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(54) Sachet having a single chamber

(57) A sachet filled with a material to be extracted by means of a liquid, such as tea or coffee, comprising a single chamber formed by a thin-walled material and filled with the material to be extracted, which chamber has two opposite sidewalls which are interconnected adjacent their longitudinal edges, the sachet comprising a first and a second longitudinal edge which are located opposite each other, the sachet being provided, adjacent the first longitudinal edge thereof, with a first expansion pleat extending parallel to the first longitudinal edge and, adjacent the second longitudinal edge thereof, with a first sealing seam extending parallel to the second longitudinal edge, characterized in that the sachet is further provided with a second expansion pleat extending parallel to the second longitudinal edge and located adjacent the second longitudinal edge.

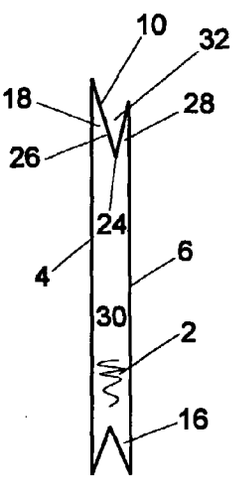

Fig. 2

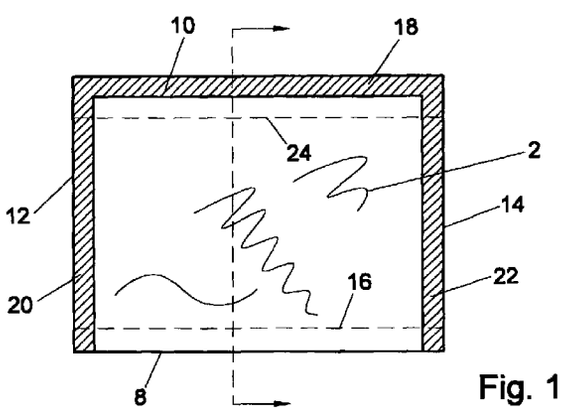

Fig. 1

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Description

The invention relates to a sachet filled with a material to be extracted by means of a liquid, such as tea or coffee, comprising a single chamber formed by a thin-walled material and filled with the material to be extracted, the chamber having two opposite sidewalls which are interconnected adjacent longitudinal edges of the sachet, the sachet comprising a first and a second longitudinal edge which are located opposite each other, the sachet being provided, adjacent the first longitudinal edge thereof, with an expansion pleat extending parallel to the first longitudinal edge and, adjacent the second longitudinal edge thereof, with a first sealing seam extending parallel to the second longitudinal edge and interconnecting the sidewalls.

The invention also relates to a method of manufacturing such sachet, wherein an elongated strip of band-shaped material is conveyed along a processing path and wherein, in the processing path, the band material is folded into approximately two equal parts along a folding seam extending in the longitudinal direction of the band material.

Such sachet and method are known from European patent application 0 148 153. Such sachet has the advantage that it can be manufactured at high speed. After all, most sachets are provided with two separated chambers, which implies that during the manufacture of such sachets, decelerating and accelerating movements have to be performed with the band-shaped material from which the sachets are manufactured.

A drawback of the sachet described in European patent application 0 148 153, which sachet contains one chamber, is that the extraction of the contents of the sachet, during the preparation of a beverage suitable for consumption, takes place relatively slowly.

The object of the invention is to provide a solution to the problem mentioned hereinabove.

According to a first aspect of the invention, the sachet is characterized in that it is further provided with a second expansion pleat extending parallel to the second longitudinal edge and located adjacent the second longitudinal edge. This second expansion pleat has as a result that the volume of the sachet can increase considerably when the sachet is immersed in a hot liquid. Accordingly, the material to be extracted, contained in the chamber, can expand generously. During the expansion, the two expansion pleats provide the required increase of the volume of the sachet. The invention hereby breaks the prejudice that sealing seams cannot be provided in the proximity of expansion pleats. The known rectangular single-chamber sachet comprises three sealing seams, so that only one of the longitudinal edges is provided with an expansion pleat.

