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54 **Accuracy cartridge plastic box.**

57 Box (1) intended for containing cartridges. Said box (1), comprising of a body (2) and a cover (3), characterized in that said body (2) is bound to cover (3) by a binding edge (4). Said body (2), cover (3) and binding edge (4) are made of a homopolymer and in that said binding edge (4) has a width greater than 7mm.

FIG 2

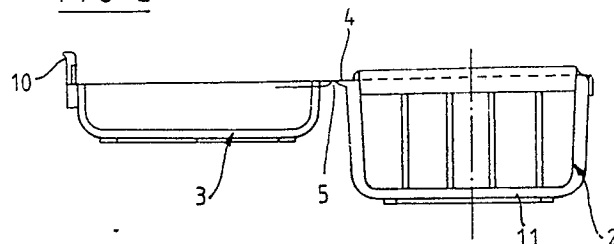
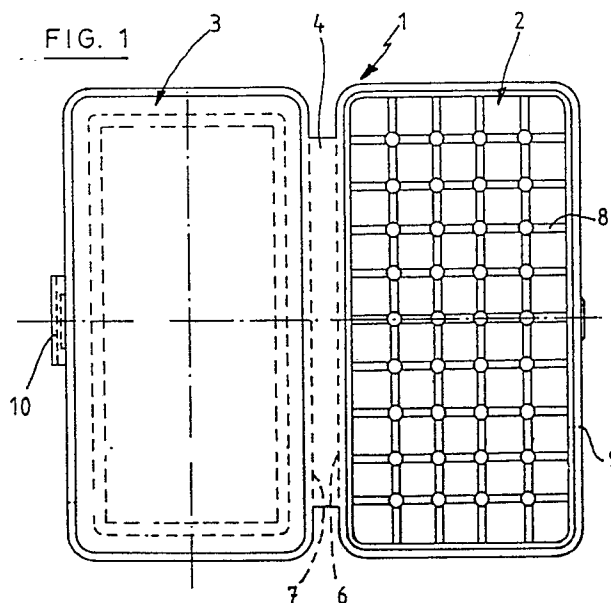


FIG. 1



EP 0 368 828 A1

Box and process for manufacturing such a box

The invention relates to a plastic box intended for containing cartridges. Said box comprising a body, a cover and a binding edge.

Boxes made of polymeric material of the type described here above are known. The known boxes have many disadvantages. Among others, they are not transparent, and breakable, heavy and not of one piece construction. There is no binding edge between the cover and the body.

The present invention has for object a box having a binding edge made of a polymeric material which can be folded a great number of times without destruction.

Applicant has found that the binding edge must have a width greater than 7mm and must be made of a homopolymer for obtaining a binding edge which can be repeatedly folded.

The box according to the invention which is intended to contain cartridges is essentially characterized in that said body (2) is bound to cover (3) by a binding edge (4). Said body (2), cover (3) and binding edge (4) are made of a homopolymer and in that said binding edge (4) has a width greater than 7 mm.

According to another characteristic of the box according to the invention, said binding edge (4) is provided with a groove (5). Said groove (5) being parallel to edges (6-7) of the body (2) and/or the cover (3).

According to a further characteristic of the box, said binding edge (4) is provided with a groove (5) on the face opposed to the face which is folded on itself when the cover (3) covers the body (2).

Another characteristic of the box, the homopolymer is a polypropylene and having advantageously, a melting temperature comprised between 220 °C and 300 °C. The polypropylene is of a high surgical and food quality.

Other details of the box according to the invention will be given in the following description in which reference is made to the attached drawings. In these drawings, figure 1. is a upper view of a box according to the invention, figure 2. is a side view of the box shown in figure 1.

In these figures, the same reference designates similar or identical elements.

The box (1) shown in figure 1. is made of homopolymer such as HOECHST PPU 1080S1 sold by HOECHST Germany and its subsidiaries.

This box (1) which is intended for containing cartridges comprises a body (2) in which cartridges may be placed, a cover (3) and a binding edge (4) binding the body (2) to said cover (3).

The binding edge (4) is made of said homopolymer and has a rectangular form, the width of

which is greater than 7 mm.

Advantageously, said binding edge (4) is provided with a groove (5) which is parallel to an edge (6) of the body (2) and to an edge (7) of the cover (3).

Such binding edge (4) allows to close or open the box (1) a great number of times without any destruction.

The selection of said homopolymer allows the manufacture of a very thin box which has very good properties, i.e. would not be destroyed when dropped from a height of 100 cm, even if these boxes contain cartridges.

