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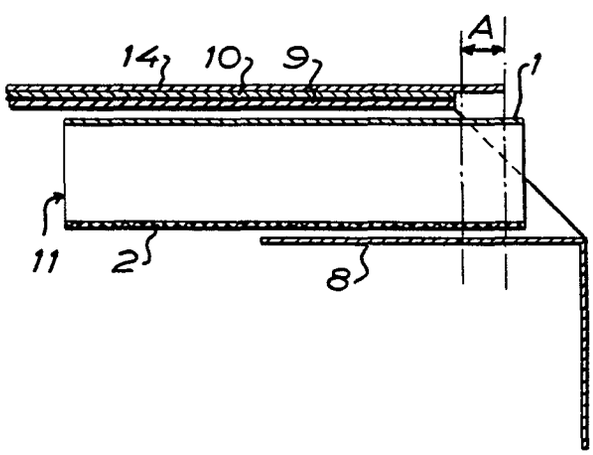
(54) Improvements in or relating to valve bags.

(57) A valve bag has a valve opening in which a valve sleeve extending into the interior of the bag, is fixed by means of a mountant. The valve sleeve consists of a supporting sheet (1) and a lip valve sheet (2) of thin porous airpermeable material which is adhered to the supporting sheet along two opposite edges. The face of the supporting sheet turned towards the lip valve sheet is formed, between the points where the two sheets are adhered together, of a material to which the mountant does not adhere.



EP 0 010 563 A1

KRAFT-PAK AB

Improvements in or relating to valve bags

This invention relates to a valve bag having a valve opening in which is fixed a valve sleeve extending into the interior of the bag. Such a bag is filled with particulate material through a fill pipe which is passed into the bag through the valve sleeve thereof, the material being injected into the bag through the fill pipe by means of a stream of pressure air. After filling of the bag the fill pipe is withdrawn, and as a result the valve sleeve, when designed as a lip valve, is pressed flat by the action of the material and the air in the bag, keeping the material trapped in the bag.

In conventional prior art designs, compare e.g. Swedish patent specification 227,754, the valve sleeve is formed of air-impermeable material so that air traped in the bag can only with difficulty penetrate through the valve sleeve serving as a lip valve in the filling operation and the subsequent handling of the bag, and this problem becomes particularly severe when the bag walls are air-impermeable so that all of the trapped air must escape through the valve sleeve. If the bag has been filled with pulverulent dust-producing material dust will be taken along by the air escaping through the valve sleeve so that serious dusting prob-

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lems arise.

To remedy the problems associated with air entrapped in the bag and with dust generation it is already known to form the valve sleeve of porous air-permeable paper or woven cloth, cf. e.g. German patent specification 867,493. The valve sleeve serving as a lip valve prevents material escaping from the bag and filters off dust from air that penetrates from the interior of the bag through the porous valve sleeve wall out of the bag.

With the use of such a valve sleeve of porous air-permeable material problems arise in manufacturing and mounting the valve sleeve in the bag. To ensure a good lip valve action the valve sleeve material must be thin and very easily flexible. Owing to its easy flexibility such a valve sleeve material is practically impossible to handle in a modern bag manufacturing machine, and due to its porosity and thinness such valve sleeve material lets through adhesive utilized in the manufacture of the sleeve and the mounting thereof so that the valve sleeve material is glued together at undesired points. The handling problem could per se be solved by constructing the valve sleeve in the manner disclosed by Swedish patent specification 221,402 from a supporting sheet and a porous air-permeable sheet adhered to the supporting sheet along two opposite edges, but the problem of the material being glued together at undesired points remains and is rendered more complex with such a construction of the valve sleeve.

The problems outlined above are solved by the present invention which suggests a valve bag having a valve opening in which a valve sleeve projecting into the interior of the bag is fixed by means of an adhesive layer formed of a mountant and extending substantially all around the valve sleeve, said valve sleeve consisting of a supporting sheet and a lip valve sheet of porous

air-permeable material, which is adhered to the supporting sheet along two opposite edge portions, and which is characterised in that the face of the supporting sheet turned towards the lip valve sheet is formed, within at least substantially the entire area between the points where the opposite edge portions of the lip valve sheet are adhered to the supporting sheet, of a material to which the mountant lacks essential adhesive power.