British patent application 2 053 668 likewise describes a sachet having a single chamber. Here, the sachet is manufactured from a band-shaped material whose opposite longitudinal edges are interconnected to create a tubular whole having two open ends. Next, one open end is sealed up. Moreover, two expansion pleats are arranged which are located opposite each other and extend in the longitudinal direction of the tubular part. The first sealing seam extends parallel between these expansion pleats. Next, the whole can be filled with the product to be extracted, after which the second open end can be sealed up. Hence, British patent application 2 053 668 does not teach that one of the expansion pleats extends adjacent and parallel to a sealing seam. In connection to this, such sachet cannot be manufactured at high speed. For performing the various operations on the band-shaped material to obtain the sachet according to British patent application 2 053 668, the band-shaped material must be accelerated and decelerated at different locations along the processing path. The sachet according to British patent application 2 053 668 must be filled via the short side. This means that the sachet must be rotated over 90° after the formation thereof. The rotation of the sachet involves a time-consuming, discontinuous movement.

According to a second aspect of the invention, which also provides a solution to the problem of the relatively long time required for extracting the contents of the known sachet mentioned, the sachet according to the invention is characterized in that the expansion pleat has a V-shaped cross section comprising two legs, the length of each of the legs being greater than a fourth of the distance between the first and the second longitudinal edge.

Because the legs of the expansion pleat are longer than a fourth of the distance between the first and the second longitudinal edge, the effect achieved is that when, in use, the sachet is immersed in a liquid, the expansion pleat can provide a relatively great increase of the volume of the sachet's chamber. Preferably, the length of each of the legs approximately equals half the distance between the first and the second longitudinal edge. On the one hand, such sachet provides a relatively great increase of the volume of the chamber during extraction, and on the other hand, such sachet has the advantage that in expanded condition, a sachet is obtained having a more or less triangular cross section, which from an aesthetic viewpoint is experienced as highly attractive.

According to the invention, a method for manufacturing such sachets is characterized in that in the processing path, the following steps are further performed:

1. an expansion pleat is provided in the band-shaped material, which expansion pleat extends parallel to the folding seam and is located adjacent the folding seam;
2. the band material is provided with equally spaced apart pairs of sealing seams which are directed perpendicularly to the folding seam and interconnect the folded parts, to form a chamber between

two adjacent sealing seams which is open on one side;

3. the formed chambers are filled with a material to be extracted;

4. the filled chambers are sealed up; and

5. the filled chambers are separated from each other.

The invention will hereinafter be specified with reference to the accompanying drawings. In these drawings:

Fig. 1 is a side elevational view of a first and second embodiment of a sachet according to the invention;

Fig. 2 shows a cross section of a first embodiment of the sachet according to Fig. 1;

Fig. 3 shows a cross section of a second embodiment of the sachet according to Fig. 1;

Fig. 4 is a side elevational view of a third embodiment of a sachet according to the invention;

Fig. 5 shows a cross section of the sachet according to Fig. 4;

Fig. 6 shows a cross section of the sachet according to Fig. 4 when the sachet is in an expanded condition;

Fig. 7.0 schematically shows a method for manufacturing a sachet;

Fig. 7.1 shows a cross section of a band-shaped material after processing step I of Fig. 7.0;

Fig. 7.2 shows a cross section of a band-shaped material after processing step II of Fig. 7.0;

Fig. 7.3 shows a cross section of a band-shaped material after processing step III of Fig. 7.0; and

Fig. 7.4 shows a cross section of a band-shaped material after processing step VI of Fig. 7.0.

