(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 495 983 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.01.2005 Bulletin 2005/02

(51) Int Cl.[7]: **B65D 30/24**

(21) Application number: **04076947.3**

(22) Date of filing: **07.07.2004**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **07.07.2003 ES 200301621 U**

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(54) Filling valve for bags

(57) Improved valve for sacks, such as of paper, polypropylene, polyethylene or a mixed material.

It comprises two flexible, rectangular superposed sheets (1,2), leaning against an internal wall of the sack (5) the sheets (1, 2) being joined perimetrically to the said internal wall except a sector of superposition where the sheet (2) possesses an extension which is folded by a folding line (3) remaining extended on the higher sheet (1), forming a lapping (4), the sheet (1) having an opening (9) facing an opening (9a) for filling the sack (5) with the edges of both openings joined. A filling pipe introduced by the openings (9, 9a) has access to the space between the sheets and can fill the sack opening the lapping (4) and the contents or load itself of the filled sack, presses against the two sheets (1, 2) and keeps the lapping (4) leaning against the internal wall of the sack (5) forming a tight closing.

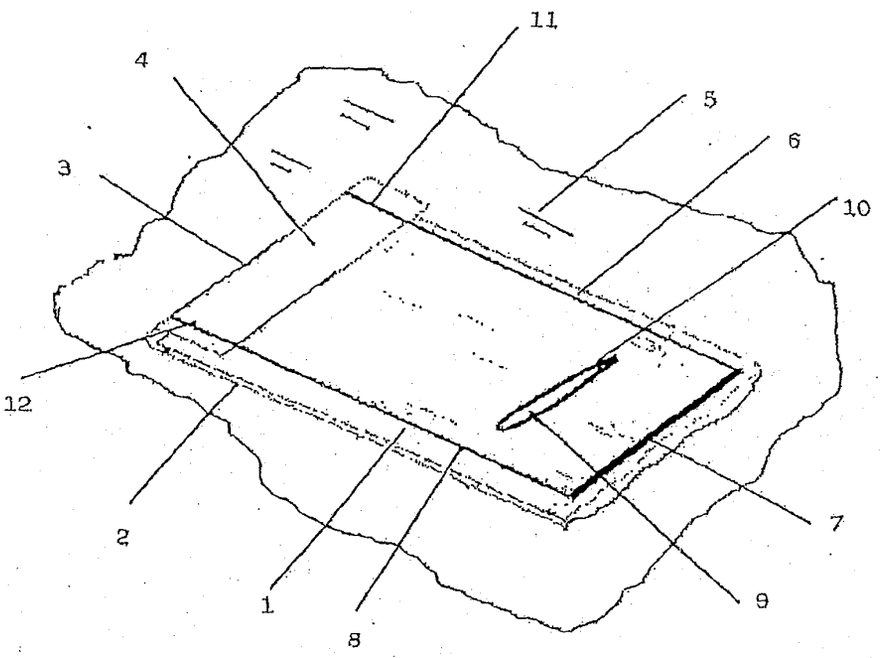

FIG. 1

EP 1 495 983 A1

Description

Field of the invention

[0001] This invention refers to a new improved valve for different products packaging sacks and namely for sacks which are automatically filled with different products, normally powder or granular products.

[0002] The object of the invention is an improved valve designed to that kind of sacks, providing an effective tightness when the said sacks are filled, the said tightness being automatically achieved by fully closing the valve after filling the sack and with the pressure exerted by the load on the wall itself of the sack which has the valve built in, fully preventing that angular points are caused and that air eventually enters in the sack.

Background of the invention

[0003] Within this field, units of sacks made of paper, polyethylene, propylene or mixed are used, which for this purpose are employed in automatic conventional filling facilities.

[0004] This kind of sacks has one end closed to be used as the bottom and the other end is also closed although provided with a side opening as a loading mouth through which a pipe coming from the hopper of a dosing packaging machine is introduced to house the product within the sack until filling it and thereafter it is closed.

[0005] In this kind of sacks usually leaks of the product contained in them occur as well as air is entering through the closing of the loaded sack.

