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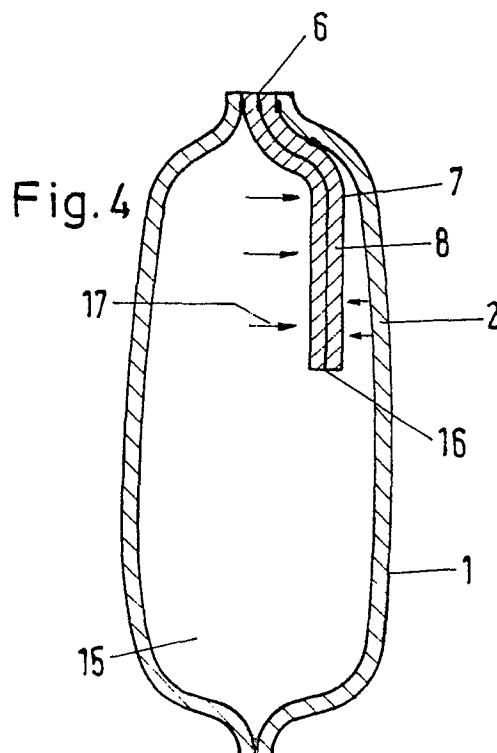
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54 **Packaging container.**

57 This invention relates to a packaging container (1) having flexible walls (2) made of plastic film or paper. The web material which constitutes the walls (2) has been provided with seam welds or adhesive seams (3, 4, 5) to form the closed container (1). The container (1) has a filling opening (6), which is adapted to be closed and in which a valve (7) is disposed, which is closed and maintained in a closed state under the pressure of the material which has been filled into the container. The valve (7) preferably consists of a flexible tubular member (8), which contains the filling opening (6).



Packaging Container

This invention relates to a packaging container having flexible walls made of plastic film, paper or the like, wherein the weblike material which forms the walls has been provided with seam welds or adhesive seams to form the closed container, which has a filling opening that is adapted to be closed.

Such containers are generally known, particularly in the form of bags or the like, and are used to contain and package various substances, such as gases, liquids, solids, pastes, granules, foodstuffs and the like.

When known containers of that kind have been filled with the material to be packaged, they are usually closed by a seam weld or an adhesive seam or by stitching and the like. When the packaged material is to be taken, the container must be more or less destroyed so that it cannot be re-used. Besides, the closing operation to be performed during the packaging process is an additional operation, which is complicated and time-consuming and requires special machinery, e.g., for sticking, welding or stitching.

It is an object of the invention to provide a packaging container which is of the kind described above and which is free of said disadvantages and, in particular is self-closing and maintains itself in a closed state when it has been filled.

In accordance with the invention that object is essentially accomplished in that the filling opening of the container contains a valve, which is closed and maintained in a closed state by the pressure of the material which has been filled into the container.

Owing to the design in accordance with the invention, the consumer can repeatedly take the contents of the container through the valve member without a destruction of the container. When the container has been emptied the consumer can refill the container with a different material so that the container can be re-used because the filling and taking are effected through the valve without destroying or damaging said valve.

In a development of the invention the tubular member is arranged at a seam weld or adhesive seam of the container and depends freely into the interior of the container.

In a preferred embodiment, an upper portion of the tubular member is laterally secured to a side wall of the container. In that case the tubular member can more easily be folded when the container has been filled, as is contemplated in accordance with a further feature of the invention.

In accordance with a further feature of the invention the tubular member is joined at a side

seam to a seam weld or adhesive seam of the container.

In a modified embodiment of the invention the tubular member is constituted by an intumed tubular portion of the material of the walls of the container. In that case the manufacture of the container can be rationalized because the tubular member will be formed as the seams are formed in a properly shaped blank made from the starting material.

In a preferred embodiment the tubular member has an oblique shape at its free edge, which surrounds the filling opening in the interior of the container. In that case the filling of the container will be facilitated because the tubular member may have such a shape that the filling opening may well be disposed adjacent to one of the walls of the container.

In accordance with an advantageous further feature of the invention the tubular member is backfolded on itself when the valve is closed. This will provide an additional safety against an escape of the packaged substances.

In an alternative, the tubular member may be rolled up in spiral shape when the valve is closed.

In accordance with further features of the invention the container may have two or more valves and associated filling openings. In a particularly preferred embodiment the tubular member consists of two strips, which are made of flexible material and are joined to each other at side seams. This will ensure that the valve will be closed even when the packaged substance is only under a low internal pressure.

In a modified embodiment, the container may be subdivided in a labyrinth pattern so that a plurality of valves are provided, which become effective one after the other.

The invention will be explained more in detail hereinafter with reference to illustrative embodiment shown on the drawings.

Figure 1 is a front elevation showing a first embodiment of the invention in the form of a plastic bag.

Figure 2 is a diagrammatic sectional view taken on line II-II in Figure 1 and showing the wall thicknesses highly exaggerated.

Figure 3 shows the same bag as Figure 2 as it is filled.

Figure 4 is an elevation showing the bag of Figure 3 when it has been filled so that the pressure applied by the packaged substance is effective.

Figure 5 is an elevation that is similar to Figure 1 and illustrates a second embodiment of the invention.

Figure 6 is a sectional view that is taken on line VI-VI in Figure 5 and corresponds to Figure 4.

Figures 7, 8 and 9 are elevations which are similar to Figure 1 and show further embodiments.

Figure 10 is an elevation that is similar to Figure 1 and shows a modified embodiment comprising a tubular member which can be rolled up.

Figure 11 shows the embodiment of Figure 10 after the tubular member has been rolled up.

Figure 12 is a diagrammatic sectional view which is taken along line XII-XII in Figure 11. In the lower part, the part surrounded by a circle is diagrammatically represented on a highly enlarged scale.

Figures 13 to 16 show further embodiments of the invention.

As is shown in the drawings a packaging container 1 consisting in the present case of a plastic bag comprises flexible walls 2, which may be made of plastic, paper or the like. The weblike material which constitutes the walls 2 has been provided with seam welds or adhesive seams 3, 4, 5 to form the closed container 1. A filling opening 6 is provided in the upper seam weld 5. The material to be packaged can be filled into the container through a filling opening 6, which is formed in the upper seam weld 5.

Various substances, such as gases, liquids, solids, pastes and other substances can be filled into the packaging container through the filling opening 6.

