

## **Examiners' Report - Paper A 2007 (Electricity/Mechanics)**

### **General considerations**

The client's company produces and sells infusion packages for preparing infusion beverages such as tea. The packages comprise an infusion bag, a string attached thereto and optionally a tag attached to the string.

The infusion bags exhibit two layers of flexible liquid-permeable sheet material. The layers are positioned one on top of the other for enclosing the infusible substance. The two layers are either formed by two separate sheets, as shown in Fig. 1 of client's letter, or by a single folded sheet, as shown in Fig. 2 of client's letter. The superposed borders of the layers are bonded together such that the infusion bag is closed along a flange and forms a single chambered bag.

Prior art infusion packages allow the infusion bag to be squeezed out in a comfortable way by pulling the string(s). Such prior art infusion package arrangements are shown in Figs. 3 and 4 of client's letter and in document D1. In these infusion packages strings form loops around the infusion bag which can be tightened by pulling the loose ends of the strings so that the infusion bag is compressed and liquid is squeezed out.

The following problems are encountered with these packages:

- it is difficult to retain the string(s) in the correct position in order to ensure effective squeezing of the infusion bag;
- the string portions extending around the infusion bag increase the risk of the string becoming entangled (e.g. when the packages are packed in a box);
- the production of these packages requires a subsequent manufacturing step on the closed bag for arranging the string around and stapling/attaching it to the bag (Figs. 3 and 4 of client's letter) or threading strings through holes provided in the side walls of the bag (document D1).

The infusion packages presented by the client solve these problems by passing the string(s) through the interior of the infusion bag and guiding the string in the flange of the infusion bag at appropriate locations. This ensures the correct position of the string(s) and reduces the risk of string entanglement. Conveniently, attachment of the string(s) to the infusion bag can be carried out during the production of the infusion bag. Appropriate arranging of the string(s) on one layer of sheet material is effected before superposition of the other layer of sheet material.

In accordance with the instructions in the client's letter, candidates were expected to draft claims to the infusion package as well as to its method of manufacture. The main challenge of the paper was to draft a single independent device claim which embraced all the embodiments described in the client's letter in a clear and concise manner, and which clearly excluded the known infusion packages. A further challenge of the paper was to draft a method claim which was consistent with the device claim.

The following points were available:

- 40 points for the independent device claim;
- 10 points for the independent method claim;
- 35 points for the dependent claims;
- 15 points for the description.

## 1. Independent claim(s)

### Device claim (40 points)

An independent device claim should comprise a combination of the following features, it being understood that the features could be expressed using different wording:

- (a) An infusion package (1) comprising
- (b) a string (3; 3') and
- (c1) an infusion bag (2) having
- (c2) first and second layers of sheet material (5; 5A, 5B)
- (c3) bonded together at borders thereof to form a flange (4),
- (d1) the string being guided at a first point (12 to 16) of the flange and being coupled to the flange at a second point (12 to 18) of the flange,
- (d2) the two points being located relative to each other
- (d3) such that by pulling the string the infusion bag can be compressed,
- (d4) the string extending inside the infusion bag between the two points.

Remarks concerning feature (a):

The client's letter clearly emphasizes the difference between the expressions "package" and "bag". "Package" or a similar expression is preferable in defining the ensemble of infusion bag and string.

Remarks concerning feature (b):

The expression "a string" in the context of the claim is compatible with

- the embodiments of Figs. 5, 6, 7 and 9 having a single string with two string ends external to the bag,
- the embodiment of Fig. 8 having two separate strings each with a string end external to the bag, and
- the alternative embodiment mentioned in connection with Fig. 9 having a single string with only one string end external to the bag.

Remarks concerning features (c):

These features concern the construction of the infusion bag. The term "infusion bag" (c1) is considered to include a bag with or without the infusible material.

It is considered that the term "infusion bag" implicitly imposes on the "sheet material" the necessary properties of a material used in such bags, so that further characterisation of the material, e.g. by terms such as "liquid permeable" or "flexible" (see client's letter, page 1, paragraph 2) is not necessary. The formulation "layers of sheet material" (c2) includes the bags shown in Figs. 5, 6, 7 and 9 which are formed by two separate sheets (described in detail in context with the prior art Fig. 1) and the bag shown in Fig. 8 which is formed by a single folded sheet (described in detail in context with the prior art Fig. 2).

The formulation "bonded together at borders thereof" (c3) encompasses both types of bag, namely the "two sheet" bags, where the bonding flange extends all around the bag (Figs. 5, 6, 7 and 9), and the "single sheet" bags, where the bonding flange is interrupted by the fold (Fig. 8). By defining the flange, the arrangement of the string in relation to the bag (see features (d1) to (d4)) can be defined clearly and such that it is distinguishable from D1.

