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(11) **EP 0 741 087 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.11.1996 Bulletin 1996/45

(51) Int. Cl.⁶: **B65D 75/58**, B31B 19/84

(21) Application number: **95830174.9**

(22) Date of filing: **02.05.1995**

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI NL PT SE

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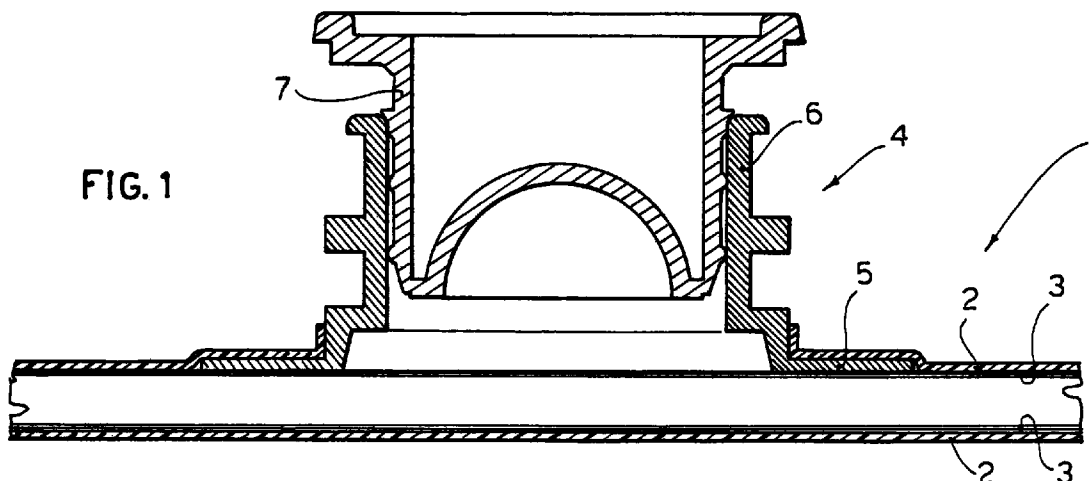
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(54) **Container with filling spout, particularly for aseptic packaging systems and relative manufacturing method**

(57) A container with filling spout (4) for aseptic packaging systems, whose walls comprise at least two layers (2, 3), the outermost of which (2) consists of a metallized laminate and the innermost (3) of a polyethylene film, in which said spout (4) is applied so as to keep at least one inner layer (3) intact, in order to insu-

late the inner chamber of the container (1) from the outside environment, said at least one inner layer (3) being broken at the time the container is filled by the stream of product itself, by a preceding jet of pressurized steam or by mechanical means.



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Description

The present invention concerns a container provided with a filling spout, particularly suitable for aseptic packaging systems, and a manufacturing method for such a container.

Containers of the above type consist of bags with walls of several-layers or films, with at least one metallized layer, or in any case with a barrier effect.

To provide a concrete example, each wall of the bag has a metallized outer sheet, with the following system of layers, working from the outside inwards: polyethylene-metallized polyester-polyethylene, and a double inner sheet obtained from polyethylene tubing. The bag will therefore have a total of six films: two outer laminates and two tubular inner films.

Such a bag is obtained by coupling the films of each wall separately and then heat-sealing them longitudinally along the edges and transversally to separate one bag from the next, after having inserted and fixed a filling spout into one wall of the bag.

Clearly the composition of the walls of the bag can differ from that illustrated above by way of example, just as the manufacturing procedure for the bag, i.e. the different steps in coupling the films, can differ.

In any case, the filling spout, which has a substantially tubular body, with an annular flange at the base, is inserted from the inside into the corresponding wall of the bag, before it is closed, making a hole which passes right through the entire wall. The flange of the spout thus abuts against the inside of the corresponding wall of the bag and is heat sealed to it from the outside along a track with a circular outline.

