thereby, it is very suitable that the heating takes place in a high frequency radiation oven.

The package blank comprises a bottom 10, four side-pieces 11, 12, 13, and 14, separated from the bottom 10 by creasing lines 15, 16, 17, and 18, resp. The side 12 and the side 14 are also creased through in the prolongation of the creasing line 15 by means each of one creasing line 19 and 20, resp., and in the prolongation of the creasing line 17 by corresponding creasing lines 21 and 22, resp. In a corresponding way the sides 11 and 13 are creased through by creasing lines 23, 24, 25, and 26 in the prolongation of the creasing lines 16 and 18.

Each corner part is further divided up in four wedge-formed fields by means of creasing lines. As the four corners are of same character, only the corner formed between the sides 11 and 12 shall be further described here. The three creasing lines are there indicated by 27, 28, and 29. The four wedge-formed fields, thus created have substantially the same angles directed with their points onto the corner to be formed in the package between the creasing lines 15 and 16, each comprising 22.5° with some adjustments, which will be evident from the following. All of the four wedge-formed fields have the form of right triangles the hypotenuses of which are formed by the creasing lines 27 and 29 and the cathets of which are formed by the creasing lines 23, 28, and 19. Every second, thus, is turned in one direction, and every second one in the other direction, which causes that the package blank will get the form of a rectangle with its corners or points cut off in an angle of 45°. In the shown form of execution, this rectangle has for gaining a simplified way of explanation, been shown as a square.

When a product shall be packed in such a package, the package blank is put down into a mould which is shaped to turn the sides 11, 12, 13, and 14 inwardly, so that they are bent upwardly perpendicularly to the bottom 10. Thereby, the four wedge-formed fields are bent outwardly and they are thereafter flattened against the sides as shown in FIGS. 2 and 3. An enlarged view of the corner part of FIG. 2 has been shown in FIG. 2A. It is easy to

see from FIG. 2A, that the creasing lines 23, 27, 28, 29, and 19 are, in the said order of sequence, turned alternatively by 180° in the one or in the other direction, however, so that the creasing line 28 is turned only by 90°. As is evident from FIG. 2 and FIG. 3, the visible fields of FIGURE 3 are formed by the side 13 and the two wedge-formed pieces 30 and 31.

To hold the lower part of the package in this state, one can provide the wedge-formed pieces and/or the outer parts of the side pieces with a weakly marked gluing, pasting or the like, but as a rule this is neither necessary, nor even desirable. As a matter of fact, the intention is that a bond of the bent over parts in the corners of the lower part of the package should be created by mounting the upper part 32, FIG. 3, which is provided with a ditch 33, in which the upper edge of the lower part of the package fits. Due to the inclined cutting of the corners of the lower part, see FIG. 1, the upper edge of the side pieces 11, 12, 13, and 14, as well as of the wedge-formed pieces between the creasing lines in the corners, will be placed in one single level. It is true that the part of the package in which the wall has due to the wedge-formed formation got three-fold, will be somewhat thicker, but it has proved in practice that this only helps in forming a still stronger bond.

According to an especially advantageous form of execution of the invention, the upper part 32-33 is provided by deep-drawing of a plastic directly on the lower part, when this is still in the mould, but after it has been filled with the product to be packed. By this step one will in a natural way get an hermetic closing of the package, which can take place in a machine by simple means, so that it is possible during all of the packing procedure to protect the package against direct contact with human hands, whereby the highest possible hygienics may be maintained. To this adds that different single samples of the package may, when bent, get slightly dissimilar, dependent upon the existence of irregular fibre-structure in the card-board, forming the blank of the lower part of the package, so that the dimensions may differ by one or some few tenth parts of a millimetre. By the upper part being shaped directly on the lower part by deep-drawing of a plastic, one will get an automatic adaption of the upper part to the lower part, existing in each separate case.

