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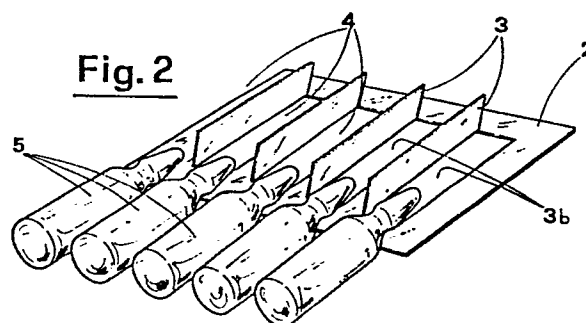
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⑤④ **Element for separating small size and/or large vials in a rectangular section container.**

⑤⑦ The invention envisages the element 1 being constituted by a sheet 2 out of which are cut a plurality of separating flaps 3 that are hinged, with respect to the said sheet 2, along an axis 3a and, when rotated with respect thereto, adopt two positions, namely a closed position and an operative position.

In the latter, the flaps 3 are : perpendicular to the sheet 2, parallel one to the other, and complementary to corresponding slots 3b made in the said sheet 2 that define a number of spaces 4 in which an identical number of vials 5 can be placed.

The unit constituted by the element 1 and the vials 5 is destined to be inserted freely into a rectangular section container 6.



Element for separating small size and/or large vials in a rectangular section container

The invention relates to an element for separating small size and/or large vials in a rectangular section container, and belongs to the specific field of packaging vials, for medicinal use, in rectangular section containers of a pre-  
5 determined capacity.

As is known, the intrinsic fragility of vials does not allow the placing freely thereof inside the rectangular section container, and thus the use is rendered necessary of an  
10 element that serves to separate one vial from another and, at the same time, contributes to the overall strengthening of the pack, preventing the vials from being directly subjected to the action of any stress at the time of packaging.

15 For this purpose, it is customary to use synthetic resin elements moulded on thermoforming machines that take the form of trays provided with separating elements fashioned directly out of the plastic film.

20 Another solution, that has been present for some time on the market, is constituted by an element of corrugated section, sometimes strengthened with a flat base, wherein the alternation of empty spaces and fully moulded parts defines, in each case, a housing for one vial and a separating element,  
25 respectively.

Whilst, from the functional point of view, the thermoplastic tray solution cannot be criticized, it has limitations since a very costly machine is required for the production of the

trays and thus the overall cost of the product is affected to no mean extent. Another problem with this particular method comes from the fact that each size of vial requires a different mould, thereby causing production costs to rise still further.

With the corrugated section solution the disadvantage also exists of it not being possible to use rationally the space for the placing of the vials in the rectangular container and, as a result of this, the container having to be oversized in keeping with the number of vials placed therein.

The object of the invention is to make available an element for separating small size and/or large vials in a rectangular container, that is easy to produce, is of a limited cost, is made of inexpensive material, that allows good use to be made of the available space and is such that the dimensions thereof can easily be varied.

Emphasis is given hereinafter to the characteristics of the element according to the invention, with particular reference to the accompanying tables of drawings, in which :

- Figure 1 shows, in a perspective view, the blank with the flaps in the "closed" position;
- Figure 2 shows, in a perspective view, the element with the flaps in the "open" position and with the vials about to be placed therein;
- Figure 3 shows, in a perspective view with some parts removed, the element in question inserted in the rectangular container, with each vial inserted in the appropriate space;

- Figure 4 shows, in a perspective view, a constructional variant for the element depicted in an identical condition to that shown in Figure 2;
- Figure 5 shows, in a front view, an example for packaging vials in two superposed layers;
- Figure 6 shows, in a front view, an example for packaging vials in two layers in accordance with the variant depicted in Figure 4.

10 With reference to the said figures, shown at 1 is an element constituted essentially by a sheet 2, in particular of cardboard, provided with parallel separating flaps 3 that are cut out of the said sheet 2, hinged, with respect thereto, along an axis 3a.

15 The said flaps 3, from the closed position (Figure 1), are placed in the operative position (Figure 2) through pressure applied thereon (arrow F) and a consequent rotation of each flap around the corresponding axis 3a. The said "pressure" is applied by known means that are not illustrated and are extraneous to the invention described herein.

25 Each flap is complementary to a corresponding slot 3b made in the said sheet 2. When in the operative position, the said flaps 3 are placed in a plane perpendicular to the said sheet 2 and, in this way, define a plurality of spaces 4 able to accept an identical plurality of vials 5 (Figure 2).

30 At 6 is shown a rectangular section container in the form of a carton destined to receive freely, at one open end, a unit constituted by an element 1 and vials 5 (Figure 3).

