June 22, 1965 K. I. HOLMSTROM 3,190,531

CONTAINER

Filed Oct. 25, 1962 2 Sheets-Sheet 1

Fig.1

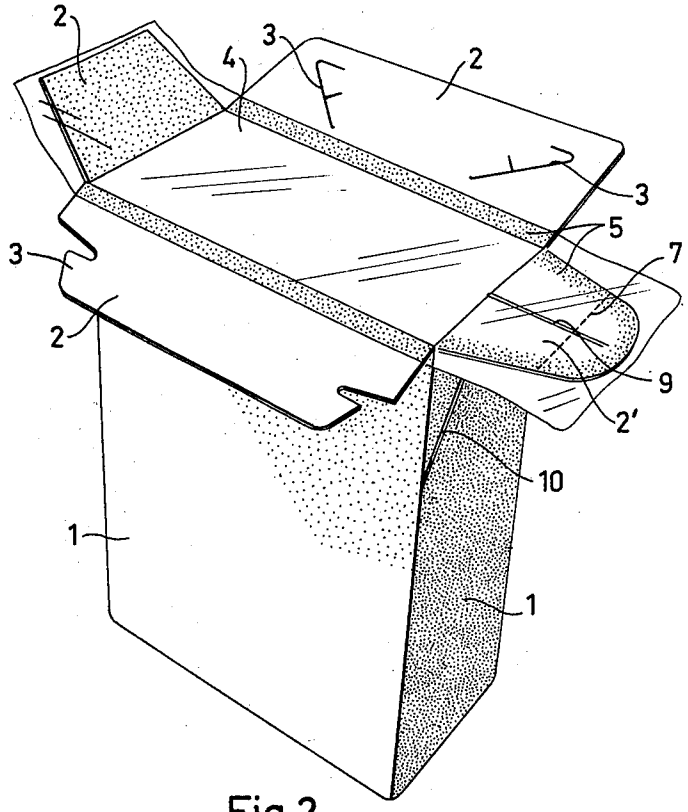
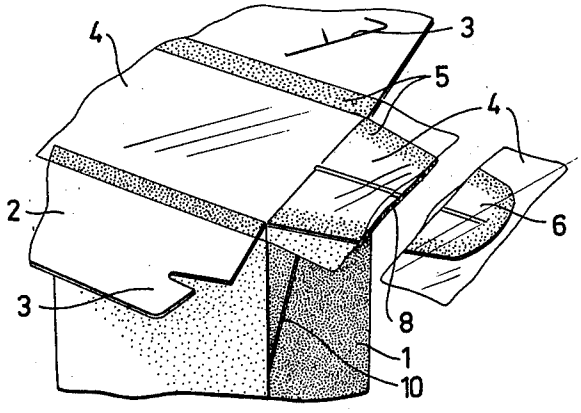


Fig.2



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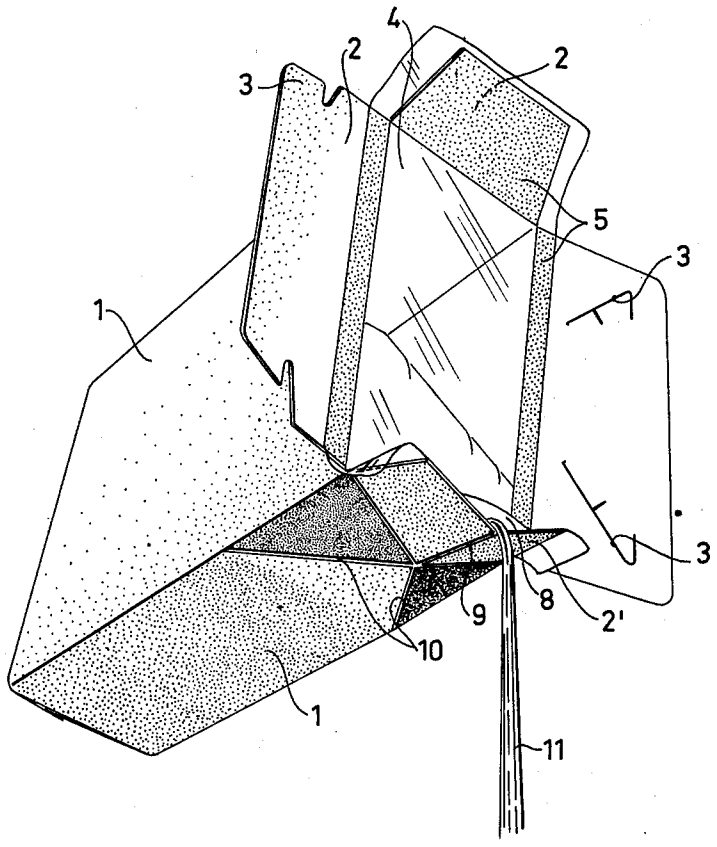
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Fig. 3



