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(54) **Package with an integrated easy-opening device by means of a not additional pull tab**

(57) The patent refers to the creation of a pull tab (4), not additional, in the package, made of one or more layers of film (3) laminated together. This tab is made of the same material of the film, and it is obtained with the manufacturing of the film itself, and it consists of a strip of

package material delimited by the perimeter of the packaging and by two scribed segments (1,2), perpendicular to the heat-sealed section. The same system is suitable to other areas with low opening resistance of sealing, applying a heat-seal lacquer at register.

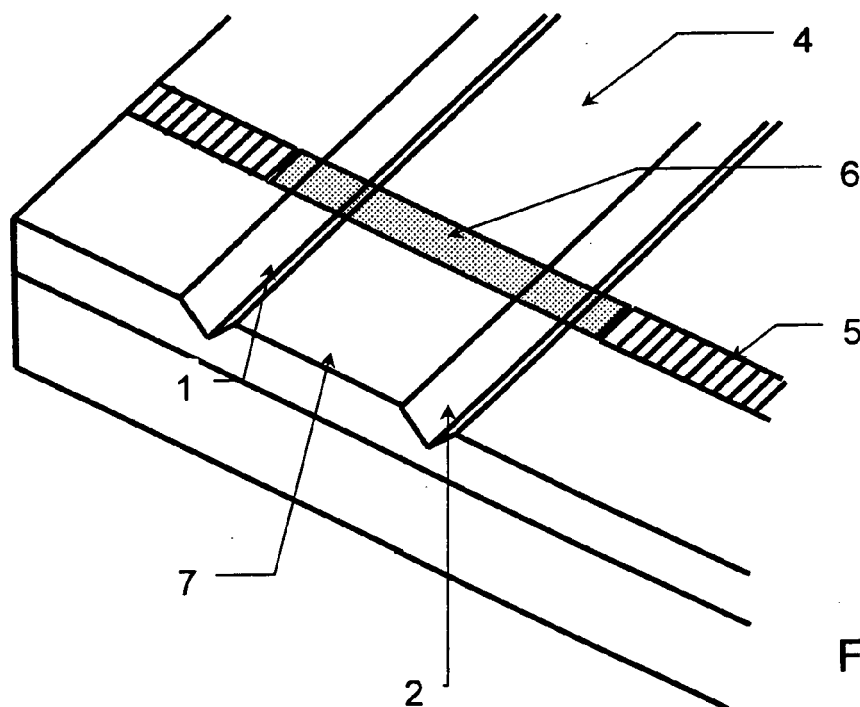


Fig. 2

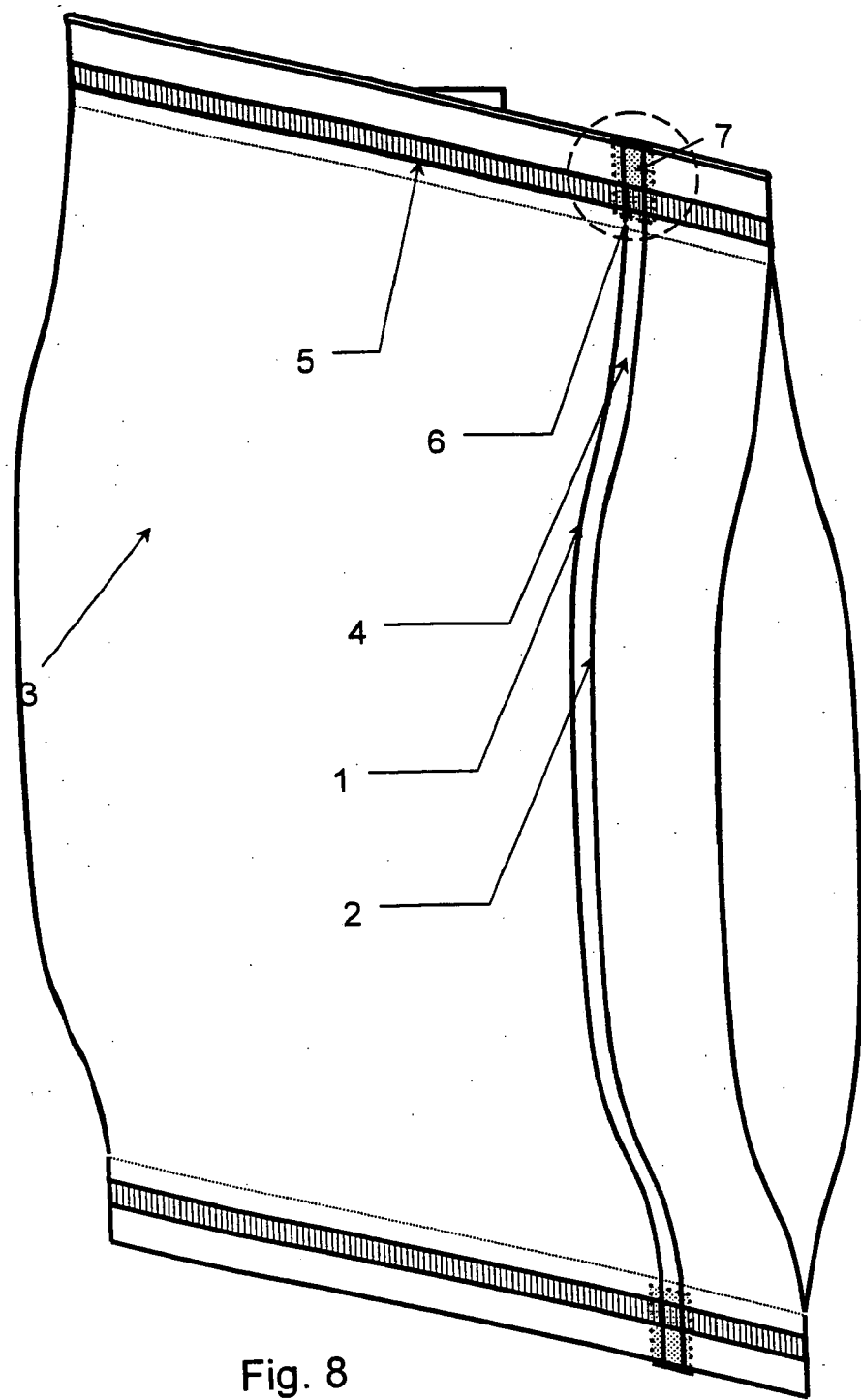


Fig. 8

Description

[0001] In conventional package, made of one or more layers of film laminated together, opening without using cutting tools, (knives or scissors) to draw out the content or part of it, is particularly difficult, due to the resistance to cutting of the material of the package and/or to the different properties of cut propagation.

