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Selected US specifications from IPC sub-class B65D

(54) Filter bags for infusion products

(57) A filter bag for an infusion product has multiple pockets 3, 4 each holding a dose of the product. The bag has a structure enabling two alternative usage layouts, of which one is a flat form for packaging with the pockets superimposed or folded one over the other, and the other, as shown, has the pockets opened out or extended, following the pick-up and pull of a corresponding tag 11 ending in a thread 10 for handling the filter bag at the time of usage.

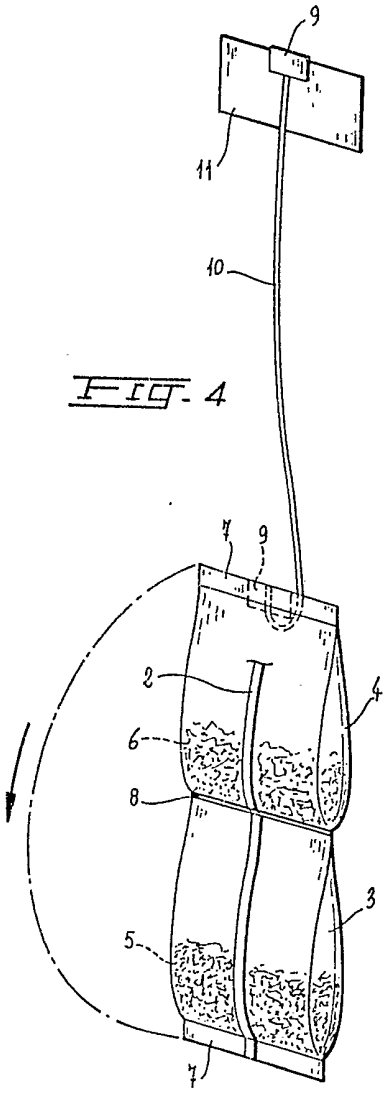


Fig. 4

GB 2 170 777 A

Fig. 1

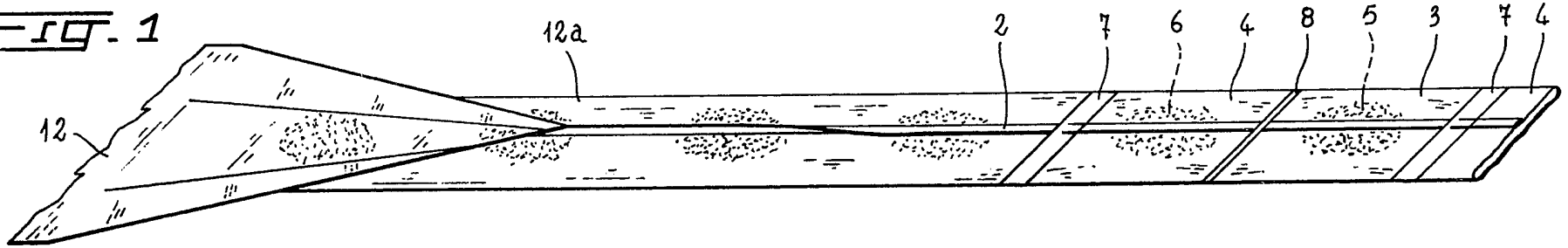


Fig. 1A

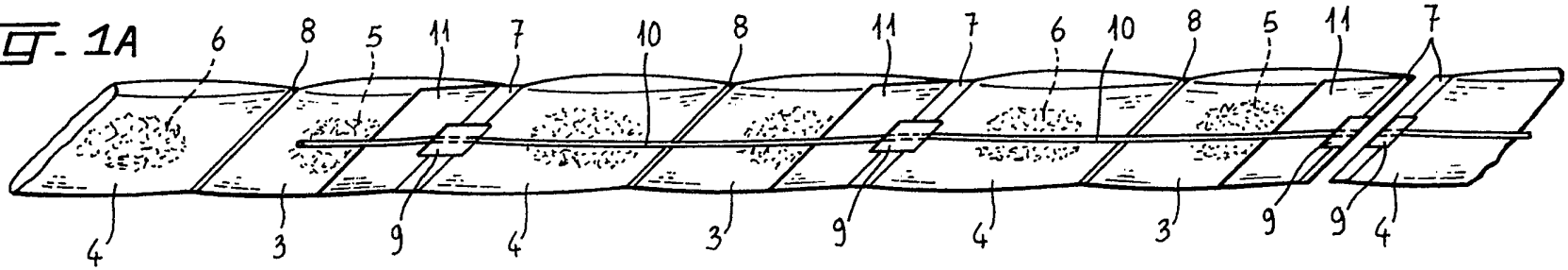


Fig. 1C

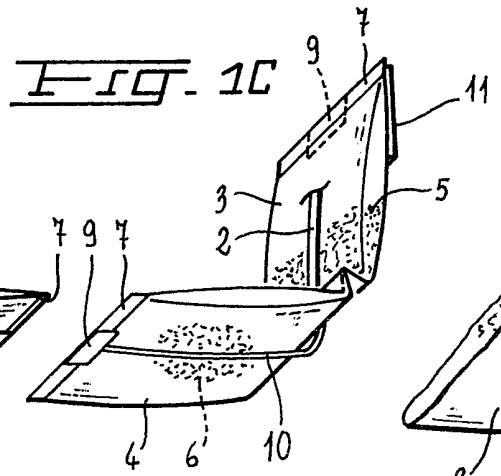


Fig. 1B

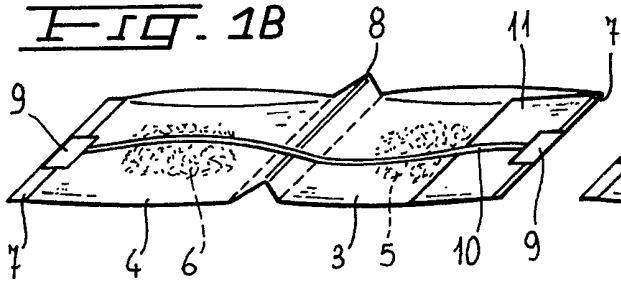
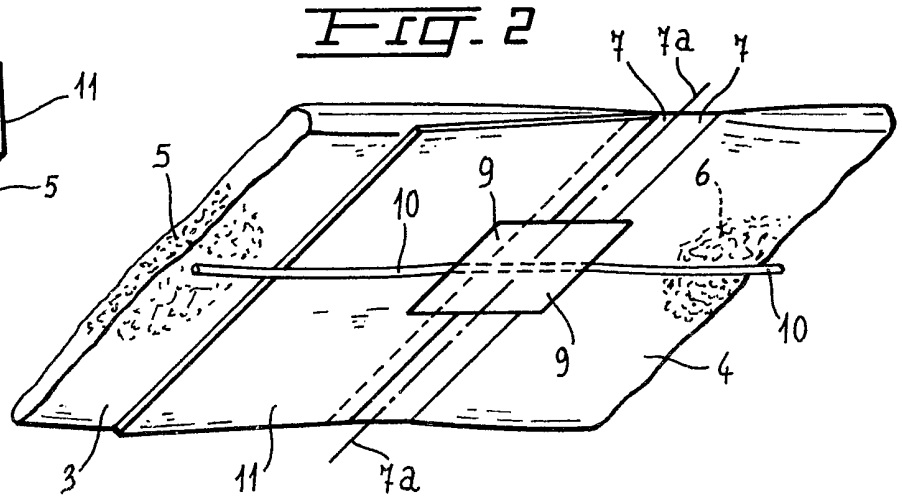


Fig. 2



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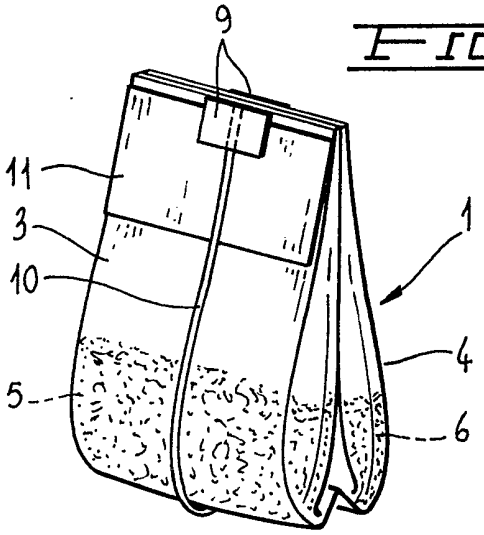