[0006] The leaks of product carries dirtiness problems and shortage of the said product, and it is a particular problem when the sack contains poisonous and/or polluting powdery material which can even generate physical and/or environmental damages. In same way, the entrance of air from outside through the filling opening can also provoke that the product becomes useless due to unwanted wetness transmitted to it.

[0007] According to the current known techniques and trying to avoid the said drawbacks, it was proposed to close the loading mouth of the sack by arranging an internal paper or polyethylene membrane during the non-stop manufacturing process of the sack, the said membrane being pushed by the product contained in the sack, and as background of the prior art documents EP 0 332 549, US 4 364 510, US 6 074 095, EP 0 135 605, US 4 316 574, can be noted,; but none of them uses a closing arrangement by means of a valve having a structure and configuration which produce a closing having the characteristics object of this invention, which achieves a tight closing through the push of the load itself on the walls of the sack and of the valve itself so that higher the pressure is tighter the closing will be.

[0008] Conventional solutions are not fully suitable because although they decrease the risks arising from the lack of tightness, they do not achieve to avoid the leaks of product nor the eventual entrance of air within it, which the valve of this invention does achieve.

[0009] Another of the techniques used consists in arranging a sheet having a portion housed within the loading mouth of the sack and the other portion protruding outwardly the said mouth. The said sheet is placed in the sack in the non-stop manufacturing process thereof.

[0010] When the sack has being filled, a worker fold by hand the external protruding part of the sheet to introduce it on the internal portion.

[0011] Regardless to the fact that this not satisfactory either due to its lack of tightness, it has, in addition, the drawback to slow down the filling process because during the time the worker is folding the sheet, the packaging machine has to stop its operation.

[0012] The improved valve for sacks object of the invention produces a tight closing, which is automatically achieved, being fully closed after filling the sack and with the pressure from the load on the wall of the sack which has incorporated the improved valve object of this invention, completely avoiding leaks and eventual entrance of air within it.

Description of the invention

[0013] In general terms, the improved valve for sacks object of this invention has the aim of a valve which is basically constituted of two flexible sheets, with a relative arrangement thereof and a characteristic interrelation, which gives, matched with the wall of the sack to which they are joined , a valve adapted for the said application.

[0014] The proposed valve possesses a so simple structure that it only require two sheets, for example rectangular sheets, arranged one over the other, the lower (which remains more inside the sack) being longer and with its longer end folded and leaning against the higher in an lapping and both sheets being joined to one of the internal walls of the sack by three of its sides (U-shaped), except a fourth which correspond to the said fold where the said lapping is located, having an opening at its higher sheet coinciding with the filling opening of the wall of the sack and both openings remaining joined on their full perimeter. Such a constitution, despite it is simple provides fully new results giving a valve which is improved comparing with the well-known in the market because of its advantages as well in the referring to its manufacture as its use.

[0015] To best understand, the improved valve object of this invention will be explained with the assistance of a sheet of drawings, in which a mere illustrating not limiting example of embodiment of the said valve has been shown. Short description of the drawings

[0016] Figure 1.- It is a general view of the improved valve for sacks object of the invention, in which all its components are shown, in closing or resting position. Main sheets 1 and 2, are illustrated which are arranged one over the other, as well as the folding line 3 by which

the sheet 2 over folded on the sheet 1 forming the lapping 4. In same way, it can be seen a wall of the sack 5 on the internal face of which is welded or joined the pair of sheets 1, 2 forming the whole valve through the lines 6, 7, 8 (welding beads 11,12) as well as the welding or union 10 of the perimeter of the entrances 9, 9a which have as well the sheet 1 as the wall of the sack 5, respectively.

[0017] Figure 2.- It illustrates a section of the improved valve closed or at rest, by means of which can be seen in same way all the sheets and parts of the invention arranged from above to the bottom: Sheet 2, sheet 1, fold 3, lapping 4 and opening 9, last the wall of the sack 5, welds are not shown.