The bag thus obtained, in which the spout is closed by an outside cap, is normally subjected to gamma ray sterilization, before being sent to the users, in particular preserving or food industries in general, who use them for packaging tomato puree and chopped tomatoes, fruit juices and the like.

The bags are filled by means of special systems for aseptic packaging, in which the product, after having undergone heat treatment by means of tube nests, is sent to the loading head, comprising a sterilized chamber, which positions itself so as to enclose the spout, emits a jet of steam or suitable sterilizing solution so as to sterilize the spout area, removes the cap from the spout and lastly positions a product delivery tube inside the spout, so as to carry out filling of the bag.

Considering the use for which the bags according to the invention are intended, therefore, it is extremely important, for good conservation of the product, that their sterility be maintained until they are filled.

This is not fully guaranteed by the bags currently produced, because of the way in which the delivery spout is applied to the bags.

In fact, as stated previously, all the different layers of the corresponding wall of the bag have to be pierced in order to apply the cap, leaving the annular flange at

the base of the spout inside the bag itself. This leads to a double drawback.

First of all, the insertion inside the bag of the annular flange material of the spout makes sterilization of the inner wall of the bag difficult but nevertheless necessary,

Then the fact of having to make a hole through the corresponding wall of the bag gives rise to a further cause of possible contamination of the inside of the bag. If, for example, the tight seal of the cap were to be lost for any reason between the sterilization stage and the bag filling stage, there would be a direct communication between the inner chamber of the bag and the outside environment, resulting in irreversible contamination.

The aim of the invention is to eliminate the above problems, while still guaranteeing the integrity of the inner chamber of the bag, and thus its state of sterility, both during and after application of the filler spout.

Another aim of the invention is to make application of the filler spout to the bag easier and safer.

These aims are achieved, according to the invention, thanks to the characteristics listed in the attached claims.

In particular, according to the invention, the filler spout is applied to the corresponding wall of the bag, so that at least one inner layer of the bag remains intact until the time of filling. That is to say, the spout is applied from the outside on said layer or film of the wall of the bag, fixed for example by heat sealing to such a layer, and the other outer layers of the bag wall, pierced beforehand to allow the spout to pass through them, are subsequently coupled. Then follows a further outer seal around the spout, which is thus firmly fixed to the bag, with at least one inner unpierced film which is opened at the time the bag is filled by the stream of product sent into the bag under pressure, or by a preceding jet of steam, or by other means.

Further characteristics of the invention will be made clearer by the detailed description that follows, referring to a purely exemplary and therefore non-limiting embodiment, illustrated in the attached drawings in which:

Figure 1 is a schematic cross section of a container according to the invention, taken in the area where the filling spout is applied.

Figure 2 is a schematic view of a manufacturing plant for the container according to the invention.

In Figure 1 the container for aseptic packaging systems according to the invention has been indicated as a whole by reference number 1.

In the example shown, each wall of the container 1 comprises an outer laminate 2 which has, for example, a series of layers consisting, from the outside inwards, of polyethylene, metallized polyester, polyethylene and an inner polyethylene film 3.

It is clear, however, that other ways of layering the walls of the container 1 are possible. For example, a fur-

ther layer of polyethylene can be provided between the outer laminate 2 and the inner film 3, according to per se known methods in the manufacture of containers for aseptic packaging systems, to which the invention refers.

Figure 1 shows a spout 4 fixed to the corresponding wall of the container 1. The spout 4 comprises, in a per se known manner, an annular base flange 5 and a substantially tubular body 6, protruding from the wall of the container, which is sealed on the outside by a cap 7.

According to the known technique, the spout is inserted by making a through hole in the corresponding wall of the container 1, which passes through both layers 2, 3, placing the flange 5 inside the container 1. Such an arrangement has all the drawbacks previously described.

On the contrary, according to the invention, as shown in Figure 1, the spout 4 is applied from the outside, maintaining the film 3 intact, and heat sealing, gluing or fixing the base flange 5 in any other way to said film 3.

