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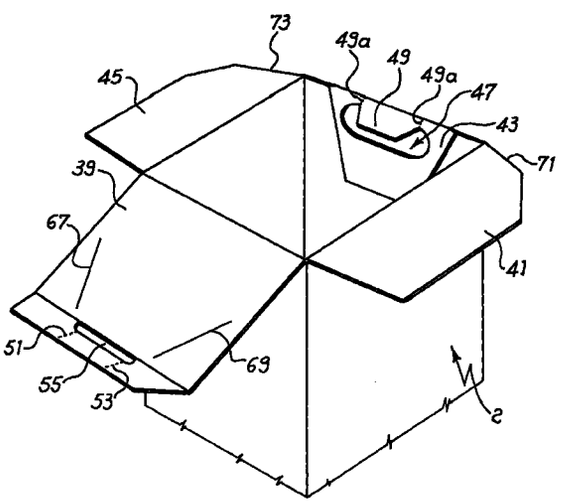
(54) Container with a safety connecting link closure

(57) A box assembled from a die-cut blank element (1), folded and glued to form a tubular body, comprises a slot (55) provided in a flap (39) and at least one projecting tongue (49) defined by an opening (47) provided in a wing (43), firmly placed side by side on the inside surface of the box for which when the flap (39) is folded up to form one of the bases. the slot (55) engages the tongue (49) and when the box is opened a partial laceration of the tongue and/ or of the flap occurs.

Fig.2



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Description

This invention relates to a box with a security closure destined to contain, for instance, bottles for medicinal substances.

With this type of closure, the user is able to ascertain whether the box has been opened at least once previously to replace, remove or interfere with its contents.

This type of box must also satisfy other requirements: it must allow the user to close and reopen the box again when necessary.

Furthermore, the box must be low cost, easy to assemble and capable of being assembled with high-speed packing lines.

One purpose of the present invention is to furnish a box that is able to satisfy these demands simultaneously.

This purpose is achieved by the present invention, which relates to a box according to Claim 1.

According to a preferential embodiment of the invention, the projecting portion that projects internally into the box, and/or the flap that engages this projecting portion, are provided with means that allow for at least partial laceration once the box has been opened.

The advantages of the invention will become evident from reading of the following description and from examination of the enclosed drawings in which:

Fig. 1 is a plan view of the die-cut blank of the box according to the invention;

Fig. 2 is a prospective view of a detail of the box assembled from the die-cut blank of Fig. 1 before the closure;

Fig. 3 is a similar view to that of Fig.2, after the opening of the box; and

Fig. 4 is a view of the box closed again after the opening.

With reference to Fig. 1, the die-cut blank 1 is shown in its open form and from the printed side, i.e. from the side that corresponds to the external side of the assembled box.

The die-cut blank is divided into portions, 3, 5, 7, 9 respectively by parallel fold lines 11, 13, 15 and comprises an edge 4 that allows the die-cut blank to be folded and glued to form a tubular body 2 (Fig. 2). The closure of the tubular body 2 is normally effected by means of wings and flaps like, for instance, the lower wings 17 and 19 and the flap 21 that project downward from the die-cut blank portions 3, 7 and 9 respectively. They serve to close the bottom of the box.

Secondary lower fold lines 23, 25, 27 are respectively provided between each wing or flap and its respective portion. The side of the wing 19, which is substantially on the prolongation of the fold line 13, presents a missing portion forming a tooth 29. Equally, the side of the wing 17, which is on the prolongation of the fold line 11, presents a missing portion forming a tooth 31.

The flap 21 presents, in its free extremity, a fold 33 that finishes in its two extremities with cuts 37, 35 respectively. The fold 33 is more internal with respect to the cuts 37 and 35, i.e. it is offset slightly toward the fold 27. The cuts 37, 35 are around 2 mm longer than the teeth 29, 31 as they serve to engage the same teeth respectively after the closure of the lower base of the box. This type of closure is known in the art but doesn't guarantee the inviolability of the packaging in that it is not possible to say whether the box has been opened and closed again. Therefore, in the box according to the present invention this system of lower closure will have been completed or replaced by a glued system, of a type known in the art, between wings and flap 21.