Description of an example of embodiment

[0018] The improved valve for sacks object of the invention are constituted by combining several sheets which are:

a rectangular sheet 1 which has a section of opening 9 close to one of its smaller sides; and
another rectangular sheet 2 which has same width as the higher 1 but longer on its side opposite to the side where the higher sheet 1 has the opening 9 and that at point 3, coinciding with an end of the sheet 1, the said longer sheet 2 end is folded on the higher sheet 1 forming an lapping 4 of the sheet 2 on the sheet 1.

[0019] The set of the sheets 1-2 so arranged and folded one over the other, at one end, is arranged joined to an internal wall of the sack 5, making that the opening 9 coincides as well with the sheet 1 as with the sheet 9a of the wall of the sack 5 which are identical and once they are facing each other, the union of the valve is achieved through the lines 6-7-8 to the wall of the sack 5, all of ti by means of an union in line and shape integral with as well the sheets 1-2 as the wall 5 of the sack, the union being carried out by any conventional system of welding or gluing, depending on the material of the valve and the sack, to thereafter and simultaneously also carry out the union of the entrances facing each other 9 as well of the sheet 1 as of the wall of the sack 5 on the whole perimeter 10, the union being in same way integral and carried out according to the materials uses in each case.

[0020] With all this, the improved valve object of the invention is embodied, which is available to be used for filling the sack, which will be carried out through the openings 9, 9a in order to thereafter passing the filling pipe between the two sheets 1-2 at the area in which are located parallel and in order that when reaching the end where the fold has been made at 3 when introducing the filling pipe, the sides of the welding lines 6 and 8 are coming close to each other due to the pressure of the filling pipe which provokes that the lapping 4 of the sheet 2 rises and is unfolded towards 3 leaving the valve open to let the filling pipe passes.

[0021] After carrying out the filling of the sack, it is proceeded to withdraw the pipe and the load inside the sack presses on the wall 5 and on the set of the two sheets 1, 2 or valve which makes that the welds 6-7 return to its initial parallel position which in turn provokes that the lapping 4 pressed by the welding beads 11-12 recovers it initial folded position on the sheet 1 by the folding line 3 which makes that the improved valve for the sacks object of the invention remains perfectly closed and providing a fully tight closing through which the load or the air cannot enter or exit.

[0022] The main advantages of the improved valve for sacks object of this invention, mainly refers to its simplicity, as well in the structure of the sheets composing it, in the construction thereof, as in the use this added to the warranty of a perfect tight closing as well for the load as for the air.

[0023] The obtention of the improved valve is by using less sheets than any other of those known in the market for the said aim and arrangement. As well the opening as the closing can be considered as automatic, since it requires no manual action from the workers, the opening occurring by the pressure of the introduction itself of the conventional loading pipe and the closing being provoked by the pressure of the load itself on the wall of the sack once it is loaded and the loading pipe has been withdrawn.

[0024] The tightness is greater when greater is the pressure of the load on the wall of the sack itself, which guarantees suitably stacking the sacks on the well-known pallets for storage and carriage, guaranteeing thus the perfect carriage and handling of the sacks with the load.

[0025] Last, the location of the valve is carried out in a way fully independent on any of the walls of the sack and regardless the shape thereof, all of it depending on the packaging mechanism available or to be used, choosing the location which is best suitable in each case.

[0026] The valve for sacks disclosed makes filling is easier, without any interruption of its process, as well for filling as for tightly closing which do not increase the cost of manufacture and packaging, on the contrary, due to the fact of being automatic, it is not required to use workers to close it and the packaging chain is not stopped.

Claims

1. Improved valve for sacks, mainly made of paper, polypropylene, polyethylene or a mixed material, **characterized in that** it is constituted by combining two flexible sheets (1, 2) which are arranged one over the other and the set of both leaning against the internal wall of the sack (5) the sheets (1,2) remaining perimetrally joined to the said internal wall

except for the superposition sector where the lower sheet (2), which is that which remains more internally in the sack possesses an extension which is folded by a folding line (11) the said extension remaining extended on the higher sheet (1) forming an lapping (4), the sheet (1) having an opening (9) facing a filling opening (9a) on the wall of the sack the edges of both openings (9, 9a) being joined to each other allowing that a filling pipe can be introduced through the pair of openings (9, 9a) having access to the space between the two sheets (1,2) and fill the sack (5) opening the lapping (4) while the contents or load of the sack itself when this later is filled, at least in part, presses against the two sheets and keeps the lapping (4) leaning against the internal wall of the sack (5) forming a tight closing.