The outer laminate 2, previously pierced, is subsequently coupled to the film 3 to allow the passage of the tubular body 6 of the spout 4, and lastly a further seal is made at the annular flange 5, above the laminate 2.

In this way the spout 4 is fixed extremely securely to the corresponding wall of the container 1, thanks to the double seal, without affecting the inner chamber of the container since at least the inner film 3 is maintained intact. In this way, the inner chamber of the container always remains completely separated from the outside environment, even if the seal of the cap 7 and the spout 4 were to be lost before the container 1 is filled.

With the arrangement according to the invention it is even possible not to carry out the subsequent gamma ray sterilization of the container, if it is closed in a sterile environment, since there is no possibility of contamination of the inner chamber of the container. This is even more feasible if a removable cover is placed over the spout 4 and the cap 7 as described in a separate Italian patent application by the same applicant, GOGLIO LUIGI MILANO S.p.A., filed on 8 March 1995 under No. MI 95 A 000447.

At the time of filling, the container 1 is brought beneath the filler head and the stream of product causes the polyethylene film 3 to break in order to free the access to the inner chamber of the container 1.

Alternatively, the layer of polyethylene 3 can be broken beforehand by a jet of pressurized steam.

Otherwise, the film 3 can be broken in advance by mechanical means, for example by the filler tube itself which can be provided with a slantwise point with special teeth to cut the polyethylene film 3.

From what is stated, the advantages achieved by the container are obvious, particularly for aseptic packaging systems according to the invention.

With reference to Figure 2 a plant and a relative manufacturing method for the container 1 are now described, it being understood that other plants and

methods can be used within the scope of the concept of the invention which consists of applying the spout 4 leaving at least one layer of the corresponding wall of the container 1 intact.

In Figure 2, 10 indicates a reel from which tubing is unwound, comprising two polyethylene films 3-3 placed one on top of the other, that are to form the inner layers of the walls of the container 1.

The tubing 3-3 passes through a plurality of transmission rollers 11 that carry out per se known functions, and arrives at a station 12 where the spouts 4 are applied. The spout 4, deliberately shown enlarged in Figure 2, possibly is applied in sterilized conditions to the outer surface of the upper film of the tubing, preferably by heat sealing its annular base flange 5. It is clear, however, that other fixing means can be provided, for example gluing or the like.

Means that are not shown can also be provided in the station 12 to keep the two films 3-3 of the tubing separate during application of the spout 4.

Subsequently the tubing 3-3, with the spout 4 applied advances and arrives at a station 13 where the outer laminate 2 is coupled to the wall bearing the spout 4.

The laminate 2 is unwound from a reel 20, passes through a plurality of idle rollers 21, is pierced at regular intervals at a punching station 14, so as to arrive at the coupling station 13 with a hole in perfect register with the spout 4 to allow it to be inserted. At this stage a further heat seal is made at the base flange 5 of the spout 4.

The tubing 3-3, with the laminate 2 coupled on the same side as the wall bearing the spout 4 then continues to advance, passing between the drawing rollers 22 until it arrives at a station 15 where coupling takes place of the other laminate 2, which unwinds from a reel 30 and passes on a plurality of idle rollers 31.

Longitudinal and transverse seals then made, together with transverse cuts to obtain the containers 1 according to the invention, after a final cutting station 35.

Claims

1. A container with a filling spout (4) for aseptic packaging systems, the walls of which are obtained by coupling at least two layers (2, 3) of plastic material with at least one of such layers (2) possibly metallized or with a barrier effect, characterized by the fact that said spout (4) is fixed to the corresponding wall of the container (1) so as to leave at least one layer (3) of material intact, this being broken at the time the container (1) is filled with the product.
2. A container according to claim 1, characterized by the fact that said layer (3) is the innermost layer of the corresponding wall of the container (1) and comprises a polyethylene film, while said layer (2) is the outermost layer and comprises a laminate con-

sisting, from the outside inwards, of polyethylene, metallized polyester and polyethylene.

longitudinal sealing and transverse sealing and cutting.

