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(54) **CONTAINER PRE-CUTTING DEVICE**

(57) The invention relates to a container pre-cutting device; comprising a die plate (1) and a punch holder plate (2) provided with upper blades (3) for making an upper precut line (51) in the multilayer material (5) of the containers positioned on the die plate (1); in which the die plate (1) incorporates, in a position in opposition to

the upper blades (3), lower blades (4), such that while bringing the punch holder plate (2) closer to the die plate (1) the upper blades (3) and the lower blades (4) define on opposite faces of the multilayer material (5) of the containers an upper precut line (51) and a lower precut line (52).

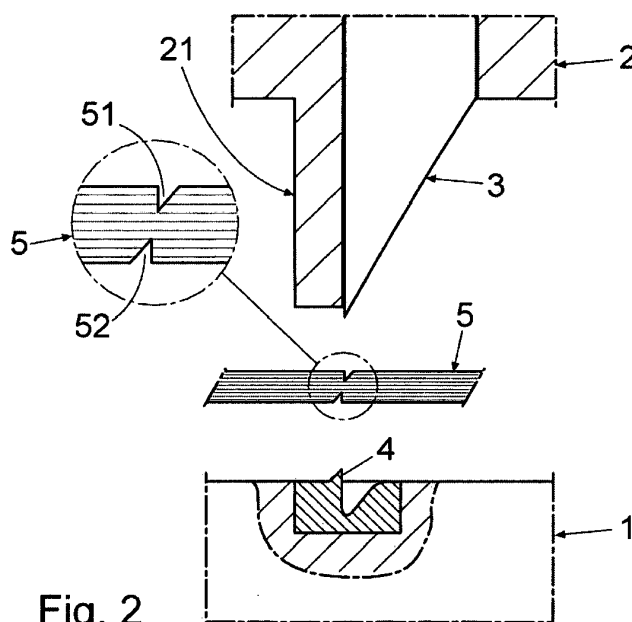


Fig. 2

Description

Object of the invention.

[0001] The object of the present invention is a container pre-cutting device, in particular for containers formed with multilayer materials, comprising a die plate and a punch holder plate provided with blades for making an upper and lower precut, in the multilayer material of the containers positioned on the die plate.

Field of application of the invention.

[0002] This invention is applicable in the field dedicated to the manufacture of containers and preferably containers for food use, such as yogurt packs or the like.

State of the art.

[0003] In the manufacture of containers and in particular containers for the food industry, packs are commonly formed with a variable number of packages which, once filled and closed, are subjected to cutting and pre-cutting operations in which a portion of the contour of the mouths of the containers is cut and precut lines which facilitate the subsequent breaking and separation of the containers from the pack are marked in the remaining portions of the contour.

[0004] These cutting and pre-cutting operations are commonly performed by a die provided with a die plate, and a punch plate which incorporates for making the precuts blades which partially project from said punch holder plate and make a crease or precut line on the upper face of the container.

[0005] In containers formed with single-layer or double-layer plastic, making the precut line in the upper area of the container is sufficient to allow the subsequent breaking and separation of the containers from the pack by the user. However, today it is common to use in the manufacture of these containers multilayer plastics incorporating more than three layers, using up to nine plastics, which have up to more than 30 layers.

[0006] With the use of these multilayer plastics, the pre-cutting devices used today are unable to leave the marking or impression of the precut line in the lower layers of the multilayer material, which constitutes an important problem since it generates defects in the breaking and separation of the containers from the pack.

[0007] Therefore, the technical problem that is considered is the development of a container pre-cutting device of the type mentioned above which allows the problems set forth above to be solved in a satisfactory manner.

Description of the invention.

[0008] The container pre-cutting device object of this invention, comprising a die plate and a punch holder plate provided with blades for marking a precut line in the upper

area of the multilayer material of the containers positioned on the die plate, presents features aimed at defining two precut lines in opposition on opposite faces of the multilayer material of the containers, preventing the defects of breaking and separation of the containers, known to all manufacturers of cutting tools for Form, Fill & Seal (FFS) lines.

[0009] To that end, and according to the invention, this pre-cutting device has an essential feature consisting of the incorporation in the die plate of a lower blade, in opposition to the upper blade of the punch plate, such that this pre-cutting device simultaneously makes in the container two precut lines on opposite faces of the container, whereby achieving said double precut line affecting both the upper face and the lower face of the multilayer material, assuring correct breaking and separation of the containers from one and the same pack.

[0010] Both the upper blade of the punch holder plate and the lower blade of the die plate are formed in a high mechanical strength material, for example metal carbide, assuring a long duration of the edges of the blades.

[0011] This device achieves the precut lines defined on opposite faces of the multilayer material affecting both the upper layers and the lower layers of the multilayer material, preventing defects in the breaking and separation of the containers.

Description of the figures.

[0012] As a complement to the description provided herein, and for the purpose of helping to make the characteristics of the invention more readily understandable, the present specification is accompanied by a set of drawings which, by way of illustration and not limitation, represent the following:

- Figure 1 shows a top perspective view of a container cutting and pre-cutting die provided with the pre-cutting device of the invention.
- Figure 2 shows a partially cross-sectioned elevation view of two portions of the die plate and the punch holder plate in which the upper blade and the lower blade, fixed respectively to the punch holder plate and to the die plate, and a portion of multilayer material of a pack of containers with the two upper and lower precut lines defined by said blades can be observed.