Remarks concerning features (d):

These features concern the arrangement of the string in relation to the bag. Features (d1) to (d3) are known per se from the prior art infusion packages shown in Figs. 3 and 4 of the client's letter but establish novelty over the disclosure of D1. Feature (d4) is known per se from D1 but establishes novelty over the prior art infusion packages of Figs. 3 and 4.

Feature (d1) can be directly derived from the client's letter, page 6, paragraph 1.

Equivalent formulations are for example:

- the string being guided at a first point of (in) the flange and extending to a further point of (in) the flange, the two points being coupled (linked) by the string (this formulation can be derived from page 3, paragraph 4 of the client's letter);
- the string being guided at a first point of (in) the flange and linked to the flange at a further point of (in) the flange;
- the string enters the bag through a passageway in the flange and extends to a point of the flange/ bag where it is coupled/linked to the flange/bag.

These formulations include all the embodiments disclosed in the client's letter:

- the embodiments of Figs. 5, 6, 7 and 9 with a single string which is guided at two or more points in the flange (entry, exit and redirection points);
- the alternative embodiment described in the context of (but not shown in) Fig. 9 with one string which is guided at a first point in the flange and fixed with one end at a further point in the flange; and
- the embodiment of Fig. 8 with two strings, each string being guided at a first point in the flange and one end of each string being fixed at a further point in the flange.

Feature (d2) in conjunction with feature (d3) implies that the first and second points are not arranged directly adjacent to each other.

"Such that" or a similar term links the functional feature of (d3) with both of the features (d1) and (d2). This implies an appropriate way of coupling/guiding (d1) and a sufficient distance between the two points (d2), for achieving compression of the bag. Pulling the string only results in the desired compression of the bag if a counter force is simultaneously exerted. Therefore the formulation "can be compressed" is suitable. "By pulling the string" implies that a string portion is located outside the infusion bag.

#### **Method claim (10 points)**

An independent method claim should preferably comprise the features listed in the following:

- (e) A method of manufacturing an infusion package (1) comprising the steps of
- (f) providing a first layer of sheet material (5, 5B),
- (g) covering the first layer with a second layer of sheet material (5, 5A),
- (h) bonding the two layers together at borders thereof to form a flange (4) to obtain an infusion bag (2),
- (i) arranging a string (3, 3') between the layers of sheet material such that
- (d1) the string is guided at a first point (12 to 16) of the flange and is coupled to the flange at a second point (12 to 18) of the flange,
- (d4) the string extends inside the infusion bag between the two points,
- (d2) the two points being located relative to each other, such that
- (d3) by pulling the string the infusion bag can be compressed.

The method claim could also be drafted by referring back to the device claim(s) and replacing features (i), (d1) to (d4) by e.g. “arranging a string (appropriately) between the two layers of sheet material”. In any case, applying the method should have inevitably resulted in the manufacture of an infusion package having all the features of claim 1.

Merely claiming a “Method for manufacturing an infusion package.” did not attract any points.

The manufacturing steps (f), (g), (h), (i) can be derived from client’s letter page 4, paragraph 4.

Remarks concerning features (f), (g):

In the same way as in the device claim the formulation “layer of sheet material” includes both the bags formed from two separate sheets and the bags formed from a single folded sheet.

Remarks concerning features (h), (i):

The order in which these steps are recited does not affect the order in which they are carried out.

**Inferior solutions** (available points: 30 for the device, 8 for the method)

Solutions defining a new and inventive infusion package or a method of manufacturing the infusion package and specifically but not generically covering all the embodiments disclosed in the client’s letter, were considered to be inferior solutions.

Such solutions use multiple independent device or method claims or alternatives in a single independent device or method claim, to cover each of the various embodiments. Such claim sets are inferior to the preferred solution wherein a generic formulation encloses all the alternatives, because they inevitably leave gaps in the scope of protection and are less concise.

**Unnecessary limitations** (max. point deductions: -20 for device, -5 for method)

Solutions excluding one or more embodiments were considered to severely limit the scope of protection. If one embodiment was excluded, the point deduction was -12 points for the device claim and -3 points for the method claim. If more than one embodiment was excluded, -20 points for the device claim and -5 points for the method claim were deducted.

Defining that the flange exhibits two passageways excludes the alternative embodiment described in the context of (but not shown in) Fig. 9 wherein the string is fixed to the flange at the second point. Further expressing that one and the same string extends through the two passageways, or enters and exits the infusion bag, led to the additional exclusion of the embodiment of Fig. 8. In fact the latter was the most frequent serious deficiency this year.

