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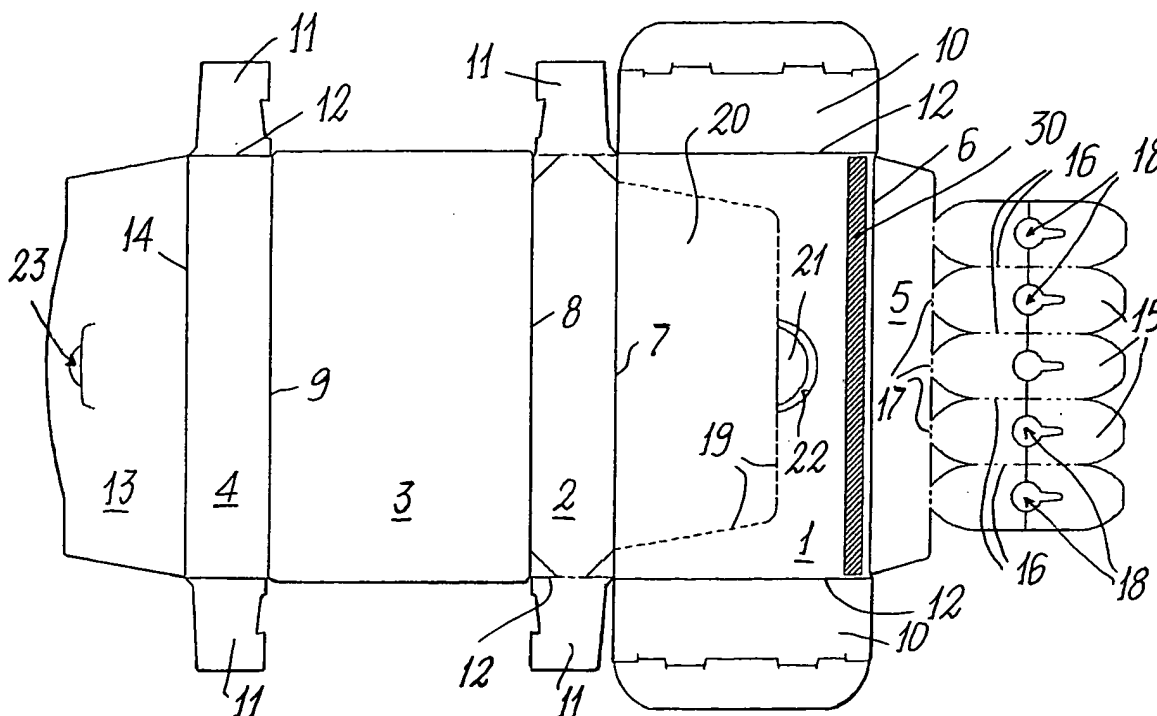
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(54) **Box with removable strips for gripping the neck of glass vials**

(57) A box formed from a single piece of cardboard for containing glass vials or the like, the box comprising a plurality of removable appendices with each of which

the neck of a glass vial can be reliably gripped and retained when the neck is broken off and removed from the vial.



**FIG. 1**

## Description

**[0001]** The present invention relates to a box formed from a single piece of punched crease-lined and knurled cardboard (or similar material) for containing glass vials or the like, the box comprising appendices with which the neck of a vial can be reliably gripped and retained when the vial is opened by cutting or breaking off its neck.

**[0002]** Many pharmaceutical products and other products of different kinds are preserved in glass vials having a cylindrical body from which a narrow elongate neck extends: to use these products the neck of each vial must be broken off and removed from the respective body, with the danger that the person effecting this operation may be injured by the sharp edges of the broken glass. To avoid injury, many persons use cotton or gauze pads to grip and retain the neck to be removed from the body of the vial, which is usually contained in a cardboard box or the like. To ensure that a pad or other device is always available to grip the neck of each vial during breakage, also a plurality (in a quantity at least equal to the number of vials) of such pads or devices would have to be also inserted into the box housing the vials, however this would create serious technical problems with consequent cost increase, deriving from their automatic insertion into boxes into which the vials and a leaflet illustrating their contents and use have also to be inserted.

**[0003]** The main object of the present invention is therefore to provide a box able to contain glass vials or the like, the box being formed from a single piece of cardboard having some of its portions shaped as appendices which can be individually removed and used by an operator to grip with two fingers of the hand the neck of each vial when being broken off, so preventing danger of damage or injury to the operator.