The body (2) is provided with internal walls (8), which creates a series of spaces in which the cartridges may be at least partially inserted.

The man skilled in the art was not able to predict that by using a specific homopolymer, it was possible to obtain a box (1) having side walls (9) with a thickness of less than 1,8mm and internal walls (8) with a thickness of less than 1,3mm, which would have less chance to be destroyed when dropped.

The selected homopolymer also allows to obtain a transparent box.

The box (1), according to the invention, is advantageously made in one piece by injection moulding so that the internal walls (8) are correctly bound to the side walls (9) and to the lower face (11) of the body (2).

The man skilled in the art was not able to predict that a specific polymer could be used for making a rigid box as well as a flexible binding edge (4).

The thickness of the binding edge (4) is advantageously of about 1,2mm, however, its thickness in the neighborhood of the groove (5) is preferably of about 0,5mm.

Applicant has observed that, when the width of the binding edge (4) was smaller than 7mm and especially when no groove (5) was present at said binding edge (4), the binding edge (4) made of a homopolymer may not be folded a great number of times without destruction.

The process for manufacturing a box (1) according to the invention, comprises the step of injecting a homopolymer in a mould.

The step of extracting the injected box (1) of said mould and the step of folding the cover (3) so that the body (2) of the box (1) is covered just after the extraction of the injected box of the mould so that the binding edge (4), adapts a flexible characteristics which limits the thickness and rigidity of the clasping device (10).

Applicant has observed that, when such a fold-

ing is made just after the extraction of the mould, the binding edge (4) has better resistant properties i.e. the binding edge (4) could be folded without any destruction.

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Claims

1. Box (1) intended for containing cartridges. Said box (1), comprising of a body (2), a cover (3), is characterized in that said body (2) is bound to cover (3) by a binding edge (4). Said body (2), cover (3) and binding edge (4) are made of a homopolymer and in that said binding edge (4), has a width greater that 7mm.

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2. Box (1), according to claim 1, is characterized in that said binding edge (4) is provided with a groove (5). Said groove (5) being parallel to edges (6,7) of the body (2), and/or of the cover (3).

3. Box (1), according to claim 2, is characterized in that said binding edge (4) is provided with a groove (5) on the face opposed to the face which is folded on itself when the cover (3) covers the body (2).

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4. Box (1), according to any one of the preceding claims, is characterized in that the homopolymer is a polypropylene.

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5. Box (1), according to claim 4, is characterized in that said polypropylene has melting temperature between 220 °C and 300 °C..

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6. Box (1), according to claim 4, is characterized in that said polypropylene has a molecular weight greater that 0,90g/cm³.

7. Process for manufacturing a box (1), according to any one of the preceding claims, in which a polymer is injected in a mould and in which the injected box is extracted of said mould, is characterized in that, just after the extraction of the injected box, the binding edge (4) of the box (1) is folded so as to close the body (2) by means of the cover (3) and the clasping device (10), so that the binding edge (4) adapts flexible characteristics.

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8. Process according to claim 7, is characterized in that the injection pressure has to be of at least 1000 bars.

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Neu eingereicht / Newly filed
Nouvellement déposé

