Nov. 30, 1954 D. E. WOODWARD 2,695,746

TUCK-IN SLEEVE

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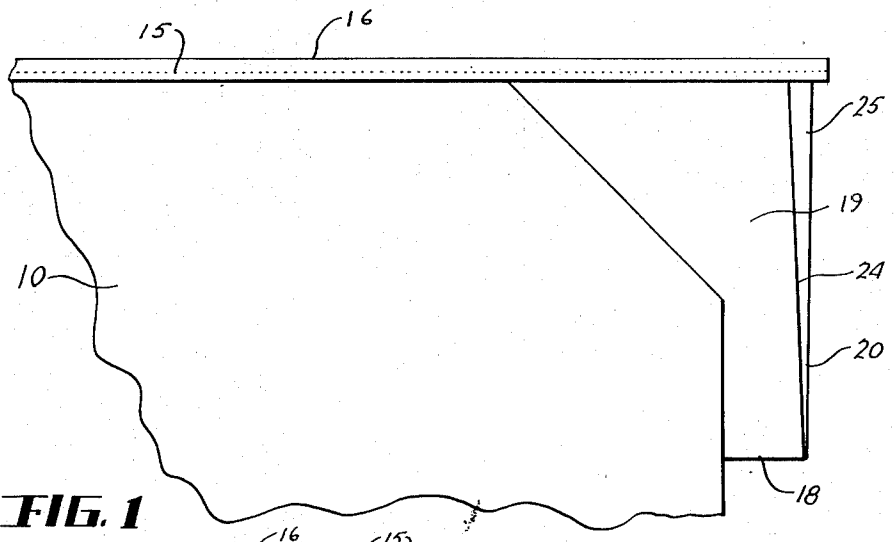