The flap 39, the wings 41 and 45 and the additional wing 43 respectively project upward from the portions 9, 7, 5, 3. Lines of secondary upper fold 40, 42, 44, 46 are provided between the upper elements 39, 41, 43, 45 and the portions 9, 7, 5, 3 respectively.

The wing 43 is equipped with an opening 47. This opening 47 has such a profile as to define a tongue 49 that projects towards the inside of the opening and is directed substantially toward the free extremity of the flap 43.

Furthermore, the secondary upper fold line 44 extends for about the length of the opening 47 and finishes each extremity with partial cuts, i.e. "half cuts" of the thickness of the die-cut blank, 57 and 59, which facilitate the folding of the flap. The flap 43 is subsequently folded up and its free extremity is glued to the inside surface of the portion 5 as shown in Fig. 2, so that, due to the fold 44 and to the partial cuts 57 and 59, the tongue 49 projects toward the interior of the box, distancing itself from the portion 5.

The flap 39 is provided in proximity of its free extremity with a slot 55 in which (with box closed) the tongue 49 engages and with a fold line 61 that terminates with cuts 63, 65 to facilitate the folding of the same free extremity. The flap 39 could also be equipped with two break-off lines 51, 53 that link the slot 55 to the free extremity of the same flap.

On the flap 39 there are also provided a pair of fold lines 67, 69 that converge in direction of the slot 55. These lines together with the cuts 63 and 65 serve for make the flap 39 elastic and permit the flap 39 to be pressed toward the interior of the box in the packing phase until the slot 55 engages with the tongue 49. In this way, when the flap 39 is released, it returns elastically to its position of rest, hooking the tongue 49 in a secure way.

The wing 41 is provided, in correspondence with the side that lies on the prolongation of the fold 13, with a missing portion forming a tooth 71. Equally the wing 45 is provided, in correspondence of the side that lies on the prolongation of the fold 11, with a missing portion forming a tooth 73.

Unlike that first described with reference to the traditional type or wings 17 and 19, in a preferential embodiment, the teeth 71 and 73 present a greater height than the depth respectively of the cuts 65 and 63 to prevent the first from getting jammed in the second during the assembly of the top base. Always to such end, the fold line 61 is not offset, like in the traditional flap 21, but is aligned with the cuts 65 and 63. In this way, the closure of the box in this extremity is entrusted to the joint between the tongue 49 and the slot 55 of the flap 39.

Reference will be made to the figures describing the assembly and the employment of the box drawn from the die-cut blank 1 now.

First of all, the die-cut blank is made to assume a tubular condition by gluing the edge 4 to the inside of the portion 3. In this condition the box is still flat and is kept flat up to the moment of packing, when it is erected and formed in a known way by folding the lower base up and superimposing the flap 21 and the wings 19 and 17; preferably flap and wings are glued to give a permanent closure.

As shown in Fig. 2, the free extremity of the wing 43 is glued in the zone 43a to the inside surface of the portion 5, in this way affords the tongue 5 projects elastically toward the lower part inside the tubular body. The fold 44 and the partial cuts 57 and 59 also favour the position engaged by the tongue.

The product, for instance a bottle, is introduced into the box from the top, then the wings 41, 45 are folded toward the interior of the tubular body.

At this point the flap 39 is folded up toward the upper base.

Particularly the extremity frees itself from the flap 39 is inserted into the hollow of the box until the tongue 49 hooks the inside of the slot 55. In this way, the upper base is complete and the box has been closed.

The converging fold lines 67, 69 facilitate closure of the box. In practice, a small pressure on the top flap directed towards the interior of the box causes the flap to bend slightly downwards. This causes the slot 55 to sink further to hook the tongue 49 more easily.