Further features of the invention and the advantages gained thereby will appear from the appended sub-claims.

The invention will be described in greater detail below with reference to the accompanying drawings which schematically show two embodiments of the invention. In the drawings:

Fig. 1 is a cross-section of a flat valve sleeve forming strip, the thickness dimensions of the strip layers having been heavily exaggerated for greater clarity;

Fig. 2 shows the strip according to Fig. 1 after its opposite edge portions have been folded;

Figs. 3 and 4 in the same way as Figs. 1 and 2 show another embodiment of a valve sleeve strip;

Figs. 5 and 6 show two stages of the manufacture of a block bottom valve bag; and

Fig. 7 is a section of a bag corner equipped with a valve sleeve which is expanded to approximately cylinder shape to permit its mounting on a fill pipe (not shown).

Upon application of the present invention a valve sleeve strip is manufactured in a separate machine and rolled together on itself into a large roll which is then mounted in a conventional bag manufacturing machine where the strip is divided into valve sleeve lengths which are mounted in the bags being manufactured in the machine and fixed by means of a mountant.

In the embodiment illustrated in Figs. 1 and 2 of the valve sleeve strip it is presupposed that for adhering together the sheets constituting the strip use is made of a sleeve forming adhesive which is compatible with or has substantially the same adhering properties as the mountant employed in the bag manufacturing machine. The valve sleeve strip illustrated in Figs. 1 and 2 is composed of two main constituents, viz. a relatively stiff strip-shaped supporting sheet 1 and a thin porous air-permeable strip-shaped lip valve sheet 2. The two sheets are of approximately the same strip width and are placed one upon the other, their edge portions being adhered together by two stripes 3 of a sleeve forming adhesive. The supporting sheet 1 suitably consists of a strong, relatively stiff paper, preferably kraft paper, and the lip valve sheet 2 suitable consists of a thin porous air-permeable paper or woven or preferably non-woven material. The sleeve forming adhesive and the mountant employed in the bag manufacturing machine can be starch glue of the kind customary in paper bag manufacture. To avoid undesirable adhering together of parts the surface of the supporting sheet 1 is formed, within certain areas, of a material to which the sleeve forming adhesive and mountant lack essential adhesion. This has been attained in that the respective areas of the supporting sheet 1 have been provided with an extremely thin coating of e.g. wax, when the sleeve forming adhesive and mountant are a starch glue. Thus, the supporting sheet 1 on its face turned towards the sheet 2 has such a coating 4 substantially throughout its area between the stripes of adhesive 3 to prevent the sheets 1 and 2 adhering together between the stripes 3 when the valve sleeves are mounted in the bags in the bag manufacturing machine, as will be described in the following. Moreover, the supporting sheet 1 on its face turned away from the lip valve sheet 2 has such a coating

5 on two surface portions opposite the stripes 3 to prevent subsequent turns of the valve sleeve roll adhering together. For in the manufacture of the valve sleeve strip a supporting sheet strip is drawn from a supply roll to means for applying the coatings 4, 5 and the adhesive stripes 3, whereupon a lip valve sheet strip is pulled from a supply roll and pressed against the supporting sheet strip, after which the valve sleeve strip thus formed is wound onto itself to form a large roll. Adhesive from the stripes 3 can penetrate the lip valve sheet 2 and might occasion adhering together of subsequent turns of the roll of lip valve sleeve material if the coatings 5 did not exist and prevented this. Although the coatings 5 in Fig. 1 have been shown as being of the same width as the stripes 3 of adhesive, it may be suitable to make the coatings 5 somewhat wider to prevent with certainty that adhesive from a stripe 3 can reach through the porous sheet 2 to a non-treated portion of the supporting sheet 1 in the next following turn of the valve sleeve roll.