FIG. 1

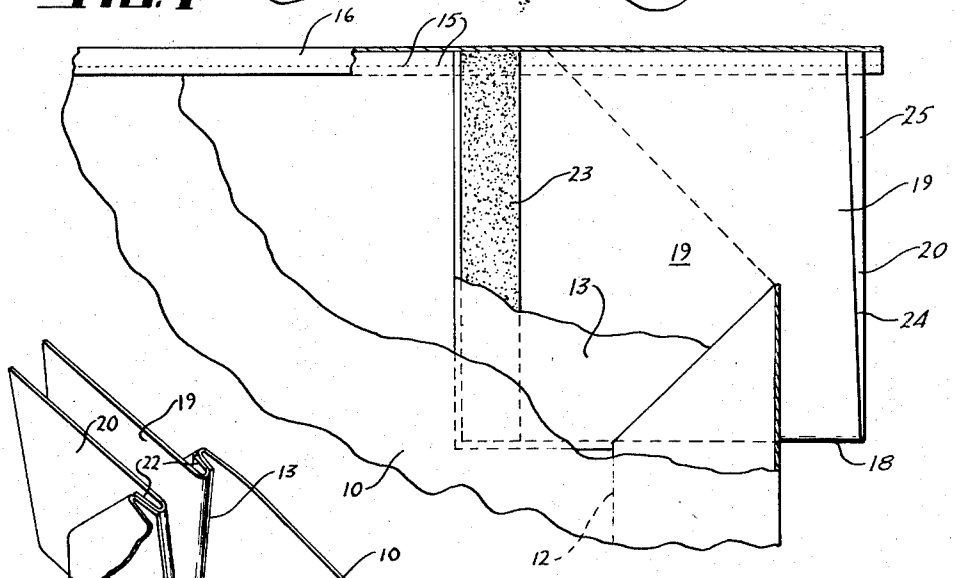


FIG. 2

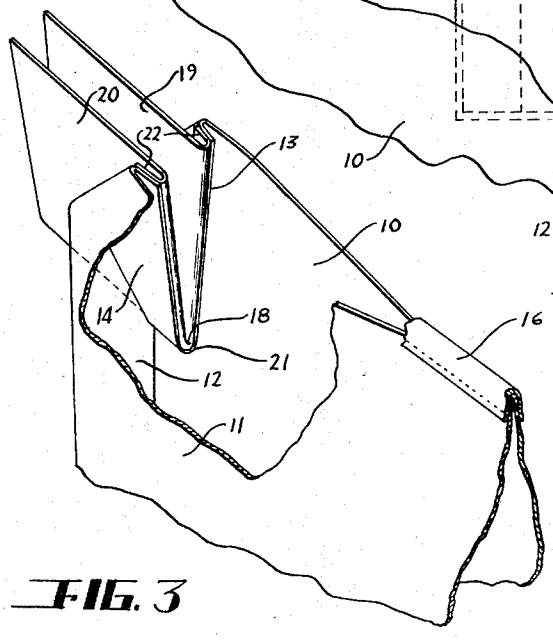


FIG. 3

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TUCK-IN SLEEVE

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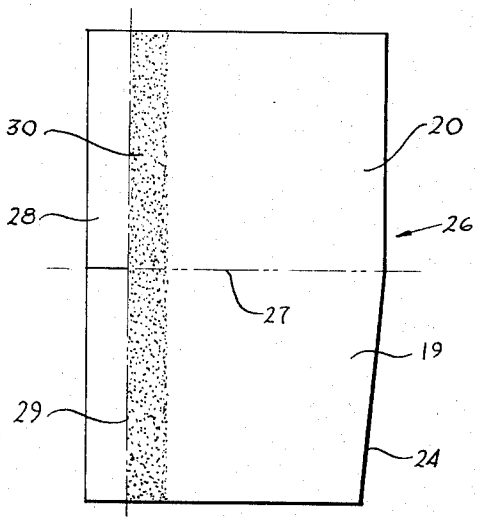