**[0004]** Another object is to locate these appendices such that they are protected inside the box when closed, but can be easily withdrawn from the box when one of the appendices is to be used.

**[0005]** A further object is to provide a box of low production cost which enables the vials and possible illustrative leaflets to be inserted into it with the same machines and in the same manner used on boxes of known traditional structure.

**[0006]** These and further objects are attained by a box comprising:

- four consecutive main panels (1-4) and a flap (5) projecting from the first main panel (1), said main panels and the flap being separated from each other by longitudinal parallel folding lines (6-9), and
- two closure panels (10) and tabs (11) projecting from the ends of respective main panels (1, 2, 4) and separated from them by transverse folding lines (12) perpendicular to the longitudinal folding lines (6-9), characterised in that

- from the fourth main panel (4) there projects a secondary panel (13) which is separated from it by a folding line (14) also parallel to said longitudinal folding lines (6-9);
- from said flap (5) there project a plurality of elongate appendices (15) separated from each other and, respectively, from said flap by breakable knurlings (16, 17), in each appendix (15) there being provided a hole (18) for passage of a vial neck;
- said flap is rotated about its longitudinal folding line (6) and is glued onto the first main panel (1);
- the fourth main panel (4) and the secondary panel (13) are folded about the respective longitudinal folding lines (9, 14) and the first main panel (1) is folded about that longitudinal folding line (7) which separates it from the adjacent main panel, the first main panel (1) and the flap (5) with the appendices (15) projecting from it being superposed on the secondary panel (13) onto which said flap (5) is glued;
- in the first main panel (1) there being provided a breakable knurling (19) bounding a lateral lid (20) rotatable about the longitudinal folding line (7) which separates the first from the second main panel (1, 2), said lateral lid being directly superposed on said elongate appendix (15) to enable it to be withdrawn when the knurling (19) is broken and the lateral lid (20) is opened into a raised position.

**[0007]** Preferably, a projection (21) defined by a cut (22) provided in the first main panel (1) extends from that side of the lateral lid (20) opposite the folding line (7) which joins the lid to the adjacent main panel (2) of the box, there being provided in the secondary panel (13) a cut defining a slot (23) into which said projection (21) can be inserted and is retained to maintain the box closed after opening the lateral lid (20) by breaking the knurling (19) bounding the lid.

**[0008]** The invention also relates to the single punched, crease-lined and knurled sheet of cardboard or similar flexible material for forming a box having the aforesaid characteristics.

**[0009]** The structure and characteristics of the box of the invention will be more apparent from the ensuing description of a preferred embodiment thereof given by way of non-limiting example with reference to the accompanying drawings, in which:

Figures from 1 to 4 represent a punched, crease-lined and knurled cardboard sheet shown stretched out in plan view and in its successive respective stages of folding to form a box;

Figure 5 is a perspective view of the box, with its lateral lid open to show the positioning of the appendices for gripping the vial necks;

Figure 6 is similar to Figure 5, but shows the lateral lid reclosed after some appendices have been removed from the box; and

Figure 7 shows the side elevation of a vial, to the

neck of which a cardboard appendix gripped between the two fingers of one hand has been applied.

**[0010]** Reference will firstly be made to Figures from 1 to 4, showing a piece of punched, crease-lined and knurled cardboard comprising four consecutive main panels 1-4 and, projecting from the first main panel 1, a flap 5 which are separated from each other by longitudinal parallel folding (crease) lines 6-9.

**[0011]** Two closure panels 10 project from the two opposing ends of the panel 1, while tabs 11 project from the ends of the panels 2 and 4; the closure panels 10 and the tabs 11 are separated from the respective main panels by transverse folding (crease) lines 12, perpendicular to the longitudinal folding lines 6-9.

**[0012]** The cardboard sheet described up to this point (and consequently the box obtainable from it) is of known type and is, in particular, totally similar to that of the box illustrated in EP-B-0709293 and EP-A-1340684, which are incorporated herein for reference. From the main panel 4 there projects a secondary panel 13 which is separated from it by a folding line 14 also parallel to the longitudinal folding lines 6-9.

