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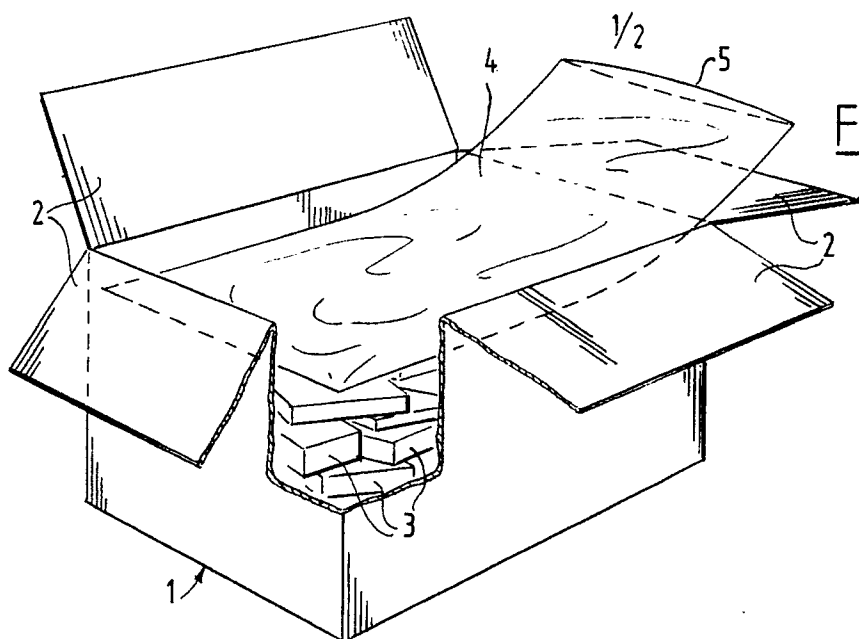
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54 **Method for immobilizing articles placed loosely in a packaging closed on all sides and packaging according to this method.**

57 A method is provided for immobilizing articles (3) which are placed loosely in a packaging (1) that is closed on all sides, by use of an inflatable body (4) which occupies the space left free in the packaging (1) by the articles (3). After closing three of four flaps (2) of the packaging (1), the inflatable body

(4), an open side (5) of which protrudes outside the packaging (1), is inflated and sealed. The protruding side (5) is then folded shut with the last flap (2). Also a packaging (1) is provided, to be used when applying the above method of immobilisation.



**FIG.1**

## METHOD FOR IMMOBILIZING ARTICLES PLACED LOOSELY IN A PACKAGING CLOSED ON ALL SIDES AND PACKAGING ACCORDING TO THIS METHOD

The invention relates to a method for immobilizing articles placed loosely in a packaging closed on all sides, wherein in the space left free in the packaging by the articles is arranged an inflatable body open on one side, the body is subsequently inflated and then sealed, and finally the packaging is closed; and to a packaging with articles immobilized in accordance with this method.

Such a method and packaging are known from EP-A-0306740. The immobilizing of articles by means of an inflatable body has great advantages relative to the classical method of immobilization wherein use is made of small specifically shaped bodies manufactured from plastic. The recipient of a package of articles immobilized in this manner is namely confronted here with the problem of disposing of or processing the used filling means. In addition the classical filling means have the drawback that they are very voluminous whereby a great deal of space is taken up in despatch departments which use these filling means and in view of the large quantity thereof that is used they form a considerable burden for the environment.

The method according to EP-A-0306740 has the drawback however that the filling opening of the inflatable body used has to be carried outside the packaging through an opening to be specially arranged in the packaging for this purpose. Moreover, after the inflatable body has been inflated and sealed, the filling opening must either be fed back into the packaging or cut off or attached against the outside of the packaging. This manner of packaging is therefore time-consuming, labour-intensive and expensive. This manner of packaging furthermore requires packagings specially manufactured therefor, which are provided with a passage opening for the filling opening of the inflatable body.