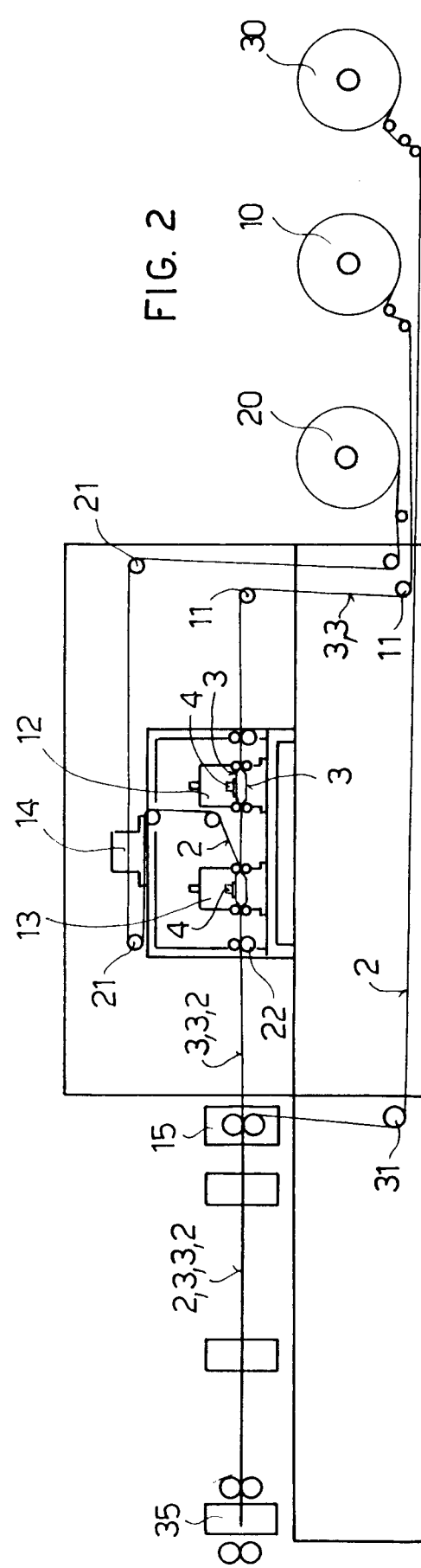
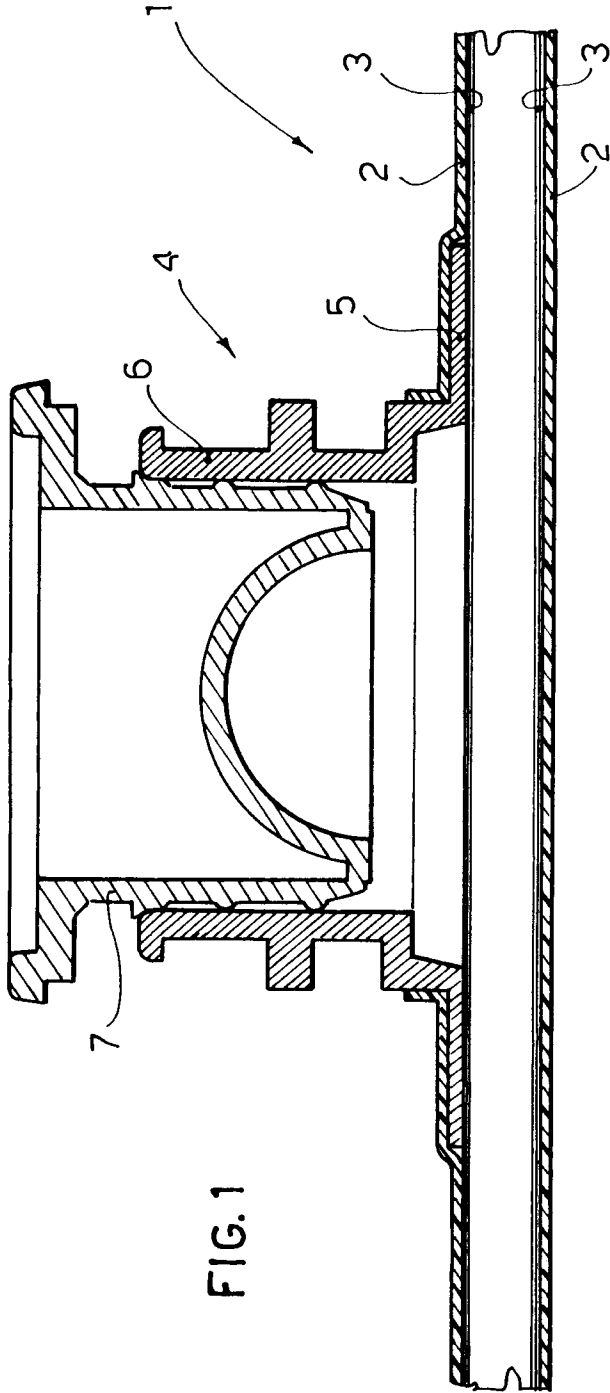
3. A container according to claim 1 or 2, characterized by the fact that said spout (4) is fixed by means of heat sealing, gluing or other means of a flange (5) at its base to the outside of said film (3), which is maintained intact, while said layer (2) is pierced for insertion of the spout (4) and further fixed, by heat sealing or the like, to said base flange (5) of the spout (4). 5 10
4. A container according to any one of the previous claims, characterized by the fact that between said layers (2, 3) at least one other layer of material is interposed, coupled to the inner layer (3) and therefore not pierced. 15
5. A container according to any one of claims 1 to 3, characterized by the fact that between said layers (2, 3) is interposed at least one other layer of material coupled to said outer layer (2) and therefore pierced to allow the spout (4) to pass through it. 20
6. A container according to any one of the preceding claims, characterized by the fact that said at least one inner unpierced layer (3) is broken during filling by the stream of product introduced through the spout (4). 25 30
7. A container according to any one of claims 1 to 5, characterized by the fact that said at least one unpierced layer (3) is broken by a jet of pressurized steam, which is sent in through the spout (4) just before the product is introduced. 35
8. A container according to any one of claims 1 to 5, characterized by the fact that said at least one inner unpierced layer (3) is broken at the time the container is filled by mechanical means. 40
9. A method for the production of containers with a filling spout for aseptic packaging systems comprising the following stages: 45

