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VALVE INSERTS FOR VALVE BAGS

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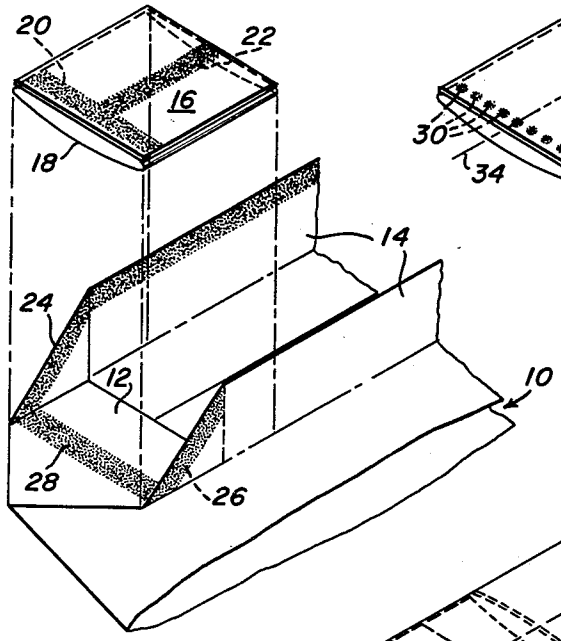


FIG. 1.

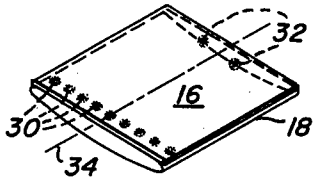


FIG. 4.

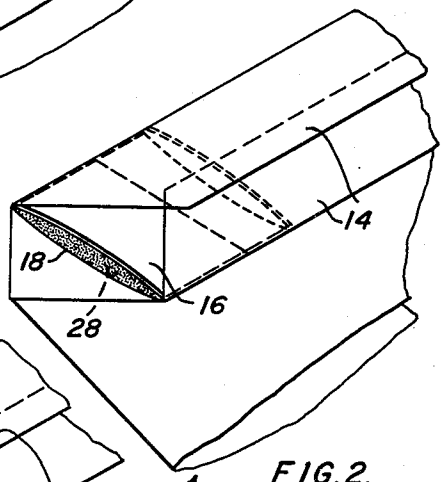


FIG. 2.

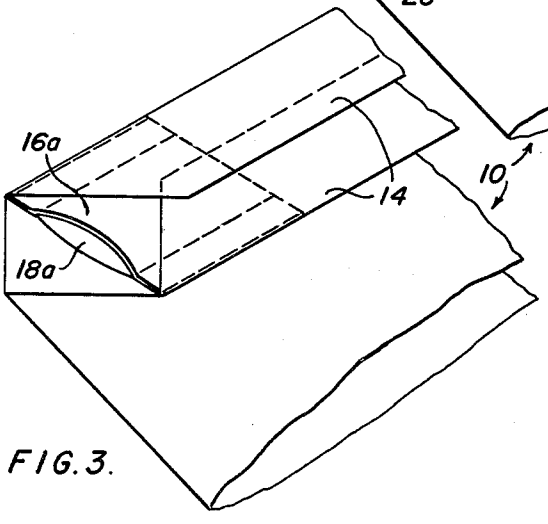


FIG. 3.

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VALVE INSERTS FOR VALVE BAGS

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2 Claims. (Cl. 229—62.5)

The present invention relates to valve inserts for valve bags.

The objects of the present invention are to provide an improved closure for a valve bag which will be substantially free from sifting during normal handling, storage and shipping of the bag, yet will permit high speed filling of the bag.

While it is old to provide bags with valve closures, the valve closures of the prior art have not been entirely satisfactory.