[0002] The operation of notching, propagating and controlling the cut becomes difficult and makes the shape of opening casual. There are some patents which describe the way to realize packages where the easy opening is obtained without cutting tools. In particular:

- United States Patent Application US 3426959 : Packaging assembly;
- UK Patent Application GB 2135651A: Easy-to-open synthetic resin bag and apparatus for the manufacture thereof;
- European Patent Application EP 0590708A1: A package having a sealed wrapper with a tear strip easy-opening device.

[0003] Yet, in each one of these patents the easy-opening function of package is realized through the application of an additional pull tab, adjacent to the line of cut propagation.

[0004] This additional pull tab can be made of a line or a thin strip made either of synthetic or natural resin or of metal; it can be applied in many ways inside or outside the package.

[0005] In most cases, the pull tab is applied in the product packaging step, and it is a "complication" of the process; in fact, additional material and suitable equipment to apply it to the package film are necessary. Furthermore, in order to avoid the breaking of the pull tab when opening the package, it must have a higher maximum tensile strength than the package film's.

[0006] These characteristics, as it is easily deducible, add new costs of packaging; they refer both to the material of the pull tab and to the equipment needed to apply it, and to the slowdown of the production process due to the negative impact on the packaging speed of the application of the pull tab.

[0007] The present invention aims at giving the package the easy-opening property without applying an additional pull tab.

[0008] A further aim of the invention is realizing a package where the pull tab is obtained directly in the mono or multi-layer film, which the package consists of when manufactured.

[0009] This allows a user-friendly opening of packaging.

[0010] Another aim of the invention is the possibility to apply it to the opening of packages which present an area with low opening resistance of sealing; such a low resistance area is obtained realizing, in the tear starting area and in the surrounding space, a layer of film on which a

heat-seal lacquer is applied at register. The invention is then applicable either to package where the characteristic of perfect airtight sealing is not required (type A), or to perfectly airtight package, where it is possible to create an "area with low opening resistance of sealing" (type B), thanks to the presence of a heat-seal lacquer, in the sealing area surrounding the tear area. An example of type A packaging is the frozen food flexible mono or multi layer package: in this case the perfect airtight sealing is not indispensable, as frozen food is solid, in blocks, and it is packaged, stored, transported and sold in such a condition that contamination of external agents is impossible. Another example of type A is the overwrap package of single packages, that is a (secondary) package containing two or more packages (primary package).

[0011] In the case of perfectly airtight sealing packaging, where it is possible to create an area with low opening resistance of sealing (type B), examples are the packaging of cheese and cold meats and salami, which are vacuum sealed or with a protecting atmosphere.

[0012] In the step of package manufacturing, which takes place through common FFS (Form-Fill-Seal) wrappers, a reserve in the area of transversal sealing is realized(or can be realized), which creates a "breathe channel", to let excess air out of the package, to reduce the size during storage, transport and sale. In case of airtight packaging, it is possible to create an area with low opening resistance of sealing, positioning a heat-seal lacquer.

[0013] Such lacquer, applied at register on the film in the sealing area, allows the airtight sealing of the package and, at the same time, reduces the pull strength as the tear of the pull tab takes place inside the lacquered area. Such a reduction takes place stimulating the adhesion lacquer-lacquer lacquer-film.

[0014] The opening resistance of sealing in this area must be high enough, to ensure the airtight sealing of packaging in the time, yet lower than the mechanic resistance of the pull tab, to avoid its breaking at opening.

[0015] The idea of the patent will be better understood making reference to the attached illustrations, where it is described as a realization given as indicative and not binding.

[0016] Tab. 1/8 in fig. 1, shows a package with an integrated easy-opening system.

[0017] Tab. 2/8 in fig. 2 shows an example of the scribed section of a package, following the patent guidelines, where the scribing affects a part of the thickness of the outer film.

[0018] Fig. 3 hypothesize a scribing which affects the whole thickness of the outer film.

[0019] Tab. 3/8 in fig. 4 refers to a scribing which partially affects the inner film. Fig. 5 shows a section with two different scribing depths. Tab. 4/8 in fig. 6 is an example of a package where the tear starting area and the related pull tab are highlighted.

[0020] Tab. 5/8 in fig. 7 hypothesize a phase of partial pull of the tab.

[0021] Tab. 6/8 in fig. 8 shows a package where an

area with low opening resistance of sealing has been realized through heat-sealing lacquer.

[0022] Fig. 9 shows the view from the top of the area affected by heat-sealing lacquer.

[0023] Tab. 7/8 in fig. 10 and 11 shows the situations of fig. 2 and 3, designed with the application of the heat-sealing lacquer in the area with low opening resistance of sealing.

[0024] Tab. 8/8 in fig. 12 and 13 shows the situation of fig. 4 and 5, designed with the application of the heat-sealing lacquer in the area with low opening resistance of sealing.

[0025] With reference to the figures, the outcome of a easy-opening system is obtained partially scribing, along two parallel segments (1) and (2), the mono or multi-layer film (3) which the package is made of. In practice, the pull tab (4) consists of the strip of package material delimited by the perimeter of the package and by the two parallel segments (1) and (2).

[0026] Such segments of partial scribing are positioned so as to result, after the package manufacturing of the wrapper machine, perpendicular to the sealing (5), at a distance of about $cm\ 1 \div 3$ between them, and inside the unsealed area or in the area with low opening resistance of sealing (6).