Further examples of unnecessary limitations leading to the exclusion of embodiments were:

- defining internal redirection points for a string or a U-shaped passageway in the flange which excludes the embodiments of Figs. 8 and 9;
- limitation to two strings which excludes the embodiments of Figs. 5 to 7, and 9;
- formulations excluding the embodiments of Figs. 5, 6, 7 and 9 which are formed by two sheets, for example “a single sheet” or “only one sheet”;
- formulations such as “the string being fixed to the flange” which exclude the embodiments of Figs. 5, 6, 7 and 9 (only the embodiment of Fig. 8 and the alternative embodiment described in the context of but not shown in Fig. 9 are covered).

In cases of minor unnecessary limitations which do not result in the exclusion of an embodiment, -4 points for the device claim and -1 point for the method claim were deducted. An example of such a limitation was claiming a straight passageway.

No point deduction was applied if the independent claim(s) explicitly mention(s)

- the infusible substance;
- a string portion outside the bag;
- a passageway in the flange without specifying its shape;
- the properties of the “sheet material” such as liquid permeable;
- the infusion package being “essentially flat”.

**Lack of novelty** (point deductions: -24 for the device, -6 for the method)

A number of cases were found where independent claims lacked novelty with respect to document D1 or to Fig. 2. An example of a device claim which lacks novelty is one which defines an “Infusion package comprising an infusion bag and a string which enters the infusion bag at a first point of the bag and extends inside the bag to at least one further point of the bag to which it is coupled, the two points being located relative to each other such that by pulling the string the infusion bag can be compressed”.

The subject-matter of such a claim is not new over D1, since in D1 there is also at least some compression between the entry and exit points of the string (see the last paragraph of D1).

Equally, a device claim exhibiting only features (a) to (d3) is not new over the prior art shown in figures 3 and 4 of the client's letter.

A method claim exhibiting only features (e) to (i) is not new over what is described in context with Fig. 2.

It is noted that, if the subject-matter of the device claim is new and non-obvious, a method claim which inevitably results in the manufacture of that device is also considered to meet the requirements of novelty and inventive step (see Guidelines C-IV 9.12; C-III 4.8).

**Lack of inventive step** (point deductions: -20 for the device, -5 for the method)

If feature (d4) was missing, device claims risked not involving an inventive step over the prior art as shown in Fig. 3 or in D1. Such cases were seldom.

**Lack of Clarity** (max. point deductions: -20 for the device, -5 for the method)

It is noted that claims which lacked novelty or inventive step due to broadly defined or omitted features were only judged under these categories and not additionally under clarity to avoid double penalisation.

Where a claim was unclear to the extent that it was not possible to determine whether or not it lacked novelty or whether or not it was rendered obvious by the prior art, points were deducted for lack of clarity and not for lack of novelty or inventive step.

If one or more essential features were missing in the claim, there was a severe case of lack of clarity. It was considered to be essential that the wording of the device claim expressed in some way or other that

- i) the string is guided at one point of the bag,
- ii) the string is coupled to a further point of the bag,
- iii) at least one of these two points is a point of the flange,
- iv) the string extends inside the bag between these two points, and
- v) that the arrangement of the points is such that the bag can be compressed by pulling the string.

Solutions which did not have all the features i) to v) were unclear because they did not sufficiently define the interaction between the string and the bag, and often only expressed a result to be achieved. 8 points or more were deducted depending on the severity of the lack of clarity.

In less severe cases up to 4 points per clarity issue for the device claim and 1 point per clarity issue for a method claim were deducted. Examples are

- confusion between "package" and "bag";
- unclear definition of the flange in relation to the bag;
- unclear definition of the relation of the string(s) to the "point" (e.g. "slidably fixed");
- "is compressed" instead of "can be compressed".

Formulations such as "infusion bag having a flange closing the bag" were considered to sufficiently define the bag construction (features (c1), (c2), (c3)). Since the features (c2) are implied by the generic term "infusion bag" there is no need to explicitly mention the presence of the bonded sheet layers. This could, however, be helpful for clearly defining the flange.

If the method claim was not consistent with the device claim, up to 5 points for lack of clarity were deducted (see Guidelines C, III-4.4). If the method claim was consistent with the device claim but had corresponding deficiencies with regard to features i) to v), 2 points or more were deducted, depending on the severity of the lack of clarity.

**Formal matters** (max point deduction: -5)

For the device claim a two-part form of the claim was expected. Preferably it was based on the infusion package according to Fig. 3 or Fig. 4 of the client's letter as closest prior art. In this case the characterising portion is formed by features (d4). It was also acceptable to base the two-part form on document D1, in which case feature (d1) forms the characterising portion (in D1 the points where the strings enter and exit the bag are also "located relative to each other, such that by pulling the string" (a part of) the infusion bag can be compressed).

A two-part form based on Fig. 2 of the client's letter was also accepted.

A two-part form claim which was clearly wrongly structured with respect to the chosen closest prior art, or a one-part form without clear indication in the description of the closest prior art and the features known from this prior art (cf. Guidelines C-III, 2.3b), led to a deduction of up to 3 points.

