

Feb. 18, 1947.

D. BELCHER

2,415,862

VALVED BAG AND METHOD OF MANUFACTURING IT

Filed March 17, 1944

2 Sheets-Sheet 2

FIG. 7.

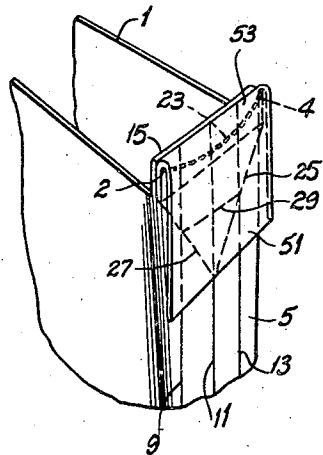


FIG. 8.

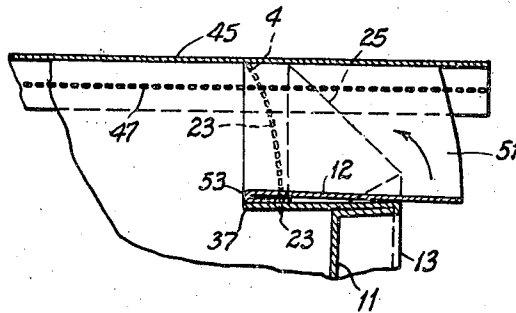


FIG. 9.

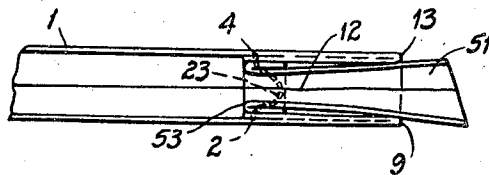


FIG. 10.

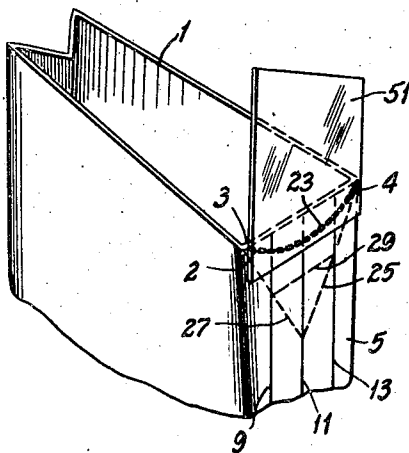
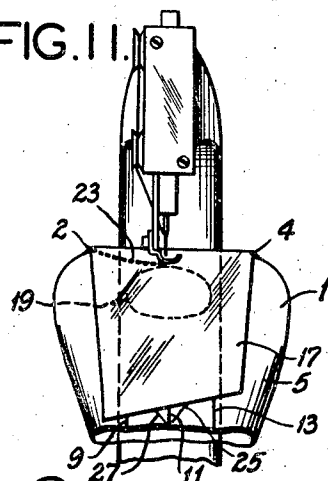


FIG. 11.



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2 Sheets-Sheet 1

FIG. 1.

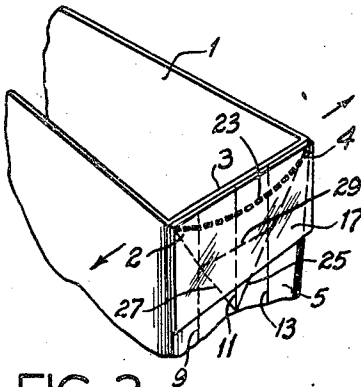


FIG. 2.

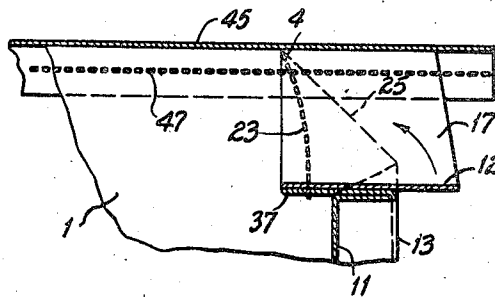


FIG. 3.

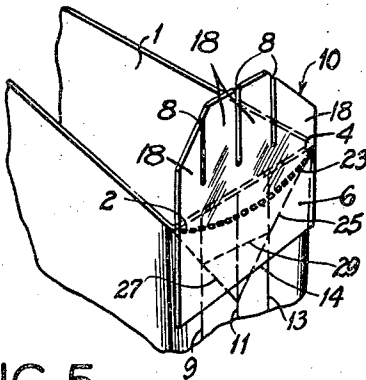


FIG. 4.