The present invention therefore has for its object to provide a method for immobilizing articles placed loosely in a packaging as described above, characterized in that the dimensions of the inflatable body are chosen such that after arrangement in the packaging the body protrudes with the open portion outside the packaging, and that the protruding portion of the body is placed inside the packaging after inflation and sealing.

If a filling and sealing device to be used for filling and sealing the inflatable body is provided with a pressure limiting device, the inflatable body can be inflated until it is subjected to a determined force.

When the method according to the invention is used with an inflatable body that is provided with concertina-like sides, varying quantities of articles

can then be optimally immobilized.

Although inflatable bodies with concertina-like sides are per se known from US-A-4762231, the packaging described in this disclosure is a very complicated construction designed for transporting only one specifically formed article and is therefore far removed from the type of packagings to which the present invention relates.

Mentioned and other features of the method and packaging according to the invention are described hereinafter on the basis of a number of embodiments to which the invention is not limited, while reference is made to the annexed drawing, wherein:

fig. 1 is a cut away view of a packaging having therein an inflatable body according to the invention;

fig. 2 shows a view of an already partially closed packaging provided with an inflatable body according to the invention and a commercially available filling and sealing device;

fig. 3 is a section through an inflatable body according to the invention and a commercially available filling and sealing device during different stages of inflating and gas-tight sealing of the inflatable body; and

fig. 4 shows a view of an alternative embodiment of an inflatable body according to the invention.

Fig. 1 shows a packaging 1 provided with flaps 2 and partially filled with loose articles 3, in which is arranged an inflatable body 4 provided with an open end 5, for the purpose of immobilizing the articles in the packaging. The dimensions of the inflatable body are selected such that when three of the four flaps 2 are closed the open side 5 of the inflatable body 4 still protrudes outside the packaging.

After three of the four flaps 2 are closed, the packaging 1 with the open side 5 of the inflatable body 4 protruding therefrom is placed close to a commercially available filling and sealing device 6. This filling and sealing device 6 comprises an arrangement 7 provided with suction openings 8 and jaws 9 manufactured from flexible material for opening and subsequently clamping the inflatable body 4, filling openings 10 and an arrangement 11 for gastight closure of the inflatable body 4.

The open end 5 of the inflatable body 4 is then placed inside the filling and sealing device 6 (fig. 3a), whereafter this open end 5 is sucked against the jaws 9 by applying an underpressure on suction openings 8 and the filling opening 10 is subsequently carried into the inflatable body 4 (fig. 3b).

The jaws 9 are moved towards one another whereby the open outer end of the inflatable body 4 is held clamped and the inflatable body is filled with a gas through the filling opening 10 (fig. 3c). Finally, the inflatable body 4 is closed gastight by the arrangement 11, whereafter the jaws 9 are moved apart and filling opening 10 is withdrawn (fig. 3d).

The protruding portion of the inflatable body 4 is lastly folded shut together with the last flap 2 that is still open, whereafter the packaging is closed and ready for despatch.

Shown in fig. 4 is an alternative embodiment of an inflatable body 12 according to the invention, wherein by arranging seams 13 concertina-like sides 14 are formed, whereby different quantities of articles can always be optimally immobilized.

## Claims

1. Method for immobilizing articles (3) placed loosely in a packaging (1) closed on all sides, wherein in the space left free in the packaging (1) by the articles (3) is arranged an inflatable body (4, 12) open on one side (5), the body (4, 12) is subsequently inflated and then sealed, and finally the packaging (1) is closed, **characterized in that** the dimensions of the inflatable body (4, 12) are chosen such that after arrangement in the packaging (1) the body (4, 12) protrudes with the open portion (5) outside the packaging (1), and that the protruding portion (5) of the body (4, 12) is placed inside the packaging (1) after inflation and sealing.

2. Method as claimed in claim 1, **characterized in that** the inflatable body (4, 12) is inflated until it is subjected to a determined force.

3. Method as claimed in claim 1 or 2, **characterized in that** the inflatable body (12) is provided with concertina-like sides (14).