For the method claim, a one-part form was considered to be appropriate. A correct two-part form was, however, also acceptable.

A partially incorrect or very incomplete set of reference signs in the claims resulted in a deduction of 1 point; the total absence of reference signs in the claims resulted in a deduction of 2 points.

## 2. Dependent claims (available points: 35)

Many answers lost points in this section due to deficiencies in the claim dependency structure. Full points for dependent claims were only awarded if:

- the claim structure not only set out the various embodiments one by one but also covered other possible combinations of features by appropriate back references (e.g. a slack portion of the string in the bag may be employed in all embodiments);
- aggregations of functionally independent features were not included in a single claim (e.g. slack portions of the string and tags attached to the bag);
- the back references were consistent; and
- did not lead to a combination of contradicting features.

A good set of dependent claims could have had the following structure:

- claim 2: bag is formed from two separate sheets which are superposed (depending on claim 1)
- claim 3: bag is formed from a single sheet which is folded (on claim 1)
- claim 4: string end fixed inside bag (on one of claims 1-3)
- claim 5: knot provided at string end for preventing it from slipping into bag (on one of claims 1-4)
- claim 6: two string ends outside the bag (on one of claims 1-5)
- claim 7: a tag at each free string end (on one of claims 1-6)
- claim 8: common (separable) tag for two (plurality of) free string ends (on claim 7)
- claim 9: tag separably connected to bag (on claim 7 or 8)**
- claim 10: perforated line in tag (on claim 8 or 9)
- claim 11: slack portion(s) of string within bag (on one of claims 1-10)**
- claim 12: plurality of string redirection points in the flange (on one of claims 1-11)**
- claim 13: string portions crossing inside bag (on one of claims 1-12)**
- claim 14: two strings (on one of claims 1-13)
- claim 15: circular tea bag (on one of claims 1-14)

Dependent method claims could relate to the manufacturing of straight and U-shaped passageways.

Regardless of whether a particular feature was claimed only in a dependent device claim, only in a dependent method claim or in both, points were awarded only once.

The most valuable fall-back positions were based on claims 9, 11, 12, 13 and the feature “U-shaped passageway”. Up to 4 points were available for each of these. Dependent claims directed to features known per se from the prior art generally attracted only 1 point.

Other dependent claims were rewarded in accordance with their merits in relation to the independent claim(s) drafted in the answer.

### **3. Separate application**

Separate applications were not expected this year.

### **4. Description (15 points available)**

Acknowledgement of the closest prior art was awarded with up to 5 points.

Either the infusion package shown in Fig. 3 and 4 of client’s letter or the one shown in document D1 could be considered to represent the closest prior art. Fig. 2 of client’s letter may also be used (though it is considered to be less suitable).

Consistency with the two-part form of the claim and a clear identification of the closest piece of prior art was expected.

10 points were available for a presentation of the problem and its solution in a manner consistent with the independent claim(s) drafted:

Presentation of the problem (up to 4 points)

The following problems are solved by the invention with regard to the infusion packages of Figs. 3, 4 and D1:

Provision of an infusion package which

- i) retains the string or strings in the correct position in order to ensure effective squeezing of the infusion bag;
- ii) reduces the risk of the string becoming entangled;
- iii) can be produced in an efficient way.

At least one of these problems, solved by the features of the drafted independent claim(s), should have been mentioned where one of the above infusion packages was chosen as closest prior art.

If the embodiment of Fig. 2 is identified as the closest prior art, the problem to be solved is to provide an infusion package which can be comfortably squeezed and efficiently manufactured.

Presentation of the solution (up to 4 points)

By guiding and coupling the string at appropriate locations in the flange of the infusion bag, the string is securely retained in its position, and effective squeezing of the infusion bag is ensured.

By passing the string through the interior of the infusion bag the risk of entanglement is reduced.

Both aspects allow manufacturing of the package in which subsequent steps for fixing the string are avoided.

The solution(s) should have been consistent with the problem(s) mentioned.

2 points were awarded for the discussion of the problem and the solution of the method claim. This could have been done by reference to the device claim.



## Paper A (Electricity/Mechanics) 2007 - Schedule of marks

Category	Maximum possible	Marks awarded	
		Marker	Marker
Device	40		
Method	10		
<b>Independent claims</b>	<b>50</b>		
<b>Dependent claims</b>	<b>35</b>		
<b>Description</b>	<b>15</b>		
<b>Total</b>	<b>100</b>		

Sub-Committee for Electricity/Mechanics agrees on ..... marks and recommends the following grade to the Examination Board:

☐

PASS  
(50-100)

☐

FAIL  
(0-49)  
COMPENSABLE FAIL  
(45-49, in case the candidate sits  
the examination for the first time)

6 July 2007

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Chairman of Examination Committee I