In Fig. 1, reference numeral 1 designates a sachet according to the invention. In this example, the sachet is filled with a material to be extracted or dissolved by means of liquid, in this case tea. The sachet is manufactured from a thin-walled material, such as filter paper. The sachet comprises two opposite sidewalls 4, 6, interconnected adjacent longitudinal edges 8, 10, 12, 14 of the sachet. Adjacent the first longitudinal edge 8, the sachet is provided with a first expansion pleat 16 extending parallel to the first longitudinal edge 8. Further, adjacent the second longitudinal edge 10, the sachet is provided with a first sealing seam 18. The sealing seam 18 interconnects the longitudinal edges of the sidewalls 4 and 6, in this case at the top side of the sachet. This connection is in this example established by means of heat sealing.

Adjacent their third longitudinal edge 12 and their fourth longitudinal edge 14, the sidewalls 4 and 6 are likewise interconnected by means of a second sealing seam 20 and a third sealing seam 22 respectively.

The sachet is further provided with a second expansion pleat 24 extending parallel to the second longitudinal edge 10 and located adjacent the second longitudinal edge 10.

The second expansion pleat 24 has a V-shaped cross section (see Fig. 2) with a first leg 26 and a second leg 28 converging towards each other in a direction towards the inside 30 of the sachet. The first sealing seam 18 is located in the first leg 26.

According to a possible further elaboration (see Fig. 2), the first leg is longer than the second leg, the first sealing seam 18 being located outside the space 32 enclosed by the two legs.

When the sachet (according to Figs. 1 and 2) is immersed in hot water, the tea 2 will expand. As a result of this expansion, the first expansion pleat 16 and the second expansion pleat 24 will expand. In other words, the angle included by the legs of the expansion pleats will increase. The presence of two expansion pleats effects that the volume of the sachet's chamber can increase sufficiently, to enable a quick and efficient tea extraction.

As the first sealing seam is located outside the space 32 enclosed by the two legs 26, 28, the first sealing seam can readily be provided during the production process, by means of heat sealing. This does not involve the risk of the legs 26, 28 also being sealed together by the heat sealing operation.

Another advantage of the sachet according to Figs. 1 and 2 is that it can be manufactured particularly quickly. This will be explained in more detail hereinbelow, with reference to Figs. 7.0-7.6

Figs. 1 and 3 show an alternative further elaboration of the sachet according to the invention. The characterizing difference from Fig. 2 is that the legs 26 and 28 are approximately equally long. Hence, the sachet is of symmetrical design, which may be an aesthetic advantage. However, the first sealing seam is now inevitably located within the space 32 enclosed by the legs 26 and 28. The consequence hereof is that the arrangement of this sealing seam during the production process is possibly more complicated than that of the sealing seam according to Fig. 2. To realize that the legs 26 and 28 are not interconnected during heat sealing, only the first leg 26 can be pressed against the sidewall 4 during heat sealing. This implies that a sealing jaw should be manipulated in the space 32. However, it is also possible to provide this sealing seam by means of priorly applied adhesive. The adhesive can then for instance be applied to the first leg 26 and/or the sidewall 4. When the sidewall 4 and the sidewall 6 are subsequently pressed together adjacent the second longitudinal edge 10, possibly with heating, only the desired first sealing seam will be provided. In accordance with an alternative method, one-sidedly sealable paper is used. This involves the two legs 26, 28 being clamped between sealing jaws. The effect thus achieved is that after sealing, the two legs become loose from each other and that in this manner a symmetrical sachet is realized.

Figs. 4 and 5 show an alternative embodiment of

the sachet according to the invention. In these Figures, parts corresponding to those of Figs. 1-6 are provided with the same reference numerals. Unlike the sachet according to Figs. 1-3, the sachet according to Fig. 4 is not provided with a second expansion pleat 24 adjacent its second longitudinal edge 10. However, the sachet does comprise the first expansion pleat 16. The first expansion pleat 16 has a V-shaped cross section comprising two legs 34, 36. The length of each of these legs is greater than a fourth of the distance L_1 between the first longitudinal edge 8 and the second longitudinal edge 10. In this example, the legs 34 and 36 approximately have an equal length L_0 . As the length L_0 is greater than a quarter of the length L_1, it is thus provided that the first expansion pleat, when folded open, effects a relatively substantial increase of the volume of the sachet's content. This means that in use, the contents of the sachet can be extracted in a very quick and efficient manner.