**[0013]** From the flap 5 there project five elongate appendices 15, separated from each other and respectively from said flap by breakable knurlings 16, 17, in each appendix 15 there being provided a hole 18 allowing passage of the neck of a vial, as explained hereinafter.

**[0014]** To form the box, starting from the condition in which the cardboard sheet is spread out flat (Figure 1), a glue strip (30) is firstly applied to the panel 1 in proximity to the crease line 6, then the flap 5 is rotated about the longitudinal folding line 6 to superpose the flap and the elongate appendices 15 onto the surface (to face the interior of the finished box) of the main panel 1, on which the flap 5 is fixed by the glue 30 (Figure 2).

**[0015]** The main panel 4 (and with it the secondary panel 13) is rotated about the longitudinal folding line 9 to superpose them both on the panel 3, a glue strip 40 then being applied to the flap 5 (Figure 3).

**[0016]** The panel 1 (and with it the flap 5 and appendices 15) is then rotated about the longitudinal folding line 7 (Figure 4) to glue the flap 5 to the secondary panel 13 such that the folding line 6 is very close to (virtually superposed on) the folding line 14; in this manner the appendices 15 become positioned between the main panels 1 and 2, with the secondary panel 13 within the interior of the box, the formation of which by its manufacturer is hence terminated. Packs of flattened boxes as in Figure 4, in which the boxes are superposed on each other to form a pack, are despatched to the user firm which, by means of commonly used automatic machines of known type, gives the boxes their final shape to receive the products to be contained therein.

**[0017]** To this end, the machines press against the opposing folding lines 7 and 9 (Figure 4) to urge them towards each other so that the box assumes a parallelepiped shape, then rotate and close the tabs 11 and clo-

sure panel 10 provided at one end of the box, after which they insert the vials (housed in appropriate containers of any known type) together with any illustrative leaflets (not shown in the drawings) into the box, and finally close the tabs 11 and panel 10 provided at the other end of the box, which is hence completed.

**[0018]** Before describing the method of using the described box, it should be noted (see specifically Figure 1) that in the main panel 1 there is provided a breakable knurling 19 defining a lateral lid 20 which (after breakage of the knurling 19) can be rotated about the longitudinal folding line 7, there extending from the lateral lid 20 (from the side opposite the folding line 7) a projection defined by a cut 22 provided in the panel 1. In the secondary panel 13 there is also provided a cut, defining a slot 23 of dimensions such as to enable the projection 21 of the lateral lid 20 to be inserted into it.

**[0019]** Assuming that the box is closed after its final completion, the lateral lid 20 will lie facing the box exterior. To open the box the user lifts the projection 21 away from the cut 22 and pulls it outwards from the box, causing the knurling 19 to break and the lateral lid 20 together with the panel 2 to rise outwards (with reference to Figure 5): in this manner the vials can be extracted from the box, with the appendices 15 (resting on the secondary panel 13) remaining uncovered and accessible from the box exterior. In this manner the appendices 15 can be pulled off one by one by breaking the knurlings 16 and 17: each appendix 15 can then be used by passing through its hole 18 the neck 50 projecting from the body 51 of a vial (Figure 7), after which the appendix can be folded back on itself to enable the user to grip the vial neck 50 (Figure 7) with two fingers and break it away from the body 51, so avoiding any danger of the sharp edges of the vial glass being able to injure the user's fingers.

**[0020]** After one or more appendices 15 have been torn from the box, the box can be easily reclosed by sliding the lateral lid 20 below the secondary panel 13 until the projection 21 of the lateral lid 20 has entered the slot 23 in the secondary panel 13, hence ensuring that the box is maintained in its closed position (Figure 6); alternatively, if desired, the lateral lid 20 can be superposed on the secondary panel 13, then care being taken to insert the projection 21 into the slot 23 to maintain the box closed.

**[0021]** From the foregoing description, the structural and constructional simplicity of the box is apparent, as are the ability to make up and use the box in the manner of a common box of known type, and the always easy access to the appendices 15.

