Dec. 13, 1938. O. E. CHEATHAM 2,140,104

BAG CLOSURE

Filed May 14, 1936 2 Sheets-Sheet 1

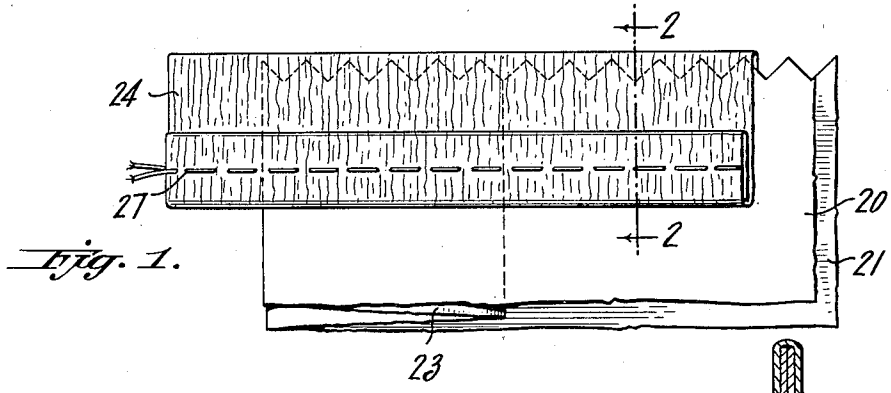


Fig. 1.

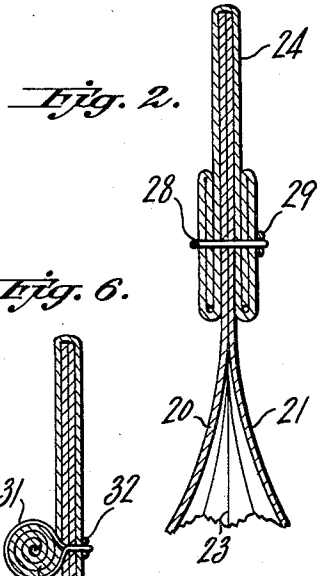


Fig. 2.

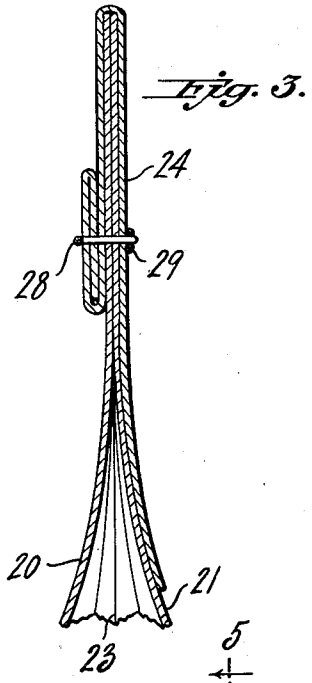


Fig. 3.

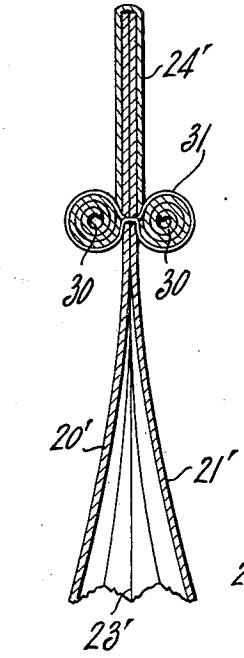


Fig. 5.

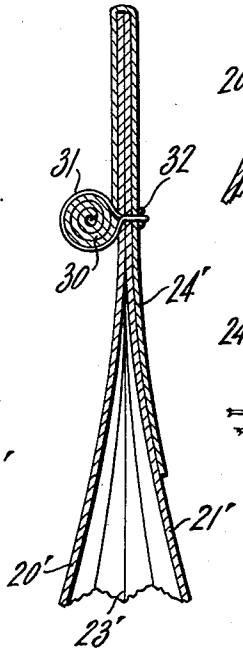


Fig. 6.