Preferably, the length L_0 of each of the legs 34, 36 approximately equals half the distance L_1 between the first longitudinal edge 8 and the second longitudinal edge 10. When the contents of the sachet expand, a cross section of the sachet will assume the shape as shown in Fig. 6. This means in the first place an optimum increase of the volume of the sachet's content. In the second place, the cross section of Fig. 6 has a substantially triangular shape. From an aesthetic viewpoint, this is experienced as advantageous.

However, in unused condition, the two legs 34, 36 extend practically parallel to each other, as shown in Fig. 5. It is also possible to seal up the expansion pleat 16 in unused condition. However, this seal should then be so weak that it is torn loose in use, as a result of the expanding tea.

To each of the above-described embodiments of the sachet, it applies that they may further comprise a cord having a label attached thereto. This cord can for instance be attached adjacent the first or second longitudinal edge of the sachet. In the case of the sachet according to Fig. 4, attachment of the cord to the sachet adjacent the longitudinal edge 12 or 14 may also be considered, in view of the aesthetic shape of the sachet, as shown in Fig. 6.

With reference to Figs. 7.0-7.4, a method will be described whereby the above-discussed sachets can be manufactured. According to this method, an elongated strip of band material 38, such as for instance filter paper, is unwound from a roll 40. The band material 38 is then passed along a processing path 42 in the direction of the arrow 44. In the processing path, the band material is subjected to various treatments. In a first step I of the processing path, the band material is folded into approximately two equal parts along a folding seam 46 extending in the longitudinal direction of the band material (see also Fig. 7.1). This folding seam 46 later forms part of the first longitudinal edge 8 of the sachet. In step II, the first expansion pleat 16 is provided in the band-shaped material. The expansion pleat 16 extends parallel to the folding seam 46 and is located adjacent the folding seam 46 (Fig. 7.2). Also, in a step III, the second expansion pleat 24 is provided adjacent the side of the folded band-shaped material located opposite the folding seam 46. This second expansion pleat extends parallel to the side last mentioned (Fig. 7.3). Steps I, II and/or II can be performed successively as well as simultaneously by means of a tool arranged therefor.

In step IV, the band material is provided with equally spaced apart pairs of sealing seams 20, 22, directed perpendicularly to the folding seam 46 and interconnecting the folded parts 4, 6, to form between two adjacent sealing seams 20, 22 a chamber which is open on one side.

In step V, the chambers are filled with a material to be extracted. Then, in step VI, the chambers are sealed up, to be subsequently separated from each other in step VII, to produce a sachet according to Figs. 1-3. It is observed that in principle, during the performance of steps I-VII, the band-shaped material need not be decelerated or accelerated. All operations can be performed when the band material 38 is conveyed along the processing path 42 at a constant speed.

For manufacturing a sachet according to Figs. 4-6, processing step III can of course be omitted. It is also possible that processing steps I and II are combined into one processing step. Processing step III can also be performed prior to processing step II. More in particular, processing step III is performed after processing step I and before processing step V.

Such variants are understood to fall within the framework of the invention.

Claims

1. A sachet filled with a material to be extracted by means of a liquid, such as tea or coffee, comprising a single chamber formed by a thin-walled material and filled with the material to be extracted, said chamber having two opposite sidewalls which are interconnected adjacent longitudinal edges of the sachet, the sachet comprising a first and a second longitudinal edge which are located opposite each other, the sachet being provided, adjacent the first longitudinal edge thereof, with a first expansion pleat extending parallel to the first longitudinal edge and, adjacent the second longitudinal edge thereof, with a first sealing seam extending parallel to the second longitudinal edge and interconnecting the sidewalls, **characterized in that** the sachet is further provided with a second expansion pleat extending parallel to the second longitudinal edge and located adjacent the second longitudinal edge.

