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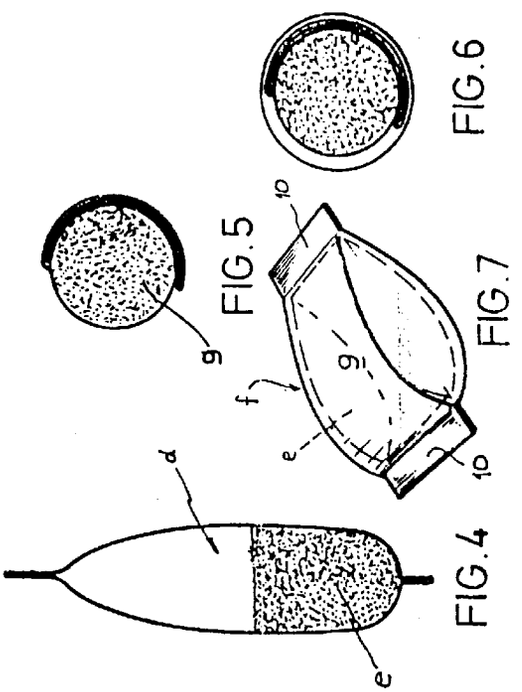
(54) A self-sufficient unit of a bag for coffee infusion and carrying container.

(57) A self-preserving coffee bag unit, including a bag (d) for the coffee, made by a filter paper body, tubular and sealed, holding an amount of coffee (e) that is in a predefined ratio with the internal capacity of the bag, so it is filled only in part. The coffee, that can be stored at one of the ends of the bag, is shaped in a ball-like form (g), around which the empty part of the bag is folded. Being the plied bag stored inside a sealed and closely fitted capsule (f), that isolates the bag from the surrounding air.



EP 0 583 210 A1

This invention deals about a new creative development for the in-situ preservation of coffee inside infusion-type bags.

Conventional coffee bags proposed so far, are always made by a "raviol" type envelope, like the classic tea bags. This bags are formed with two small square or rectangular sheets of termosealable filter paper, joined by the edges and holding a small amount of powdered coffee. This amount of powder or grinded coffee always leaves some free space inside the bag.

In practice (commercial practice), coffee spreads freely inside its container (bag), and the whole set (bag and coffee), with some amount of air already inside, takes a more or less laminar, flat shape. It is well known that powdered coffee is very sensitive to the oxygen of the air, and gets spoiled by oxidation of its essential oils. Due to this reason, coffee bags are kept inside a second, larger envelope, made of water- and airtight laminar stuff, sealing the coffee against the oxygen of the surrounding air.

When the coffee bag and its outer envelope are assembled, the small amount of powdered coffee, normally about 4-5 grams, remains stored for some time - several months- till the moment of use, i.e. opening of the unit and preparation of the infusion in a cup of water. During this relatively long time, the oxygen of the air that has been kept inside the inner bag and between the bag and the outer seal attacks the free (loose) particles of coffee, degrading them by oxidation of its essential oils.

Due to this fact, and also because laminar, "raviol" type bags are not a good solution for the treatment of powdered coffee inside a bag, the bags of this kind that have been proposed up to now have not been acceptable for a massive market like this. It has to be taken in account that coffee as infusion is the world's most consumed aromatic, hot beverage, much more even than tea.

As a result of a creative study of this problem, it has been concluded that this double amount of air kept between the bag itself and its protective seal must, and can, be removed, and that this removal is not possible if both elements are kept in its usual quasi-laminar shape. The proposed solution - and this is the core of the invention - is giving to the filter bag a tubular, elongated shape, allowing the storage of a amount of powdered coffee at one of its ends in a ball-like shape (never as a sheet), but leaving empty a good part of the said tubular body, making room for the free movement of the coffee at the moment of using the bag, and allowing a good contact and dispersion of the particles in the water or liquid used to make the infusion (i.e. milk). If the free part of the bag's tubular body is then plied, covering the "ball" of coffee, a more or less spherical structure will be formed, with the coffee moderately compacted at the inside, and thus with practically no air, and consequently, oxygen. If the bag with this shape is now covered by a envelope made with a sheet or film of a material that makes a barrier against the oxygen, like i.e. polypropylene, and if this seal is closely fitted, like a glove, around the bag's plied body, a self sufficient unit can be assembled, holding a negligible amount of air as compared with that of coffee.

As coffee doesn't degrades by itself, but by oxygen attack to its essential oils, it has to be understood that with this proposed solution the basic goal can be attained, allowing the commercial feasibility of coffee bags that can keep for months the coffee in a good, tasty state.