Preferred embodiment of the invention.

[0013] The embodiment shown in Figure 1 depicts a die provided with a die plate (1) and a punch holder plate (2) which, as schematically shown in Figure 2, incorporates upper blades (3) for defining a precut line on the upper face of the multilayer material of the containers positioned on the die plate (1).

[0014] According to the invention, and as shown in the mentioned Figure 2, the die plate (1) incorporates, in a

position in opposition to the upper blades (3), lower blades (4) which form, together with the former, the pre-cutting device of the invention.

[0015] When the punch holder plate (2) is brought closer to the die plate (1), the upper blades (3) and the lower blades (4) define in the multilayer material (5) of the container two precut lines: an upper precut line (51) and another lower precut line (52), which affect both the upper layers and the lower layers of the multilayer material of the containers, assuring correct breaking and separation of the containers from a pack.

[0016] As can be seen in Figure 2, the punch holder plate (2) has, on one side of the upper blades (3), a protrusion (21) for pushing the multilayer material (5) against the lower blade, assuring both upper and lower cutting.

[0017] Having sufficiently described the nature of the invention, in addition to a preferred exemplary embodiment, it is hereby stated for the relevant purposes that the materials, shape, size and layout of the described elements may be modified, provided that it does not imply altering the essential characteristics of the invention claimed below.

Claims

1. A container pre-cutting device; in particular for containers formed with multilayer materials (5); comprising a die plate (1) and a punch holder plate (2) provided with upper blades (3) for making an upper precut line (51) in the multilayer material (5) of the containers positioned on the die plate (1); **characterised in that** the die plate (1) incorporates, in a position in opposition to the upper blades (3), lower blades (4), such that while bringing the punch holder plate (2) closer to the die plate (1) the upper blades (3) and the lower blades (4) define on opposite faces of the multilayer material (5) of the containers an upper precut line (51) and a lower precut line (52).

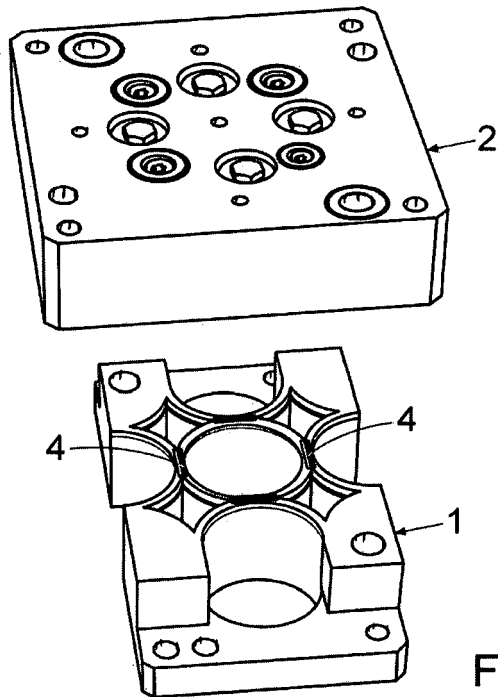


Fig. 1

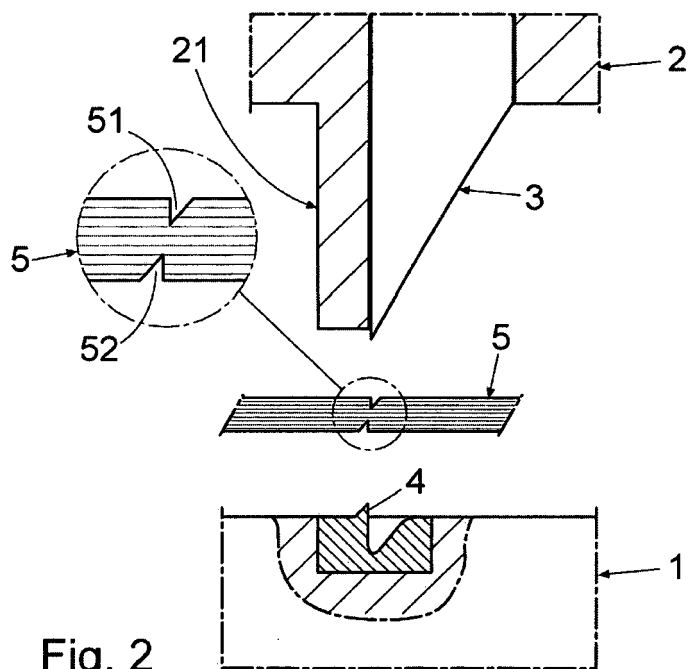


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
EP 19 00 0209

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y	WO 00/59725 A1 (3M INNOVATIVE PROPERTIES CO [US]; MORSE THOMAS L [US] ET AL.) 12 October 2000 (2000-10-12) * figure 4 *	1	
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 September 2019	Examiner Wimmer, Martin
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 00 0209

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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