Jan. 30, 1951 W. O. STRELLER 2,539,799

BAG CLOSURE

Filed April 14, 1948

Fig. 1.

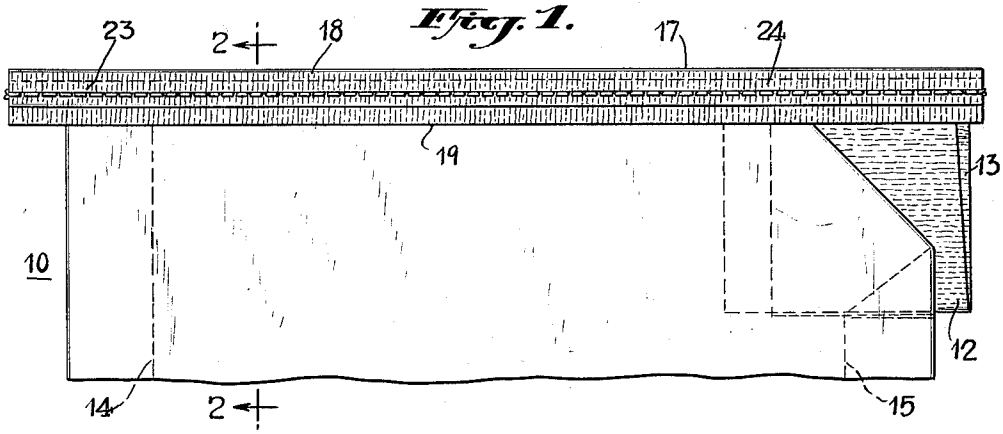


Fig. 4.

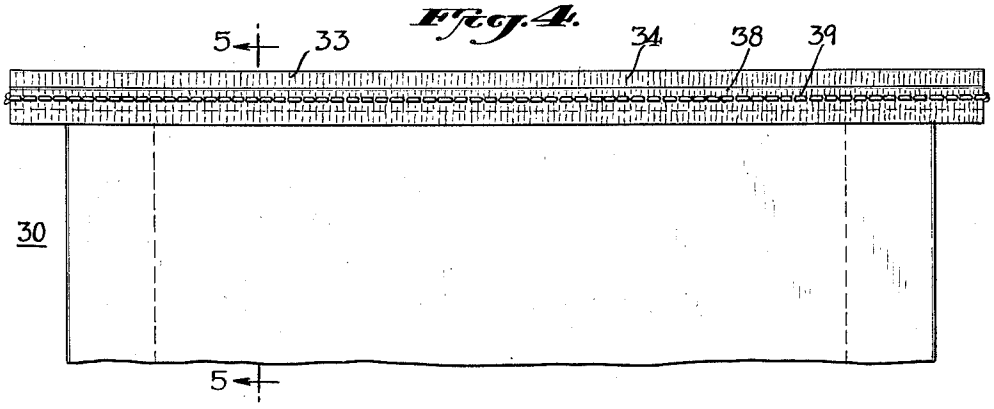


Fig. 2.

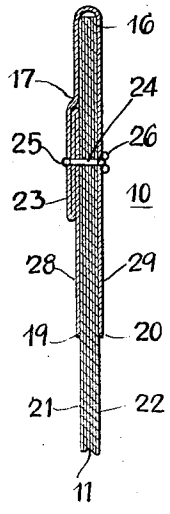


Fig. 3.

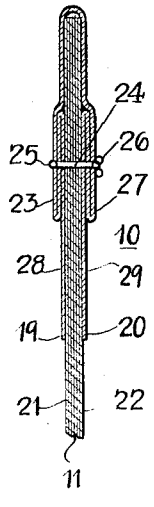


Fig. 5.

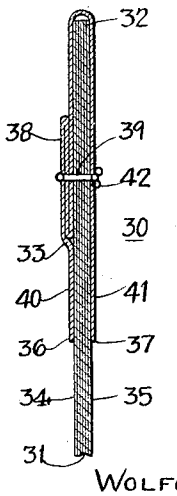
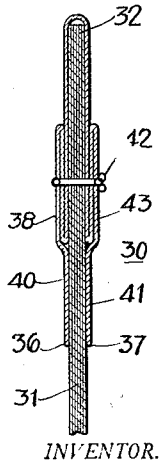


Fig. 6.



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BAG CLOSURE

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2 Claims. (Cl. 229—62)

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This invention pertains to improvements in and closures for paper bags and the like, and more especially to bag end closures of the sewn seam type.