One widely used valve closure is known as an "internal sleeve" construction and consists of an insert of kraft paper which extends inwardly into the bag and is of tubular formation with a slit along its base. To fill a bag provided with such a closure the filling tube is inserted into the sleeve, whereupon the material issuing from the filling tube and entering the sleeve parts the sleeve at the slit so that the material may pour into the bag. When the filled bag is removed from the filling tube, the slit in the internal sleeve closes and the sleeve itself collapses against the bag end where it is held by pressure of the contents, thus sealing the valve opening. While desirable filling speeds can be obtained with this internal sleeve construction, sifting is apt to occur through the closure. If an attempt is made to avoid sifting by using a more flexible material as the internal sleeve, the bag end is weakened in the corner where the valve closure is located and it is difficult to maneuver the bag onto the filling tube.

Another widely-used valve closure is known as a "tuck-in" sleeve. In this construction a tubular sleeve extends outwardly from the wall of the bag, and the filling tube is inserted into this tube to fill the bag. When the filled bag is removed from the filling tube, the sleeve is folded manually and tucked into a pocket formed in the bag end, thus sealing the bag against leakage. The main drawback of the tuck-in sleeve closure is the time consumed by the manual folding and tucking-in steps. Furthermore, if the sleeve is not properly tucked in, the closure will not properly perform its sealing function.

We have found that the disadvantages of the prior art can be avoided through the provision of a valve insert for a valve bag which is made up of a combination of two parts of different stiffness. The novel valve insert of our invention gives a substantially sift-proof closure, lends itself to high speed filling, and requires no manual folding or tucking-in after filling, yet is simple and economical of manufacture.

The valve insert of our invention may generally be defined as a valve insert for a valve bag comprising a rectangular flexible stiffening strip, and a flattened open-ended tube which is of substantially the same size as said strip, said tube being formed of appreciably more flexible material than said strip, said strip being superimposed on one of the flattened sides of said tube, the bottom of said strip being secured to said tube along a line extending transversely across the bottom of said strip at one end thereof and joining said end to the adjacent side of the flattened tube along the adjacent open end thereof. While the tube is preferably of the same width as the strip it may, however, be narrower than the strip.

As the rectangular stiffening strip we presently contemplate using 50 to 100 pound kraft paper (preferably either bleached kraft, natural kraft or polyethylene-coated natural kraft) and more preferably such kraft paper in a weight of about 60 pounds, or a sheet of thermoplastic material having a thickness of between about 3 and about 10 mils.

The appreciably more flexible material for the open-ended tube is preferably either made from thermoplastic sheet material having a thickness of from about 1 to about 5 mils, or a crepe paper in a weight of from about 30 to about 60 pounds, or an extensible paper in the same weight range. By the term "extensible paper" we mean a paper which has been preformed during manufacture so as to give substantially greater stretch under load than is obtainable by normal manufacturing methods. One such paper being sold under the registered trade mark "Clupak" by Clupak Incorporated of New York City, U.S.A. Our presently preferred combinations of stiffening strip and flexible tube are as follows:

(1) A bleached or natural kraft paper having a weight of about 60 pounds as the stiffening strip, and an extensible paper having a weight of about 50 pounds as the flexible tube.

(2) A bleached or natural kraft paper having a weight of about 60 pounds as the stiffening strip, and a blown tubular polyethylene film having a thickness of about 2 mils as the flexible tube.

In the drawings illustrating embodiments of the invention:

FIGURE 1 is a perspective view showing one embodiment of the valve of the invention, separated from a bag in which it is to be mounted, and the bag proper at the stage in its formation when it intended to have the valve insert placed within it;

FIGURE 2 is a perspective view of the valve insert of the invention mounted in one corner of an otherwise conventional diamond-folded paper bag, and

FIGURES 3 and 4 are perspective views showing further embodiments of the invention.

FIGURE 1 shows one corner of a partially formed, diamond-folded, pasted end, paper bag **10** having conventional end and side flaps **12** and **14** respectively, folded to give a conventional diamond-folded corner structure. The valve insert of the invention is shown above the unfinished bag corner and consists of a rectangular stiffening strip **16** and a flattened open-ended tube **18** of substantially the same size as said strip but formed of more flexible material. Tube **18** is secured to the bottom of the strip by two bars of adhesive **20** and **22**, the bar **20** extending transversely across the bottom of the strip at one end thereof and joining said end to the adjacent side of the flattened tube **18** along the adjacent open end thereof, and the bar **22** extending substantially at right angles to the bar **20** and being located substantially mid-way between the sides of the strip. The bars of adhesive **20** and **22** could be replaced by similarly located lines of heat sealing in cases where the materials employed in forming the valve insert lend themselves to heat sealing procedures, and since it is not essential that the bars or lines **20** and **22** be continuous they could be replaced by a series of glued or heat sealed spots.