2. A sachet according to claim 1, characterized in that a second expansion pleat has a V-shaped cross

section with a first and a second leg converging towards each other in a direction towards the inside of the sachet, the first sealing seam being located in the first leg.

3. A sachet according to claim 2, characterized in that the first and the second leg have an equal length.

4. A sachet according to claim 2, characterized in that the first leg is longer than the second leg, the first sealing seam being located outside the space enclosed by the two legs.

5. A sachet filled with a material to be extracted by means of a liquid, such as tea or coffee, comprising a single chamber formed by a thin-walled material and filled with the material to be extracted, said chamber having two opposite sidewalls which are interconnected adjacent longitudinal edges of the sachet, the sachet comprising a first and a second longitudinal edge which are located opposite each other and directed substantially parallel to each other, the sachet being provided, adjacent the first longitudinal edge thereof, with an expansion pleat extending parallel to the first longitudinal edge and, adjacent the second longitudinal edge thereof, with a first sealing seam extending parallel to the second longitudinal edge, characterized in that the expansion pleat has a V-shaped cross section comprising two legs, the length of each of the legs being greater than a fourth of the distance between the first and the second longitudinal edge.

6. A sachet according to claim 5, characterized in that the length of each of the legs is approximately equal to half the distance between the first and the second longitudinal edge.

7. A sachet according to claim 5 or 6, characterized in that in unused condition, the two legs extend substantially parallel to each other.

8. A sachet according to claim 7, characterized in that in unused condition, the expansion pleat is sealed up.

9. A sachet according to any one of the preceding claims, characterized in that the sachet further comprises a third and a fourth longitudinal edge which are located opposite each other and are directed substantially perpendicularly to the first and the second longitudinal edge, while a second sealing seam is provided adjacent and parallel to the third longitudinal edge, said second sealing seam interconnecting the opposite sidewalls, and a third sealing seam is provided adjacent and parallel to the fourth longitudinal edge, said third sealing seam interconnecting the opposite sidewalls.

10. A sachet according to any one of the preceding claims, characterized in that the sachet further comprises a cord attached to the sachet adjacent the first or second longitudinal edge thereof.

11. A sachet according to any one of the preceding claims, characterized in that the thin-walled material consists of one-sidedly sealable paper.

12. A method of manufacturing a sachet according to any one of the preceding claims, wherein an elongated strip of band material is conveyed along a processing path and wherein in the processing path, the band material is folded into approximately two equal parts along a folding seam extending in the longitudinal direction of the band material, characterized in that in the processing path, the following steps are further performed:

    1. an expansion pleat is provided in the band-shaped material, which expansion pleat extends parallel to the folding seam and is located adjacent the folding seam;
    2. the band material is provided with equally spaced apart pairs of sealing seams which are directed perpendicularly to the folding seam and interconnect the folded parts, to form a chamber between two adjacent sealing seams which is open on one side;
    3. the formed chambers are filled with a material to be extracted;
    4. the filled chambers are sealed up; and
    5. the filled chambers are separated from each other.

13. A method according to claim 12, characterized in that after step 1. and before step 3., adjacent the side of the folded band-shaped material located opposite the folding seam, a second expansion pleat is provided which extends parallel to the side last mentioned.

14. A method according to claim 13, characterized in that the expansion pleats each have a substantially V-shaped cross section.