Though not absolutely necessary, it may be suitable, before or during mounting of a valve sleeve in a bag, to fold in a manner to be described in the following opposite edge portions of the supporting sheet 1 inwardly over the face of the supporting sheet turned away from the lip valve sheet 2, as shown in Fig. 2, to cover the coatings 5 so that the valve sleeve everywhere turns such surfaces outwardly to which the mountant employed in the bag manufacturing machine can adhere. As the supporting sheet 1 and the lip valve sheet 2 are of the same width, as shown in the embodiment according to Figs. 1 and 2, the lip valve sheet and the adhesive stripes 3 will take part in said folding of the supporting sheet 1, but this does not impair the contemplated concealment of the coatings 5 since the mountant can adhere both to the sheet 2 and the adhesive stripes 3. If desired, the supporting

sheet 1 may, however, have edge portions protruding beyond the adhesive stripes 3, which edge portions are folded over the coatings 5 without the lip valve sheet 2 and the adhesive stripes 3 taking part in the folding operation.

Figs. 5 and 6 show how a valve sleeve formed by the valve sleeve strip according to Figs. 1 and 2 is mounted in a block bottom bag in a bag manufacturing machine. In the machine a bag sleeve 6 arrives at the mounting position in such a conventional state that its one end has two inwardly folded corner flaps 7, 8, a forwardly directed side flap 9 and a side flap 10 which is folded backwardly over the bag sleeve. A stripe of mountant has been applied to the corner flap 8 within at least one region A. Laterally of the mounting position in the bag manufacturing machine is a supply roll (not shown) of valve sleeve strip according to Fig. 1. A length of strip is cut therefrom to form a valve sleeve 11, and the lateral edges of the sleeve 11 are folded in the manner illustrated in Fig. 2, after which the valve sleeve 11 is disposed on the corner flap 8 in the manner appearing from Fig. 5 so that the supporting sheet 1 of the valve sleeve is turned away from the corner flap and a considerable portion of the valve sleeve 11 protrudes past the corner flap 8 towards the longitudinal centre line of the bag tube 6. Now the side flap 9 is first folded along the crease line 12 inwardly over the valve sleeve 11 and the corner flaps 7, 8, whereupon the side flap 10 is folded along the crease line 13 inwardly over the side flap 9 and adhered thereto by means of a stripe (not shown) of adhesive. Finally, a cover sheet 14 provided with mountant is applied over the folded-together side flaps 9, 10, the corner flap 7 and that portion of the valve sleeve 11 which is not concealed by the side flaps. The thus finished bag block bottom with a valve sleeve 11 mounted at

one corner is shown in Fig. 6.

The mountant applied within the region A of the corner flap 8 and the mountant applied to the cover sheet 14 will form a layer of adhesive extending substantially all around the valve sleeve 11 and adhering thereto. This adhesive layer can certainly penetrate through the lip valve sheet 2 of the valve sleeve, but it cannot adhere the sheet 2 to the supporting sheet 1 of the valve sleeve within the area between the adhesive stripes 3 (Fig. 1) since the coating 4 of the supporting sheet prevents this.

Fig. 7 shows one corner of a bag manufactured according to Figs. 5 and 6 with the valve sleeve 11 expanded to approximately cylindrical shape to permit said sleeve to be passed onto a fill pipe for filling the bag with particulate material. In Fig. 7 there have been shown for greater clarity spaces between, on one hand, the valve sleeve 11 and, on the other hand, the corner flap 8, the side flap 9 and the cover sheet 14, but actually such spaces are substantially lacking, and the valve sleeve is adhered all around its periphery to said parts at least within the region A. The supporting sheet 1 of the valve sleeve 11 is turned towards the side flaps 9, 11 of the bag bottom and the lip valve sheet 2 is turned towards the corner flap 8, but protrudes a considerable distance beyond said corner flap into the interior of the bag to serve as a lip valve together with the supporting sheet in a manner known per se.

