

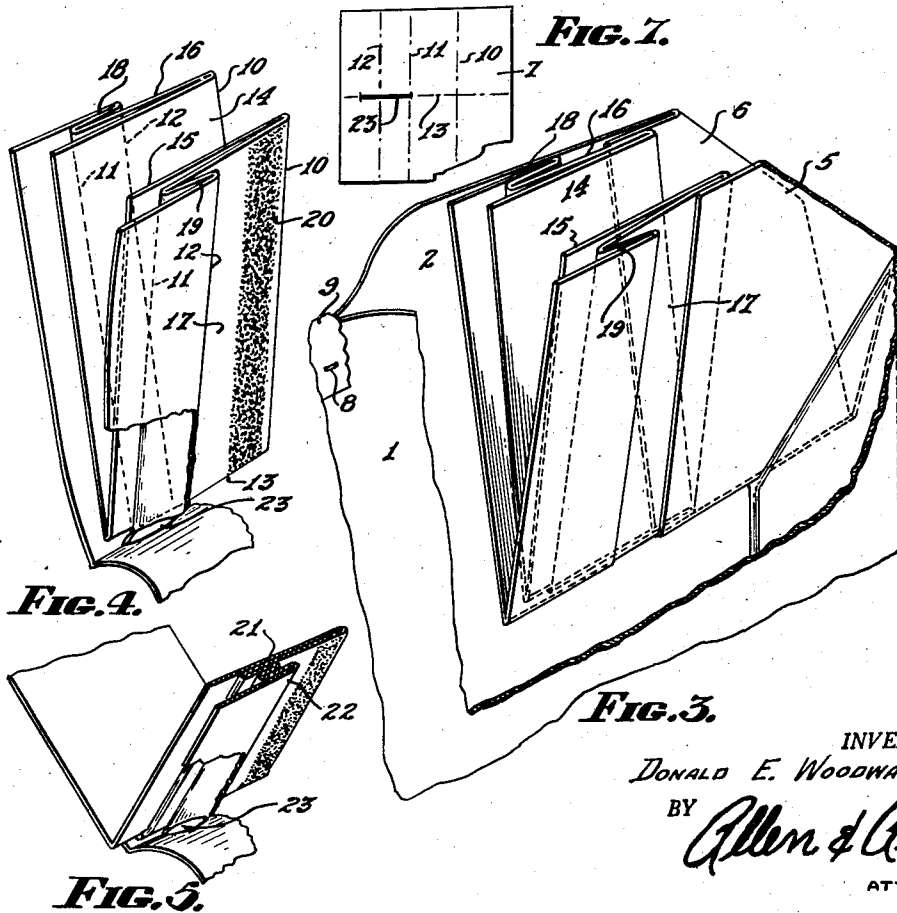
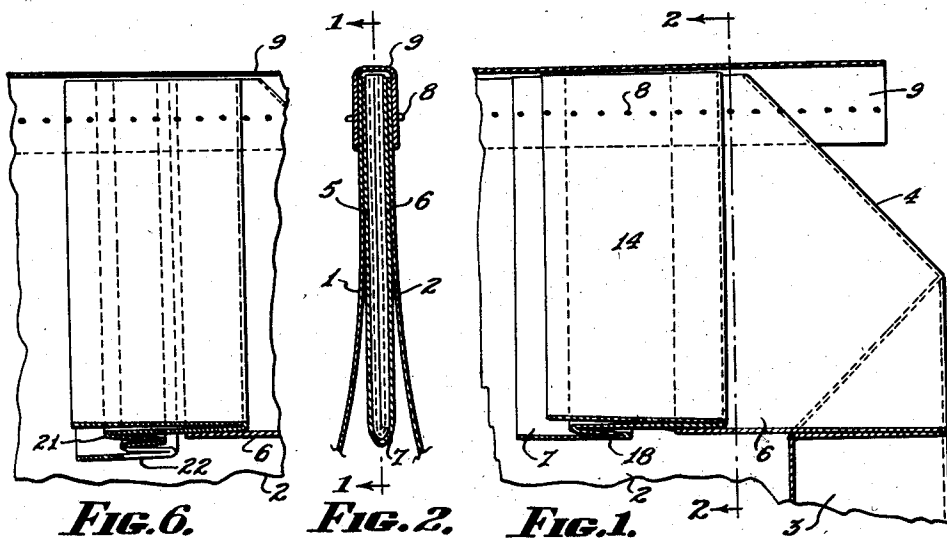
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SLEEVE STRUCTURE FOR BAG VALVE