In accordance with the invention the filling opening of the container 1 contains a valve, which is generally designated 7 and which is closed and maintained in a closed state by the pressure which is generated in the interior of the container 1 by the filled-in material.

For an explanation of the valve 7, reference is first made to Figures 2 to 4, in which the mode of operation of the valve is diagrammatically illustrated. The illustrations in Figures 2 to 4 are sectional views, which are taken substantially on line II-II and in which like parts are designated by like reference characters. For the sake of clearness, the wall thicknesses are exaggerated.

As has been shown, the valve 7 consists of a flexible tubular member 8, which contains or, more exactly, surrounds the filling opening 6.

The tubular member 8 preferably consists of the same material as the walls 2 of the container 1 although that material may optionally be used in a somewhat stiffer grade.

In the present illustrative embodiment the tubular member 8 is joined by seam welds 9 and 10 to the wall material of the container 1.

It is apparent that in its state of rest, shown in Figure 2, the tubular member 8 has a highly flattened diameter. In a preferred embodiment the tubular member 8 consists of two strips 11, which are joined to each other at side seams 13, 14. This will ensure that the valve will more readily assume a closed state.

In the illustrative embodiment shown in Figures 5, 6 and 8, the flexible tubular member 8 is arranged at the upper seam weld 5 of the container 1 and depends freely into the interior 15 of the container 1.

As the container 1 is filled, the tubular member 8 of the valve 7 assumes the shape that is shown in Figure 3 so that the filling opening 6 communicates through the outlet 16 of the tubular member 8 with the interior 15 and the material to be packaged can be filled into the container.

When the filling operation has been completed, a pressure, which is indicated by the arrows 17 in Figure 4, prevails in the interior 15 of the container 1 and compresses the tubular member 8 so that the valve is closed and remains closed under the constantly applied pressure.

It is apparent that the packaged material can be taken when the valve 7 has been opened in that the tubular member 8 has been forced open and that said member will automatically close itself after a part of the contents has been taken so that such container will be self-closing after a taking of contents and when it has been filled and the container can be re-used several times. Such containers may be used, e.g., to package foodstuffs, such as milk and the like, or in the form of large sacks for a packaging of cereal grains and the like.

In the embodiment shown in Figures 5 and 6 the same details are provided as in the embodiment shown in Figures 1 to 4 but the tubular member 8 is backfolded on itself when the valve 7 is closed so that the closure will be more reliable.

In the embodiment shown in Figure 7 the flexible tubular member 8 is joined at its side seam 13 to a seam weld or adhesive seam of the container 1.

In the embodiment shown in Figure 8 the flexible tubular member 8 is arranged as in the embodiment shown in Figures 1 to 4 and the tubular member may have various lengths. In the illustrative embodiment shown in Figure 8 the tubular member 8 extends close to the bottom 19 of the container 1.

In such embodiments the edge which surrounds the mouth 16 of the tubular member 8 has preferably a lateral oblique shape 20 so that the container 1 can more easily be filled.

The embodiment shown in Figure 9 has basically the same design as the embodiment of Figure 7 in that one side seam 14 of the flexible

tubular member 8 is joined to the side seam 5 of the container 1.

In the embodiment shown in Figures 10 to 12 the design is the same as in the embodiment of Figure 1. When the valve 7 is closed, the flexible tubular member 8 is rolled up in a spiral shape. Such features will be adopted in dependence on the nature of the packaged material. A rolling up of the tubular member to a spiral shape will be preferred with materials which tend to trickle out.

In the embodiments shown in Figures 13 to 15 the flexible tubular member 8 is formed in that the material of the walls 2 of the container 1 is closed in tubular shape by inturned portions 21 and is then welded. Such embodiments are particularly preferred because such containers can be made in a simple manner.

As is also apparent from Figure 13 the container may have two or more valves 7 with the associated filling openings 6.

In the embodiment shown in Figure 16 the valve 7 is constituted by a multiplicity of internal partitions, which are stepped in a labyrinth pattern.

It is emphasized that the basic concept of the invention includes also containers which do not necessarily have flexible walls provided that they have a valve which automatically closes a filling opening under the internal pressure of the packaged material.

All features and advantages of the invention which are apparent from the description, the claims and the drawings, inclusive of details of design and three-dimensional arrangements, may be essential for the invention in themselves or in any desired combination.

Claims

1. A packaging container having flexible walls made of plastic film, paper or the like, wherein the weblike material which forms the walls has been provided with seam welds or adhesive seams to form the closed container, which has a filling opening that is adapted to be closed, characterized in that the filling opening (6) of the container (1) contains a valve (7), which is closed and maintained in a closed state by the pressure of the material which has been filled into the container.

2. A packaging container according to claim 1, characterized in that the valve (7) is constituted by a flexible tubular member (8), which contains or surrounds the filling opening (6).

3. A packaging container according to claim 2, characterized in that the tubular member (8) consists of the same material as the walls (2).

4. A packaging container according to claim 2 or 3, characterized in that the tubular member (8) has a flattened crosssection in a state of rest.

5. A packaging container according to any of the preceding claims, characterized in that the tubular member (8) is arranged at the upper seam weld (5) of the container (1) and depends freely into the interior (15) of the container (1).

6. A packaging container according to any of claims 1 to 4, characterized in that an upper portion of the tubular member (8) is laterally secured to a side wall (2) of the container (1).

7. A packaging container according to any of the preceding claims, characterized in that the member (8) is joined at a side seam (13) to a seam weld or adhesive seam (18) of the container (1).

8. A packaging container according to any of the foregoing claims, characterized in that the tubular member (8) is constituted by an inturned tubular portion (21) formed by the material of the walls (2) of the container (1).

9. A packaging container according to any of the preceding claims, characterized in that the tubular member (8) has an inclined section 20 at its free edge, which surrounds the mouth (16) in the interior (15) of the container (1).

10. A packaging container according to any of the preceding claims, characterized in that the tubular member (8) is backfolded on itself when the valve (7) is in its closed state.

11. A packaging container according to any of claims 1 to 9, characterized in that the tubular member is rolled up in a spiral shape when the valve (7) is in a closed state.

12. A packaging container according to any of the preceding claims, characterized in that the container (1) comprises two or more valves (7) and associated filling openings (6).