By all the above reasons, it can be concluded that the present invention includes a self-sufficient unit of bag for the infusion of coffee and its protective cover, and that its characteristics are: a filter paper bag with a general tubular, elongated shape, sealed and holding a predefined amount of powdered coffee, occupying only part of the inner capacity of the bag, being the relationship between the amount of powdered coffee and the inner capacity of the bag such that in the operative immersed position of at least part of the bag inside the amount of liquid where the infusion will be made, this amount of coffee has room enough to move and get in wide contact with the liquid, and with the bag having also an elongated shape, leaving room at one of its ends for the total amount of coffee, and allowing the forming of a virtual, half-compact ball, being also the free part of the bag's tubular body plied around the end containing the said ball of coffee, contributing to its external shape, and providing also an external envelope for the plied bag, made up by an airtight capsule of an isolating layer that acts as barrier against the oxygen, with a shape that fits around the plied bag, leaving a minimum of free space between bag and capsule.

It has thus to be understood that a main objective of the present invention is getting an integrated construction of a coffee bag with its envelope-container, having an effective ability to preserve the coffee by really minimizing the air inside, and thus the detrimental oxygen that makes part of this air.

Another important objective of the present invention is the making of a bag with a good and effective ability for making infusions of coffee.

Still another important objective of the present invention is the making of the double structure of bag and its protecting envelope by simple procedures, both concerning the intervening material and the manufacturing process.

There are obviously other significant objectives of the present invention, that will be made evident as the description of the invention is exposed.

Now, with the aim of making the present invention understandable by experts in the art, and even put into practice, it has been illustrated with an example of implementation, not excluding others, by

means of several drawings, as follows:

Figure 1 is a perspective of a conventional, "raviol" type bag, inside an external protective envelope. These bags and external protective envelope make no part of the present invention.

Figure 2 is a cross section of figure 1 assembly. It is not part of the present invention.

Figure 3 is a lateral general view in horizontal, non-operative position of a bag made according to the present invention. It is shown in its full deployed configuration.

Figure 4 shows the same bag of figure 3, but in vertical position, with the portion of coffee contained in the bag placed in the lower end (bottom) of the bag.

Figure 5 is a cross sectional view of the same bag, with the empty part of its body folded over its lower part, where the half-compacted sphere or ball of coffee is formed.

Figure 6 is also a cross section of the same bag of figure 5, but put inside the "sachet" that acts as barrier against the oxygen, thus protecting the bag.

Figure 7 shows an external view of the said "sachet" that holds and protects the bag.

In the above figures, the same signs and numbers refer to identical or similar parts.

Making now reference to the drawings, it must be clarified that the bag and external envelope shown in figures 1 and 2 make not part of the present invention, and are shown here only with the aim of improving the understanding of the bag and its container, that are the object of the present invention, and are illustrated in the other figures.

Always referring to figures 1 and 2, it is pointed out that they are a combination of filter bag containing powdered coffee, and its isolating envelope. Such a combination has already been used in previous attempts with little success, due to the reasons already explained. Anyway, it can be said that (figures 1 and 2) -a- is a conventional, "raviol" type filter bag, made up by two squares or rectangles -1- of termosealable filter paper, soldered together by their edges -2-. In the inside free space -3- a small amount of powdered coffee -b- has been placed, with a volume that is less than the total capacity of the bag, thus leaving some empty space -4- that, due to the filter paper porousness is totally filled with air, and in consequence with its part of oxygen.

The said filter paper bag is put inside an envelope -c- with the same shape that of bag -a- but somewhat bigger, in order to contain the bag. It is made with two squares or rectangles -5- of a film that acts as a barrier against air, like polypropylene, cellophane, etc, soldered at their edges -6-.

Results: in spite of the flatness of the bag -a- itself, made of filter paper, the coffee -b- gets exposed to the two amounts of air: one trapped inside the bag, and the other between the bag -a- and the protective envelope -c-. Such a structure is hopelessly inefficient in its aim of protecting the coffee against the oxidizing action of the air's oxygen.