FIG. 5

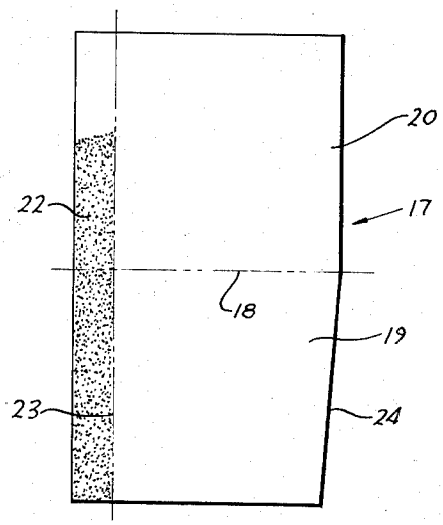


FIG. 4

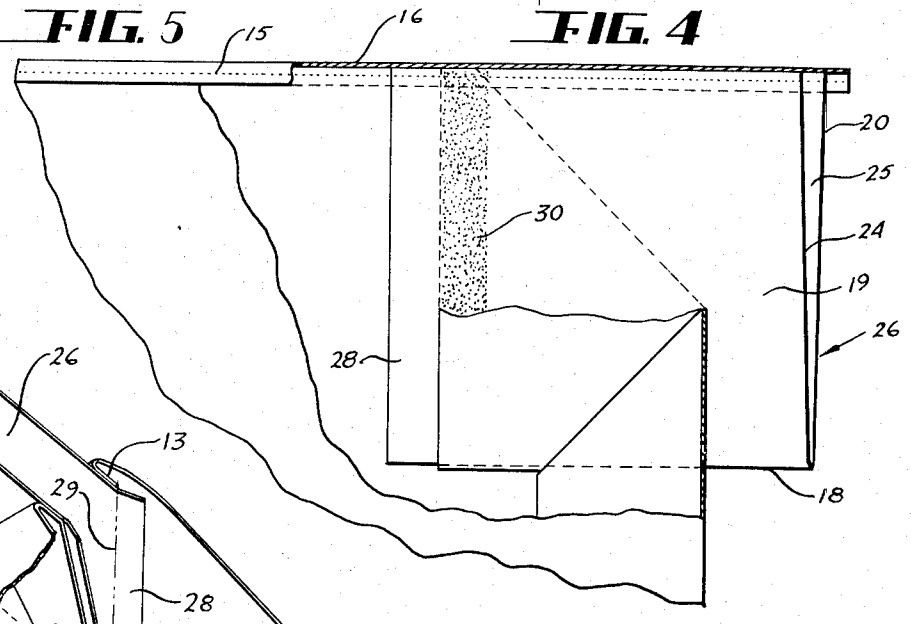


FIG. 6

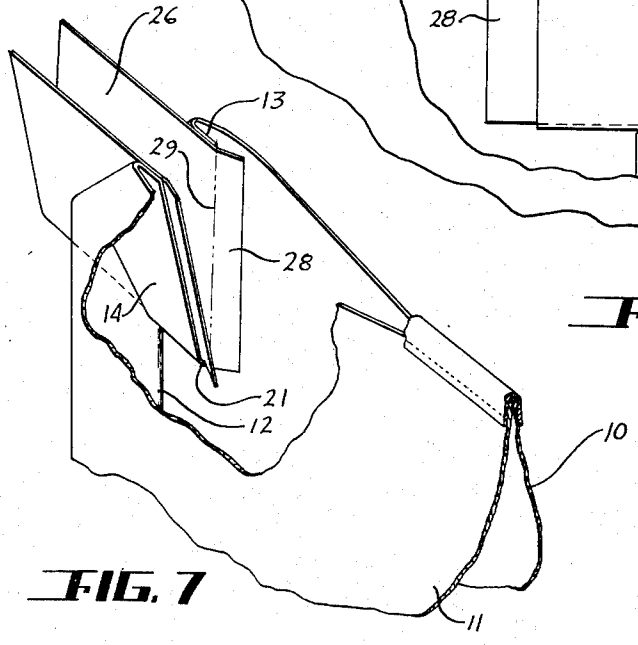


FIG. 7

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TUCK-IN SLEEVE

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Application November 10, 1949, Serial No. 126,490

2 Claims. (Cl. 229—62.5)

This invention relates to a supplemental closure for a valve bag. A valve bag is closed at both ends except for a filling opening at one corner of the bag, through which a filling spout may be inserted. This opening is usually formed by folding a corner portion of the bag inwardly between the side walls thereof in such a manner as to form a 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. Such bags are usually formed of one or more plies, or walls, of relatively stiff paper and the valve is, therefore, relatively stiff and cannot be pressed or crushed against the top of the bag in such a manner as to completely close the filling opening. Such a bag is useful for, and is extensively used for, many purposes but when the bag is filled with very fine material there will be more or less seepage of the material through the valve. When such a bag is used for fine material it has been customary to provide the valve with a supplemental closure of flexible material, commonly called a sleeve, which can be crushed or folded across the end of the valve to more tightly seal the filling opening. In some instances this sleeve extends inwardly beyond the valve so as to be crushed against the top of the bag and across the inner end of the valve to tightly close the latter. In other instances, the sleeve extends outwardly beyond the outer end of the valve and the projecting end thereof is folded or tucked into the outer portion of the valve to seal the same. Both types of sleeves are commonly inserted in the valve by hand after the valve has been formed, or partially formed, and before the adjacent end of the bag has been closed, but recently there has been provided a machine which will automatically insert the inwardly extending, or inner, sleeve into the valve after the valve has been formed and before the end of the bag has been closed.

One object of the invention is to provide a valve sleeve of the outwardly extending, or tuck-in type, which can be inserted by a mechanical device.

Another object of the invention is to provide a tuck-in sleeve with improved means for attaching the same to the valve.

A further object of the invention is to provide a tuck-in sleeve which will provide a closure for the inner end of the valve as well as a tuck-in closure for the outer end of the valve.

A further object of the invention is to provide a tuck-in sleeve with means whereby the outer end thereof can be easily opened to receive the filling spout.

Other objects of the invention may appear as the sleeve is described in detail.