The flap recovers its former shape as soon as this pressure is removed.

When, to open the box, the user lifts the flap 39, the effort is transmitted the tongue 49 and the opening causes the partial separation of the tongue 49 from the flap 43 along the lines outlined 49a. The tongue 49 remains attached to the box only along the fold line 44 and remains lifted toward the top; the only resistance to opening is given by the tongue-slot engagement since, as said, there is no teeth-half cuts joint in the upper base like that in the lower base. This allows easier sizing of the length of the lines 49a so that the tongue tears along 49a on the application of a certain strength (fig. 3).

But, the function of closure of the tongue isn't lessened by the partial separation of the tongue. In fact, if the user desires close the box again, the tongue is able to engage in the slot again, so maintaining the top flap closed.

In the case that the flap 39 is equipped with the break-off lines 51, 53, they will break as well as the tongue in the zone indicated by the lines 49a. In this embodiment, because the box is closed again after it has been opened the first time, the flap 39 needs to be pushed toward the interior until it engages under the (broken) tongue 49, i.e. until the tongue rises above the flap (Fig. 4). Obviously, this can also happen if there is only partial breaking of the tongue.

From the moment that the box can only be opened via the top flap 39, the user is always forced to break either the tongue 49 or the break-off lines 51 and 53 of the top flap 39, or both.

The box allows to the user to see if it has been previously opened. As mentioned above, the cuts 63 and 65 are not able to engage the teeth 71 and 73 and the closure of the box, after the first opening, is entrusted to the tongue alone.

Therefore even with the box closed, if, from the outside, it is possible to see the tongue in almost horizontal position inserted into the slot, then the box has been opened previously. This is because when the tongue is no longer integral with the flap it remains in substantially horizontal position.

If instead it is not possible to see the tongue from the outside with the box closed, that means that the box has never been opened. In fact, when the tongue is integral with the flap 49 also in the zone indicated by the lines 49a, it is forced to project obliquely downward.

This check is facilitated if the tongue is of a different color to that of the other parts forming the box.

Furthermore, if during the opening of the box the user notices that the action of opening happens too easily, that means that the box has been previously open.

Therefore the purpose of the invention has been achieved in that a box has been produced that allows the user to ascertain in an unequivocal way if others have already opened it at least once.

Claims

1. Box comprising a tubular body formed by a folded and glued die-cut blank element (1), and a plurality of wings (17, 19, 41, 45) and folding flaps (21, 39) to close the extremities of the box, characterized in that the box comprises furthermore at least one projecting portion (49) on said die-cut blank (1) corresponding to at least one extremity of the tubular body, said projecting portion, or portions, being capable of a restrained engagement with the corresponding closure flap (39) present on said extremity of the tubular body.

2. Box according to Claim 1, characterized in that said projecting portion (49) and/or said closure flap

present means (49a; 51; 53) for their at least partial laceration following the opening of the box.

3. Box according to Claim 2, characterized in that said projecting portion (49) is a tongue defined by an opening (47) provided in an additional wing (43), said wing (43) being firmly placed side by side on the inside surface of the corresponding portion (5) of the tubular body of the box.

4. Box according to any of the preceding claims, characterized in that said additional wing (43) is defined by a fold line (44), said fold (44) terminating at its extremities in a pair of lines (57, 59) of partial cutting.

5. Box according to Claim 4, characterized in that the length of the line (49a) between said opening (47) and said fold (44) is sized to provoke the breakup of the wing along such line (49a) in succession to the lifting of said closure flap (39).

6. Box according to any of the preceding Claims, characterized in that said closure flap (39) is equipped with a fold line (61) and cut lines (63, 65) in alignment.

7. Box according to Claim 6, characterized in that said closure flap (39) presents fold lines (67, 69) converging in the direction of its free extremity.