FIG. 2

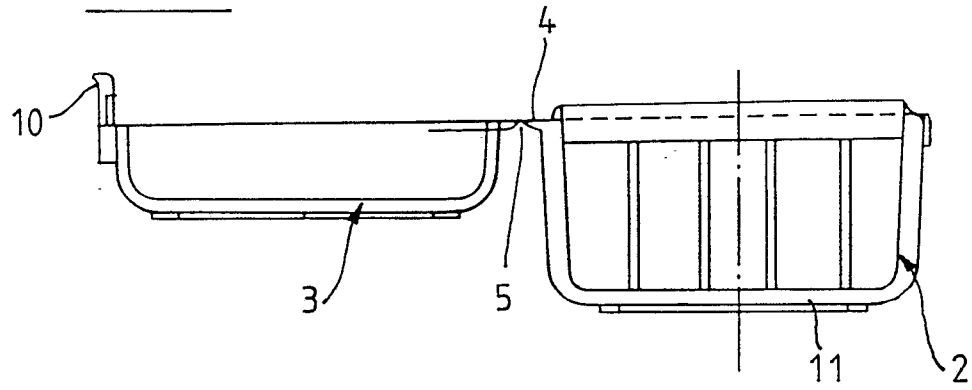
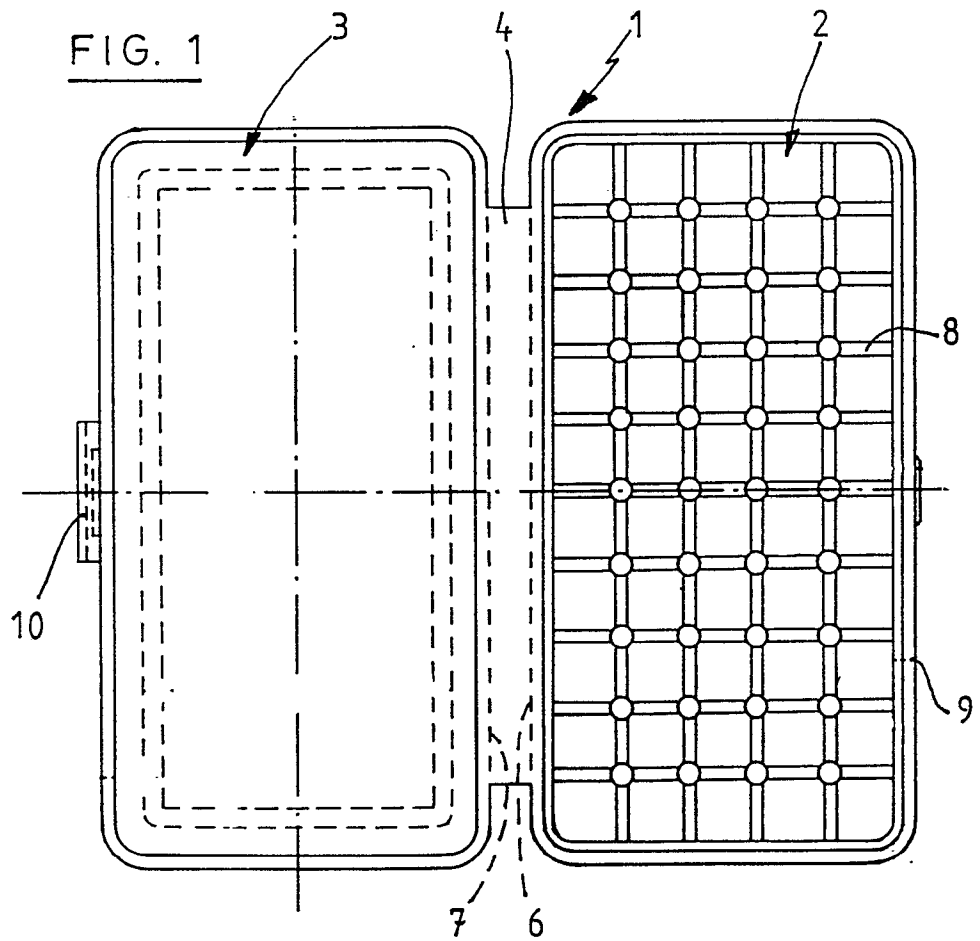
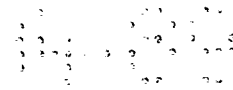