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CONTAINER

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The present invention relates to a container consisting of side wall panels, bottom and flaps arranged at the top end of the side wall panels, for the purpose of, in a well-known way, forming the top closing of the container, and a cover-sheet placed across the opening of the container and attached to the insides of the flaps when swung outwards in a 90° angle, by means of a continuous seal running around the opening.

Containers intended for packaging finely granulated or pulverized contents, as for instance sugar or flour, will have to be sufficiently tight to prevent the contents from leaking out during the transportation of the container or when subject to normal handling. It is furthermore a requirement that it should be easy to open the container in a way that admits easy access to the contents, and later on, if not the whole of the contents has been dispensed, it should be possible to re-close the container in such a way that no contents are spilled when the container is placed on its side, or, for instance, placed upside down.

For containers of the type concerned it is known to place a cover-sheet over the opening of the container, said cover-sheet being fixed to the inner parts of the insides of the flaps by means of a continuous glued seal running around the opening. A container of this type fulfils the above requirements as regards tightness as long as the sealing of the container remains unbroken, i.e. as long as the cover-sheet is not removed. When this has been done, there will only be the mentioned flaps left to be used for the closing of the container. A closing of the container by means of flaps only, folded on top of each other and holding each other together, will, however, only prevent a completely free flow of the contents, while on the other hand leakage is not prevented if, for instance, the container is placed upside down.

This disadvantage is avoided by means of a container in accordance with the invention, which is characterized therein that the cover-sheet on at least one of the mentioned flaps is applied, by means of an approximately U-shaped, continuous seal extending across the body part of the flap, in such a way that an outwards open channel is formed between the flap and the cover-sheet through cutting off the body of the flap as well as the cover-sheet by a cut through the legs of the U-shaped seal behind the seal section connecting the legs. The channel formed when the container is opened may thus, with regard to tightness, be re-closed in a satisfactory way by folding the flaps in the familiar way inwards and over the cover-sheet and by locking same to each other.

As the flap, as well as the sheet attached on top of it, is flat and consequently has a very small area of discharge, the channel between the flap and the cover-sheet will, in order to facilitate dispensing, have to be widened during dispensing and subsequently re-closed in order to prevent wastage. This widening of the discharge channel is facilitated if the flap, together with the side wall panel adjoining it, are provided with crease lines in a suitable way.

A container in accordance with the invention is described in the following with reference to the enclosed diagrammatical drawing.

FIG. 1 shows a container sealed with a covering sheet, the top flaps of the container being in a swung out position.

FIG. 2 shows a detail of the opening flap of the container after its outer end has been cut off.

FIG. 3 shows an open container from which the contents is being dispensed.