Fig. 3

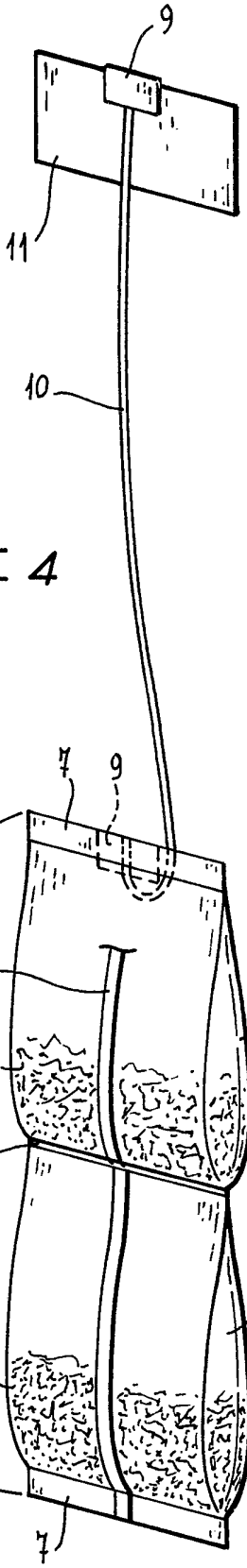

Fig. 4

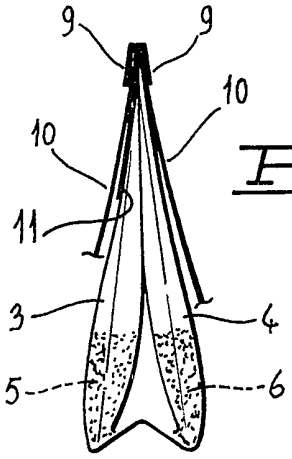

Fig. 5

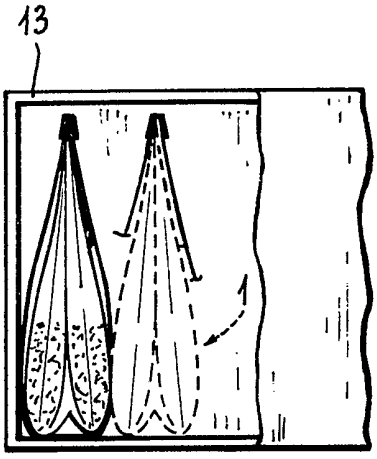

Fig. 6

SPECIFICATION

Filter bags for infusion products

The present invention concerns a filter bag for infusion products, and a method of manufacturing such a bag.

In making infusions it is well known that an increase in the contact surface between the liquid and the infusion product particles speeds up the infusion process and enables better use of the product or, as is usually said, one obtains a greater unit use of the same infusion product.

In the case of the traditional infusions such as tea or camomile grindings, the use of filter paper bags is well known. The so-called tea or camomile bags are soaked at the time of consumption in a suitable container with boiling water.

At present, in the particular case of tea infusions, three main types of filter bag are known none of which allow the dose or unit quantity of grindings to grow in volume and dissolve upon immersion of the filter bag in the water so that the water is able to flow all around the tea particles.

A first traditional type of filter bag is that made in a very simple manner with two layers of filter paper placed face-to-face or superimposed and welded along at least three, or even all four sides.

Such a filter bag is extremely flat, theoretically with zero capacity, which on immersion in water holds the tea grindings compactly.

A second traditional filter bag, intended to provide some volume growth when immersed in water, has a bellows-like structure similar to the fundamentally flat bag but with two face-to-face layers of filter paper, and a number of folds along at least two opposing sides.

In practice, it has been found that these folds, for a given quantity of infusion product, enable an expansion of its capacity volume just sufficient to allow a partial swelling of the product when immersed in the water, but not sufficient to provide dissolution of the product so that water is able to flow freely through its particles.

A third typical traditional filter bag, again intended to improve the performance from the standpoint of volume growth, has two or more discrete sections or lobes for containing the product, with or without lateral bellow-like folds.