FIG. 1





Neu eingereicht / Newly filed
Nouvellement déposé

FIG. 4

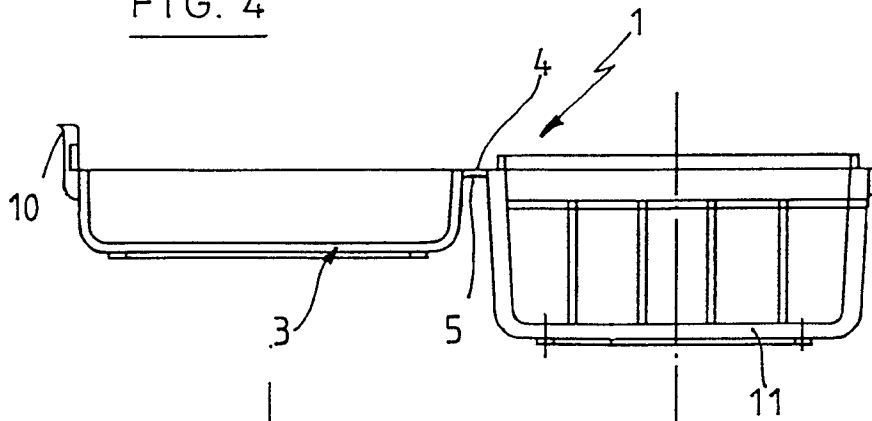
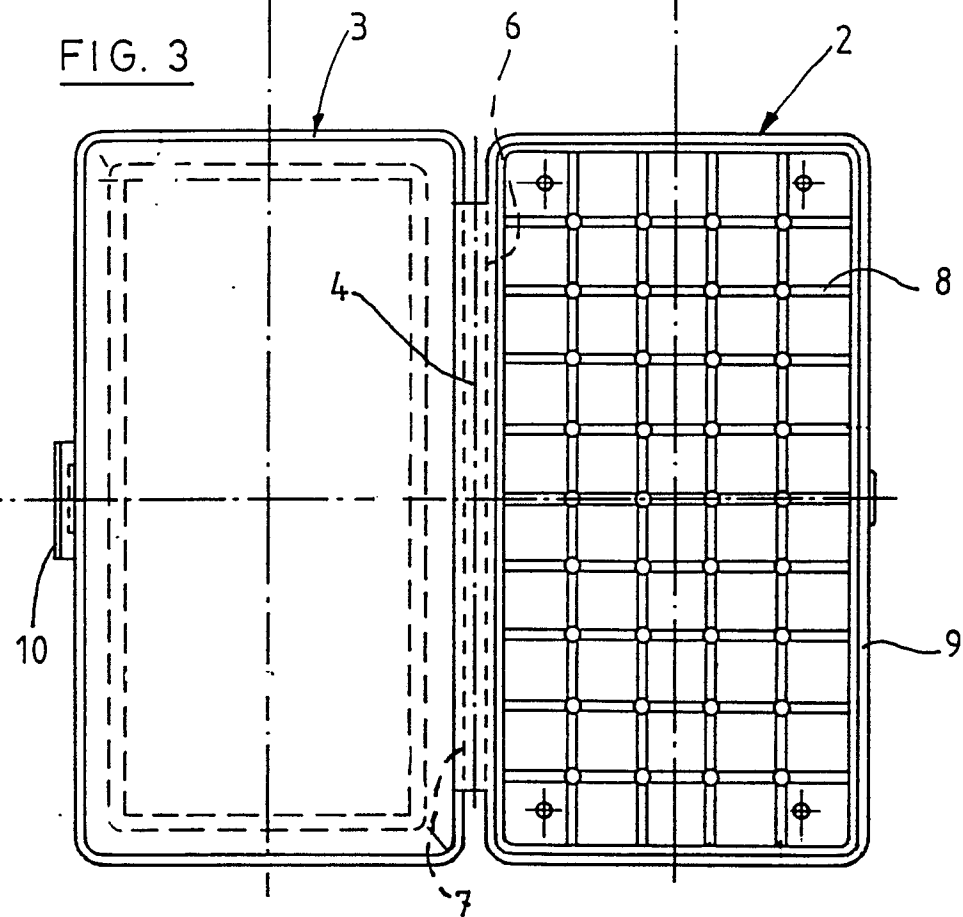