4. Packaging (1) having articles (3) placed loosely therein and means for immobilizing these articles (3), **characterized in that** the means comprise an inflatable body (4, 12) open on one side, the opened side (5) of which can be closed gastight after inflation, this in accordance with the method as claimed in any of the claims 1-4.

5. Packaging as claimed in claim 4, **characterized in that** the inflatable body (12) is provided with concertina-like sides (14).

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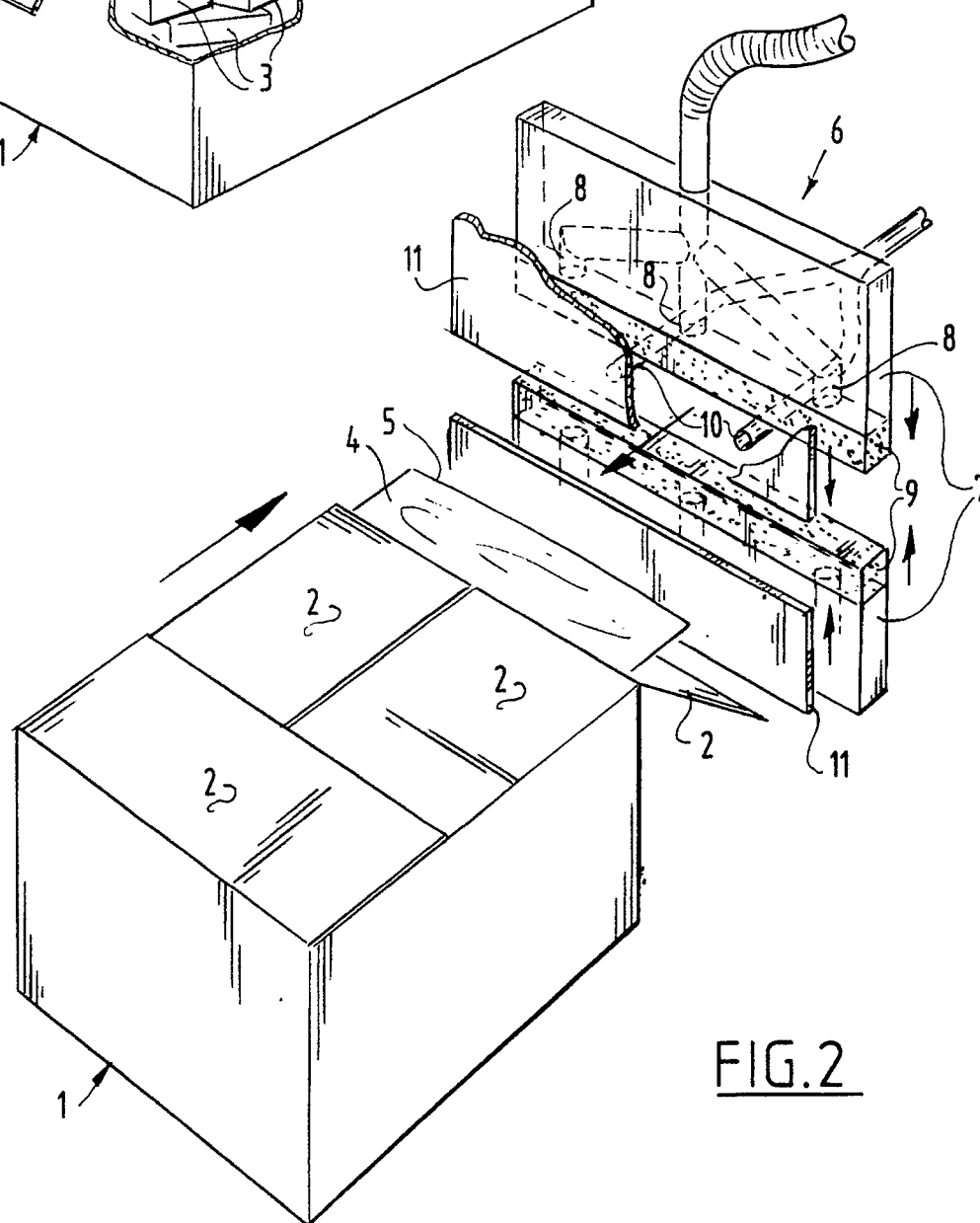
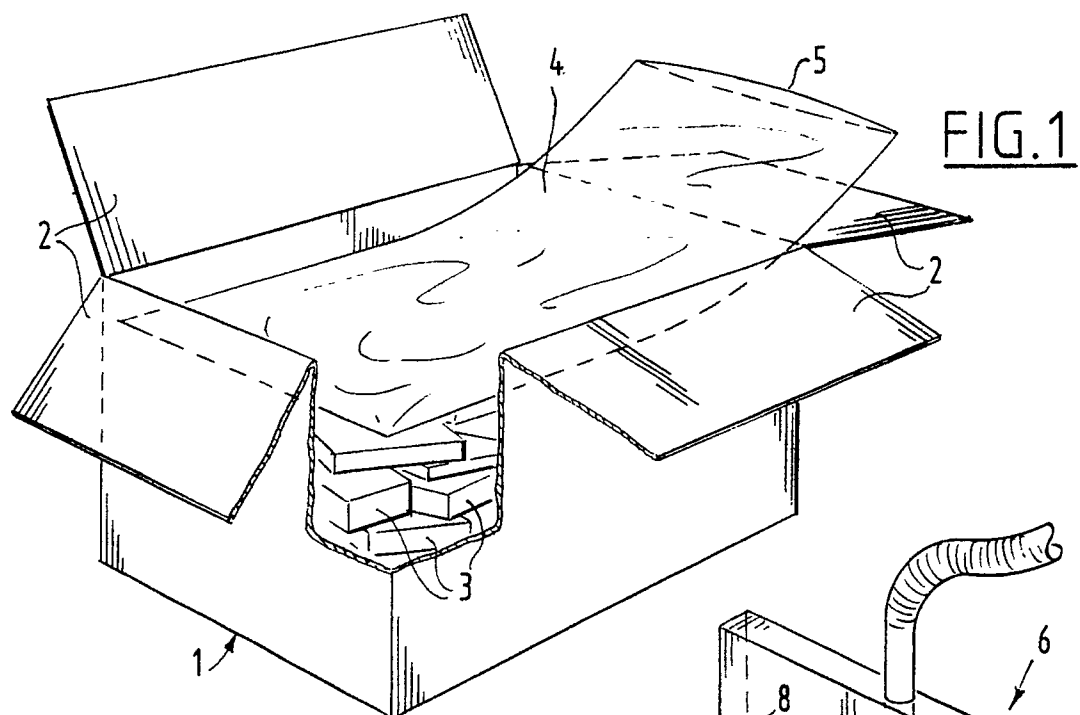
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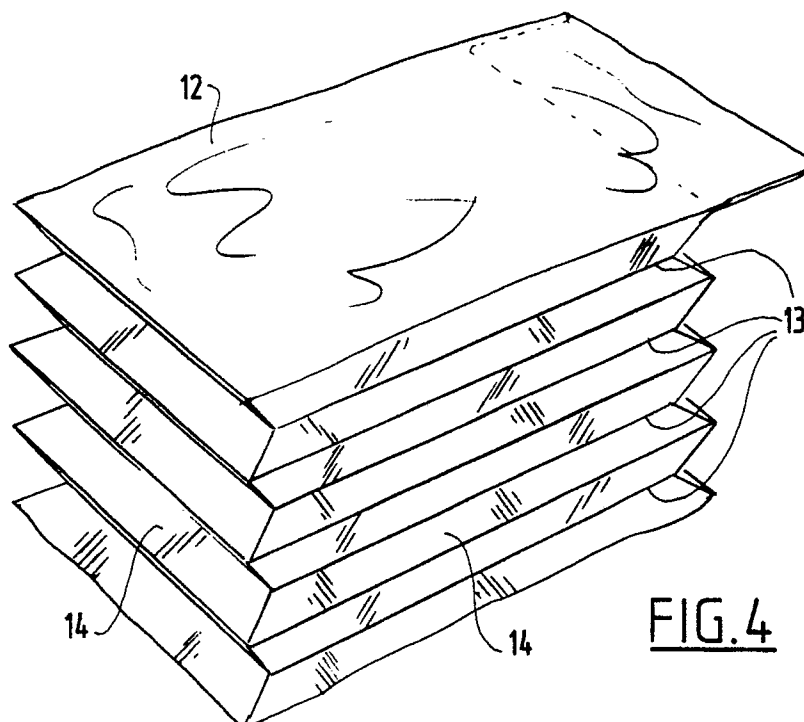
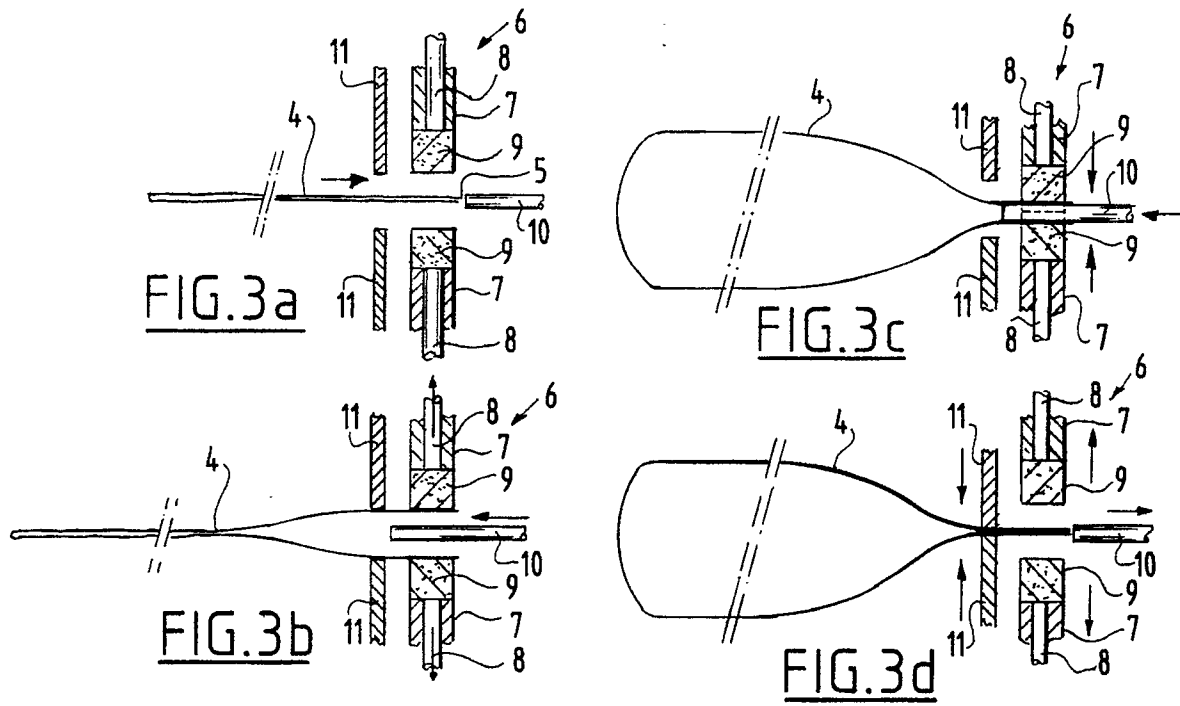
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## EUROPEAN SEARCH REPORT

Application Number

EP 90 20 1120

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-4 793 123 (PHARO) * Column 1, line 65 - column 2, line 25; column 2, lines 50-66; figures 1,2,3 *	1,4	B 65 B 61/22 B 65 D 81/08
Y	---	3,5	
D,Y	US-A-4 762 231 (KISELEWSKI) * Column 4, lines 53-65; figure 3 * -----	3,5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 5)
			B 65 B B 65 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04-07-1990	Examiner CLAEYS H.C.M.
<b>CATEGORY OF CITED DOCUMENTS</b> 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			