In the accompanying drawings, Fig. 1 is a side elevational view of the valve corner of a bag embodying the invention; Fig. 2 is a similar view showing portions of the bag and of the valve broken away to show the manner of attaching the sleeve thereto; Fig. 3 is a perspective view of a partially open valve corner of a bag showing the inner ends of the valve and sleeve; Fig. 4 is a bottom plan view of the section of material from which the sleeve is formed; Fig. 5 is a bottom plan view of a slightly modified form of the sleeve section; Fig. 6 is a side elevational view, partly broken away, of the valve corner of a bag provided with a modified form of sleeve; and Fig. 7 is a perspective view of the valve corner portion of a bag, partially open to show the inner ends of the valve and of the modified sleeve.

In these drawings I have illustrated one embodiment of the invention, together with a modified form thereof, but

it is to be understood that the sleeve may take various forms and may be attached to the bag in various ways without departing from the spirit of the invention.

In these drawings I have shown the sleeve inserted in a bag comprising side walls **10** and **11** and having its longitudinal walls folded inwardly to form gussets, one of which is shown at **12**, in Fig. 3. At one corner of the bag the upper portion of the gusseted wall and portions of the side walls have been folded inwardly to form a valve comprising side walls **13** and **14**. The upper edges of the side walls of the bag are connected one with the other by a line of stitching **15**, and usually a strip of sealing tape **16** is folded over the upper edges of the bag walls and attached thereto by the same line of stitching that unites the upper edge portions of the side walls. The terms "upper" and "lower," as used herein, refer to the bag when it is in an upright position with the valve end thereof uppermost. For simplicity of illustration the bag is shown as a single wall bag, but the invention may be, and usually is, applied to multi-wall bags.

The sleeve is formed of a section of suitable flexible material **17**, such as crepe paper, which is preferably substantially rectangular and oblong in shape, as shown in Fig. 4, and is folded on a transverse fold line **18** to provide the same with side walls **19** and **20**. When the section of material **17** has been folded on the transverse fold line to form a sleeve, the sleeve is inserted between the side walls of the valve with its folded lower edge **18** close to, or in contact with, the folded lower portion **21** of the valve, as best shown in Fig. 3. The width of the section of material **17**, which when folded constitutes the length of the folded sleeve, is materially greater than the length of the valve, and the length of the section is such that the side walls of the inserted sleeve extend upwardly to lines adjacent the upper edges of the side walls of the bag, and thus extend into the sealing tape **16** and are connected one with the other and with the side walls of the bag by the line of stitching **15**. In practice, the bags are fed successively, in narrowly spaced relation one to the other, to a sewing head, or heads, which sew the upper end, or both ends, of the bags, the sealing tape **16** is continuous and the stitching extends through those portions of the tape which are between adjacent bags, said portions of the tape being severed after the bags have passed beyond the sewing heads. Consequently, the side walls of the sleeve are sewed one to the other for their full length and the upper end of the outwardly projecting portion of the sleeve is completely closed.

In that form of the sleeve shown in Figs. 1 to 4, one lateral edge portion, or margin **22** of the blank is folded over the adjacent portion of the body of the blank on that side of the body which is outermost in the folded sleeve, and this folded marginal portion of the sleeve is attached to the valve adjacent the inner end of the latter, as by applying paste to the outer surface of the marginal portion of the sleeve before the sleeve is inserted, as shown at **23**. When the sleeve has been inserted in the valve with the paste in contact with the surfaces of the side walls of the latter, the side walls of the bag are pressed one toward the other, thus pressing the side walls of the valve into firm contact with the marginal portions of the side walls of the sleeve and thereby firmly adhering the sleeve to the valve. When so connected with the inner portion of the valve the outer end of the portion of the sleeve projects a substantial distance beyond the outer end of the valve and is adapted to be folded or tucked into the valve to tightly seal the same.