[0027] It is advisable to keep a distance between the two segments (1) and (2) of about $cm\ 1 \div 3$, both to allow a easy identification of the "grip" of the pull tab (4), and to give the pull tab a proper mechanic resistance in order to avoid its breaking at opening.

[0028] To open the package, the final user pulls (removing it) the pull tab in the direction parallel to the scribing. The removal has been made possible as the film scribing reduces the mechanic resistance and triggers a preferential direction for the cut propagation.

[0029] Thus, it is possible to tear (cut) the package film along the segments (1) and (2) easily, allowing the removal of the pull tab and the access to the product contained in the package.

[0030] Positioning the two segments (1) and (2) inside the unsealed area or in the area with low opening resistance of sealing (6) is necessary to allow the proper cut propagation of the pull tab (4).

[0031] If this positioning were not respected, it would be difficult to remove the pull tab (4), because in order to propagate the cut along the two segments, the sealing strength should be won, too.

[0032] To facilitate identification and the first step of the pull tab removal (4), the scribing along the segments (1) and (2) can be as such to have a different depth ($H_1 > H_2$, with H_1 equal to the thickness Sp of the film) compared to the thickness of the mono or multi-layer film along its length. This allows to realize a strip of film partially detached from the whole package, which represents a area of "invitation to opening" (7).

[0033] In Tab. 6/8 and Tab. 7/8 the low resistance area has been indicated with (6).

[0034] Manufacturing of the package object of this in-

vention is based upon the newest printing, lamination and cutting technologies for mono and multi-layer flexible package.

[0035] The realization of the integrated easy-opening system, that is the scribing of two segments (1) of the integrated pull tab, can be realized during the step of reel slitting, through the scribing\cutting systems, which can be both mechanical and based upon the technology of the so called laser scribing.

[0036] Both scribing\cutting systems allow partial and "at register" scribing of the mono and multi-layer film both at constant scribing depth and at "variable" depth.

15 Claims

1. Package with an integrated easy-opening device by means of a pull tab, **characterized by** the fact that the pull tab is made by a strip of the same packaging material bounded by the perimeter of the packaging and by two partially scribed segments positioned so as to be perpendicular to the heat-sealed section, after the package making.
2. Package according to the previous claim, **characterized by** the fact that the pull tab is obtained by a partial scribing of the mono- or multilayer film which the packaging is made of.
3. Package according to the previous claims, **characterized by** the fact that the scribing along the two segments can be realized so as to have a different depth along its length in comparison to the thickness of the mono- or multilayer film in order to realize a strip partially cut off from the rest of the packaging so as to form a tear starting portion.
4. Package according to the previous claims, **characterized by** the fact that the distance between the two scribed segments is about 1-3cm in order to grant a mechanical resistance to the pull tab so as to avoid its breaking during the opening of the package.
5. Package according to the previous claims, **characterized by** the fact that the two scribed segments are positioned inside the unsealed area.
6. Package according to the previous claims, **characterized by** the fact that the pull tab can be positioned inside a reduced sealing resistance area realized applying a heat-seal lacquer at register onto the inner surface of the film.
7. Package according to the previous claims, **characterized by** the fact that the heat-seal lacquer is applied only to the heat-sealed section surrounding the tear starting portion.