In the constructional variant shown in Figure 4, two lateral flaps 2b are provided, formed by folding the said sheet 2, parallel to the said separating flaps 3 and oriented identically thereto. The said lateral flaps 2b render easier the insertion of the said unit into the container.

Shown at  $F_1$  and  $F_2$  in a first embodiment (Figure 5) and a second embodiment (Figure 6) are two superposed rows of vials inserted in a suitably sized rectangular section container.

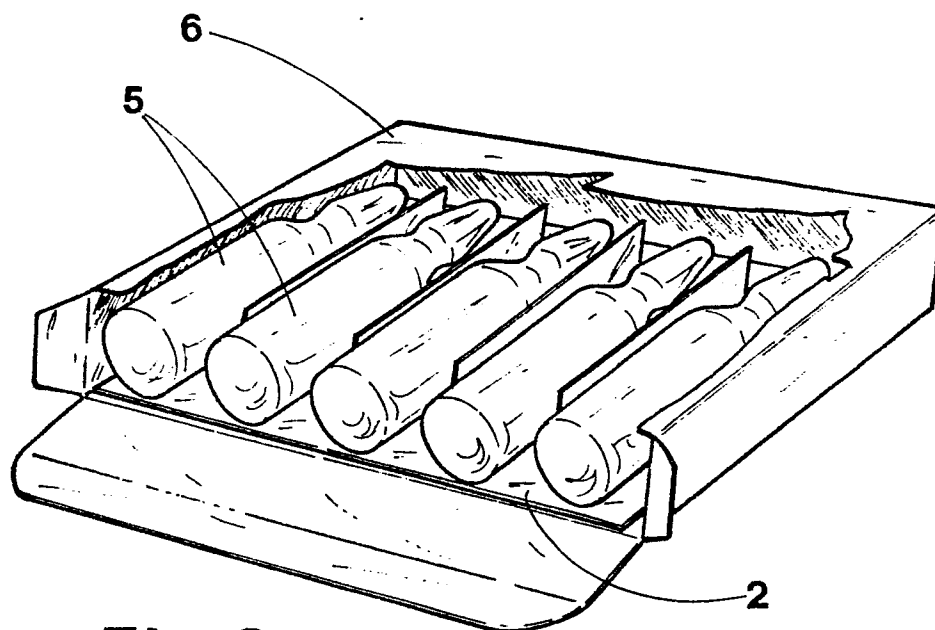
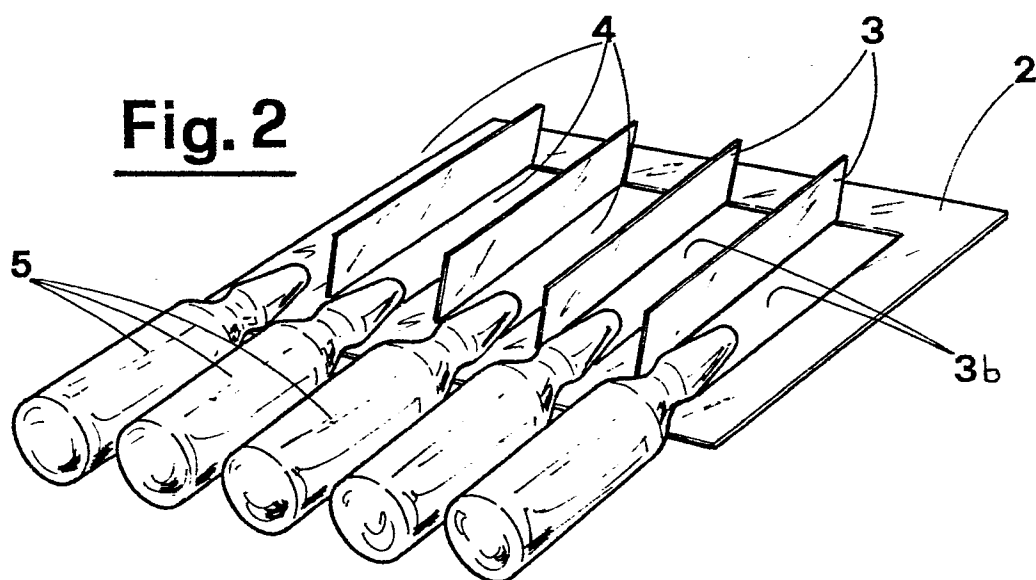
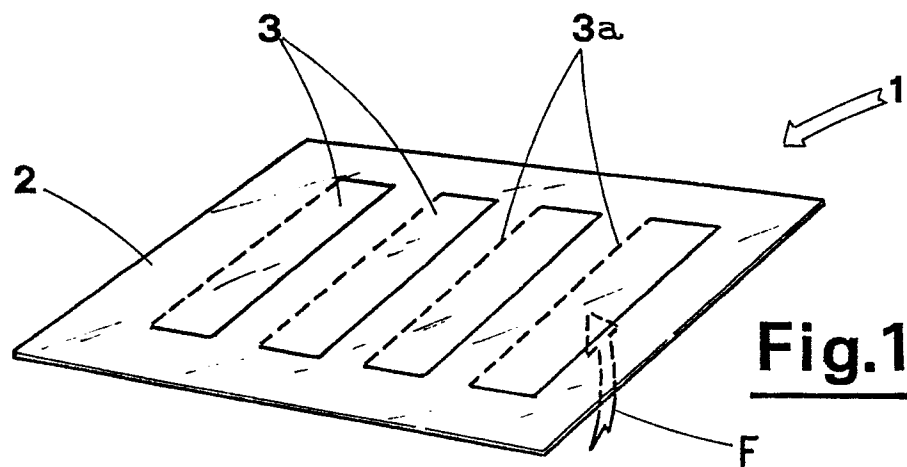
Thanks to the particular conformation of the element according to the invention, an extremely simple and inexpensive blank can be used for the formation thereof, and the dimensions can easily be varied to suit the type of vial destined to be accepted.