Figs. 3 and 4 show an embodiment of a valve sleeve strip which is suited for use when one wishes to employ as sleeve forming adhesive an adhesive intended for wax paper and wants to utilize in the bag manufacturing machine a starch glue as mountant. In Figs. 3 and 4 one face of a supporting sheet 15 is coated in its entirety with a surface forming plastic layer 16 to which the mountant but not the sleeve

forming adhesive adheres, whereas the other face of the supporting sheet is coated in its entirety with a surface forming wax layer 17 to which the sleeve forming adhesive but not the mountant adheres. The thin porous air-permeable lip valve sheet 18 has its lateral edges adhered to the surface coating 17 of the supporting sheet by glue stripes 19 of wax paper glue. In connection with the mounting of valve sleeves in the bag manufacturing machine opposite edge portions of the supporting sheet 15 are folded, as will appear from Fig. 4, inwardly over the face of the supporting sheet which is turned towards the lip valve sheet 18 to cover the glue stripes 19 to which the mountant does not adhere.

In a modification of the embodiment according to Figs. 3 and 4 the edge portions of the lip valve sheet 18 are fixed to the wax layer 17 of the supporting sheet 15 by heat sealing so that glue stripes 19 are not needed. In such a case the plastics layer 16 on the supporting sheet 15 can also be dispensed with. This modified embodiment, however, suffers from the drawback that heat sealing is a slow process and results in unreliable jointing.

CLAIMS

1. A valve bag having a valve opening in which a valve sleeve (11) projecting into the interior of the bag is fixed by means of an adhesive layer formed of mountant and extending substantially all around the valve sleeve, said valve sleeve consisting of a supporting sheet (1, 15) and a lip valve sheet (2, 18) of porous air-permeable material, which is adhered to the supporting sheet along two opposite edge portions, c h a r a c t e r i s e d in that the face of the supporting sheet (1, 15) turned towards the lip valve sheet (2, 18) is formed, within at least substantially the entire area between the points where the opposite edge portions of the lip valve sheet are adhered to the supporting sheet, of a material to which the mountant lacks essential adhesive power.

2. A valve bag as claimed in claim 1, in which the opposite edge portions of the lip valve sheet (2) are adhered to the supporting sheet (1) by means of a sleeve forming adhesive which is compatible with or has substantially the same adhering properties as the mountant, c h a r a c t e r i s e d in that the face of the supporting sheet (1) turned away from the lip valve sheet (2) has two surface portions (5) located opposite said edge portions of the lip valve sheet and formed of a material to which the sleeve forming adhesive lacks essential adhesive power.

3. A valve bag as claimed in claim 2, c h a r a c t e r i s e d in that opposite edge portions of the supporting sheet (1) are folded inwardly over the face of the supporting sheet turned away from the lip valve sheet (2) to cover said surface portions (5) of the supporting sheet.

4. A valve bag as claimed in claim 1, c h a r a c t e r i s e d in that the face of the supporting sheet (15) turned towards the lip valve sheet (18) is formed

of the material, to which the mountant lacks adhesive power, also within those surface portions where the opposite edge portions of the lip valve sheet are adhered to the supporting sheet by heat sealing or by means of a sleeve forming adhesive which is of a kind other than the mountant and has power to adhere to said surface forming material of the supporting sheet.

5. A valve bag as claimed in claim 4, c h a r a c t e r i s e d in that opposite edge portions of the supporting sheet (15) are folded inwardly over the face of the supporting sheet turned towards the lip valve sheet (18) to cover the edge portions of the lip valve sheet which are glued to the supporting sheet.