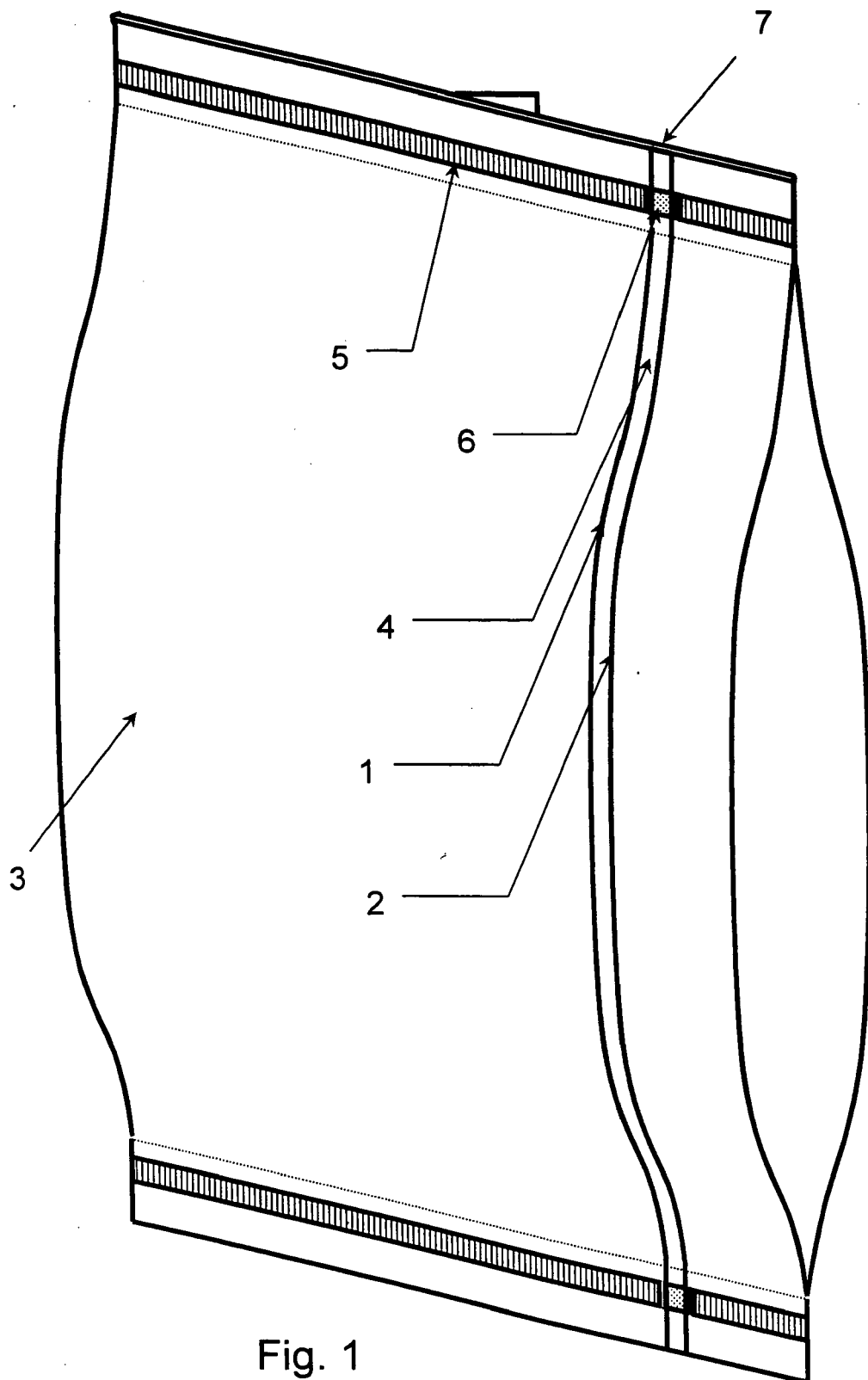


Fig. 1

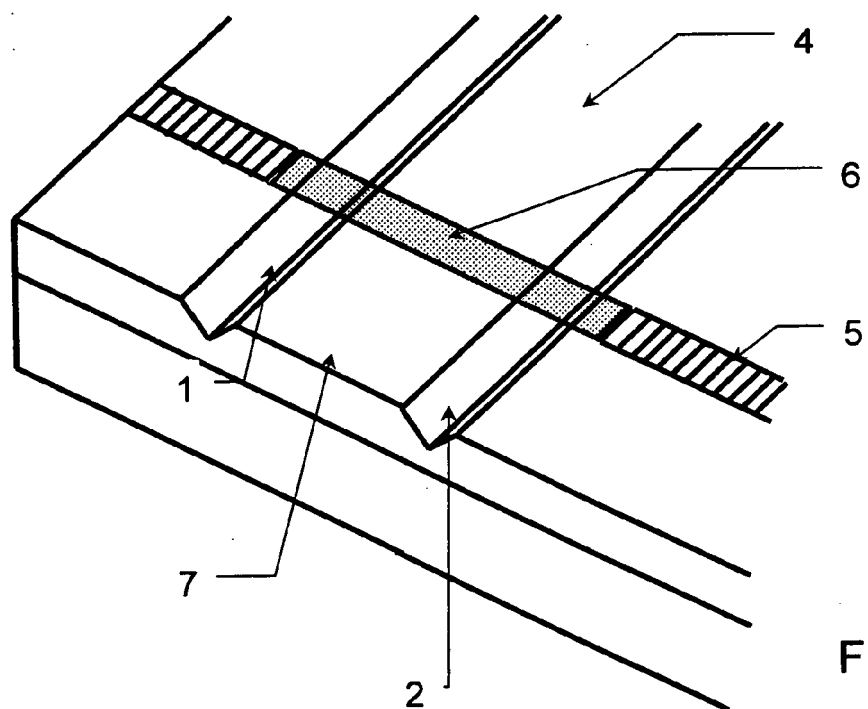