13. A packaging container according to any of the preceding claims, characterized in that the tubular member (8) consists of two strips (11,12), which are joined to each other at side seams (13,14).

14. A packaging container according to any of the preceding claims, characterized in that the container (1) comprises a multiplicity of internal partitions (22), which are stepped in a labyrinth pattern and constitute the valve (7).

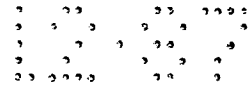
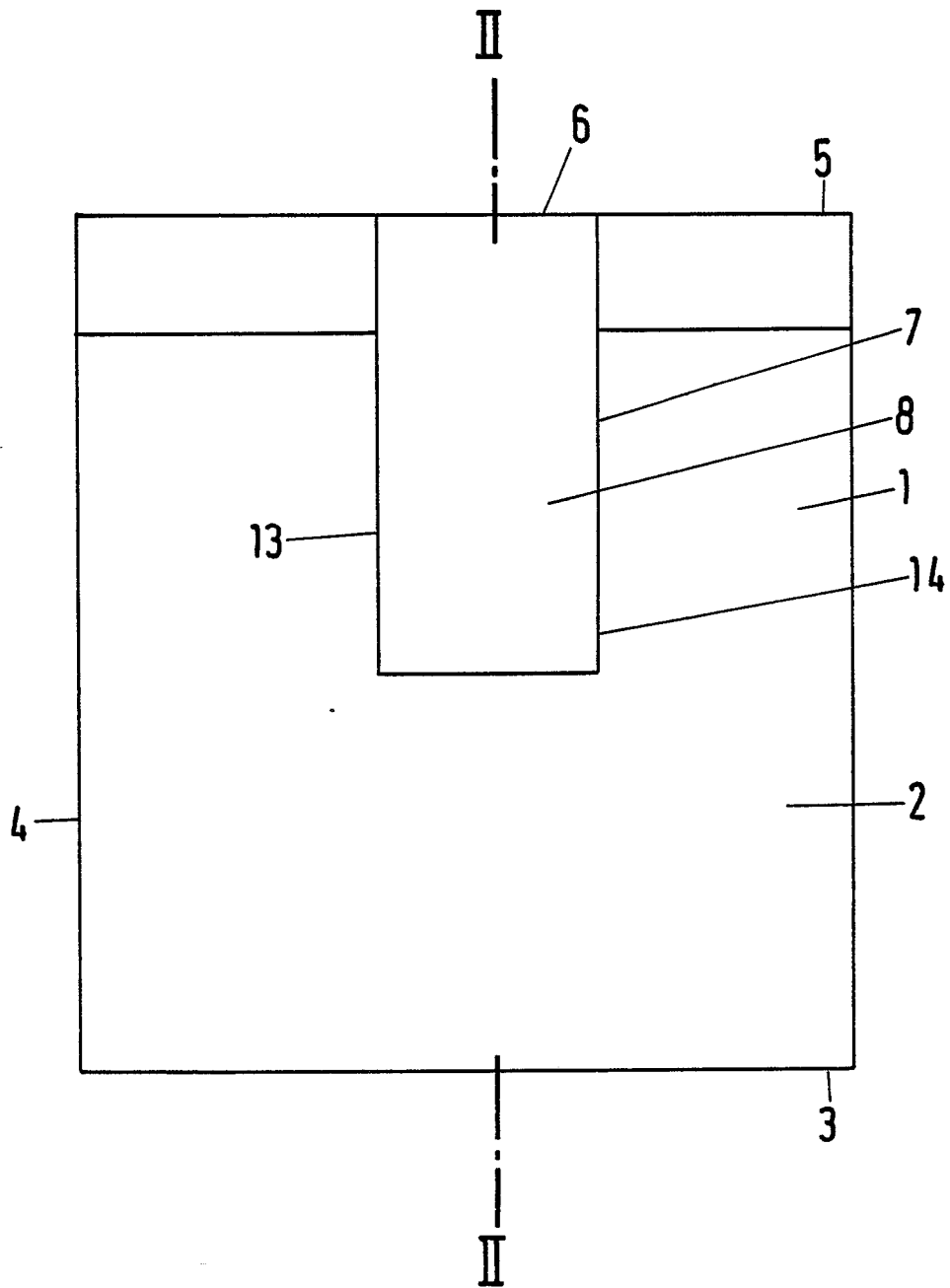
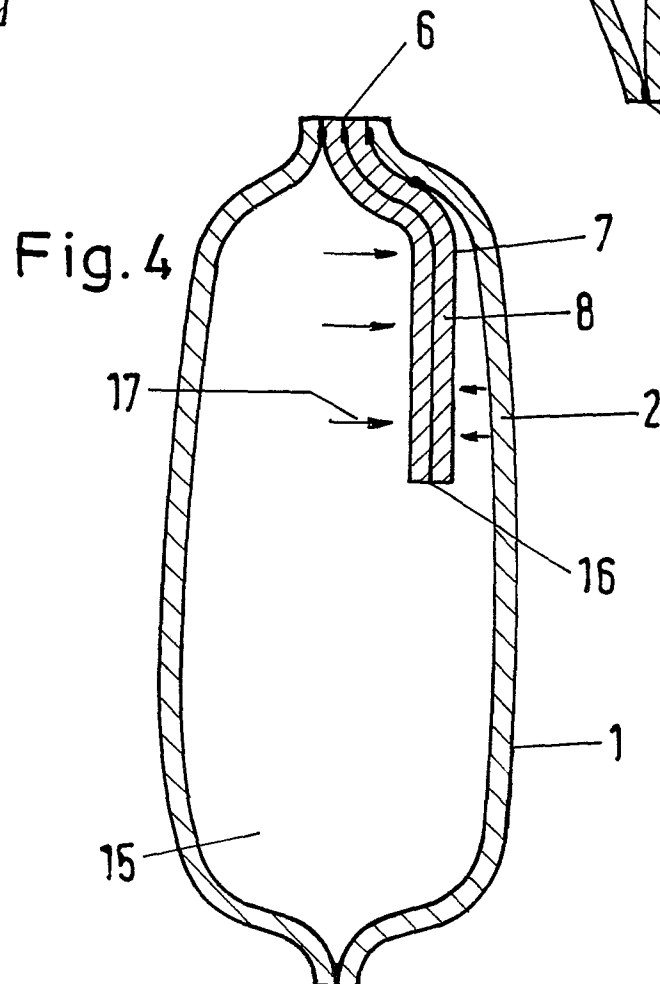
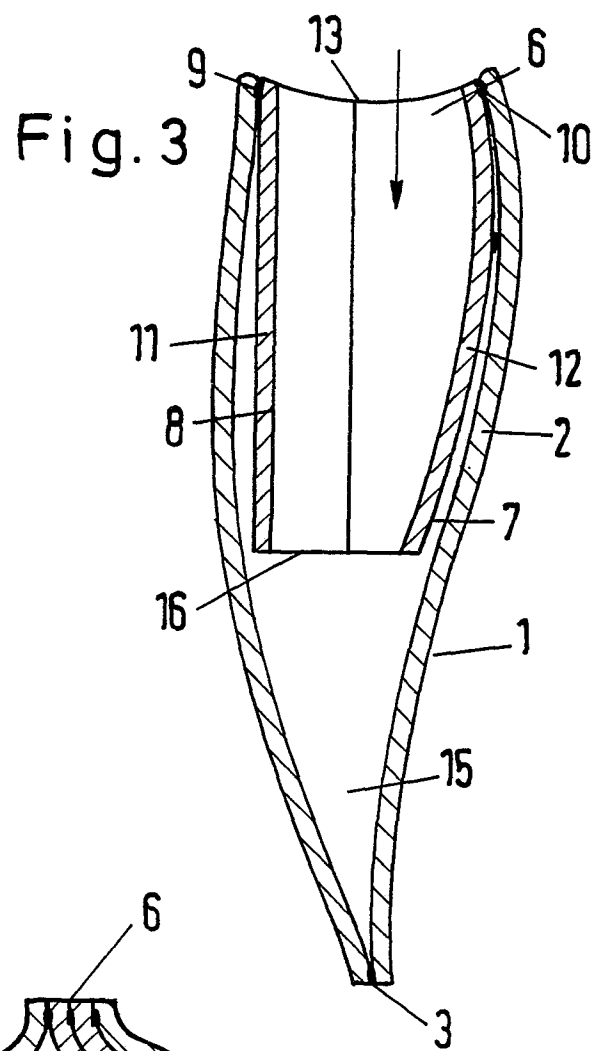
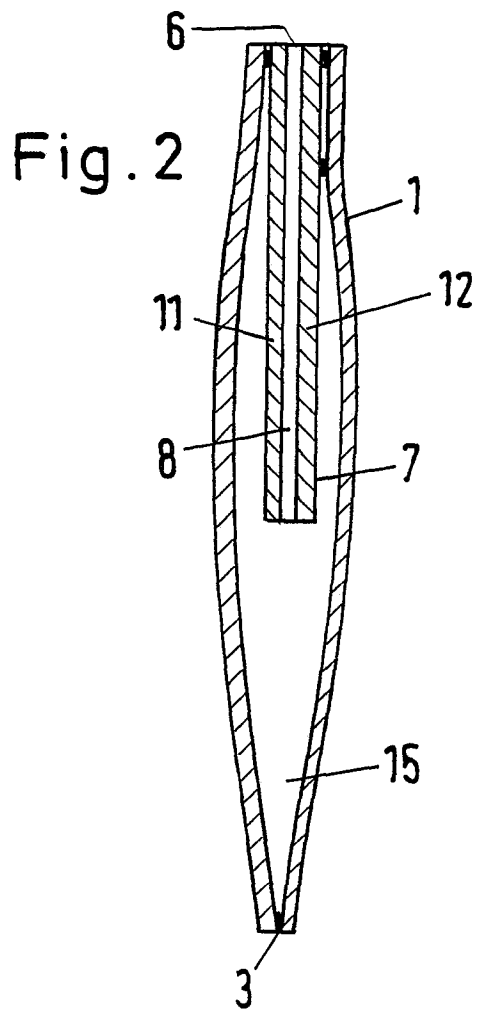


