

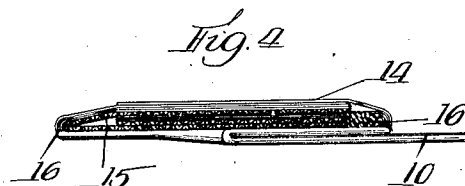
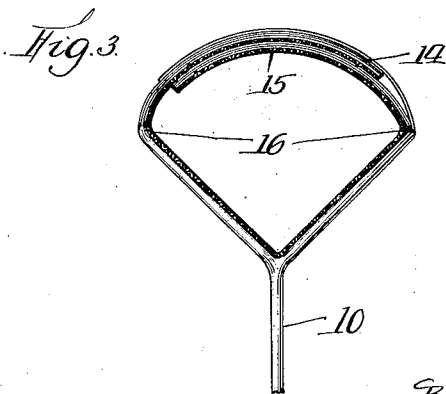
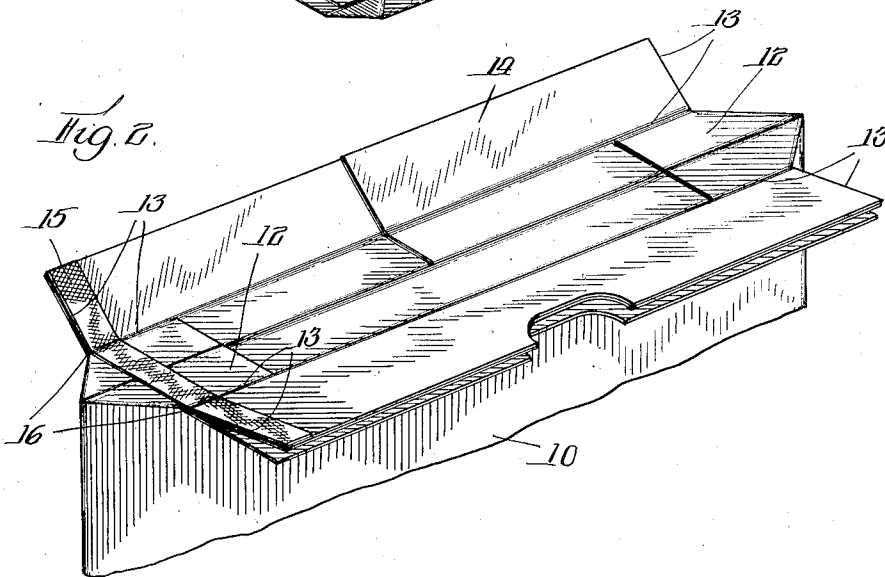
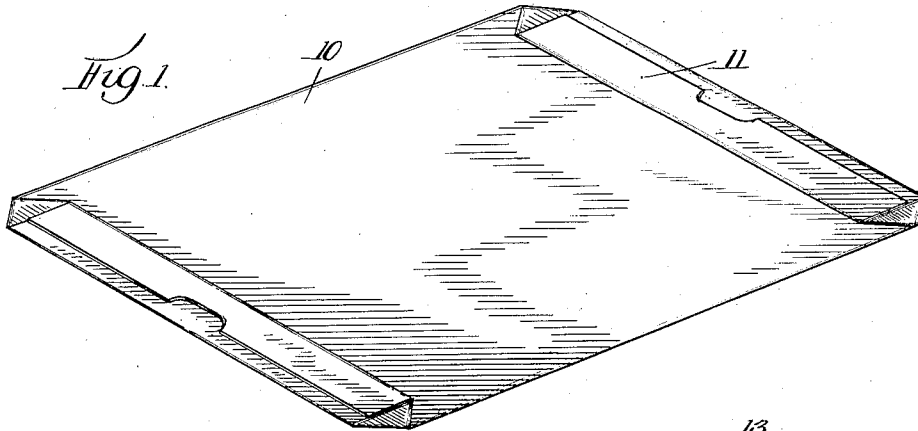
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A. E. CURRIER

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REINFORCED VALVE BAG

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Inventor
Andrew E. Currier,
By Wilkinson, Husley, Bryan, & Knight
attys.