## Claims

1. A box formed from a single piece of cardboard with removable appendices for gripping the neck of glass vials and the like, comprising:

- four consecutive main panels (1-4) and a flap (5) projecting from the first main panel (1), said main panels and the flap being separated from each other by longitudinal parallel folding lines (6-9), and 5
  - two closure panels (10) and tabs (11) projecting from the ends of respective main panels (1, 2, 4) and separated from them by transverse folding lines (12) perpendicular to the longitudinal folding lines (6-9), **characterised in that** 10
  - from the fourth main panel (4) there projects a secondary panel (13) which is separated from it by a folding line (14) also parallel to said longitudinal folding lines (6-9); 15
  - from said flap (5) there project a plurality of elongate appendices (15) separated from each other and, respectively, from said flap by breakable knurlings (16, 17), in each appendix (15) there being provided a hole (18) for passage of a vial neck; 20
  - said flap is rotated about its longitudinal folding line (6) and is glued onto the first main panel (1);
  - the fourth main panel (4) and the secondary panel (13) are folded about their respective longitudinal folding lines (9, 14) and the first main panel (1) is folded about that longitudinal folding line (7) which separates it from the adjacent main panel, the first main panel (1) and the flap (5) with the appendices (15) projecting from it being superposed on the secondary panel (13) onto which said flap (5) is glued; 25 30
  - in the first main panel (1) there being provided a breakable knurling (19) bounding a lateral lid (20) rotatable about the longitudinal folding line (7) which separates the first from the second main panel (1, 2), said lateral lid being directly superposed on said elongate appendices (15) to enable them to be withdrawn when the knurling (19) is broken and the lateral lid (20) is opened into a raised position. 35 40
2. A box as claimed in claim 1, **characterised in that** a projection (21) defined by a cut (22) provided in the first main panel (1) extends from that side of the lateral lid (20) opposite the folding line (7) which joins the lid to the adjacent main panel (2) of the box, there being provided in the secondary panel (13) a cut defining a slot (23) into which said projection (21) can be inserted and is retained to maintain the box closed after opening the lateral lid (20) by breaking the knurling (19) bounding the lid. 45 50
3. A single punched, crease-lined and knurled sheet of cardboard or similar flexible material for forming a box having the characteristics of claims 1 and 2. 55