Fig.1





12 00 00

Fig. 5

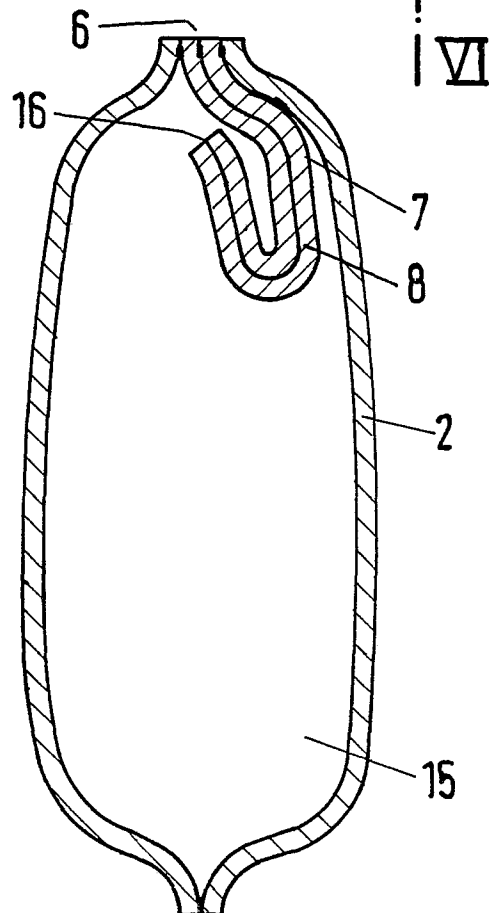
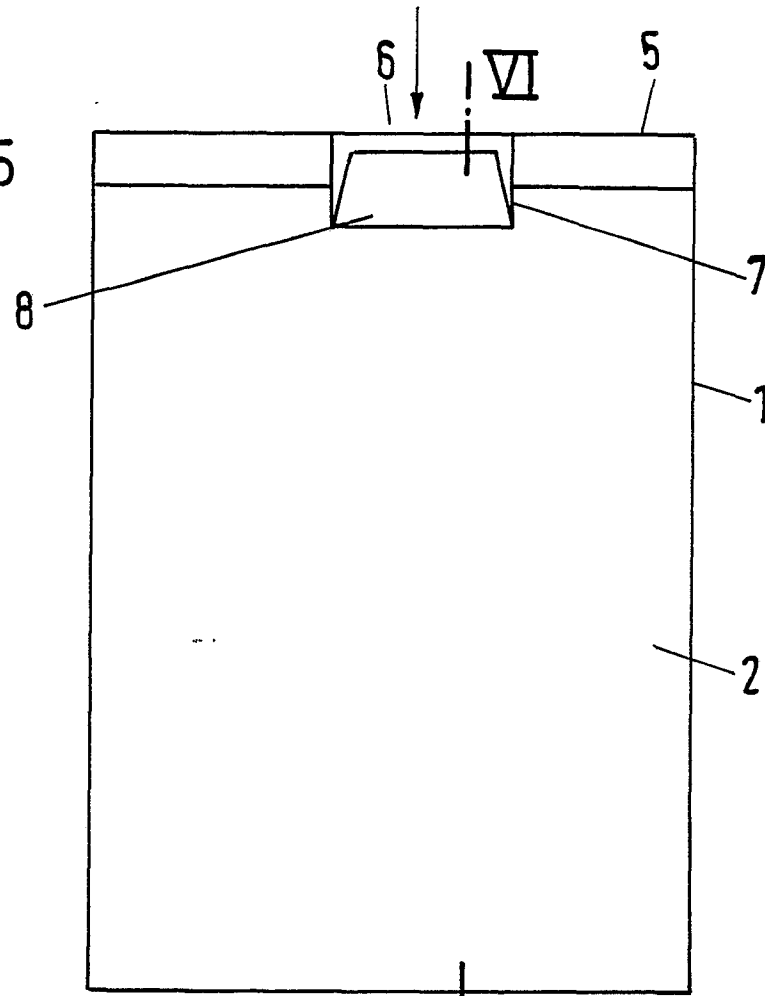