Fig. 2

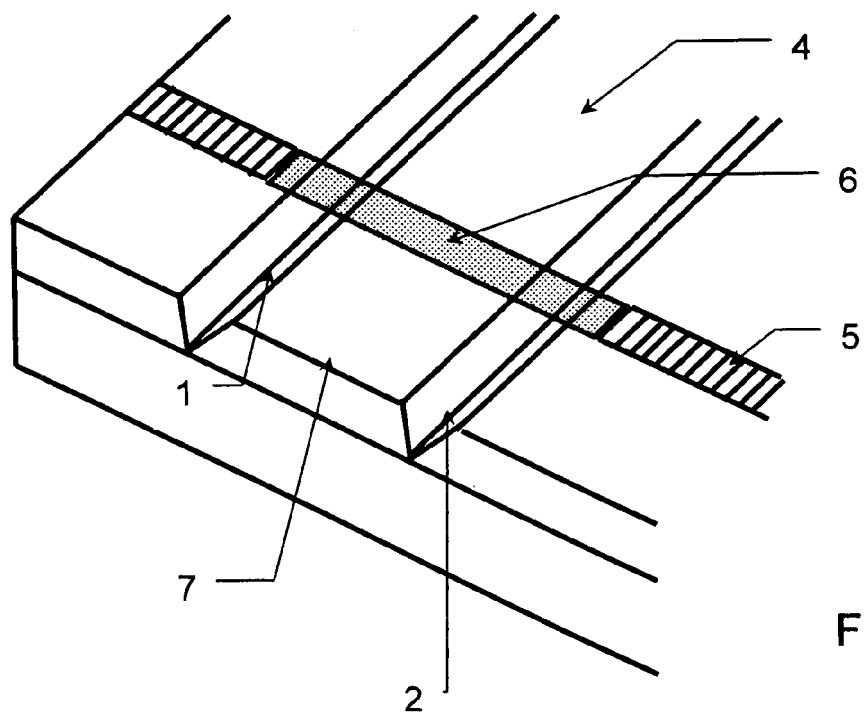


Fig. 3

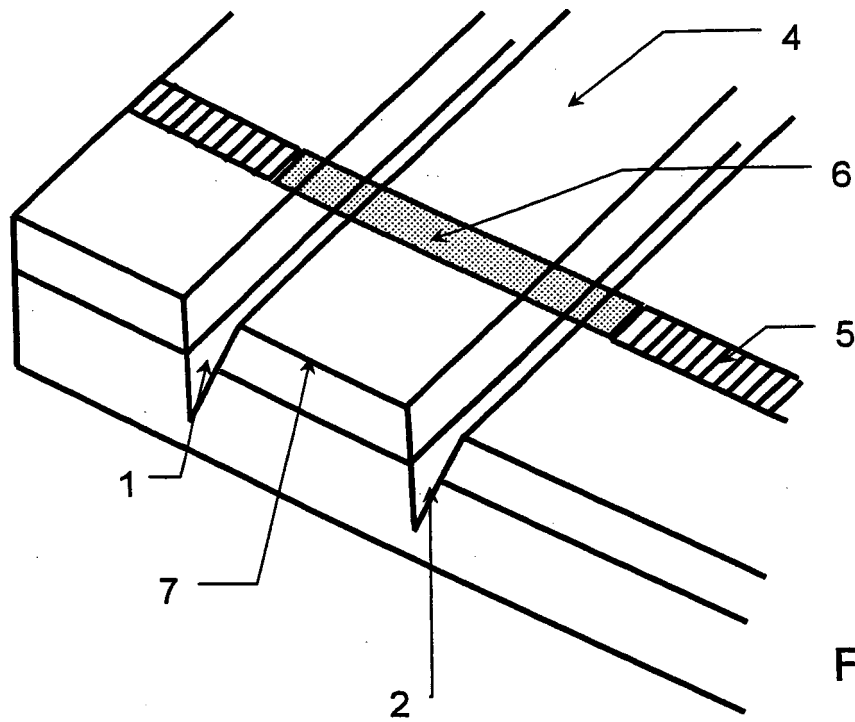