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1

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SLEEVE STRUCTURE FOR BAG VALVE

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2 Claims. (Cl. 229—62.5)

My invention has to do with a sleeve structure for a bag valve, and more particularly to an improved valve sleeve which will effectively prevent the escape of material through the bag valve.

A valve bag is one in which a filling opening is provided in a corner of the bag through which a filling spout may be inserted. The filling opening is formed by folding the corner of the bag inwardly between the side walls, whereupon the end of the bag is sewn closed. The line of stitching used to close the end of the bag also extends through the outer edges of the folded corner to define a tubular pasageway or valve which, when the bag has been filled and extended, will be pressed upwardly against the top of the bag to close the filling opening. Since such bags are customarily formed from one or more plies, or walls, of relatively heavy paper which prevents the valve from being tightly pressed or crushed against the top of the bag, it is customary to provide the valve with a more readily compressible extension, known as a sleeve, which can be more completely crushed or flattened by the contents of the bag than the valve itself. While such sleeves have materially reduced leakage through the bag valves it has been found difficult to provide a sleeve which will entirely prevent the escape of material, particularly when the material is of relatively fine granular or powdered character.

A principal object of the instant invention is the provision of an improved valve sleeve which will more effectively prevent leakage of the packaged material through the bag valve.

A further object of the invention is the provision of a valve sleeve incorporating one or more bellows folds which permit a greater degree of expansion and flexibility in the sleeve structure than has heretofore been obtained employing conventional sleeve constructions.

Yet a further object of my invention is the provision of a bellows fold sleeve which can be folded and inserted in the valve mechanically during the normal manufacturing operations.

Yet a further object of my invention is the provision of a bellows sleeve construction in which the bellows may be partially slit so as to further enhance the ability of the sleeve to be tightly compacted against the top of the bag.

These as well as other objects of my invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, I accomplish by those constructions and arrangements of parts of which I shall now describe certain exemplary embodiments.

Reference is now made to the accompanying drawings wherein:

Figure 1 is a side vertical sectional view of a bag valve incorporating a sleeve in accordance with my invention.

Figure 2 is a vertical sectional view taken along the line 2—2 of Figure 1.

Figure 3 is a partial perspective view of a partially

2

open valve corner of a bag showing the inner ends of the valve and sleeve.

Figure 4 is a perspective view illustrating a valve sleeve in accordance with my invention.

Figure 5 is a partial perspective view of a modified form of valve sleeve.

Figure 6 is a partial side vertical sectional view illustrating the sleeve of Figure 5 associated with a bag valve.

Figure 7 is a plan view of the valve sleeve of Figure 4.

It will be understood that a valve bag is usually of the multi-ply type, but for simplicity and clearness of illustration I have shown the sleeve applied to a single ply bag which will be understood to correspond to the innermost ply of a conventional multi-ply bag.

Referring now to Figures 1 and 2 of the drawings, I have therein illustrated the valve corner portion of a bag comprising side walls 1 and 2, the bag having its longitudinal walls folded inwardly to form gussets, one of which is indicated at 3. The corner of the bag is folded inwardly to form a valve 4 comprising side walls 5 and 6. The sleeve 7 is inserted in the valve 4 and positioned to extend inwardly therebeyond; and the upper edges of the bag side walls and the sleeve are connected one to the other by a line of stitching 8 and a strip of sealing tape 9 folded over the upper edges of the bag walls and attached thereto by the same line of stitching, as will be clearly apparent from Figure 2 of the drawings.