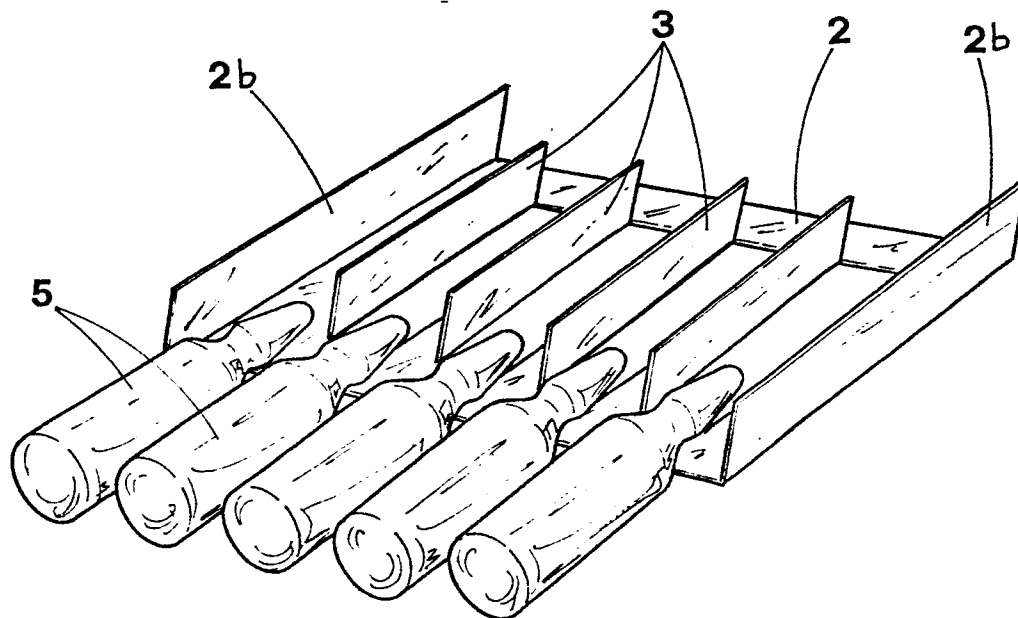
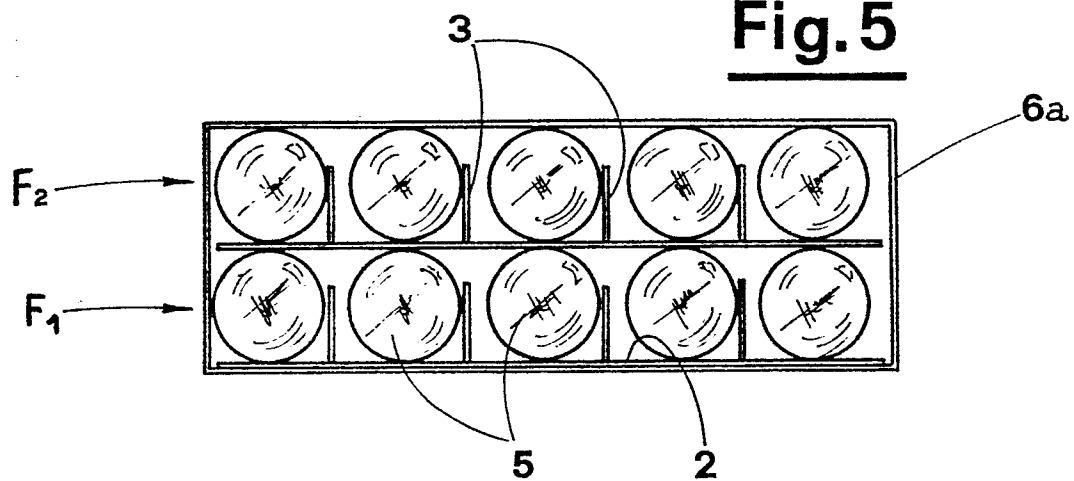
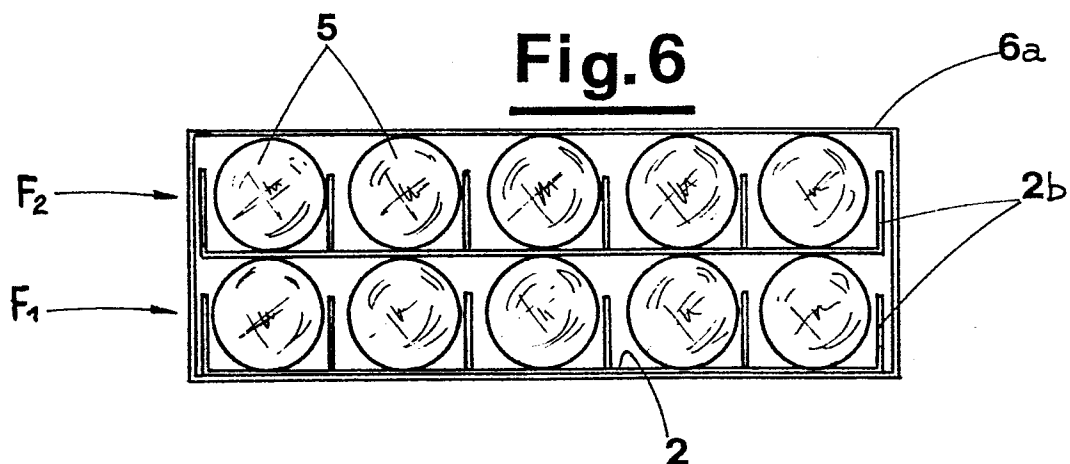
Another particularly advantageous feature of the invention is the optimum use made of the available space since the area taken up by the element in question is reduced to a bare minimum.