Fig. 6

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Fig.7

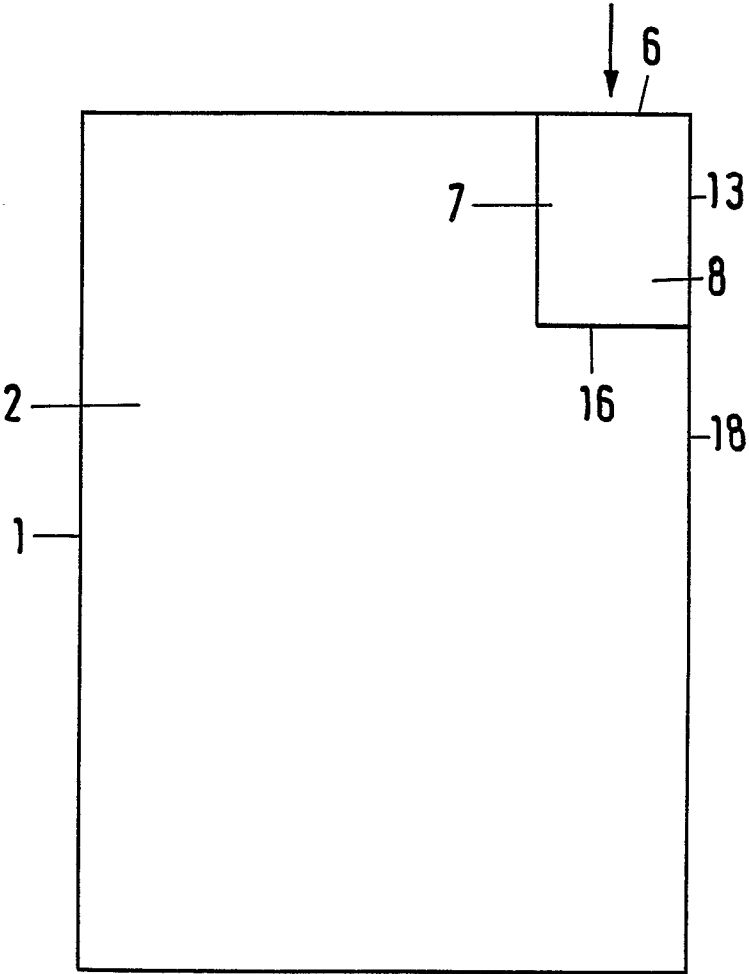


Fig.8

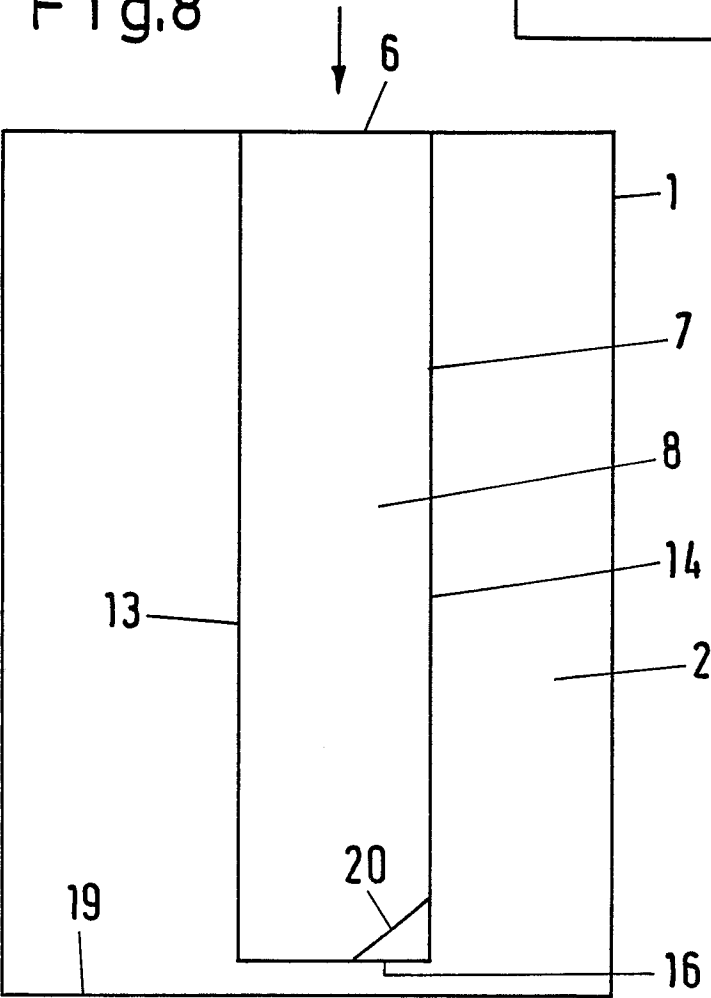