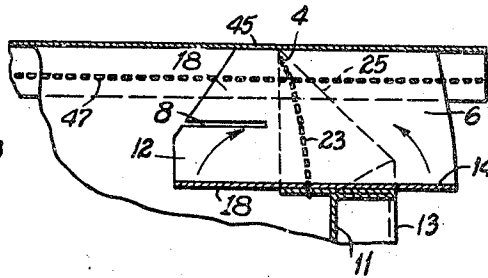


FIG. 5.

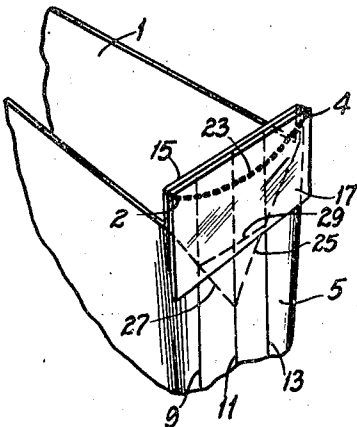
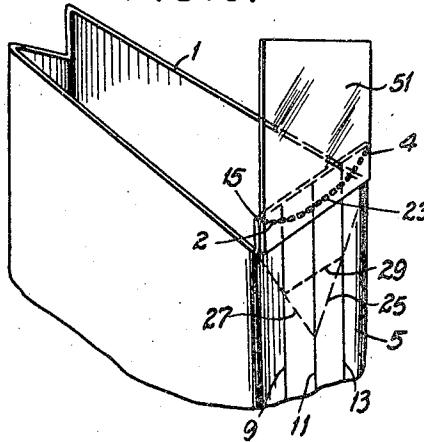


FIG. 6.



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UNITED STATES PATENT OFFICE

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VALVED BAG AND METHOD OF
MANUFACTURING IT

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Application March 17, 1944, Serial No. 526,875

2 Claims. (Cl. 229—62.5)

1

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This invention relates to valved bags, and to a method of manufacturing them, and with regard to certain more specific features, to sift-proof bag valves of the sleeve-lined, tucked-in flap type.

The invention is an improvement upon the inventions disclosed and claimed in two United States patent applications—namely, Serial No. 526,910, filed March 17, 1944, by William R. Wood, for Valved bags and method of manufacturing them; and Serial No. 526,911, filed March 17, 1944, by Gus A. Bauman, for Valved bags and method of manufacturing them. It is also an improvement upon the construction shown in United States Patent 1,827,040, dated October 13, 1931.

Among the several objects of the invention may be noted the provision of improved simple means of attaching a sleeve liner to a bag valve; the provision of attachment means of the class described which is effective whether or not the bag carrying the valve includes a valve-forming extension but particularly when it does not; and the provision of an attachment means of this class which may be effected at low cost and high rates of production. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, steps and sequence of steps, features of construction and manipulation, and arrangements of parts which will be exemplified in the structures and methods hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which are illustrated several of various possible embodiments of the invention,

Fig. 1 is a perspective view of a drawn-out, extensionless bag showing the invention applied thereto;

Fig. 2 is a vertical section through a finished and closed bag, embodying the construction of Fig. 1;

Fig. 3 is a view similar to Fig. 1, showing a modified sleeve attachment;

Fig. 4 is a view similar to Fig. 2, but illustrating the modification;

Fig. 5 is a view similar to Fig. 1, showing another modification;

Fig. 6 is a view similar to Fig. 5, showing another species of the Fig. 5 modification;

Fig. 7 is a fragmentary view similar to the right-hand portion of Fig. 6, illustrating a subsequent step in connection with the Fig. 6 species;

Fig. 8 is a vertical section of one corner of a

closed bag, illustrating the final arrangement of the Fig. 6 species;

Fig. 9 is a plan view of Fig. 8, without the cover strip and its stitching;

Fig. 10 is a view similar to Fig. 6, showing another modification; and,

Fig. 11 is a diagrammatic view of a sewing machine illustrating how an attachment is made, using the Fig. 1 form of the invention, for example.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now more particularly to Fig. 1, there is shown the corner of an extensionless, gusseted bag 1, which has been stretched out in the direction of the arrows shown, so as to open out the upper end of one of the side gusset portions 5. The mouth of such a bag is uniformly in a plane at right angles to the length of the bag. The gusset consists of three longitudinal creases 9, 11 and 13, which are formed when the tube is formed from which the bag material is cut. The creases 9 and 13 ultimately form the bag corners, the shaded corners shown being only temporary during the stretching operation. A bag having the above-mentioned side gussets is common and forms the subject-matter upon which the present invention is operative. Often, such a bag has an outward extension from the mouth edge portion 3, but for various reasons it is more economical to make bags in quantities without such extensions.