Now, dealing already with the implementation example of the present invention, illustrated in figures 3 to 7, it can be seen how the unavoidable problem of the unit shown in figures 1 and 2 is solved. The point is giving the body -d- of the bag, made of filter paper, a tubular, elongated shape of circular section (figures 5 and 6), although it could also be square, rectangular, etc, with its ends -7- and -8- closed. Inside the bag -dan specified and enough amount of coffee -e- is stored, filling it only in part, as shown in figures 3 and 4. This amount is the amount required to produce an infusion of the desired volume. If the bag -d- is placed in vertical position, the coffee -e- falls to the lower end and gets softly compacted. If in this position, the upper empty part (the one without coffee) is picked and folded over the lower, filled part of the bag (figure 5), it will take an almost spherical shape -g-, like a ball.

In this condition, with the coffee slightly compacted and the empty part of the bag covering all, or almost all of it, almost no air is left inside, but perhaps the minimal part retained among the coffee particles.

At the same time, if the kind of ball made with the bag shaped like an sphere is put inside a "sachet" or capsule -f- (figures 6 and 7), made of a sheet or film of polypropylene or other material that acts as a barrier against oxygen, and if this "sachet" is dimensioned so it fits tightly around the coffee bag, it is evident that no space, or more properly inter-space, is formed between the coffee bag and the "sachet", thus leaving no room for air. The said "sachet" -f- is made by a folded tubular film -9- with its ends -10- soldered, allowing for the required air-tightness, and the folded bag is tightly packed inside -d-.

If the above requirements are met, it is evident that a self-sufficient unit is produced, including bag and container, allowing the long-term conservation of the coffee inside the bag due to the fact that no oxidizing air is kept inside, by the simple reason that almost no space (inter-space) is left for the air.

It must be understood that the shown example can have modifications, both in the filter bag itself and in the capsule that protects the bag. Also, as a consequence of modifications in the shape of the bag, the half-compacted amount of coffee could have a not so spherical shape. The key point is having the coffee in a ball-like form, independent of its external shape.

The limitations in the above mentioned variations are only that established in the claims stated in the following clauses.

Claims

1. A self-sufficient unit of a bag for coffee infusion and carrying container, characterized by includ-

ing: a filter paper bag of general tubular, elongated shape, sealed, holding a predefined amount of powdered coffee that occupies only a part of the inner capacity of the bag, with a ratio of the volume of the powdered coffee with respect to the inner capacity of the bag such that, in the operative position of the bag being immersed, at least partially, into a volume of liquid for making the infusion, the said amount of coffee can move freely inside the bag, to allow a wide contact with the liquid, and at the same time the bag having an elongated shape, able to hold at one of its ends the total amount of coffee, allowing the formation of a virtual half-compact ball, and at the same time the empty part of the tubular body of the bag being folded around the end that contains the said ball of coffee, following its external shape, and providing also an external envelope for the folded bag, made by an air-tight capsule of an isolating sheet, acting as barrier against the oxygen, and shaped around the folded bag in a way that leaves a minimum of free space between capsule and bag.

2. A self-sufficient unit of a bag for coffee infusion and carrying container according to the claim 1, characterized in that the body of the tubular bag having a circular section.

3. A self-sufficient unit of a bag for coffee infusion and carrying container according to the claim 1, characterized in that the body of the tubular bag having a polygonal section.

4. A self-sufficient unit of a bag for coffee infusion and carrying container, characterized in that the body of the tubular bag having one of its ends sealed, and shaped so it can receive in an extended form, the total amount of coffee.

5. A self-sufficient unit of a bag for coffee infusion and carrying container according to any one of the preceding claims, built, prepared and functioning according to any of the described and illustrated procedures.