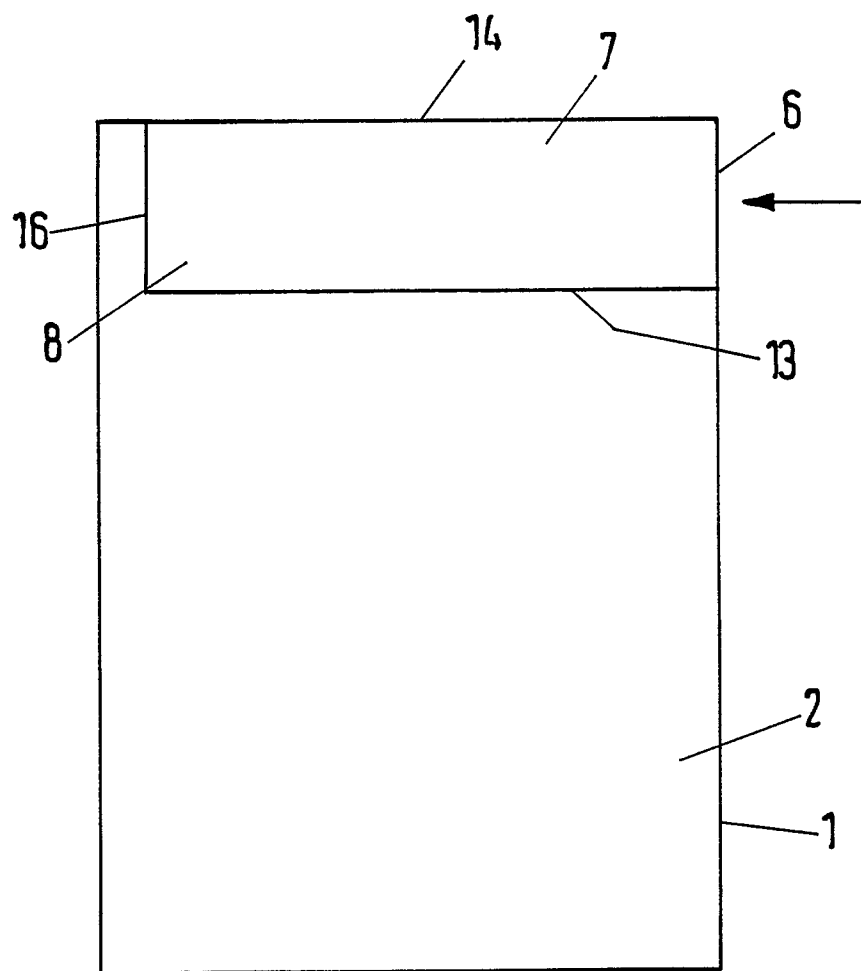


Fig. 9



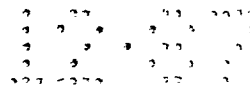
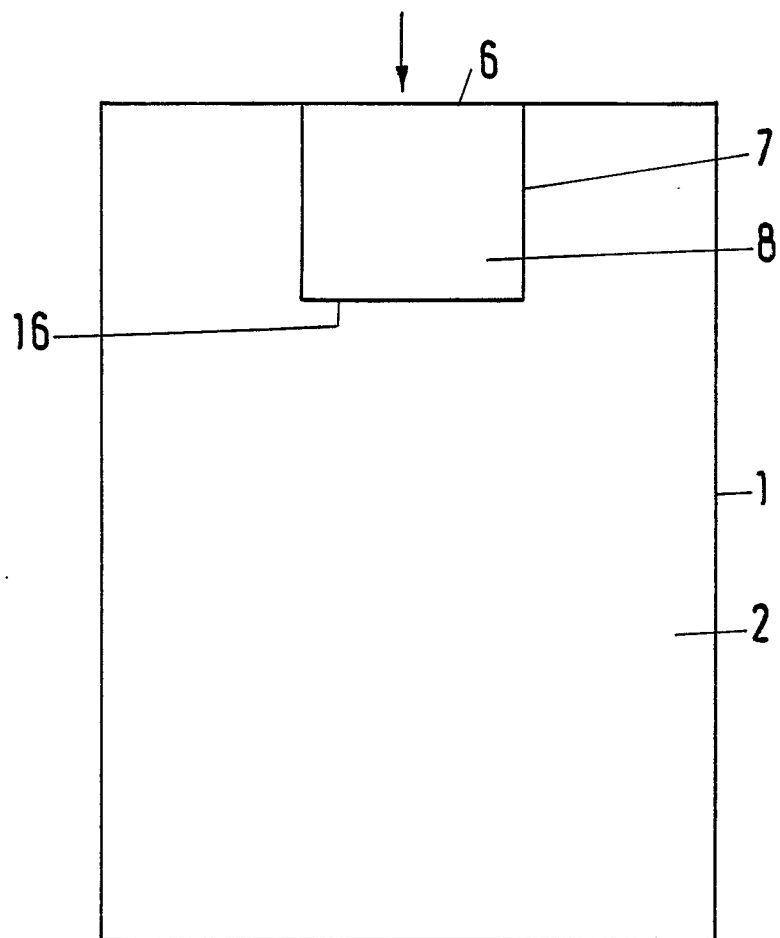
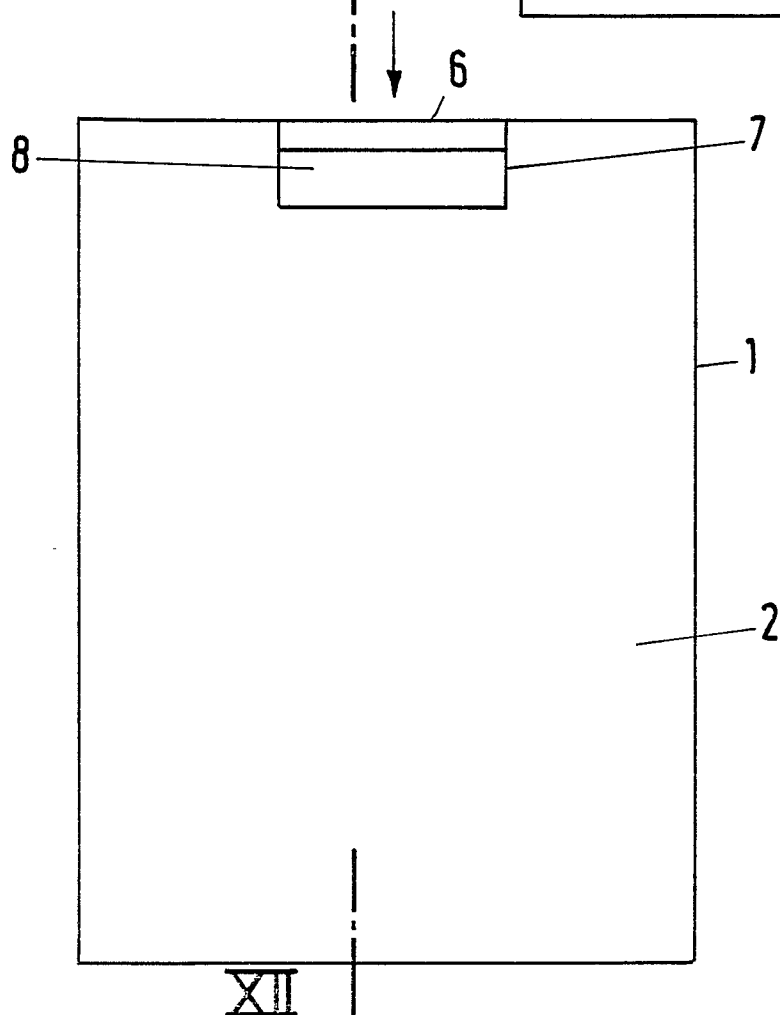