Fig. 4

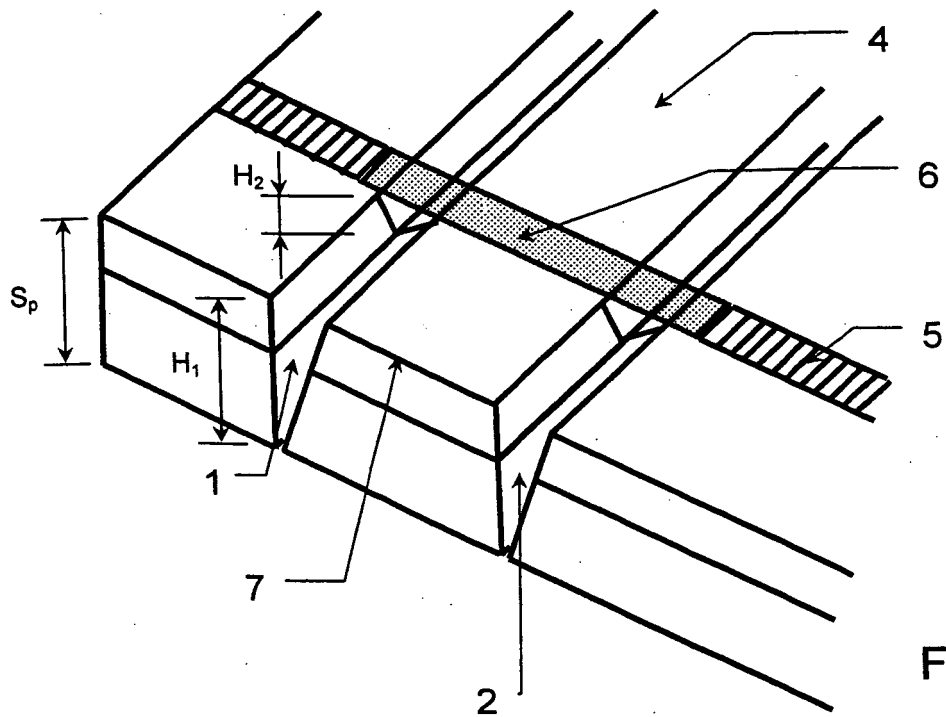


Fig. 5

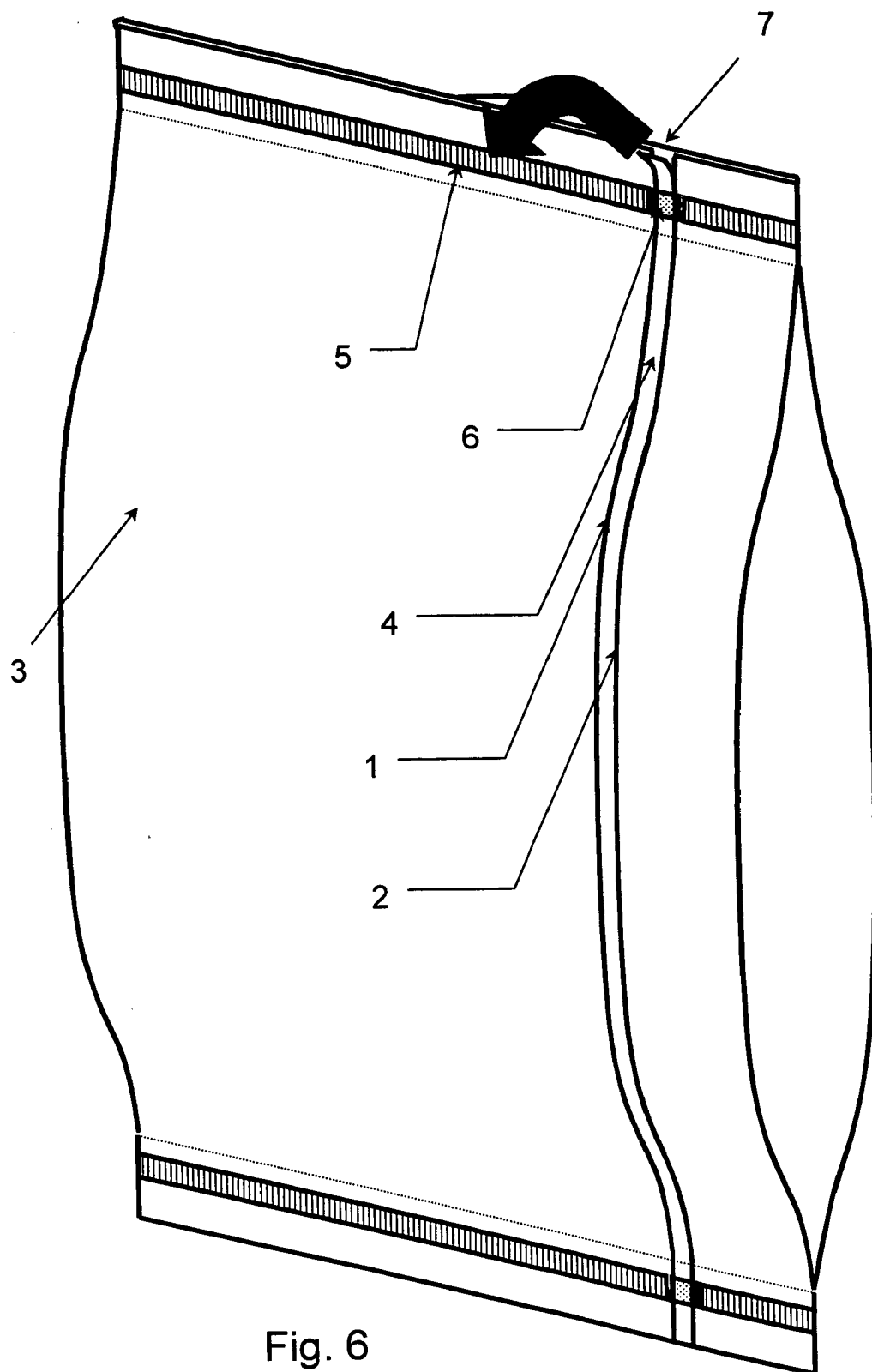