Additional folds or creases 25, 27 and 29 may be applied before attachment of the valve liner shown at 17 and to be described, or the application of these creases may be postponed until said valve liner has been applied, as will appear. These fold lines 25, 27 and 29 are of the type generally used for later forming and turning in a valve flap, causing the material at the upper end of the gusset 5 to break along the proper lines for the purpose.

At numeral 17 is shown a sleeve-forming insert or liner of quadrilateral form. To apply this liner or insert, the operator, as above stated, stretches out the gusseted corner of the bag as shown. This makes the adjacent part of the gusset substantially flat. Against the marginal portion of this flat portion of the gusset is laid the marginal portion of the sleeve liner or insert 17. This causes the sides of the liner to intersect the mouth edge 3 at corner 2, these sides being at right angles to the mouth edge 3. The operator then places the assembly over the horn 19

3 of a sewing machine (Fig. 11), and applies stitching 23 in a curved path, starting at one corner or intersection 2 and ending at the other corner or intersection 4. The result is the attachment shown in Fig. 1. The whole operation is quite simple, since the four fingers of the operator may be inserted behind the corner portions 2 and 4, and the thumbs may hold said corners against the bag. The non-linear character of the stitching is an important feature of the invention. It allows for dispensing with the extension above-mentioned, which would be required in order to stitch straight across the insert. By arcuately sewing as described, the sewing machine needle may start in the clear and advance relatively across the edge of the bag at the corner or intersection 2, finally advancing into the clear by traverse across the edge at the corner or intersection 4. Thus starting and completion of the stitching operation may occur at points outside of, rather than at points within the field of the sewn material. The latter would require undesirable special sewing machine manipulation for starting and stopping the seam.

After the sleeve liner has been applied as indicated in Fig. 1, a valve flap 37 may be formed of the upper end of the gusset by breaking along the crease lines 25, 27 and 29. This is indicated in cross section Fig. 2, wherein the sleeve liner 17 is shown as extending outward from the valve flap thus formed. It becomes bent at 12 next to crease 11. The result is a lined valve flap in an extensionless bag wherein the fit of the liner is improved. Finally, the bag is closed, along with the upper side of the valve by applying an inverted V-shaped cover strip 45 held in place by means of stitching 47. The bag is then ready for the insertion into the valve of a suitable filler nozzle, by means of which it may be filled. After withdrawal of the nozzle, the outer portions of the sleeve 17 may be wadded into the valve flap by pushing the outside portions in the direction of the curved arrow shown in Fig. 2. To facilitate this the liner is made of flexible material such as crinkled or crepe paper. A closed condition of a valve is not shown.

In Figs. 3 and 4, like numerals designate like parts. In this case, however, the sleeve liner is indexed 6, and differs from the Fig. 1 form in that it incorporates a beveled extension 10 having slits 8 providing flexible tongues 18. As in Fig. 1, there is no extension formed from the material of the bag per se. In this case, stitching 23 is applied arcuately, as before from intersection or corner 2 to intersection or corner 4. The result is attachment of the sleeve liner to the valve flap at an intermediate region of said liner. Then, when the valve flap is turned in, as indicated in Fig. 4, there will be an inward extension having flexible tongues, and an outward extension 14. The bag and the lined valve are then closed by means of the cover tape 45 and stitching 47. After filling and closure, outer extension 14 may be wadded into the valve. The flexible inward extension 10 will tend to move into sealing position within the valve in response to any tendency for the materials therein to escape.

In Fig. 5 is illustrated the point that, although the invention is primarily for use with sleeve liners used in connection with extensionless bags, it may also be used in connection with bags having extensions. In Fig. 5 the usual flap extension is shown at 15. Otherwise the numerals correspond to those used in Fig. 1. In this case,

although a straight sewn seam could be used, the arcuate seam or its equivalent has advantages. By equivalent is meant any seam shape which is not a single straight line across the valve. That is, it has a component of seam traverse which is along the ultimate axis of the valve flap. This tends to stiffen the valve axially at its central portion without stiffening either the inward or outward extensions therefrom.