The container shown in FIG. 1 consists of four side wall panels 1, bottom, and four closing flaps 2, which are arranged to be locked, after being folded over the top of the container, in a folded position by means of locking arrangements 3 on two of the flaps. The opening of the container is furthermore covered by a covering sheet 4, which is fixed to the inside of the flaps 2 along a closed, glued seal or welding 5 running around the opening. At one of the flaps 2' the seal 5 has been arranged in a U-shaped arch along the whole length of the flap, in the main following its edge line. Thereby an area is formed on the inside of the U-shaped seal, where the covering sheet 4 and the flap 2' are not glued to each other. The side wall panel adjoining the flap 2' is furthermore provided with converging crease lines 10, arranged for outwards creasing, which from their point of convergence at the middle point of the flap 2' continue in a crease line 9 extending across the whole length of the flap 2'. In order to facilitate the removal of the top part 6 of the flap 2' when opening the container, the flap 2' as well as the cover-sheet applied on top of it may be provided with a perforation 7.

FIG. 2 shows the flap 2' after the removal of its outer part 6 by a cut (for instance cutting or tearing along a perforation) through the body part of the flap. In the middle area a channel 8 is then formed between the flap 2' and the cover-sheet 4. The channel 8, which opens outwards, is limited along the flap 2' by the seal 5 running along either side of the channel 8.

In FIG. 3 the container is shown with the discharge channel 8 widened during the dispensing of contents 11. Otherwise FIG. 3 is marked with the same symbols as FIG. 1.

The container, which after filling has been sealed with the cover-sheet 4 attached by a continuous glue seal 5 running around the opening of the container, is after the sealing tight for finely granulated or pulverized contents, as for instance sugar and flour. In order to ensure that the cover-sheet 4 forms a tight sealing as described, it is important that the top edge lines of the side wall panels be located with a high degree of accuracy at the same level. The weak points of the tightening are naturally formed in the corner points, where the glued seal becomes relatively narrow. Through using a suitable material in the container and ensuring that the flaps 2 in manufacture are not completely separated right down to the corner points, a fibrous tuft is formed at the corner points when eventually torn open and the flaps 2 are swung outwards in 90° angle to the outside of the side wall panels, and this tuft has proved to form a satisfactory under-layer for the glued seal in the corner points and consequently to form a satisfactory tightening. Another way of solving this problem is to apply a tensile plastic layer, for instance polyethylene, on the inside of the side walls and the flaps, and to avoid cutting the flaps 2, or at least the plastic layer applied on these, right down to the corner points. When the flaps 2 are swung out to a position when they are in about 90° angle with the outer sides of the container, a triangular area of stretched, but otherwise intact, plastic film is formed in the corner points between the swung out flaps.

The container, which in this way has been provided with cover-sheet 4, is then further closed by folding the flaps 2 across the opening of the container and by locking the larger flaps, shown in the figure, over the smaller flaps by means of the locking arrangements.

In order to make the contents of the container acces-

sible again the locking arrangement 3 is undone, whereafter the flaps are swung upwards. The flap 2', at which the glued seal 5 does not follow the edge line of the opening, but extends in an arch across the flap, is, in the example of embodiment illustrated, provided with a perforation extending across the body part 6 of the flap 2'. When the outer part of the flap is torn off a channel 8 is formed between the flap 2' and the cover-sheet 4, extending from the interior of the container out into the free air. When the flap 2' is flat the channel 8 has a very small area of discharge, wherefore in this position it is of little use as a passage through which the contents could be dispensed. By means of the crease lines 9 and 10 shown in FIGS. 1 and 3 the channel 8 may, however, be widened in the way shown in FIG. 3. The crease lines 10 which commence at the vertical edges of the side wall correlated to end flap 2' converge and meet the crease line 9 in flap 2' at its base point established by the junction of this flap with the side wall. Crease line 9 extends along the flap 2' bisecting the U-shaped reentrant portion of the seal zone. The three crease lines thus establish an outwardly foldable inverted Y-shaped crease pattern facilitating widening of the pouring channel 8. When the upper part of the container near the flap 2' is pressed together, by pressing lightly near the flap 2', the flap 2' as well as the upper part of the side wall panel adjoining this flap are folded along the crease lines 9 and 10, respectively. The cover-sheet 4 on the flap, which in this way is folded into V-shape, is thereby bending in the opposite direction in relation to the flap 2', resulting in a widening of the channel 8. When the required quantity of the contents 11 has been dispensed from the container the pressure applied against the upper part of the side wall panels of the container is relaxed, whereby the channel 8 again contracts when the flap 2' and thereby the attached side wall panel straighten out by spring action. In order to prevent leakage the flap 2', after the required quantity of the contents has been dispensed from the container, is again folded across the cover-sheet 4, whereby the channel is closed in a satisfactory way. In order to fix the flap 2' in this position, when the container is not being used, the other flaps 2 are also folded over the container 4, whereafter the larger flaps, by means of the locking arrangement, lock themselves as well as the smaller flaps.