feeding of tubing comprising two polyethylene films placed one on top of the other (3), to a station (12) where said spout (4) is applied on the outside of one of such films (3), maintaining the film intact; 50

coupling in a subsequent station (13) of a laminate (2) of polyethylene, metallized polyester, polyethylene, previously pierced in a punching station (14) to allow the passage of said spout (4); 55

coupling onto the other surface of the tubing (3-3), in a station (15), of a further laminate (2) consisting of polyethylene, metallized polyester, polyethylene;

10. A method according to claim 9, characterized by the fact that in said station (12) for applying the spout (4) to the film (2) heat sealing is carried out around a flange (5) at the base of the spout, and by the fact that in said station (13) for coupling said pierced laminate (2) further sealing of such laminate to said base flange (5) of the spout (4) is carried out.





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EUROPEAN SEARCH REPORT

Application Number
EP 95 83 0174

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	EP-A-0 007 685 (WRIGHTCEL LTD.) * the whole document * ---	1	B65D75/58 B31B19/84
A	EP-A-0 236 107 (BCL PACKAGING LIMITED) * abstract; figures * ---	1	
A	EP-A-0 415 691 (KIRIN BEER) * abstract; figures * ---	1	
A	WO-A-92 06892 (SOUS CHEF LTD.) ---		
A	US-A-3 069 303 (SCHOLLE) * the whole document * -----	9	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D B65B B31B
Place of search		Date of completion of the search	Examiner
THE HAGUE		23 October 1995	Smith, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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