8. Box according to any of the preceding Claims, characterized in that said closure flap (39) comprises break-off lines (51, 53) that link the slot (55) to the free extremity of the same flap.

9. Box according to any of the Claims from 4 to 8, characterized in that said closure flap (39) cooperates with closure wings (41, 45), said closure wings being provided with teeth (71, 73) longer than the length of the said cut lines (63, 65) of the closure flap (39).

Fig.1

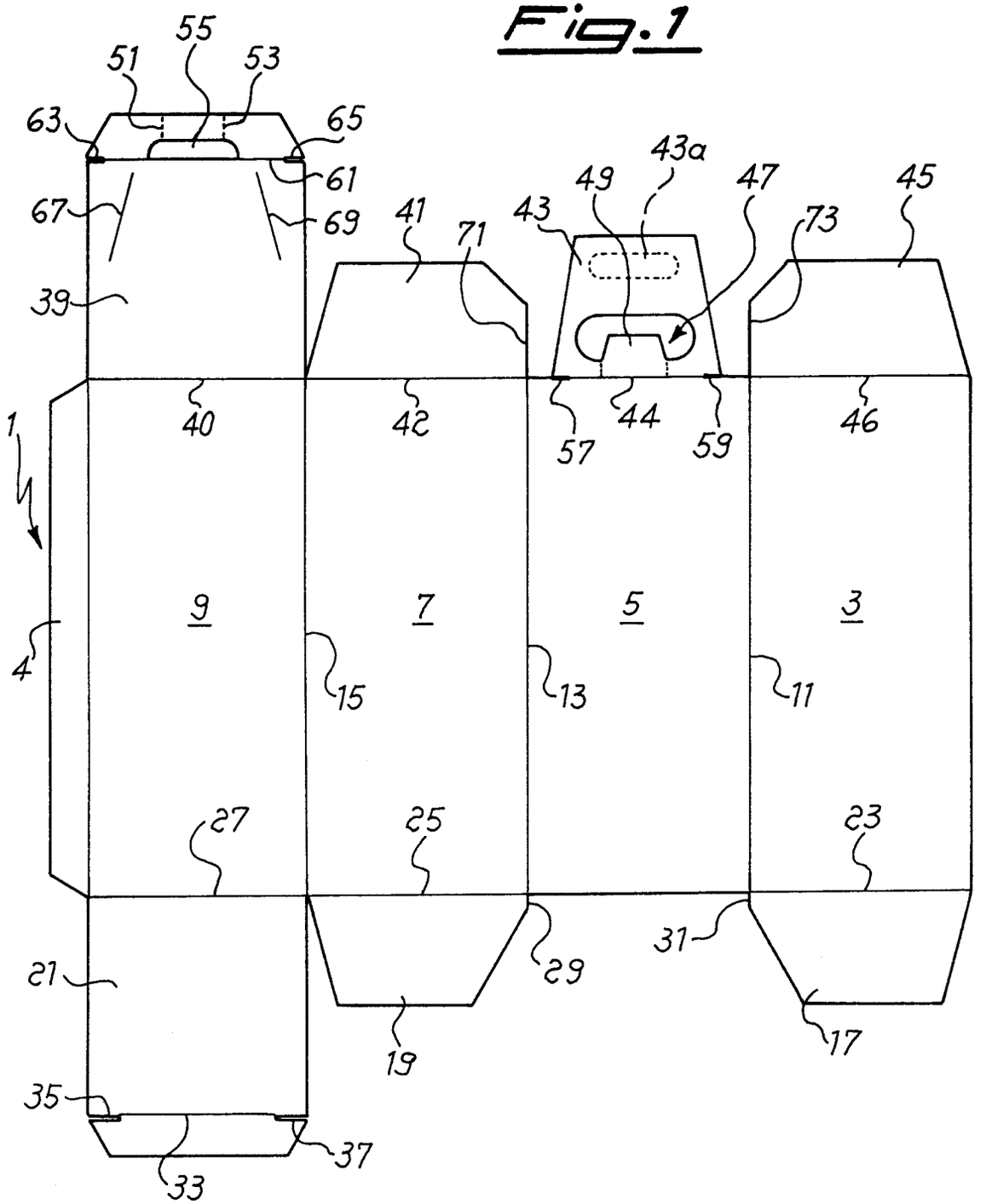
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Fig.2