These filter bags with multiple container sections or lobes effectively increase the containing volume for the same unit content, but due to the fact that the sections or lobes are densely packed against one another, with little possibility of opening out at the bottom, and none at the top, the product is pressed against the walls of each individual lobe following swelling of the bag with reciprocal contact with the walls of the next lobe, particularly in the upper area, so that there is little possibility for water to flow between the particles of the compressed product.

More recently a filter bag has been proposed that is able to assume two stable positions; one flat, when not in use and for packaging, and the other three-dimensional when in use, the internal volume being much greater than in the filter bags described above for the same amount of material. However the infusion product particles in the lower part of the bag are still compressed following swelling of the bag during infusion.

A pracatical embodiment of such a three-dimensional filter bag is furthermore difficult to achieve both from the point of view of production capacity and from that of an automatic manufacturing machine, and consequently also from the standpoint of production costs.

Traditionally, the upper terminal section of these known filter bags is shaped with a polygonal profile, generally trapezoidal, or sometimes triangular, from which an anchored thread bearing a tag (label) and forming the pick-up element for the handling of the filter bag during use, extends.

According to one aspect of the present invention there is provided a filter bag for infusion products, such as tea or camomile, the bag having at least two lobes each containing a dose of the infusion product, the lobes being initially retained in a first folded or compact configuration in which the lobes are superimposed on one another but being releasable into an unfolded or extended configuration in which the lobes are serially disposed one after the other.

According to a further aspect of the present invention there is provided a method of producing filter bags for infusion products, the method comprising depositing doses of the infusion product at equal intervals along a continuously moving web of heat weldable filter paper, folding the opposed longitudinal edges of the web inwardly toward the centre of the web and heat sealing the edges to one another, forming transverse heat seals across the folded web to enclose the successive doses of infusion product in respective pockets, severing the web along a median line of selected ones of the transverse heat seals such that a section of the web containing at least two successive pockets is separated from the remainder of the web at each severing operation, folding each separated section of the web about the intermediate transverse heat seals between the pockets of that section such that the pockets are superimposed face-to-face with one another, and releasably retaining the said sections in their folded configuration.

By way of example only, a method of producing a filter bag embodying the invention will now be described with reference to the accompanying drawings in which:

Figures 1, 1A, 1B and *1C* show in succession the stages through which a filter bag is obtained from a web of filter paper; Figure 1 being a perspective view of the initial section of the web seen from above and Figures 1A, 1B and 1C being the intermediate and end sections, always in perspective, but from below;

Figure 2 shows, perspectively and from below, an enlarged detail;

Figures 3 and *4* show perspectively the filter bag in its alternative configurations;

Figure 5 shows the same filter bag from the side when in the position of Figure 3, and

Figure 6 shows a boxed pack of such filter bags.

A filter bag 1 for infusion products is made of heat weldable filter paper and comprises a flat structure with a median longitudinal weld 2 and multiple pockets or lobes 3, 4, either superimposed or in series (cf. Figures 3, 4 and 5), each pocket or lobe containing a corresponding dose 5,6, or unit quantity of an infusion product, for example tea grindings.

The container pockets 3,4 are defined by alternate transverse heat welds 7 and an intermediate weld 8.

Along the transverse heat welds 7, as will be seen later, a piece of material 9, known in the trade under the Registered Trade Mark "MYLAR", is heat welded to the two ends of a thread 10, one of which also terminates in a non-heat weldable paper tag (label) 11.

In practice, such a bag structure 1 can assume two positions of use: firstly a flattened form (cf. Figures 3, 5 and 6) for packaging in boxes 13 (Figure 6), the pockets or lobes 3,4 being successively flattened and superimposed back-to-back by folding pocket 3 over pocket 4 along the intermediate weld 8; and secondly, a position in which the pockets or lobes 3,4 are disposed one after the other or in series, in the manner explained later (cf. Figure 4).

In the first position of use, as shown in Figure 3, the thread 10 connecting tag (label) 11 to the bag, is wound longitudinally around the bag as will be seen later.