A common form of end closure for relatively large bags, i. e., those adapted to packaging goods in bulk, such, for example, as cereals, flour, cement, etc., is one wherein the oppositely disposed will portions of the bag end are overlapped with a separate sealing tape of heavy paper or the like, and secured together by means of a seam, which may comprise a series of staples, but more preferably comprises a continuous sewn seam of cotton thread or cord, or other suitable organic material. A serious objection to this type of end closure resides in the fact that the needle holes resulting from the sewing operation permit the packaged goods, especially if of finely ground or pulverulent material, to sift out, and these holes further provide points of ingress for insects and the like, particularly as applied to packaged comestibles such as flour, cereals, etc. Likewise, these needle holes permit the bag contents to be easily penetrated by moisture, molds, fungi, etc., from the outer atmosphere, and also prevent the packaging therein of goods of a viscous or easily flowable character.

Many attempts have heretofore been made to overcome this difficulty, as for example, superimposing on the sealing tape, on one or both sides thereof, and along the line of stitching, such stitching-perforation-filling materials as filter cord, paper strips or the like; or by attempting to accomplish the same result by folding the sealing tape along the stitching line in one or more folds. All such expedients are objectionable, however, either by reason of the additional expense of fabrication thereby entailed, or due to the fact that such expedients are either ineffective or weaken the bag end closure.

In accordance with the present invention, it is proposed to overcome these objections to prior constructions in an extremely simple, yet effective, manner. Thus, in accordance with the invention herein, the sealing tape, which overlaps the bag end, is folded back upon itself along an intermediate portion thereof, on one or both sides of the bag, to form a pleat or pleats substantially paralleling the bag end, and the closure completed by means of stapling, or more preferably, by means of a sewn seam passing through the pleated portion or portions of the tape and the bag walls interposed therebetween. In conjunction therewith, the extremities of the sealing tape are adhesively bonded to the opposite side walls, respectively, of the bag.

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By virtue of this construction, the folded-over or pleated portions of the sealing tape effectively fill the stitching perforations, while the adhesive bonding of the sealing tape extremities to the opposite bag walls, respectively, not only increases the rupture or breakage strength of the bag end when packed with the packaged goods, in handling or throwing about, etc., but in addition, seals off exposure of the stitching perforations, which would otherwise occur between the bag walls and the edges of the sealing tape.

The invention is, of course, applicable to end closures for all types of bags, and is especially effective as applied to multiwall or multi-ply bags such as are employed in the industry in tremendous quantities for the packaging of goods in bulk as aforesaid.

In the drawings:

Figure 1 is a plan view of the upper end of a valve type of multiwall bag, illustrating an end closure in accordance with one modification of the invention, Figure 2 being a sectional view thereof, taken at 2—2 of Figure 1. Figure 3 is a sectional view, similar to Figure 2, illustrating a further modification of the invention.

Figure 4 is a plan view, similar to Figure 1, showing a further modification of the invention, applied as an end closure of an initially open-ended type of bag, or as an end closure at the lower end of either a valve type or open-ended type of bag. Figure 5 is a sectional view of the Figure 4 modification, taken at 5—5 of Figure 4; while Figure 6 is a sectional view similar to Figure 5, but illustrating a further modification thereof.

Referring to Figures 1 and 2, there is shown generally at 10, the upper end of a multiwall bag comprising a number of bag plies as indicated at 11, this bag being of the valve type, i. e., provided with a valve sleeve corner as indicated at 12, to provide an aperture as indicated at 13, for purposes of filling the bag with the goods to be packaged therein, for example, flour, cereals, cement or the like. The bag is gusseted along the lateral edges as indicated at 14, 15, to provide a flat construction prior to filling.

In accordance with the modification of the invention illustrated in Figures 1 and 2, the upper ends 16 of the bag plies 11 are overlapped with a strip of sealing tape 17, composed, in the modification illustrated, of creped paper as indicated at 18. The sealing tape 17 overlaps the ends 16 of the bag plies 11 to the distance 19, 20 along the opposite, outer side walls 21, 22, respectively, of the bag. An intermediate portion of the sealing tape is folded back on itself, on one side of

the bag, in the manner shown at 23 in Figure 2, thereby to provide a pleat substantially paralleling the bag end, as illustrated more clearly in Figure 1. The closure is completed by means of a seam 24, which may be a series of staples, but more preferably comprises a sewn seam, which passes through the opposite sides of the sealing tape, including the pleated portion thereof, and through the interposed bag plies 11, in the manner clearly illustrated in Figure 2.