FIG. 3



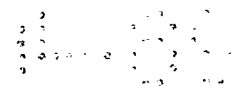


FIG. 5

FIG. 6

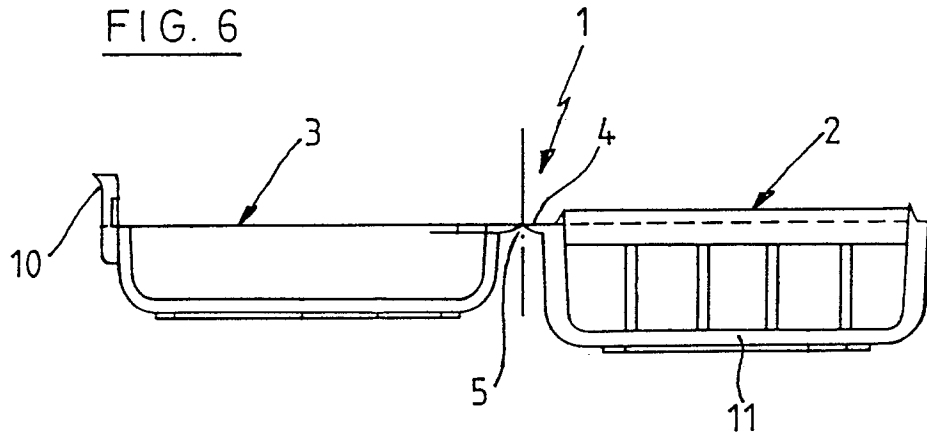
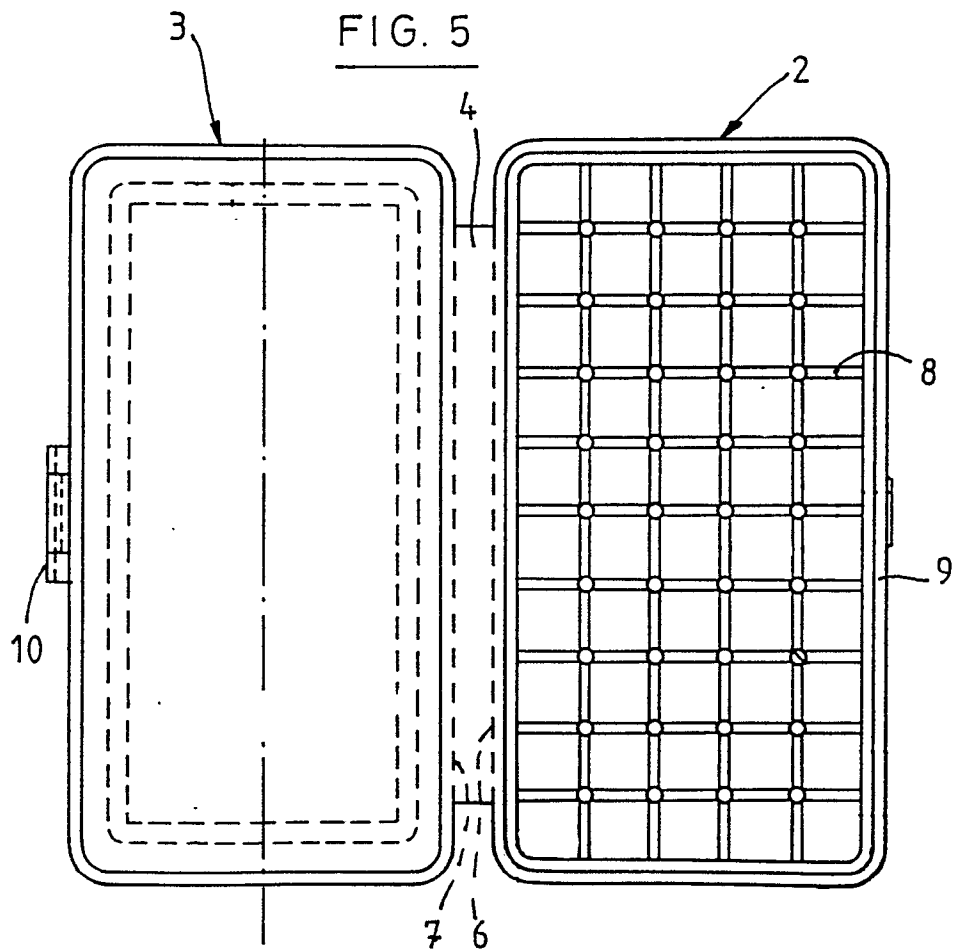


FIG. 5





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.5)
Y	US-A-3 923 152 (MINNEMAN) * Column 2, lines 30-44; column 3, lines 58-65; figures 1-11 * ---	1-4	B 65 D 43/16 F 42 B 39/02
Y	US-A-4 681 223 (ROBERTS) * Column 1, lines 47-68; column 2, lines 1-11,51-61; column 3, lines 53-63; figures 1-5 * ---	1-4	
Y	FR-A-2 244 674 (ETHYL DEVELOPMENT) * Page 2, lines 21-30; page 3, lines 17-28; page 4, lines 20-36; page 5, lines 1-18; page 6, lines 25-36; page 7, lines 1-11; figures 1-5 * ---	2,3	
A	US-A-4 518 092 (CONTRERAS) * Column 1, lines 12-26,34-48; column 3, lines 53-68; column 4, lines 35-44; figures 1-10 * ---	1,4,7,8	
A	US-A-4 467 947 (MINNEMAN) * Column 2, lines 54-68; column 3, lines 1-4; figures 1-7 * ---	1	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	US-A-3 759 428 (HETER) * Column 1, lines 17-26; column 2, lines 16-41; column 3, lines 16-40; figures 1-6 * ---	1	B 65 D F 42 B
A	US-A-3 789 531 (KERSTEN) * Column 2, lines 58-68; column 3, lines 1-5 * -----	4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 06-09-1989	Examiner VAN DER PLAS J.M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			