UNITED STATES PATENT OFFICE

ANDREW E. CURRIER, OF LEOMINSTER, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CORNELL BAG CORPORATION, A CORPORATION OF DELAWARE

REENFORCED VALVE BAG

Application filed May 20, 1929. Serial No. 364,419.

This invention relates to improvements in bags, and particularly to bags of the well known valve type.

An object of the present invention is to provide a valve bag of an improved construction provided with a reenforced valve opening making for greater strength both at the location of the valve and throughout the bottom and side wall portions of the bag adjacent the valve.

The present invention is illustrated as applied to a valve bag of a size and design usually employed for bagging cement or similar relatively heavy materials and one which is provided with pasted ends commonly known as satchel bottoms.

With bags of this type, the bottom is provided by folding the end portions of the tube constituting the body of the bag in a predetermined manner and securing the overlapping portions while leaving one corner unsecured in a manner to provide a valve opening.

In forming satchel bottoms, it is usual to fold the end portions of the tube inwardly to produce what is known as the diamond fold and subsequently to fold the side flaps produced by the diamond fold, over one upon the other and securing them in such folded position.

It will readily appear in folded bottoms of this character that the length of the diamond fold constituting the valve opening will depend upon the amount of material that is initially folded inwardly from the tube end, or in other words, the length of the diamond fold will be equal to the amount of material initially appropriated from the end of the tube for the purpose of forming the folded bottom.

It would also appear that there is a definite relationship between the length of the valve flap and the material provided by the diamond folding operation constituting the side flaps or, considering it another way, between the length of the valve flaps and the width of the bottom.

It is desirable in bags of this character, in order to provide strength and to prevent leakage of bagged materials, to provide as much

over-lap between the inner and outer folds of the valve as possible and further to provide this maximum amount of over-lap without rendering the bottom of the bag unduly wide.

In order to increase the amount of over-lap at the valve, bags having this type of folded bottom have been provided with longitudinal slits at the end of the bag tube so that the end fold or diamond fold, would be cut at least partially free from the side flaps. With such slits, portions of the side flaps which would ordinarily be folded under, may be folded outwardly so as to increase the over-lap for any particular width of bag at the valve and if desired, at the other corners of the bag.

From this, it will be readily understood that the maximum over-lap is provided when the longitudinal slits referred to are placed along the lines of the folds defining the side flaps, as when at this point, no portion of the side flap is folded under.

Although the maximum advantage as regards the overlap is provided by this construction, in bags prior to the present invention, a marked disadvantage was encountered in bags made in this fashion for the reason that the slits extended to, or to points near the outer edge of the bag, thereby producing areas of weakness at which the bag would be apt to burst under heavy usage.

The present invention therefore, has for an object, the elimination of this objection when applied to bags constructed in this manner, although it is to be understood that the present invention is applicable to other types of valve bags and that its advantage resides in the strengthening of a valve opening and bag corner and reinforcing the valve opening against wear, such as for instance, abrasion occasioned in placing the bags on and removing them from the nozzles of filling machinery.

The reinforcement contemplated in the present invention also offers special advantages due to its cheapness, both in cost of the materials required and the simplicity and inexpensive character of the applying operation.

Although the reinforcement contemplated is particularly applicable to the valve open-

ing, it may, if desired, be applied with a high degree of usefulness at the location of the other corners of the bag where, due to the unusual strains in heavy service, bursting may in some instances occur. Although the present invention is illustrated as applied to a bag having the longitudinal slits located at the folds defining the side flaps, it is equally well adapted to bags of this same general kind but which are provided with slits out of registry with the folds defining the side flaps.

The present disclosure is given merely by way of illustration and it is not to be construed as limiting the invention in any respect, as the scope of the invention will be determined from an understanding of the illustrated embodiment and an appreciation of the advantages which it produces therein.

20 Various additional objects not specifically enumerated will readily appear to one skilled in the art as the following description proceeds. The following description will be more readily understood by referring to the

25 accompanying drawings in which:—
Figure 1 is a perspective view of a finished bag constructed in accordance with the present invention.

30 Figure 2 is an enlarged perspective view of one end of the bag constructed in accordance with the present invention, showing the side flaps of the bottom portion folded outwardly to disclose the manner of applying the reinforcing strip.