Fig.10



XII



F i g . 11

Fig.12

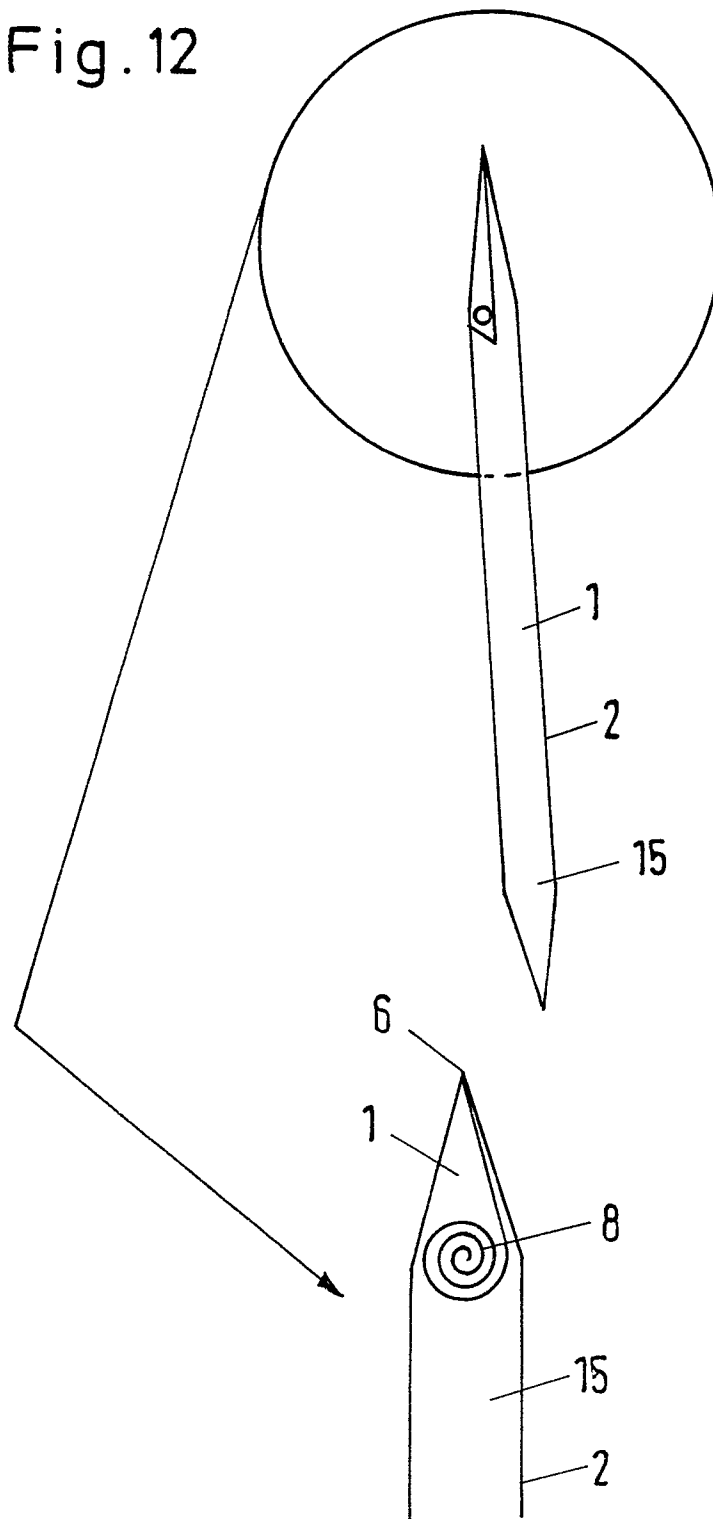


Fig.13

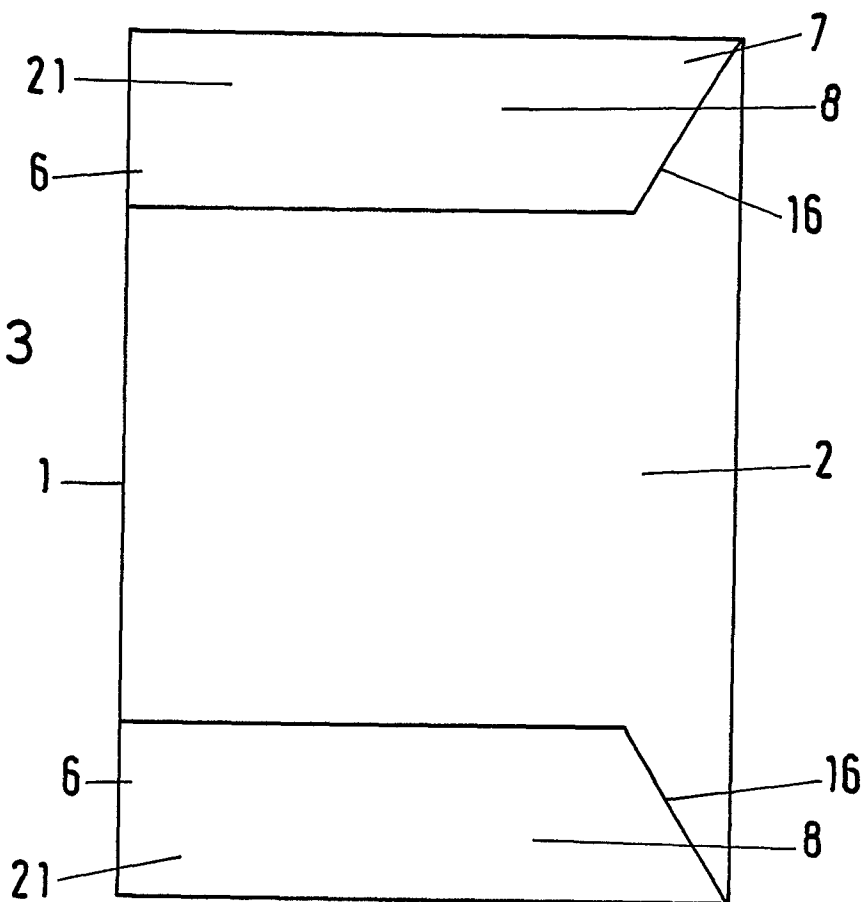