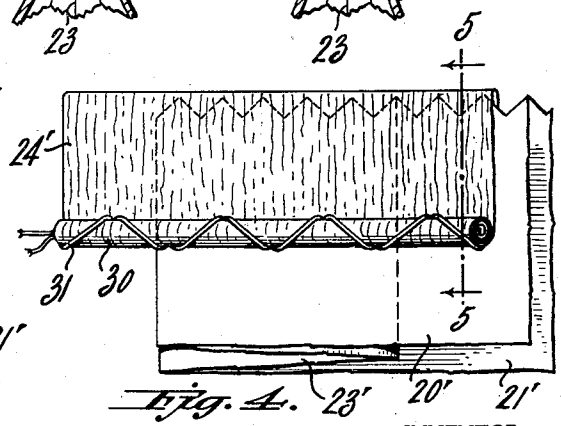


Fig. 4.

INVENTOR:
ORME E. CHEATHAM
BY
ATTORNEY.

Dec. 13, 1938. O. E. CHEATHAM 2,140,104

BAG CLOSURE

Filed May 14, 1936 2 Sheets-Sheet 2

Fig. 7.

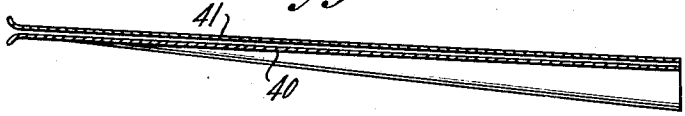
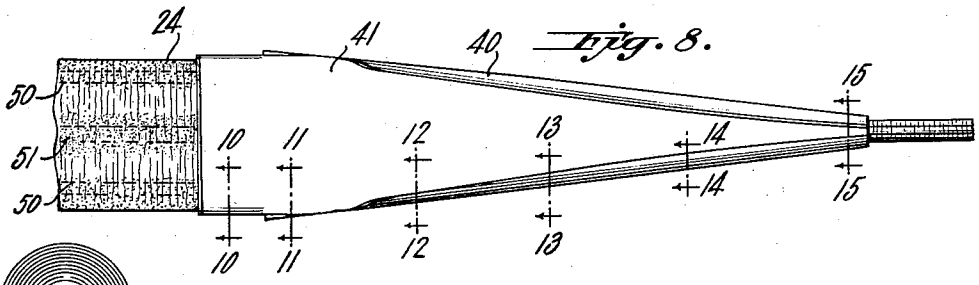


Fig. 8.



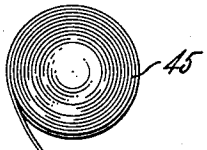


Fig. 9.

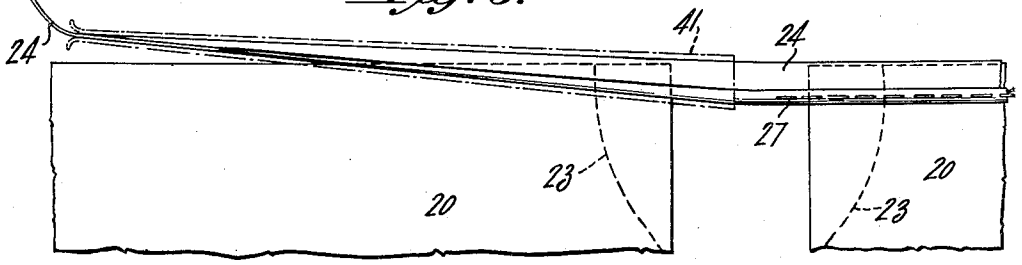


Fig. 10.

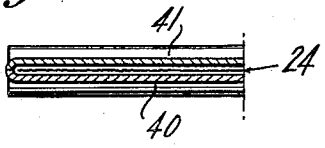
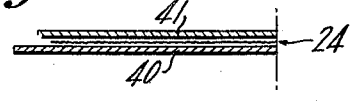


Fig. 11.



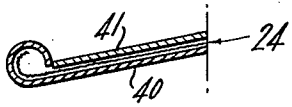


Fig. 12.

Fig. 13.

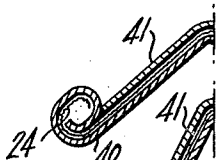
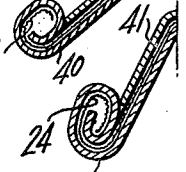


Fig. 14.