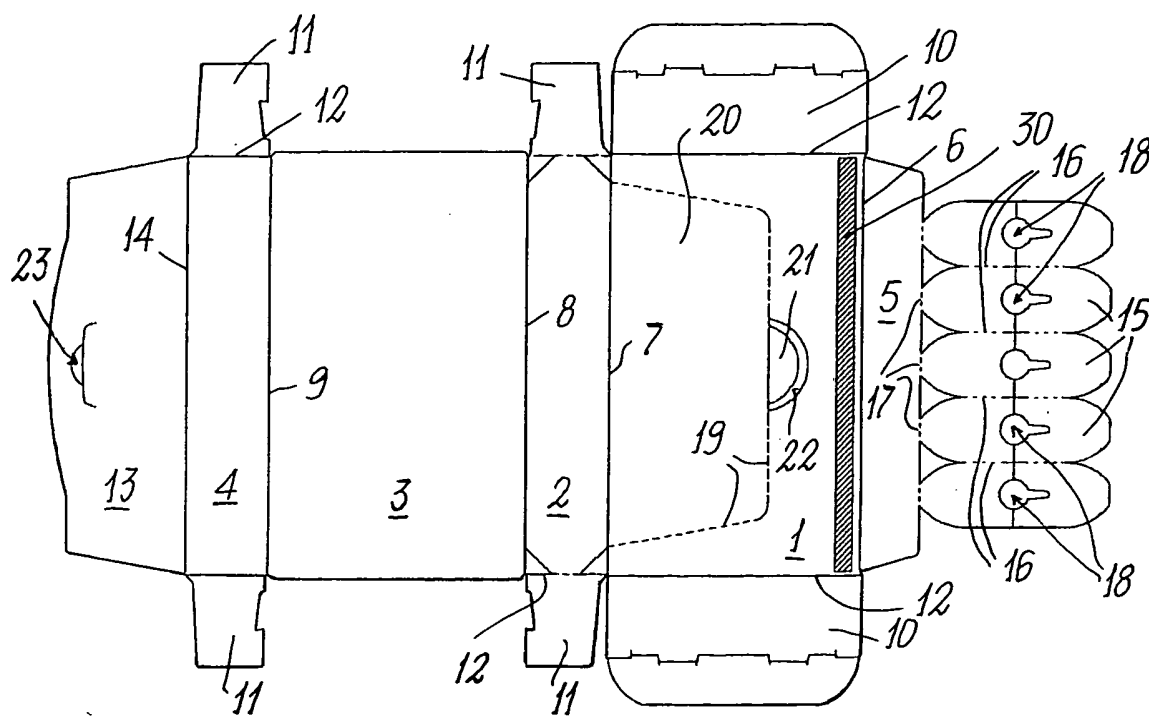


FIG. 1

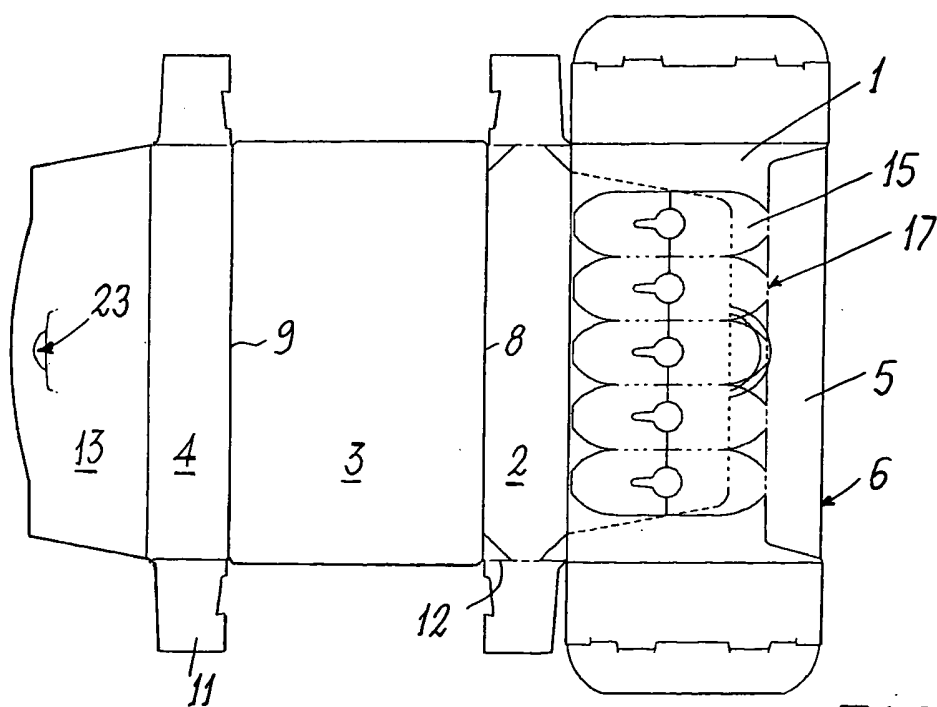


FIG. 2

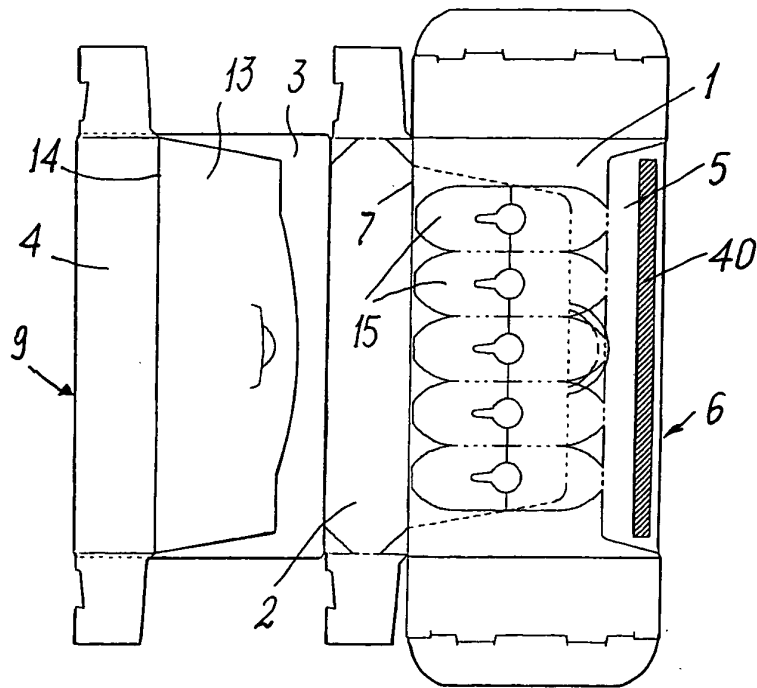


FIG. 3

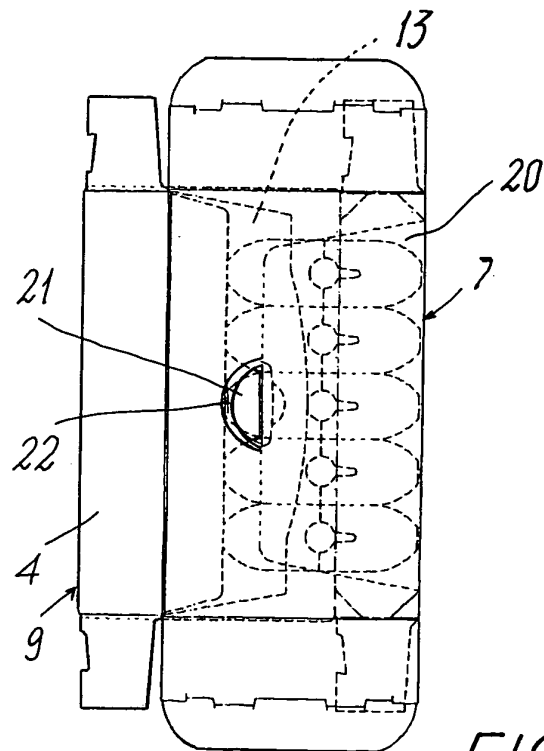
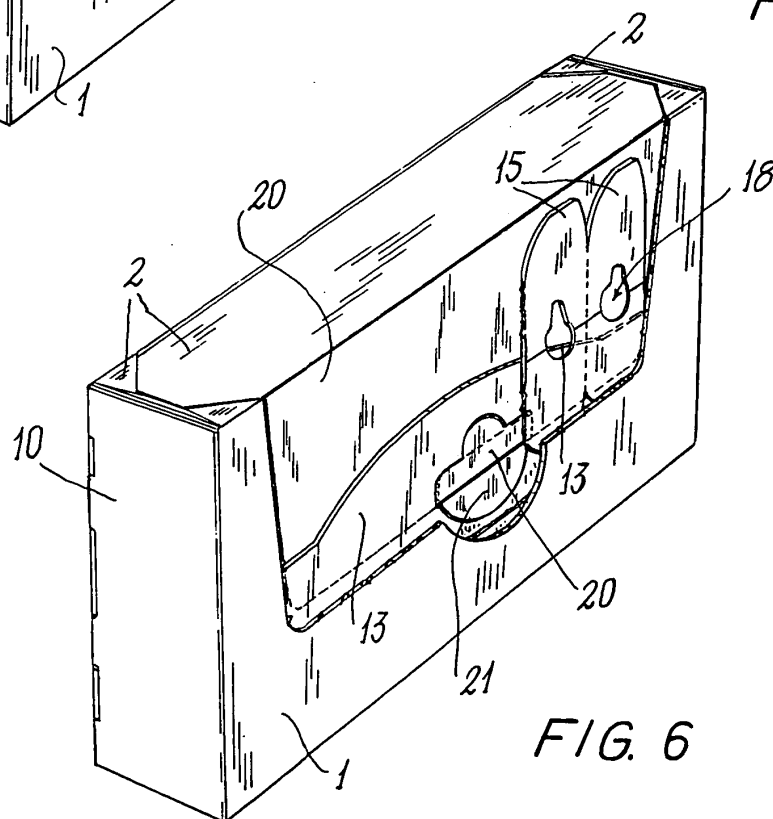
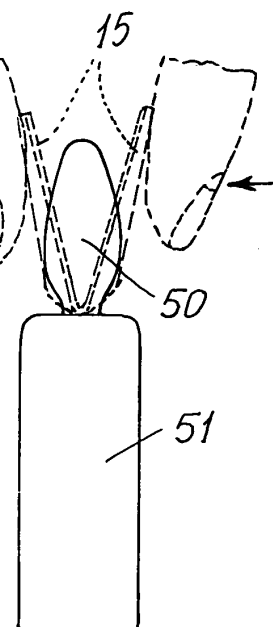
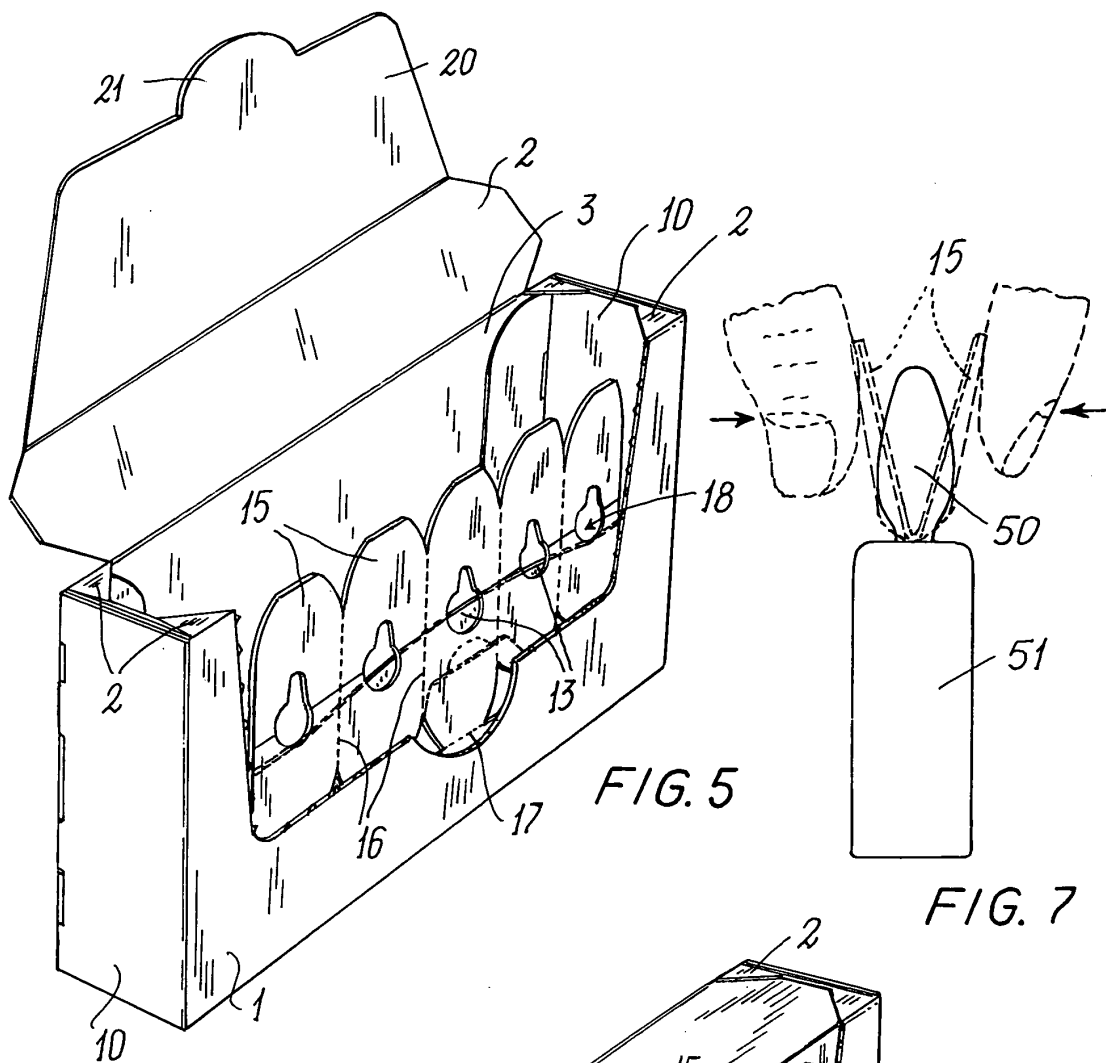


FIG. 4





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Application Number  
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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                                                                          |                                                                                                                                                                                                                                                                                       |                                               |
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| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                                                                          |                                                                                                                                                                                                                                                                                       |                                               |
| Place of search<br>Munich                                                                                                                                                                                                                              |                                                                                                                                          | Date of completion of the search<br>23 February 2005                                                                                                                                                                                                                                  | Examiner<br>Jervelund, N                      |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                                                                          | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                               |

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