The sleeve 7 is formed from a sheet of suitable flexible material, such as relatively light weight kraft paper or crepe paper, which is generally rectangular and oblong in shape. The sheet is first folded longitudinally along the spaced apart and parallel lines for folds 10, 11 and 12 and then transversely along the medial line for fold 13 to form the completed sleeve structure. As best seen in Figure 4, the sleeve structure comprises inner sleeve walls 14, 15, outer sleeve walls 16, 17 and reversely folded bellows 18 and 19 the free ends of which are of a size to extend inwardly beyond the free inner ends of the inner sleeve walls 14, 15.

The sleeve 7, upon being folded to the condition illustrated in Figure 4, may be readily inserted in the valve by means of the sleeve inserting device taught in Peters et al. Patent 2,442,431, it being understood that the sleeve will be inserted between the side walls 5 and 6 of the valve and adhered thereto by means of an adhesive stripe 20 (Figure 4) applied to the marginal edges of the outer sleeve walls 16 and 17 adjacent fold line 10. The sleeve is thus secured to the valve in substantially the position illustrated in Figure 3.

The sleeve structure just described provides three relatively movable sleeve sections which act, upon compression of the valve and sleeve structure against the top of the bag, to tightly seal the valve and prevent the contents from escaping through it. The first of these relatively movable sections comprises the inner sleeve walls 14, 15; the second comprises the outer sleeve walls 16, 17 together with the portions of the bellows lying between the fold lines 11 and 12; and the third comprises the remaining inwardly extending portions of the bellows. The three sections, upon being compressed, will accommodate themselves individually to the contour of the bag top and hence will more effectively seal closed the valve opening.

Figures 5 and 6 illustrate a modified sleeve structure incorporating a pair of bellows members 21 and 22 formed by folding and reversely folding a somewhat wider sheet an additional time, thereby providing a sleeve structure having four relatively movable sections.

I have also found that an even greater degree of flexibility can be imparted to the bellows structure by slitting the bellows 18 and 19 along their common bottom edge, as defined by the medial fold line 13, the

3

slit, indicated at 23 in Figure 7, extending between the fold lines 11 and 12 and beyond the fold line 12 by an equal distance, i.e. a distance equal to the distance between the lines 11 and 12. Such slit may be provided either in the bellows 18, 19 of the sleeve structure of Figure 4 or between the bellows 21 in the sleeve structure of Figure 5.

Further modifications may be made in my invention without departing from the spirit of it. Having, however, described my invention in certain exemplary embodiments, what I desire to secure and protect by Letters Patent is:

1. A structure for the purposes described comprising a bag having an inturned valve, a sleeve for said valve formed from a substantially rectangular piece of flexible material folded and reversely folded along spaced apart parallel lines of fold to define at least one bellows intermediate the opposite longitudinal edges of said sleeve, said sleeve also being folded into two halves along a line of fold extending normal to said parallel lines of fold, said folded sleeve structure lying between the sides of said inturned valve with marginal portions of said

4

sleeve adhesively secured to marginal portions of said valve and with the major portion of said sleeve including said bellows extending within said bag beyond said valve, said bellows being free from attachment to said valve and serving to divide said sleeve into a plurality of relatively movable sleeve sections capable of conforming to the contour of the bag when filled.

2. The structure claimed in claim 1 wherein said sleeve has a slit therein coinciding with the line of fold dividing said sleeve into two halves and lying in the area of said bellows.

References Cited in the file of this patent

UNITED STATES PATENTS

1,132,293	Weiss	Mar. 16, 1915
1,819,421	Kendall	Aug. 18, 1931
2,714,983	Potdevin	Aug. 9, 1955

FOREIGN PATENTS

829,548	Germany	Jan. 28, 1952
904,728	Germany	Jan. 7, 1954