The deep-drawn upper part is shown in FIG. 4. One will see that the channel enclosing the upper edge of the lower part is thinner in the middle part of each side, for instance at 34, but is thicker at the outer end of the sides, for instance at 35 and 36. It is suitable in mass-production and closing of packages to make the deep-drawing of the upper part on a plurality of lower parts in one single procedure, and the different upper parts will then be combined by inter-pieces between the different packages, which makes it necessary in separate order to cut them free. The cutting tool should preferably be so formed that it will give a weakly extending flange 37 around the edge of the upper part of the package, which has proved to a high extent to improve the stability of the package. Simultaneously, one may cut out an opening tongue 38 at a corner of the package.

It is very easy to open this package. One only has to grip the opening tongue 38 and to draw the lid away, which, if it is made of plastic, as a rule will not attach to the deep-cooled product, also if there should be a substantial formation of ice. Thereafter, usually, the sides move out by themselves under re-forming of the lower part such as indicated in FIG. 5. Certainly, it may happen that ice-formation has caused a bond by moisture having penetrated through the slot between the two creasings 25 and 19, see FIG. 2A, and has in this way got in between the triangular corner closing parts, but this ice-formation will not prevent the two creased parts to be brought out, which consist in the parts between the creasing lines 23, 27, and 28 as well as 19, 29, and 28, where-

after one can without difficulty break the package open, if this should not by itself open.

The difficulty existing in earlier packages for deep-cooled foodstuffs, when their opening was concerned, therefore will not exist in the package according to the invention.

When the package is used for packing portions of food, the package according to the invention makes it possible to heat the food in the still hermetically closed package, in which it is delivered directly to the final consumer. When he opens the package the lower part will by proper force expand into the plate-form, shown in FIG. 5, which is both practical and comfortable to use as a direct eating vessel.

However, in tests with such packages it has proved that certain disadvantages occur. Foodstuffs have to contain liquid for being palatable and usually this liquid is water. During the heating this water is evaporated and as the lid is hermetically closed a steam pressure will be created in the interior of the package, which may get so strong that the lid is forced away from the package, whereby this will lose its property of being hermetically closed until it comes on the table of the final consumer. Even if this should not happen, a deformation of the package and/or its lid will take place. Further formation of moisture will occur, as the water vapor formed will be condensed after the package has been taken out from the heater cabinet, so that a layer of water will be placed on top of the heated food. When opening such a package water steam will get out, which has not yet been condensed, and this water steam will have some but not all of the taste-giving constituents dissolved in it, which often may cause a bad odour which acts disturbing and appetite decreasing. It is therefore extremely important that the water steam created at the heating is let out without assuming a pressure above the atmospheric one inside of the package.

Of course, the simplest way of causing this would be to remove the lid already before the heating, but then an essential part of the hygienic promoting properties of such a package would get lost. Often, one cannot avoid that the servants have, when handling such a package with removed lid, to grip the package with some fingers in contact with the inner side of the package, and even if this could be avoided, the suspicion will still remain at the final consumer that it has happened. Removal of the lid before the heating is therefore not a good solution on the existing problem.

According to a further development of the present invention, a small opening is arranged in the upper part of the package, preferably in its lid, which is sufficiently great to let out the water steam created but is not sufficient for the foodstuffs moving out through the opening as long as the package is kept with the lid turned up. The package must, however be possible to transport, and thereby it should be fully tight. Further impurities may fall down onto the package at times before it is put into the heating cabinet and also this should be prevented. Therefore, the opening is covered with an easily removeable secondary lid, which is removed immediately before the package with its contents of foodstuffs is put into the heating cabinet.

The opening may for instance be covered by means of a tape of plastics which may easily by a simple move be removed without the person removing the secondary lid getting in contact by his fingers with the interior of the package. For supporting the tape of plastics, this may be provided with a small plate on its lower side, well adapted to the opening, whereby the appearance is improved as well as foreign particles are prevented from entering the package. This plate may also be a little greater than the opening so that this will fully be covered by the plate which extends outwardly of its edges for reliable rigidity.