If the projecting portions of the side walls of the sleeve were of equal length and the vertical outer edges parallel throughout their length, it would be difficult to quickly open the sleeve to permit the insertion of the filling spout. To facilitate the opening of the sleeve I have provided one side wall of the sleeve with a part which extends outwardly beyond the corresponding part of the other side wall. This part may be formed in any suitable manner but in the present arrangement the edge portion of the side wall **19** is cut away on a line **24** which extends upwardly and inwardly from the folded edge of the sleeve. Thus the outer edge portion **25** of the side wall **20** of the sleeve extends outwardly beyond the outer

edge of the side wall **19** and forms a finger piece. It is not necessary that the side wall **19** should be cut away for its full width but this simplifies the production of the sleeve. When the sleeve is to be opened to receive the filling spout, the operator by placing his thumb on the finger piece **25** and engaging the sealing tape at the top of the projecting portion of the sleeve by his fingers, can simultaneously exert lateral pressure on the side wall **20** of the sleeve and downward pressure upon the upper edge of the sleeve and thereby flex the outer portions of the two side walls in opposite direction to open the sleeve.

That the form of the sleeve shown in Figs. 5, 6, and 7 is, in its general character, similar to the sleeves above described and is formed from a blank **26** similar to the blank **17** and is folded in the same manner about a transverse fold line **27**. However, the longitudinal marginal portion **28** of the blank **26** is not folded onto the body portion of the blank but is adapted to extend inwardly beyond the inner end of the valve and to be pressed or crushed against the top wall of the bag and across the valve opening after the bag has been filled. Preferably this marginal portion is defined by a scoreline **29** which facilitates the folding or crushing of the margin **28** across the inner end of the valve. A line of paste **30** is applied to the outer side of the body portion of the blank, or section of material, **26** adjacent to the score line **29** and when the folded sleeve is inserted in the valve this line of paste engages the adjacent surface of the valve close to the inner end of the latter, so that the score line **29** is at, or slightly beyond, the inner edge of the valve. Thus when the bag is filled the marginal portion **28** thereof is pressed or crushed against the top of the bag and across the inner end of the extended valve and provides a closure for the inner end of the valve in addition to the tuck-in closure at the outer end of the valve.

Sleeves of both forms above described may be inserted in the valve by hand or by a mechanical device, and they are particularly well adapted for insertion by a sleeve insertion apparatus of the type shown in the Peters and Pierson Patent, No. 2,442,431, dated June 1, 1948.

While I have shown and described certain embodiments of my invention, I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A preformed sleeve structure for insertion in a valve-bag with a preformed valve, said sleeve structure consisting of a piece of flexible material of generally rectangular configuration an edge portion of which is folded over onto the body portion of the piece to form a cuff, the said body portions being also folded into two halves along a fold line transverse said cuff, the said cuff lying to the outside of the folded structure, the edge portion lying opposite the cuff on one of the said halves only being cut back slantwise from the said line whereby the said edge of the said half becomes non-coterminous with the corresponding edge of the other half in the folded structure, said folded structure being adapted for insertion between the side walls of the said preformed valve of the valve-bag with the outer surfaces of the cuff in contact with inner end portions of the side walls of the said valve with an opposite portion of the said structure projecting outwardly beyond the end of said valve, and a coating of adhesive covering the outer surfaces of the cuff for securing the said cuff to the inner end portions of the side walls of said valve.

2. A structure for the purpose described comprising a bag having an inturned valve, said bag being closed at both ends, said valve having a sleeve formed from a substantially rectangular piece of flexible material an edge portion of which is folded over onto the body portion of the piece to form a cuff, the said body portion being also folded into two halves along a fold line transverse said cuff, the said cuff lying to the outside of the folded structure, the edge portion lying opposite the cuff on one of said halves only being cut back slantwise from the said line whereby the said edge of the said half becomes non-coterminous with the corresponding edge of the other half in the folded structure, said folded structure lying between the side walls of the said preformed valve of the valve-bag with the outer surfaces of the cuff adhesively secured to marginal portions of the inner wall surfaces of said valve, said sleeve and valve being in flat-folded condition with the edge portions of the sleeve lying opposite the said cuff projecting outwardly beyond the end of said valve.

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