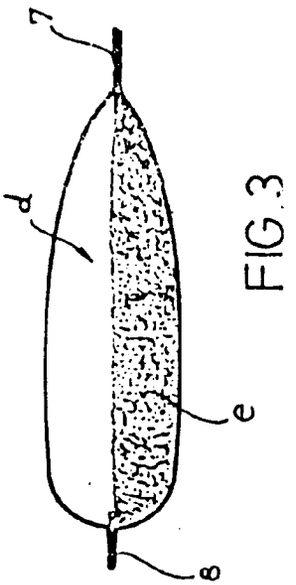


FIG.3

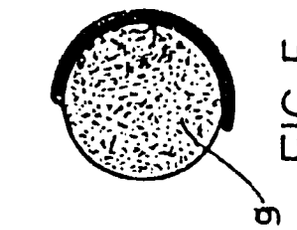


FIG.5

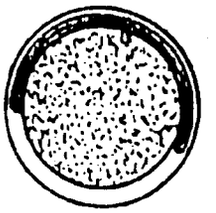


FIG.6

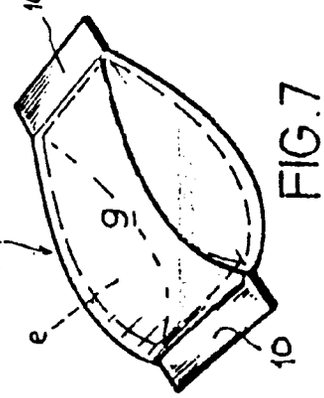


FIG.7

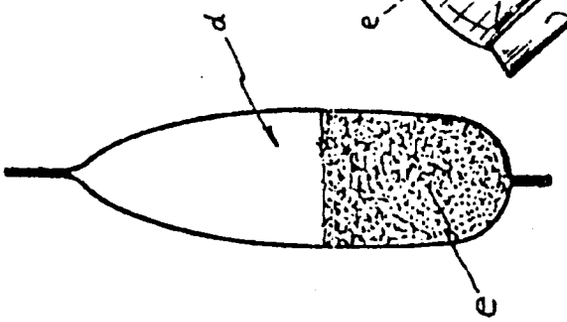


FIG.4

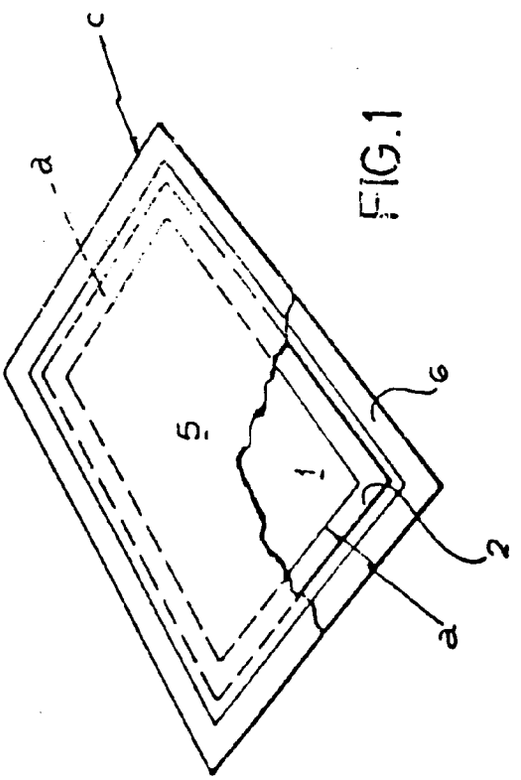


FIG.1

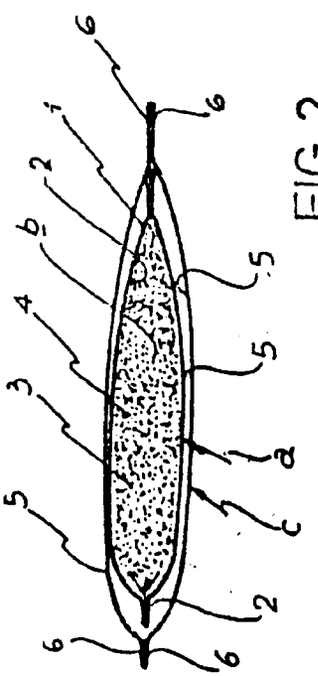


FIG.2

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EUROPEAN SEARCH REPORT

Application Number EP 93500122.2

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.5)
X	US - A - 2 571 183 (IRMSCHER) * Claims 1,4,5; figs. 6,7, 10 *	1-5	B 65 D 81/34 B 65 B 29/02
X	US - A - 2 306 400 (MENZEL) * Claims 1-3; fig. 6 *	1-5	
X	US - A - 2 728 671 (YOUNG et al.) * Claims 1,2; fig. 2 *	1-5	
X	DE - A - 2 032 166 (WENK) * Claim 1; figs. 1-3 *	1-5	
X	DE - A - 2 323 052 (SUDBROCK) * Claims 1,2 *	1-5	
A	US - A - 3 539 355 (KASAKOFF) * Claims 1-3; figs. 1-4 *	1-5	TECHNICAL FIELDS SEARCHED (Int. Cl.5) A 23 F 5/00 A 47 G 19/00 A 47 J 31/00 B 65 B 29/00 B 65 D 81/00 B 65 D 85/00
A	US - A - 2 986 269 (GOLDBERG) * Claims 1,3,7; figs. 1,2,5 *	1-5	
A	US - A - 3 387 978 (MAJOR) * Claim *	1-5	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	10-11-1993	PUSTERER

CATEGORY OF CITED DOCUMENTS

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