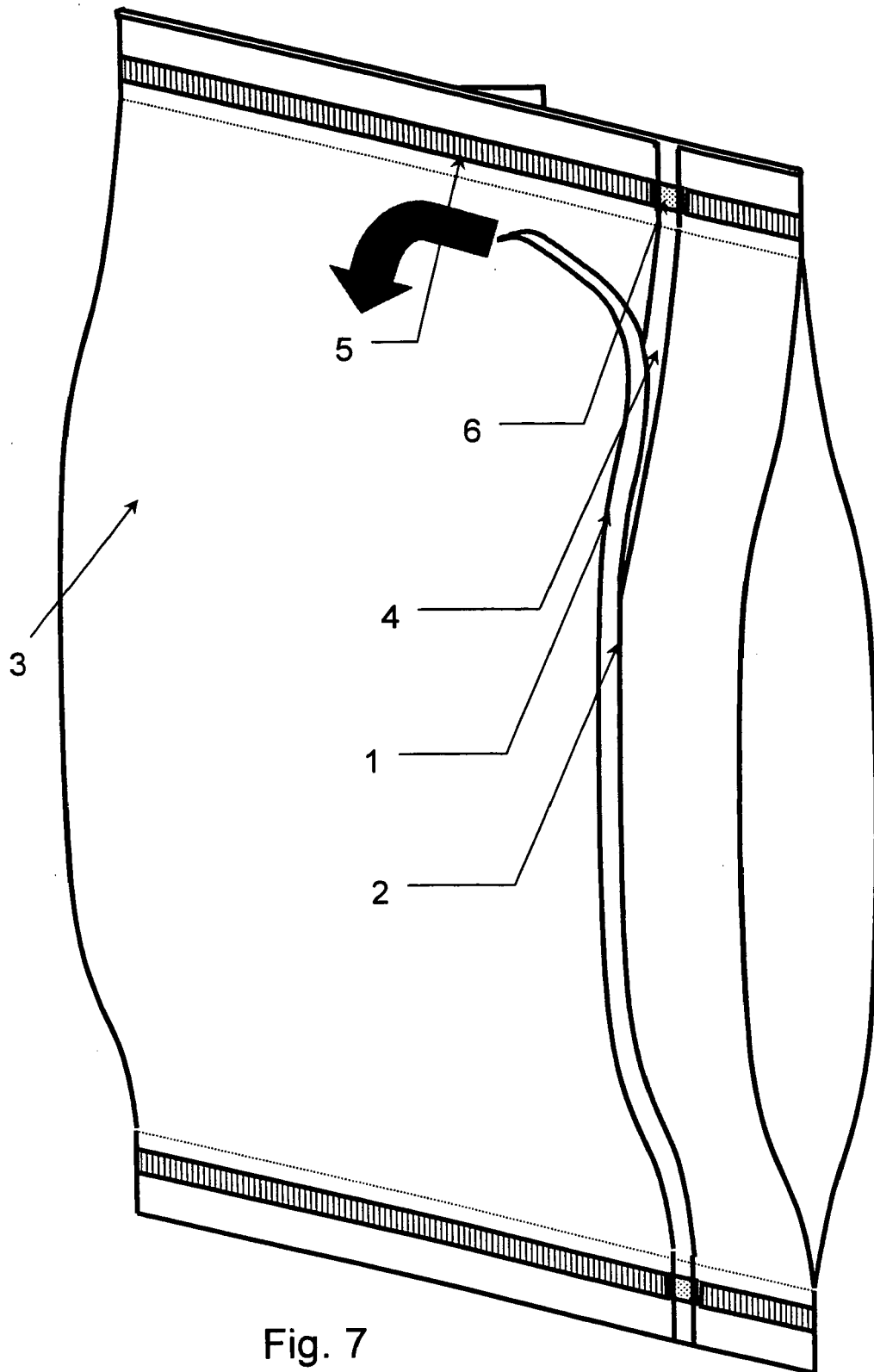
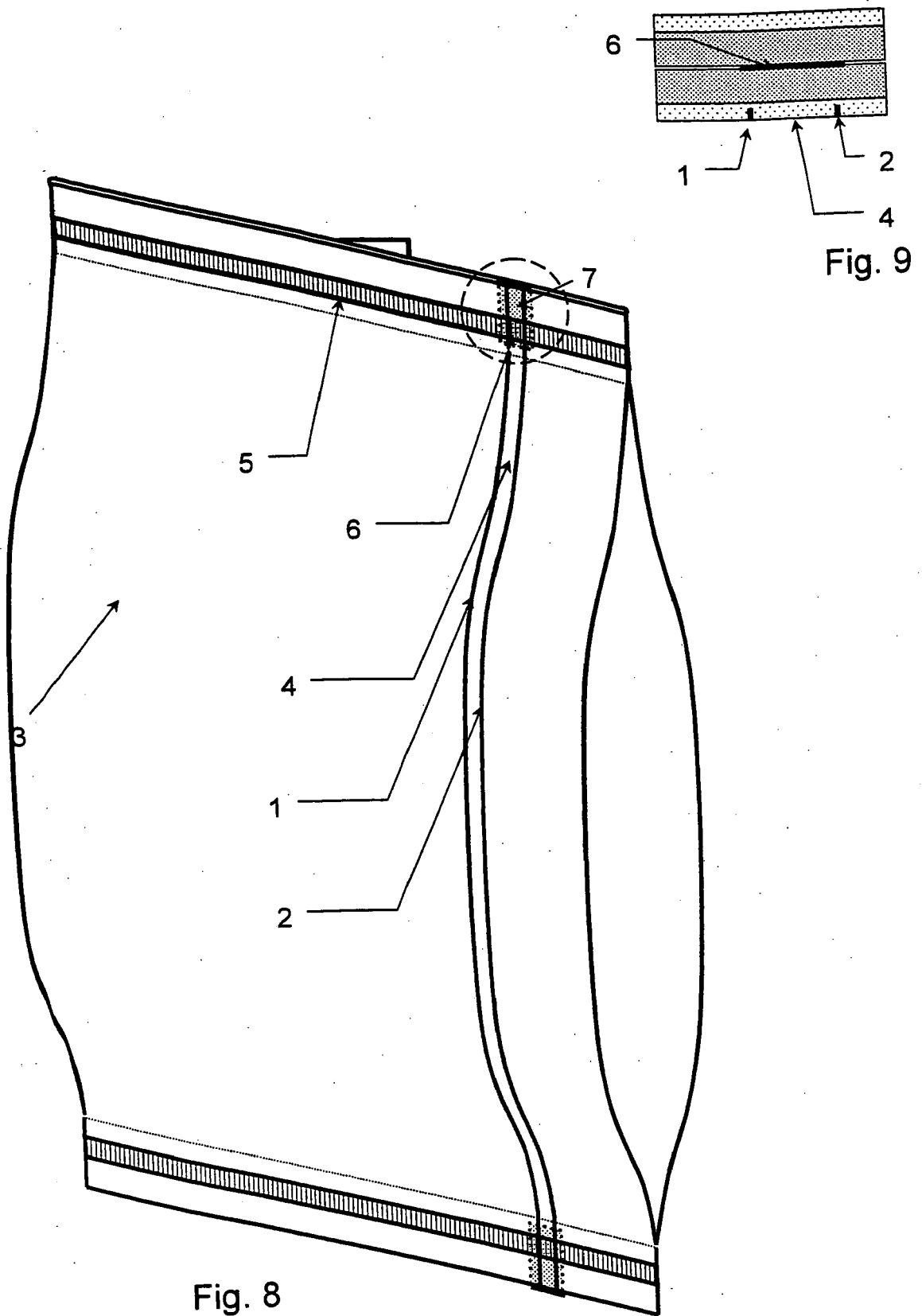