Figure 3 is a cross sectional view of one end of the bag disclosing the valve opening and

Figure 4 is an end elevational view of a bag end constructed in accordance with the present invention and shown in folded position.

By referring to the drawings, it will be noted that the present invention is illustrated as applied to a bag comprising a body portion 10, which is made up before the ends are formed in the form of a tube which may be either of single ply thickness or multi-ply, as desired, and having the folded end or bottom portions 11 as shown in Figure 1.

50 Referring particularly to Figure 2, it will be noted that the type of bottom here illustrated comprises the end or diamond folds 12, which are formed by folding the end of the tube inwardly after the tube has been slit along edges 13, so as to permit the diamond folds to be folded inwardly free of the side flaps 14. Prior to folding the side flaps 14, inwardly into the positions to form the finished bottom, the reinforcing strip 15 of cambric, paper or other suitable reinforcing material of desired strength, is applied across the diamond fold and side flaps in the manner shown in Figure 2. This material is secured by means of suitable adhesive.

It will be noted that when the reinforcing

strip is applied to bags of the type illustrated, that is, where the slit 13 extends all the way to the corner 16, the reinforcing strip covers the slit and adds strength at the location of the slits such as would otherwise be weakened by the presence of the slits. In practice, it has been found that the reinforcing strip more than makes up for the loss in strength produced by the slits 13.

In addition to the added strength at the location of the slits, the strip provides a reinforcing for the valve opening to make up for any strength which may be lost by the absence of adhesive at this location and in addition, provides a wearing strip preventing damage due to abrasion in placing the bag on and off of the nozzles of the filling machinery.

The bags may be made with slits 13 only at one corner thereof for providing the valve opening and with the other three corners left uncut with the corners of the side flaps folded inwardly, as the need for an increased overlap at the corner other than the valve corner is not as important. However, if the bag is made with slits 13 at all four corners, the reinforcing strip 15, may if desired, be placed thereon in the same manner for the purpose of reinforcing the corner of the bag.

The present disclosure illustrates a bag of the multi-ply type in which one of the side flaps provides a plurality of flaps such as will permit an interleaving of side flaps in a manner to form an improved bottom (see co-pending application of Arthur L. Currier, Serial No. 284,236, filed June 9th, 1928, entitled, "Multi-walled bags") and the present invention makes for a special improvement when applied to this type of bag, as it permits the slits 13 which are very advantageous for effecting a separation of the plies of the side flap, such as is required for interleaving purposes.

It will be obvious that the present type of reinforcing strip may be modified without departing from the spirit of the invention, that is, it may be of any desired width and of various lengths depending upon the need and the kind of bag to which it is applied and it will also appear that the application of the strip to the upper surface of the diamond fold and the inner surface of the side flap requires only a very simple and inexpensive operation and is one which may be accomplished by special but simple mechanism applied to the usual and well known types of bottoming machines.

However, these features are to be considered as advantages and not as limitations.

The present invention is not to be limited by the present disclosure but is to be subject to such modification and change as will fall within the scope of the appended claims.

I claim:

1. A valve bag of the character described,

comprising a tube provided with longitudinal slits at its end and at the location of the valve opening, and having an end flap between said slits and side flaps on each side of said slits, and a reinforcing strip secured across the top of said end flap and on the inside of said side flaps along the edges of said slits, said side flaps being folded inwardly and secured in overlapped relationship.

2. A bag of the character described comprising a tube provided with longitudinal slits at its ends, said tube being folded to provide end flaps and side flaps at each side of said end flaps and a reinforcing strip secured to the upper surface of said end flap and to the inside surfaces of said side flaps, said reinforcing strip extending across and reinforcing said slits.

3. A bag of the character described comprising a tube provided with longitudinal slits at its ends, said tube being folded to provide end flaps and side flaps at each side of said end flaps and a reinforcing strip secured to the upper surface of said end flap and to the inside surfaces of said side flaps, said reinforcing strip extending across and reinforcing said slits adjacent the end edges of said side flaps.

Signed at Pepperell, Massachusetts, this 16th day of May, 1929.

ANDREW E. CURRIER.

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