2. Valve according to claim 1, **characterized in that** the said two sheets are rectangular and one of them is longer so that when it is folded by its folding line (3) it forms the said lapping (4).

3. Valve according to claim 2, **characterized in that** the said two rectangular sheets (1, 2) have same width.

4. Valve according to the claim 2, **characterized in that** the said two rectangular sheets (1, 2) have a different width.

5. Valve according to claim 2, **characterized in that** the said two sheets (1, 2), superposed, are joined or welded by three of their sides (6, 7 and 8) as well between them as to the internal wall of the sack (5).

6. Valve according to claim 2, **characterized in that** the said opening (9) is located close to the edge of the sheet (1) distal from the area supporting the lapping (4).

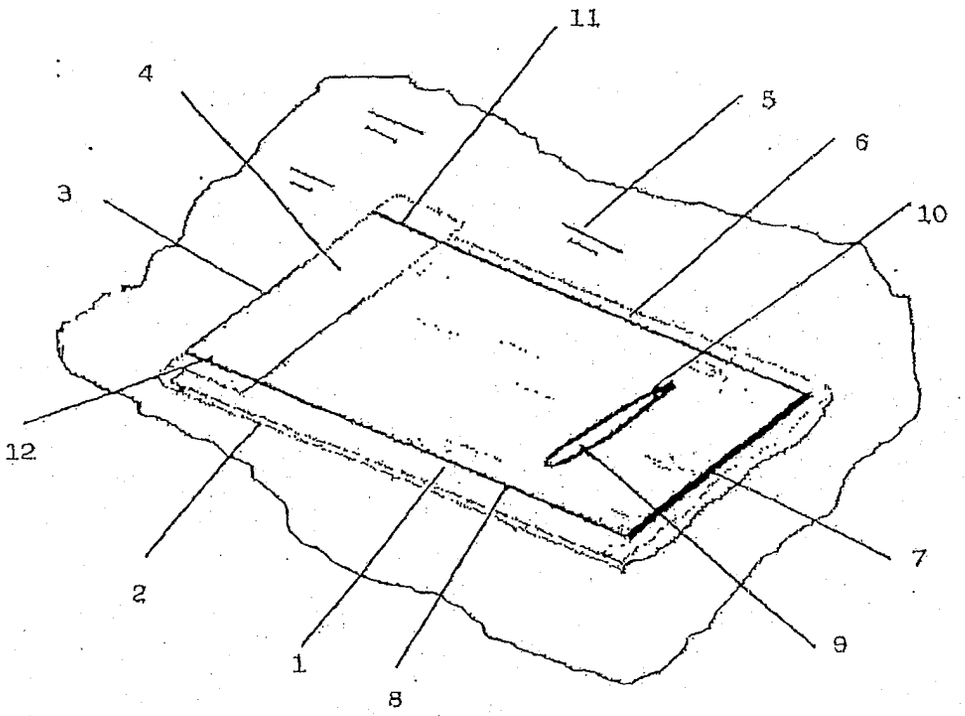

FIG. 1

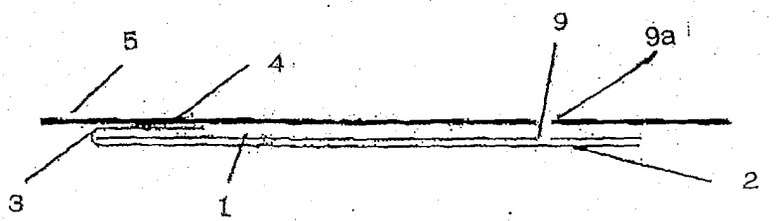

FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 04 07 6947

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.7)
X	FR 2 439 719 A (JACOBONE PANSAC) 23 May 1980 (1980-05-23)	1	B65D30/24
A	* page 2, line 7 - line 18; figures 1,2 * * page 2, last line - page 3, line 2 *	2	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 November 2004	Sundell, O

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 07 6947

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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05-11-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82