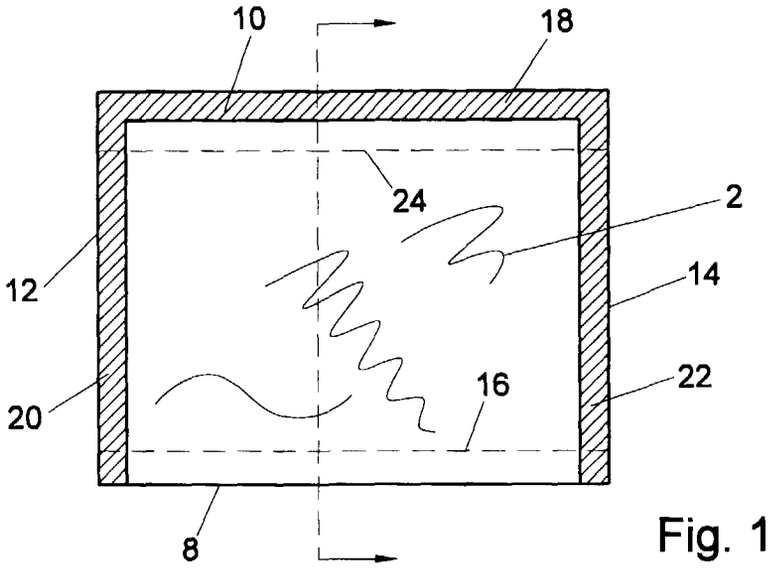

Fig. 1

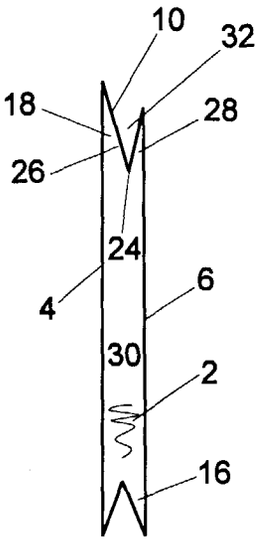

Fig. 2

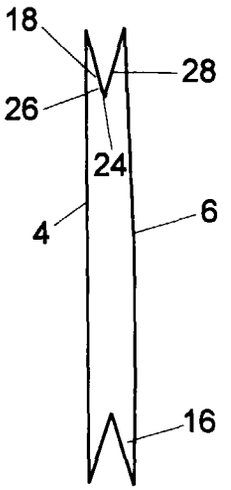

Fig. 3

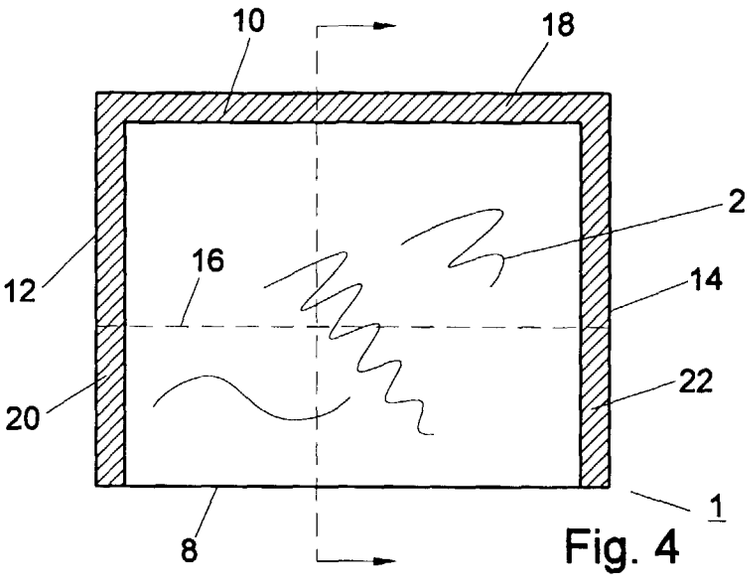

Fig. 4

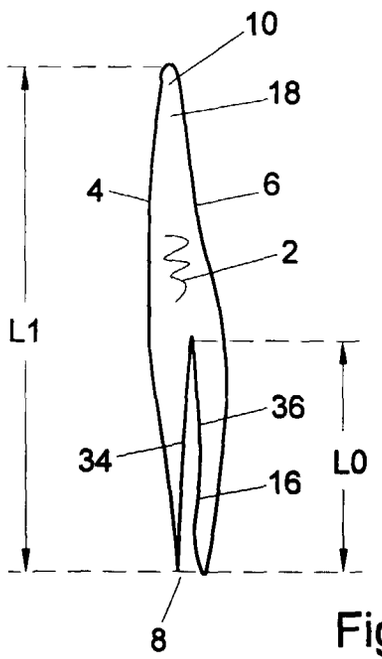

Fig. 5

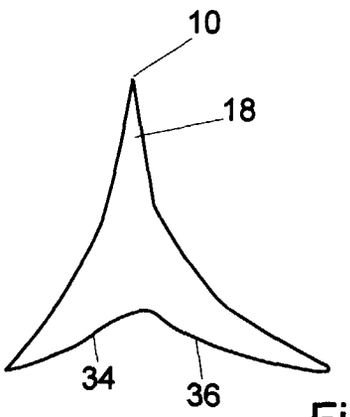

Fig. 6

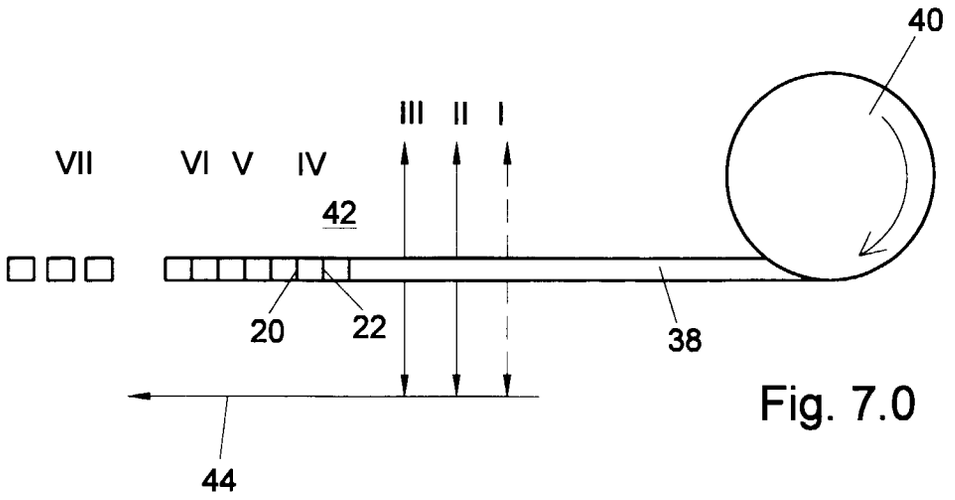

Fig. 7.0

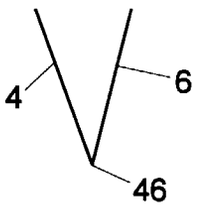

Fig. 7.1

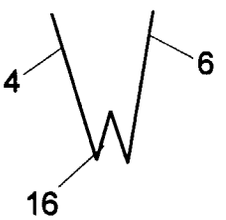

Fig. 7.2

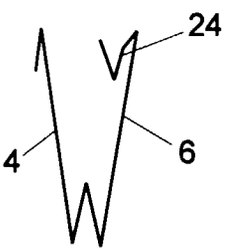

Fig. 7.3

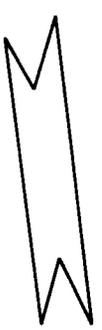

Fig. 7.4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 20 0524

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.6)
A	GB 789 492 A (MODERN COFFEES INC.) * page 1, line 55 - page 2, line 40; figures 1-3 *	1-5,9, 12-14	B65D81/00
A	CH 209 650 A (BENTZ) * page 2, column 1, line 35 - column 2, line 4; figures 3,4 *	1,5-7,12	
D,A	EP 0 148 153 A (BLANC) * claims 1-9; figures 1-6 *	1-5,9-12	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65D
B65B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 May 1998	Vantomme, M

CATEGORY OF CITED DOCUMENTS

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