It is understood that the foregoing description has been given purely as an unlimited example and thus that eventual variants of a constructional nature (for example flaps 3 provided in one single piece with a sheet 2 devoid of slots 3) fall within the framework of protection afforded to the invention as described above and claimed hereinafter.

## Claims:

1. Element for separating small size and/or large vials in a rectangular section container, characterized by the fact of comprising a sheet 2 in which a plurality of parallel flaps 3 define a number of spaces 4 destined to receive therein an identical number of small size and/or large vials 5, with the unit constituted by the element 1 and the vials 5 able to be inserted freely into the said rectangular section container 6.
2. Element according to Claim 1, characterized by the fact that the parallel flaps 3 are cut out of the sheet 2, are hinged, with respect to the edge common to the latter, along an axis 3a, and are complementary to an identical number of slots 3b provided in the said sheet.
3. Element according to Claim 1, characterized by the fact of being provided with two additional lateral flaps 2b made by folding the said sheet 2 and parallel to the other separating flaps 3.
4. Element according to Claim 1, characterized by the fact that the sheet 2 and the separating flaps 3 are fashioned out of the same blank.
5. Element according to any one of the preceding claims, characterized by the fact that the said flaps are parallel to one side of the sheet.
6. Element according to Claim 4, characterized by the fact that the said blank is made of cardboard.



**Fig. 4****Fig. 5****Fig. 6**



| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                               |                                                |                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim                              | CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)                                                  |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | FR-A-2 498 562 (NICOLET)<br>* Figures 1-4 *                                   | 1-6                                            | B 65 D 5/48                                                                                     |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CH-A- 201 465<br>(CIGARETTENFABRIK AUSTRIA AG)<br>* Figuren 1-4 *             | 1,2,4-6                                        |                                                                                                 |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB-A- 9 248 (HOSKING) (A.D. 1910)<br>* Figures 1-3; page 1, line 6 *          | 1,2,4-6                                        |                                                                                                 |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB-A- 882 716 (S. & S. GOOLNIK LTD.)<br>* Figures 1-3 *                       | 1,2,4-6                                        |                                                                                                 |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB-A-1 161 824 (OLIN MATHIESON)<br>* Figures 1,2 *                            | 1,2,4-6                                        | <div>TECHNICAL FIELDS SEARCHED (Int. Cl. 4)</div> <div>B 65 D 5/48</div> <div>B 65 D 5/50</div> |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                                                |                                                                                                 |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                               | Date of completion of the search<br>09-10-1985 | Examiner<br>MARTENS L.G.R.                                                                      |
| <div>CATEGORY OF CITED DOCUMENTS</div> <div> 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<br/> 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/> &amp; : member of the same patent family, corresponding document </div> |                                                                               |                                                |                                                                                                 |