Fig.14

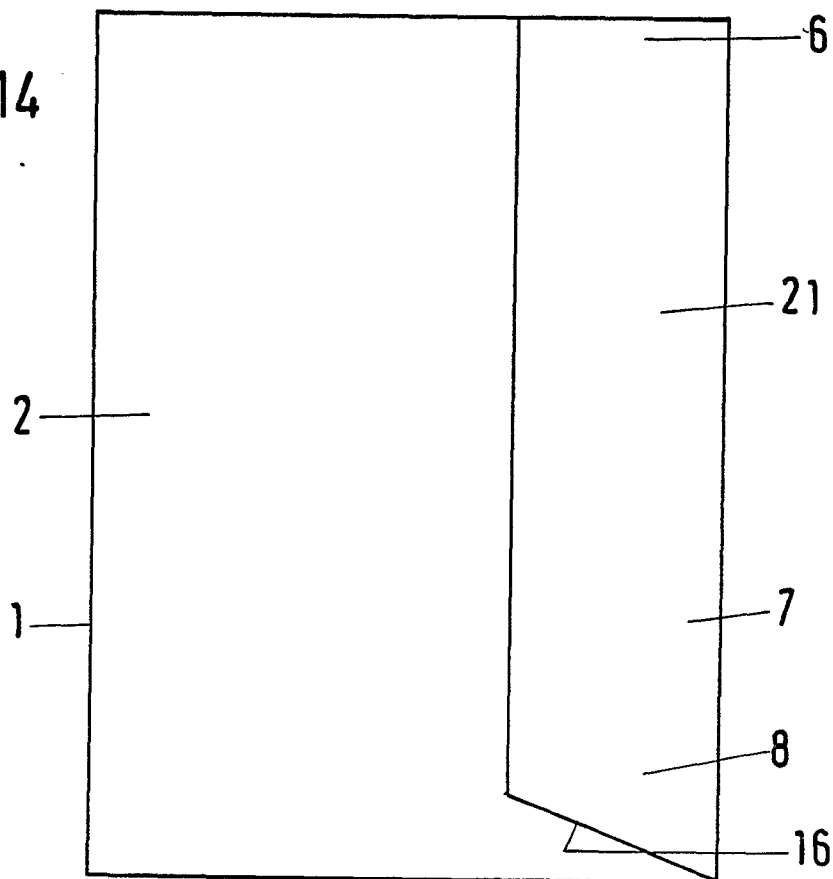


Fig.15

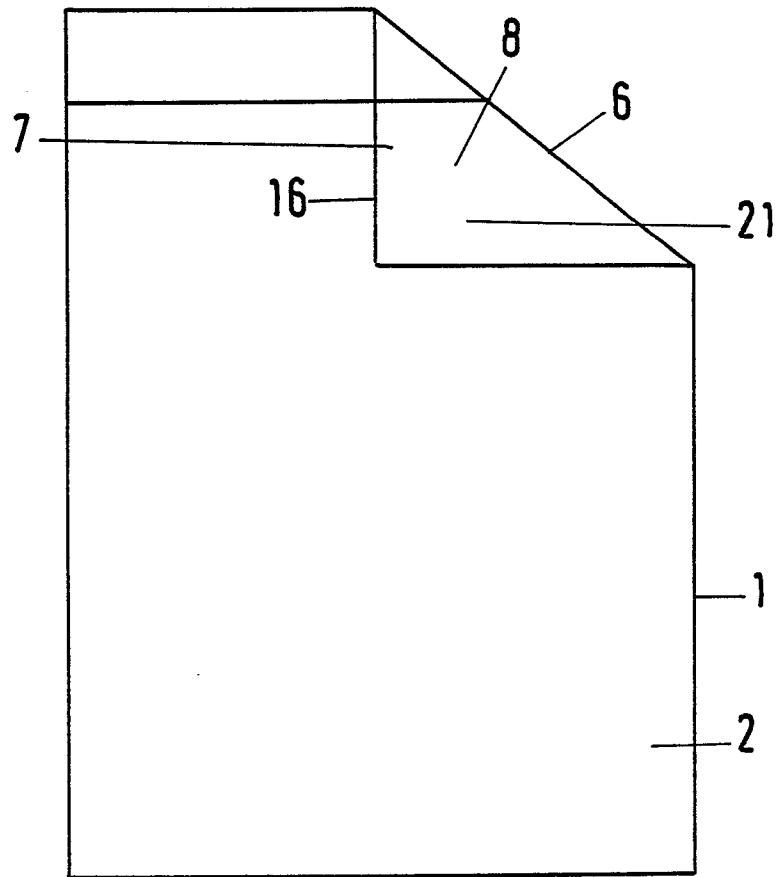


Fig.16