Fig. 6





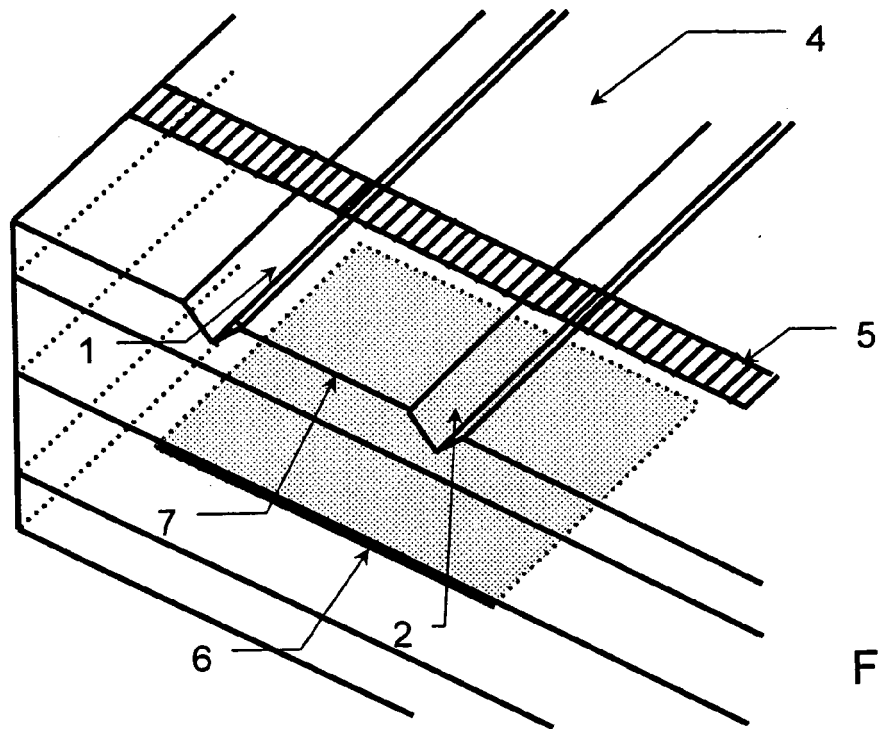


Fig. 11

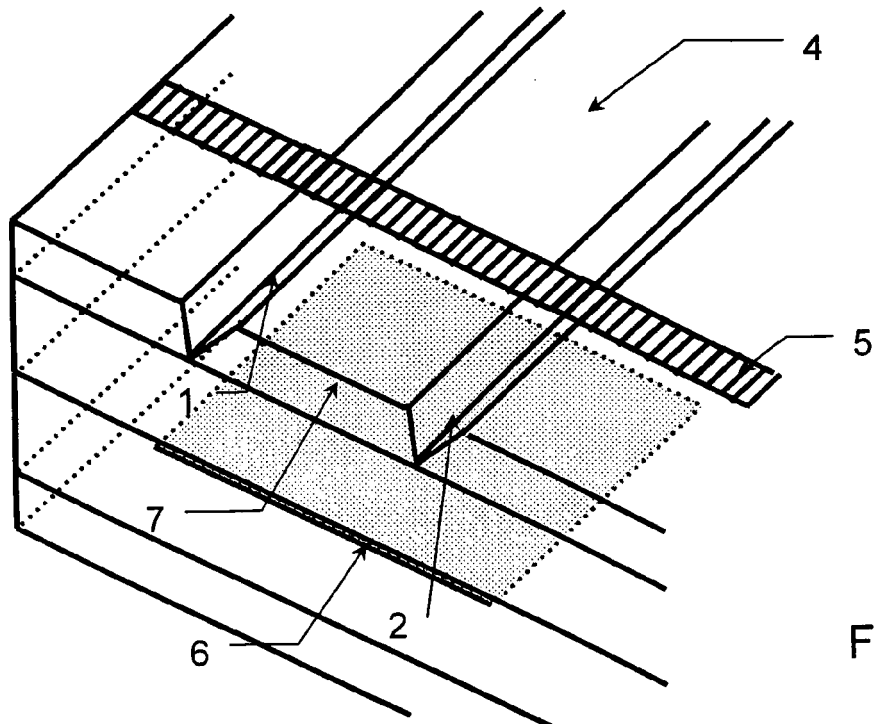


Fig. 10

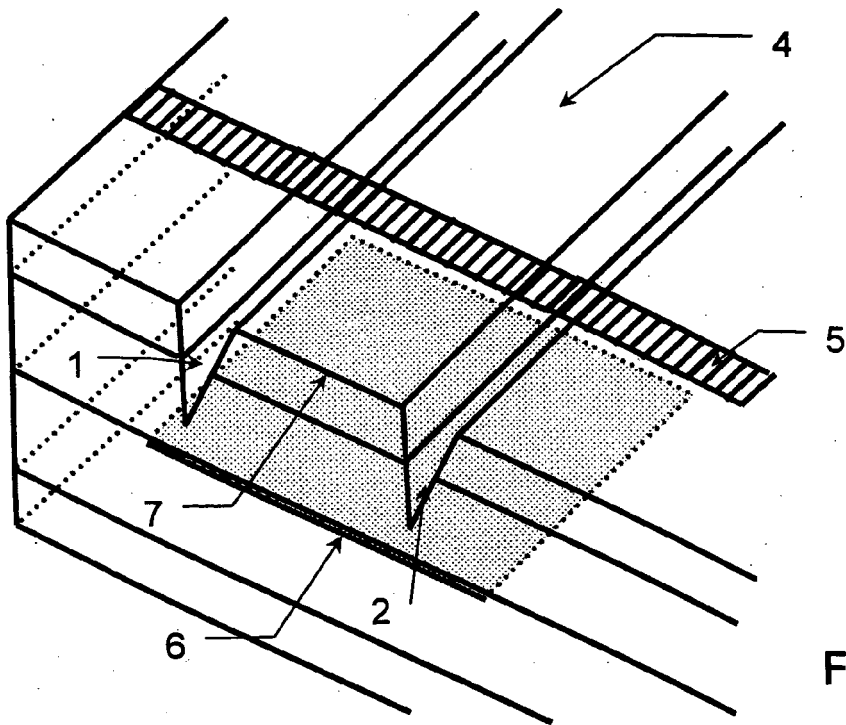


Fig. 13

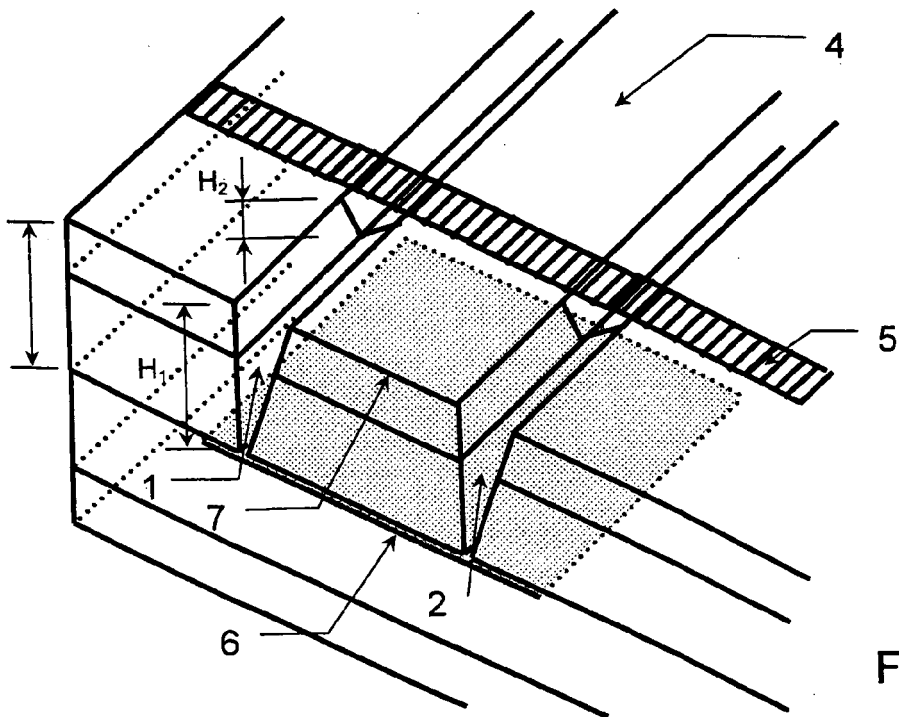


Fig. 12



EUROPEAN SEARCH REPORT

Application Number
EP 11 42 5085

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (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 6 July 2011	Examiner Janosch, Joachim
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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