It is naturally within the scope of this invention possible to visualize embodiments other than the one explained here. One of these alternatives may be achieved if, for instance, the flap position opposite the flap 2' is first folded across the cover-sheet 4, and then both the larger flaps 2 are folded in the same way and fixed to each other or alternatively to the cover-sheet by means of a layer of glue. The remaining flap 2' may thereafter be folded back over the already fixed flaps 2 and be locked to these by means of an easily opened slot or fastening point. The container is in this case opened by bending the flap 2' upwards into vertical position. The outer part of the flap is removed in the way previously explained, whereafter the channel formed between the cover-sheet and the flap 2' may be widened, in the way previously described, through pressing together the upper part of the container on either side of the flap 2'. In order to make it possible in this case for the cover-sheet 4 to bend outwards the corners of the larger flaps adjacent to the flap 2 may be cut off preferably before the gluing. When the container again is closed after dispensing the flap is again bent backwards over the previously fixed flaps. In order to secure the flap in this position it may also for instance be provided with a tab or anything similar, which is intended to be put into a corresponding slot made in any of the other sealed flaps.

The cover-sheet 4 applied, in the method of construction first described, may preferably be made of a transparent material, whereby it will be possible to inspect the contents of the container.

I claim:

1. A container comprising a plurality of walls forming a hollow open ended body portion of the container, end closure flaps hingedly connected to each said wall along the openable end of the container, each said flap being substantially coextensive in width with the width of the corresponding wall of the container, a sealing sheet covering the open end of the hollow portion of the container and overlapping all of said flaps and all corner portions between said flaps when the flaps are swung outwards to lie in a substantially common plane, and said sheet being sealed to all of said flaps and said corner portions in a seal zone along a path around the container flaps, said seal zone including a reentrant portion on one of said flaps having an essentially U-shaped configuration such as will establish an outwardly opening pouring channel between said flap and said sealing sheet upon cutting off a part of said flap and sealing sheet along a cut line extending through said U-shaped reentrant portion of said sealing zone.

2. A container comprising a plurality of walls forming a hollow open ended body portion of the container, end closure flaps hingedly connected to each said wall along the openable end of the container, each said flap being substantially coextensive in width with the width of the corresponding wall of the container, a sealing sheet covering the open end of the hollow portion of the container and overlapping all of said flaps and all corner portions between said flaps when said flaps are swung outwards to lie in a substantially common plane, and said sealing sheet being sealed to all of said flaps and said corner portions in a seal zone along a path around the container flaps, said seal zone including a reentrant portion on one of said flaps having an essentially U-shaped configuration such as will establish an outwardly opening pouring channel between said flap and said sealing sheet upon cutting off a part of said flap and sealing sheet along a cut line extending through said U-shaped reentrant portion of said sealing zone, said flap of said container which includes said reentrant portion of said seal zone being provided with a first crease line extending outwardly from a base point established by the junction of said flap with the corresponding side wall along a line bisecting said U-shaped reentrant portion of said seal zone, and said corresponding side wall being provided with two other converging crease lines commencing at the vertical edge lines of said corresponding side wall and which meet said first crease line at the base point thereof, said crease lines establishing an outwardly foldable inverted Y-shaped crease pattern to facilitate widening of said pouring channel.

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