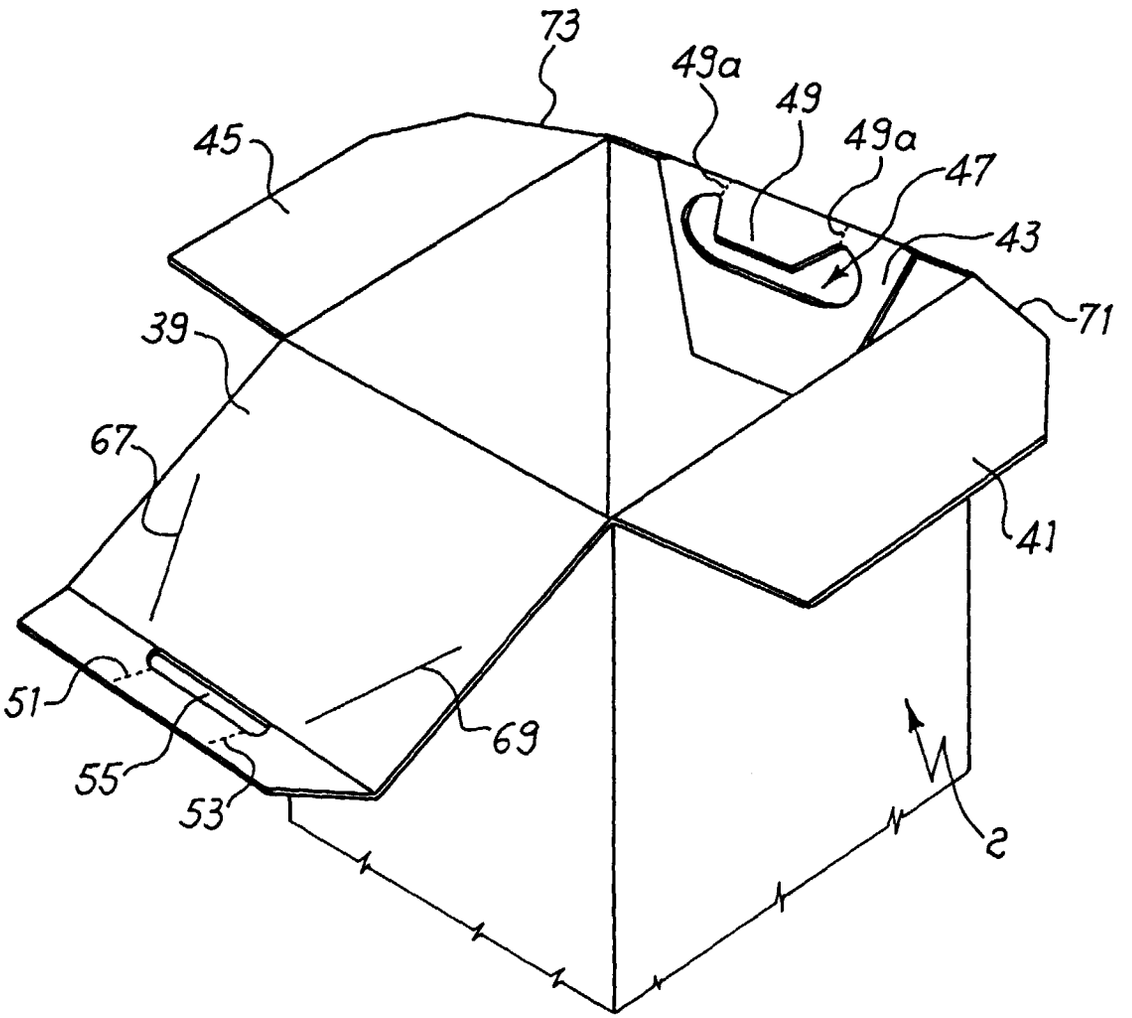

Fig.3