The diamond-folded bag end is, in the case illustrated in FIGURE 1, provided with conventional lines of adhesive **24** and **26** on the inner sides of the side flaps **14**, and with an additional bar of adhesive **28** extending transversely across flap **12** in the region of its base.

With the flaps **12** and **14** of the bag end disposed as shown in FIGURE 1, the valve insert is inserted in the corner of the bag as indicated by the dotted lines in FIGURE 1, the lower edge of the tube **18** is adhered to the bar of adhesive **28**, and the flaps **14** are adhesively secured to the upper surface of the stiffening strip **16**

and to one another by means of the lines of adhesive 24 and 26, thereby completing the diamond-folded bag end and simultaneously securing the valve insert in its desired final position.

Tests made with bags such as the one shown in FIGURE 2, i.e. provided with a valve insert as described above, have shown that the valve closure is substantially sift-proof due to the flexible nature of the tube 18 while the stiffening effect of the strip 16 facilitates speed of handling at the filling machine. Moreover, the additional strength imparted to the corner of the bag where the stiffening strip is mounted militates against bag breakage during filling, shipment and handling of these bags.

The embodiment shown in FIGURE 3 is substantially the same as that shown in FIGURES 1 and 2 except for the fact that in the FIGURE 3 embodiment, while the stiffening 16*a* is of substantially the same width as the bag and (just as in FIGURES 1 and 2), the tube 18*a* is appreciably narrower than the strip and hence narrower than the width of the bag end.

The valve insert shown in FIGURE 4 is the same as the valve insert shown in FIGURES 1 and 2 except for the fact that bar of adhesive 20 is replaced by a series of aligned spots of adhesive 30 and the fact that the bar of adhesive 22 is replaced by a pair of adhesive spots 32 located on opposite sides of the centerline 34 of the stiffening strip 16 and adjacent the inner end of the strip. It will be appreciated that additional spots of adhesive could be employed, if desired, and that, where the materials selected for the stiffening strip 16 and the tube 18 lend themselves to heat sealing, the glued spots 30 and 32 could be replaced by heat-sealed spots.

By way of example, the valve of the invention has been illustrated as inserted in a single-ply, diamond-folded, pasted end bag. Our novel valve is, however, useful with bags of more than one ply and with end closures of any of the conventional types.

What we claim as our invention is:

1. A valve bag having an end which includes two conventionally folded corners, each of which includes an end flap, one of said corners being completely sealed and the other corner serving to mount a filling valve, said valve comprising a flattened open-ended tube formed of thin flexible material, a rectangular stiffening strip superimposed on one of the flattened sides of said tube, said stiffening strip being formed of material which, though flexible, is appreciably stiffer than the material of said tube, said stiffening strip extending the full length of said tube, said stiffening strip and tube both extending inwardly into the bag a greater distance than the inner extremity of the bag end flap in the corner where said valve is mounted, the bottom of said strip being secured to said tube along a first line extending transversely across the bottom of said strip at the end thereof nearest the valve corner of the bag and joining said end to the adjacent side of the flattened tube along the adjacent open end thereof, the opposite ends of said stiffening strip and tube being secured to one another only centrally of the bottom of said strip at the inner end thereof.

2. A bag as defined in claim 1, in which the bottom of said stiffening strip is secured to the said tube along a second line extending substantially at right angles to said first line, said line being located substantially midway between the sides of said strip and extending substantially the full length of said strip.

References Cited in the file of this patent

UNITED STATES PATENTS

2,105,376	Scott	Jan. 11, 1938
2,490,966	Johnsson	Dec. 13, 1949
2,682,902	Metzger	July 6, 1954
3,033,439	Arenbeck	May 8, 1962