FIG.1

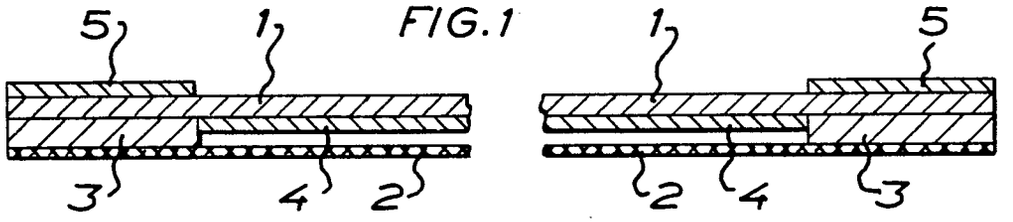


FIG.2

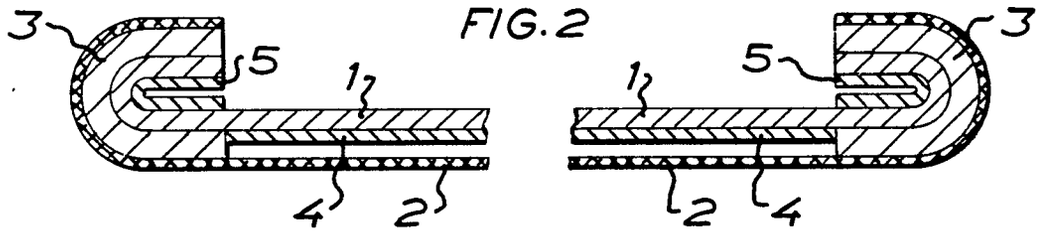


FIG.3

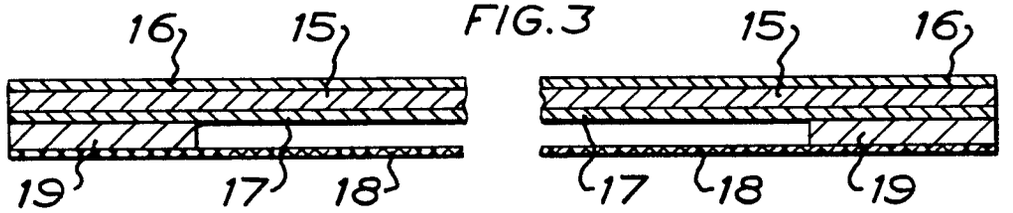


FIG.4

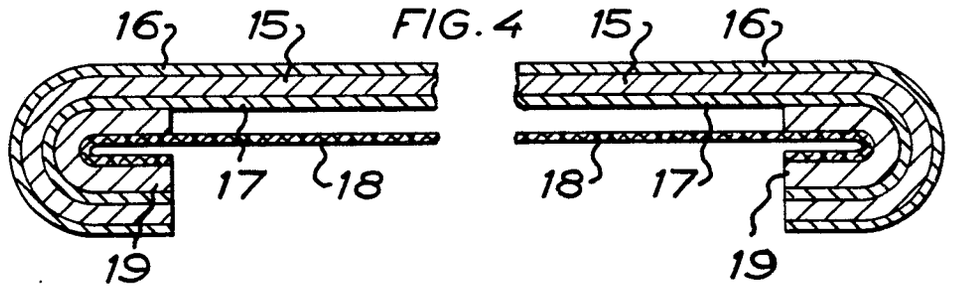


FIG.5

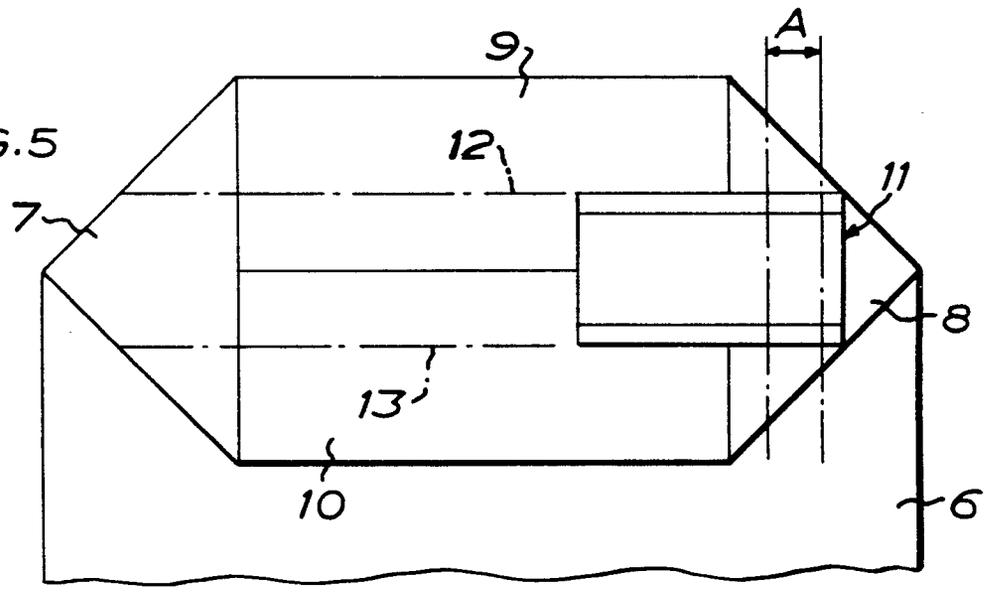
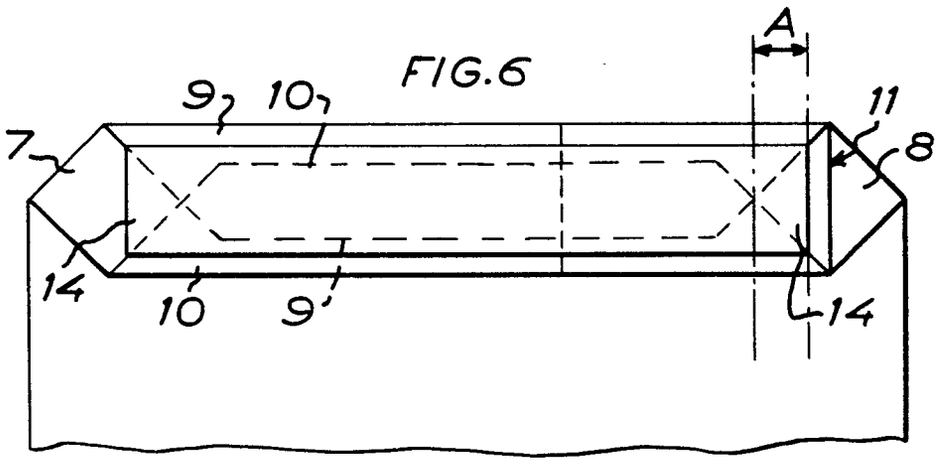


FIG.6



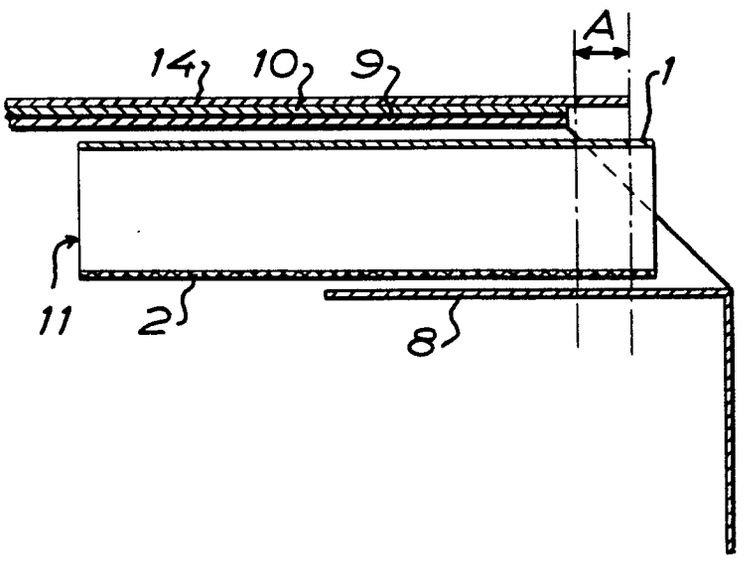


FIG.7

European Patent Office

EUROPEAN SEARCH REPORT

Application number
0010563
EP 79 85 [illegible]

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	US - A - 3 291 376 (BEMIS COMP.) * Column 5, lines 61-75; column 6, lines 1-21; figure 22 *	1,3
A	US - A - 3 261 267 (BEMIS COMP.)	1
A	US - A - 2 040 338 (ROSMAIT)	1
A,D	SE - A - 227 754 (FOLLIN-JOHNSON)	1
A,D	DE - C - 867 493 (OSTER)	1
A,D	GB - A - 940 603 (FOLLIN-JOHNSON) & SE - A - 221 402	1

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

B 65 D 30/24

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

B 65 D 31/14
31/08

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12-02-1980	BAERT

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