In Figs. 6, 7 and 8 is shown an application of the invention to a bag having an extension 15, but wherein the sleeve liner attachment 51 is reversed in its placement with respect to that shown in Fig. 5. The stitching 23 is applied as before, and then the attachment 51 is folded down along the line 53, as indicated in Fig. 7. Thereafter, upon forming the valve flap, the result shown in Fig. 8 is obtained, wherein the flap is again indexed with numeral 37, the closure strip being shown at 45 held in place by the stitching 47.

It will be clear from Fig. 9 how the stitching has the above-mentioned directional component along the axis of the valve flap. It will be recalled that Fig. 9 is a plan view of a bag valve without the cover strip 45. An advantage of the inverted, turned-down sleeve liner 51 is that the stitching 23 is guarded thereby against abrasion.

In Fig. 10 is shown the attachment of an inverted liner attachment (similar to that shown in Fig. 6) to a bag having no extension itself. Such a bag corresponds to those shown in Figs. 1-4. Prior to tucking in the valve flap in the case of Fig. 10, the attachment is turned down, as above described in connection with Figs. 6 and 7.

Although I have illustrated a fairly constant curvature for the arc which comprises the locus of the stitching 23, it should be understood that the curvature may vary from beginning to end of this stitching, and also that the locus may even be composed of angularly related straight-line portions, preferably arranged concave upwardly with respect to the mouth of the bag, or stated otherwise convex toward the opposite closed end of the bag. The primary point in this connection is that the stitching should first be run from one side of the liner attachment where it intersects the bag mouth toward the opposite end of the bag, and then away from it, while at the same time traversing the attachment from side to side, and finally approaching the other side of the liner where it intersects the bag mouth. This provides for most convenience in operating the sewing machine. As above forecast, it also provides a direction to the stitching in the walls of the final valve which is angular to the valve length. This is clear from Figs. 2, 4, 8 and 9.

While angular or curved lines of stitching are equally effective, so far as attachment characteristics are concerned, the arcuate form is somewhat easier to apply, since the sewing machine operator may continuously advance and turn the bag which is somewhat easier to do than to run a straight line of stitching and then making an angular offset for a subsequent line of stitching. In the case of a bag with an extension a downwardly concave form could also be applied but this is not as convenient, and in any event it could not be used practically in the extensionless forms of Figs. 1, 3 and 10.

A general advantage of sewing the liner attachment to the flap-forming parts of the valve is that, if the bag is of multi-ply type, the stitch-

ing not only holds the liner attachment to the bag, but also serves to hold together the multiply layers of the bag to prevent sifting therebetween of material carried in the bag.

An advantage of the invention is that in addition to making easier a manual application of the sleeve liner, it also makes practicable the devising of automatic machinery for so doing.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a valved bag, tucked-in valve flap extending inwardly into the mouth of the bag, said flap being formed from a portion of said mouth, said mouth prior to the tucking-in of the flap lying uniformly in a plane at right angles to the length of the bag, said flap being formed by folding inwardly a portion of the adjacent bag wall, a sleeve liner in said valve flap having a portion arcuately stitched to the inwardly extending wall portions of said valve flap, the terminal points of the stitching prior to turning in the flap lying substantially in the plane of the bag mouth where intersected by the sides of the sleeve liner, and the arc of stitching being concave inwardly after the flap is turned in.

2. The method of applying a sleeve-forming

attachment to a valve-forming portion of a tube having a mouth edge lying uniformly in a plane at right angles to the length of a bag formed from the tube, comprising stretching out said valve-forming portion adjacent the open mouth edge of the tube, laying said attachment against said stretched-out valve-forming portion with the sides of the attachment extending from and lying at right angles to said mouth edge, and applying a line of connecting stitching through the attachment and the valve-forming portion so that the locus of the stitching is convex toward said mouth edge of the tube, the ends of said connecting stitching lying at the intersection of said mouth edge and the attachment.

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The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,415,862.

February 18, 1947.

DANIEL BELCHER

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Column 5, line 19, claim 1, before "tucked-in" insert the article *a*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of September, A. D. 1947.

[SEAL]

LESLIE FRAZER,

First Assistant Commissioner of Patents.