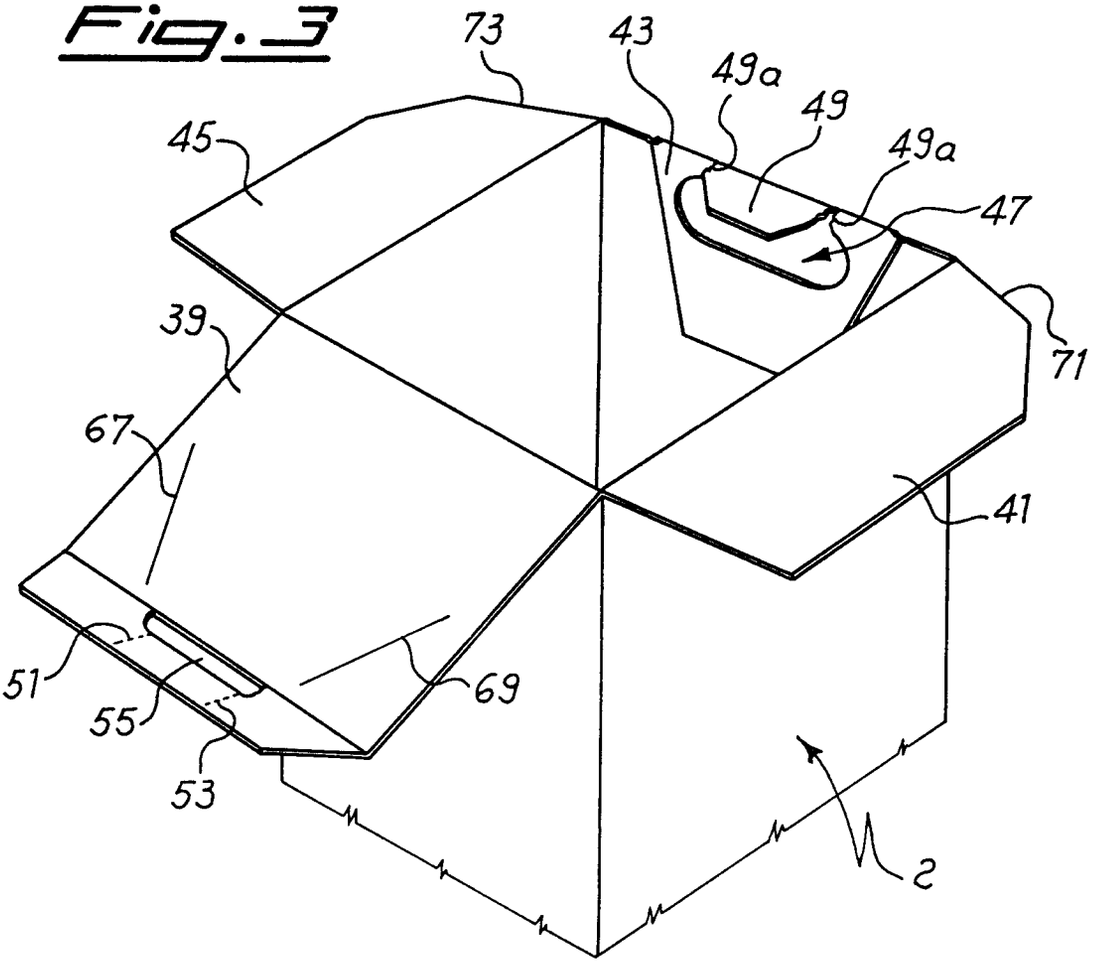

Fig.4