A common type of stitch which may be employed for the seam 24, where a sewn seam is employed, is known as the "double chain stitch," in which, on the rear side of the same, the loops of the needle thread 25, Figure 2, are chained into loops of a looper thread 26. It has been found that the looper side of the seam is ordinarily strong enough, and fills the needle perforations on the loop of thread on the 26 side sufficiently, that it suffices in many instances to omit a pleat in the sealing tape on the looper side, as shown in Figure 2, and merely to provide the pleat on the opposite side of the sealing tape, the latter as shown at 23.

A much stronger construction and more effective closing of the needle perforations is, however, obtained in accordance with the modification of the invention illustrated in Figure 3, wherein the sealing tape is folded back on itself on both sides of the bag to provide oppositely disposed, pleated portions 23 and 27, through which the seam is sewn as at 24.

It will be observed in both the Figures 2 and 3 modifications, that the lower extremities 19 and 20 of the sealing tape extend well below the pleated portions 23, 24 thereof, to provide sealing tape portions 28 and 29, disposed below the pleats, which portions are firmly bonded or cemented to the outer surfaces of the outer bag plies 21, 22, thereby to increase the strength of the closure in handling or throwing about of the bag when packed, and also to seal the lower extremities 19 and 20 of the sealing tape to the bag walls 21, 22 against exposure of the stitching perforations which might otherwise occur therebetween in the absence of such bonding of portions 28 and 29 of the sealing tape to the opposite bag walls 21, 22.

It will be noted that in the Figures 2 and 3 modifications the sealing tape is pleated in such fashion that the pleats point downwardly, i. e., toward the median line of the bag. In the Figures 4–6 inc. modifications, the pleating is in the opposite direction, i. e., the pleats point toward the bag end. Thus, referring more particularly to Figures 4 and 5, there is illustrated generally at 30, an end of a multiwall or multi-ply bag, the plies of which are indicated at 31. The extremities 32 of the bag plies are overlapped with a strip 33 of sealing tape composed, as in the previous modifications, of creped paper as indicated at 34, this sealing tape extending downwardly along the opposite sidewalls 34, 35 of the bag to the distances 36, 37 respectively. An intermediate portion of the sealing tape on one side of the bag is folded back on itself to form a pleat substantially paralleling the bag end as shown at 38, and the bag end closure is completed by a stapled or stitched seam 39, passing

through the opposite sides 40, 41 of the sealing tape in the pleated portion 38 thereof, and also through the interposed bag plies 31, as shown. It will be noted that in this modification the pleat 38 is so formed in the sealing tape as to point toward the bag end, i. e., toward the upper extremities 32 thereof.

As in the Figure 2 modification, if the seam 39 comprises a sewn seam of the double chain stitch type, a pleat such as 39 may also be required, for many applications, only on the side opposite to the looper side 42 of the stitching. As above stated, however, a stronger construction is secured, and one in which the stitching perforations are more effectively closed, if pleats are provided on both sides of the sealing tape as illustrated in Figure 6 at 38 and 43, respectively. In the Figure 6 modification, as in Figure 5, both of the pleats 38 and 43 are so formed as to point to the bag end 32 as shown. Also, as in the Figures 2 and 3 modifications, the lower extremities 40, 41 of the sealing tape are firmly bonded or cemented to the opposite sidewalls 34, 35, respectively, of the bag, being interposed adhesively, and for purposes above stated. The modifications of Figures 2 and 3 are preferred to those of Figures 5 and 6, as the former have been found by tests to give a somewhat stronger construction.

What I claim is:

1. A bag having oppositely disposed walls terminating in a bag end, and a sift-proof closure therefor comprising a separate sealing tape folded over astride said bag end, an intermediate portion of said tape being folded back upon itself on at least one side of said bag, forming a pleat substantially paralleling said end, and a seam passing through the bag walls and the oppositely disposed portions of said sealing tape, including the pleated portion thereof, the oppositely disposed edge portions of said sealing tape extending below said pleat and being adhesively bonded to the contiguous bag walls, respectively.

2. A bag having oppositely disposed walls terminating in a bag end, and a sift-proof closure therefor comprising a separate sealing tape folded over astride said bag end, an intermediate portion of said tape being folded back upon itself on each side of said bag end to form a pair of pleats substantially paralleling said bag end, and a seam passing through the bag walls and the pleated portions of said sealing tape, the oppositely disposed edge portions of said sealing tape extending below said pleats and being adhesively bonded to the contiguous bag walls, respectively.

WOLFGANG O. STRELLER.

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