The filter bag 1 is formed from a heat weldable paper web 12 by feeding doses of infusion products 5, 6 onto the continuously moving web at equal intervals and folding the edges of the web inwardly to form a flattened tube 12a, the edges being sealed by a longitudinal heat welding operation to form the weld 2.

With the further advancing of the flattened tube 12a, it undergoes transverse heat welding operations to provide alternate welds 7, with intermediate and narrower transverse heat welds 8 enclosing the doses 5, 6 in the pockets or lobes 3, 4. With the tube 12a still advancing, the following operations take place: (1) positioning successive tags (labels) 11 with one edge of the tag lying parallel with and closely spaced to the median line 7a of the transverse welds 7; (2) continuously laying thread 10 in the median longitudinal position; (3) partly overlapping the tags (labels) 11 with a corresponding piece 9 of "MYLAR" (Registered Trade Mark) such that the pieces 9 span the welds 7 and (4) heat welding in succession the pieces 9 to connect the thread 10 to the tags (labels) 11 and the thread 10 to the tube 12a through the transverse heat welds 7.

At this point tube 12a is cut along the median lines 7a of the transverse heat welds 7, dividing the respective pieces 9 into two parts and dividing the tube 12a into sections that include at least two successive pockets or lobes 3,4. Each section is then folded with a preformed inverted V fold along the relevant intermediate transverse heat weld 8 so that the lobes 3,4 are superimposed or set up back-to-back (cf. Figure 1C).

Lastly, the opposing ends of each section are bonded together by heat welding to release the gluing material of the pieces 9, (cf. Figure 3).

The amount of gluing material released by the pieces of material 9 is a function of the intensity of the heat welding operation, and we have found that by cntrolling this intensity it is possible to select one of two alternative configurations for the bag following the pick-up and pulling of tag (label) 11. it is possible to simply detach thread 10 with the relevant tag (label) 11 from lobe 3, leaving the top of lobe 3 bonded to the top of lobe 4 as in the Figure 3 packaging arrangement. Alternatively lobe 3 can be pulled away from lobe 4 so that the former opens out to an extended position as shown in Figure 4.

In practice we have found that such a filter bag, with lobes in series folded back-to-back with each other and capable of assuming two alternative positions of use following the simple action of pick-up and tear by pulling the corresponding tag (label) for handling the filter bag at the moment of use, it is possible to obtain a greater utilisation and therefore a better yield from the infusion product.

CLAIMS

1. A filter bag for infusion products, such as tea or camomile, the bag having at least two lobes each containing a dose of the infusion product, the lobes being initially retained in a first folded or compact configuration in which the lobes are superimposed on one another but being releasable into an unfolded or extended configuration in which the lobes are serially disposed one after the other.

2.A filter bag according to claim 1 in which a thread having an attached tag at one end is secured to each lobe in such a manner that the tag is separable from a first of the lobes to provide a free end of thread for lifting the two lobes in and out of boiling water.

3. A filter bag according to claim 2 in which the thread is releasably attached to the lobe by a piece of heat weldable material and, before separation, encircles the superimposed lobes in their folded or compact configuration.

4. A method of producing filter bags for infusion products, the method comprising depositing doses of the infusion product at equal intervals along a continuously moving web of heat weldable filter paper, folding the opposed longitudinal edges of the web inwardly toward the centre of the web and heat sealing the edges to one another, forming transverse heat seals across the folded web to enclose the successive doses of infusion product in respective pockets, severing the web along a median line of selected ones of the transverse heat seals such that a section of the web containing at least two successive pockets is separated from the remainder of the web at each severing operation, folding each separated section of the web about the intermediate transverse heat seals between the pockets of that section such that the pockets are

superimposed face-to-face with one another, and releasably retaining the said sections in their folded configuration.

5. A method according to claim 4 in which each section is releasably retained in its folded configuration by releasably bonding the opposed ends of the section to one another using discrete pieces of heat sealable material attached to respective ends of a thread.

6. A method according to claim 5 in which the strength of the bond between the opposed ends of the web section is dependent on the intensity of the heat sealing operation.

7. A filter bag substantially as herein described with reference to the accompanying drawings.

8. A method of producing a filter bag substantially as herein described with reference to the accompanying drawings.

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