The opening is seen in FIGS. 3 and 4, where it is indi-

cated by 39. It is in such an altitude of the package that it will be well above the foodstuffs stored up in the package, preferably in its lid. This opening 39 is covered by the plate 40 which is not attached to the edge of the opening but on the lower side of a strip of tape 41, which may easily be drawn away, the plate 40 thereby following with the strip of tape, and the opening 39 is uncovered.

It is now assumed, that the package has been filled with the ready prepared dish of foods to be quick served, and that thereafter has the lid been applied such as shown in FIG. 4, with the opening 39 covered by the plate 40 and with this plate retained by means of the strip of tape 41. In this form, the package is delivered to the place, where the food should be served. Before serving, the food should be heated, which suitably takes place in a heating cabinet, as mentioned above.

Immediately before the package is put into the oven, one has to remove the strip of tape 41, and thereby the plate 40 will follow. The opening 39 has been uncovered by this. Thereafter the package together with the dish of food packed therein is heated. No pressure above the atmospheric one is formed, because the steam will freely get away through the opening, now opened. Consequently no deformation of the package will take place due to steam pressure. Nor will there be any greater amount of steam enclosed, which could cause moisture deposits by condensation when the package is later on taken out for consumption of the dish of food contained therein.

Even if the folding picture in the corners of the lower package has been shown above to be of a specific kind, which has in practice proved extremely practical and further will give the completely closed package a very high degree of rigidity, the folding picture may, of course, be subjected to all kinds of modification, dependent upon the circumstances in each separate case.

What is claimed is:

1. A package especially intended for foodstuffs, comprising a lower part and a separate upper part, the lower part being cup-formed having an upper edge forming an upper opening, and the upper part having the form of a lid resting on the upper edge of the lower part, said package being characterized in that the lower part comprises a blank with crease lines around its middle part for separating the bottom of the lower part from the sides thereof, the lower part further including corner parts connecting the side parts, said corner parts being provided with crease lines for forming a number of wedge-shaped sections arranged with their apexes located at the bottom of their respective corner parts, said corner parts being double-folded such that when held in place by the upper part they lie flat against the sides, even in the absence of a permanent bond between them or between them and the sides, and such that the upper edges of the corner parts lie at the same level as the upper edges of the sides, such that the upper edges of the corners and of the sides form the said upper edge of the lower part, the upper part, when mounted on the lower part, including a channel all around its circumference and shaped to receive, hold and sealingly engage both the upper edges of the sides and the upper edges of the doubled-folded corner parts, the said crease lines having sufficient resilient force to urge the sides of the lower part of the package outwardly and said lower part being sufficiently free of a permanent bond so that when the said channel of the upper part is removed from the lower part the sides of the lower part will move outwardly into plate-like form.

2. A package according to claim 1, in which the corners of the lower part are provided with three crease lines in addition to and between the creasing lines for separating the corner parts from the package sides, said additional crease lines being directed radially for defining four wedge shaped sections, two of which adjacent each other being double-folded and bent against one side of the lower package part and the two other ones likewise being double-

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folded and bent against their adjacent side of the lower package part.

3. A package according to claim 2, in which the four wedge-shaped sections have substantially the same apex angle.

4. A package according to claim 3, in which the wedge apex angle is about 22.5°.

5. A package according to claim 1, in which the upper part is made from a plastic, deep-drawn onto the lower part.

6. A package according to claim 1 in which the lower part is made from card-board, and includes a lacquer coating on at least its inner side.

7. A package according to claim 1, including a small opening in the upper part, said opening being sufficiently large to permit the escape of steam formed during the heating but not so large that the foodstuffs may move out through the opening, said opening being covered by a removable secondary lid adapted to be removed immediately before the package, together with its contents of foodstuffs, is heated.

8. A package according to claim 7, in which the opening is covered by a strip of tape.

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9. A package according to claim 8 in which the opening is covered by a plate.

10. A package according to claim 9, in which the plate has a magnitude adapted to cover the said opening.

11. A package according to claim 9, in which the plate has a shape substantially similar to but larger than the said opening.

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U.S. Cl. X.R.

229—43; 220—44