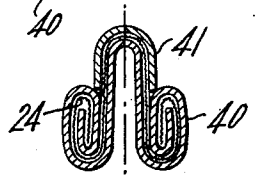


Fig. 15.

INVENTOR.
ORME E. CHEATHAM

BY

ATTORNEY.

Patented Dec. 13, 1938 2,140,104

UNITED STATES PATENT OFFICE

2,140,104

BAG CLOSURE

Orme E. Cheatham, West Brighton, N. Y., assignor to Bagpak, Inc., New York, N. Y., a corporation of Delaware

Application May 14, 1936, Serial No. 79,773

6 Claims. (Cl. 229—62)

My present invention relates to the formation of bag end closures. The particular type of bag is relatively immaterial and may be flat or square, and may be pasted, sewn, stapled or of any other type as long as at least one end is open in order that the new closure may be applied thereto. The invention may be applied to both ends of a valve bag during its manufacture, or to one end of an open-mouth bag during its manufacture, and/or to the opposite end of an open-mouth bag after it has been filled. The bag may be a flat bag comprising two sides only, or may be a gussetted bag having a relatively rectangular shape when opened or filled. The bag may consist of one or more plies of the same material or of various materials in combination, and is of particular utility with respect to bags formed of one or more plies of paper.

The closure consists essentially of a binding or sealing tape applied over the end of a bag and extending down over its sides, the edges, or at least one edge, of the tape being folded or rolled back upon itself to form a selvage or bead which is incorporated into a seam closing the mouth of the bag and binding the tape to the bag. The seam may consist of textile stitches, or of metallic staples, or of other extraneous fastening means passing through the plies of the bag. In the preferred form of the invention the seam passes through the selvage edge of the tape, while in another form of the invention the seam passes around the selvage edge of the tape in order that the loops of the stitches or of the individual binding members may be reinforced against pulling through the walls of the bag. The selvage edge acts not only to reinforce the seam, but acts as a resilient member to take up shock. In both forms the selvage edge assists in blocking the stitch holes against the escape of dust and ingress of moisture and odors. The tape may consist of textile material but is preferably formed from heavy kraft paper, and particularly crinkled kraft paper which is easily bent and which forms a very tough reinforcing and sealing member. The tape may be adhered to the bag by some type of adhesive or may be held in place only by the seam.

The object of the invention is to form a strong, seep-proof closure for bags by means of a sealing tape so arranged and applied to the bag as to form a reinforced closure without the need for applying additional reinforcing strips or cords. The advantages of the present invention lie first, in the savings accomplished due to the elimination of additional reinforcing members, and secondly, in the savings effected by the elimination of expensive mechanism necessary to hold and apply additional reinforcing members, and thirdly, in assisting the production of bags by eliminating the necessity for an attendant to observe the spools or reels of additional reinforcing members and to replenish the same from time to time.

Other objects and advantages of the present invention will be apparent from the following description and claims taken in connection with the accompanying drawings wherein like parts are referred to by like numerals throughout:

Referring to the drawings:

Fig. 1 discloses a preferred form of the invention applied to a portion of one end of a bag, the remainder of the bag being eliminated as unnecessary for clear illustration;

Fig. 2 is a vertical cross-section taken along line 2—2 of Fig. 1;

Fig. 3 is a view, similar to Fig. 2, of a modified type of closure;

Fig. 4 is a view similar to Fig. 1 showing another form of the invention;

Fig. 5 is a vertical cross section taken along line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 5 showing that type of closure modified in the same manner that Fig. 3 relates to Fig. 2;

Fig. 7 is a view in section taken along the median line of a former adapted to form the tape as shown in Figs. 1 or 4;

Fig. 8 is a plan view of the former with the tape passing therethrough;

Fig. 9 is a schematic representation of the method of applying the closure to the ends of a series of bags; and

Figs. 10 to 15, inclusive, are cross sections taken along lines 10—10, 11—11, 12—12, 13—13, 14—14, 15—15, respectively, of Fig. 8.

Referring to Fig. 1 there is disclosed a bag consisting of a front wall 20 and a rear wall 21 collapsed upon an infolded gusset 23 whereby to form a gusseted bag. A tape 24, preferably of crinkled kraft paper, is folded longitudinally over the open end of the bag, or of one or both ends of the blank forming the bag. The edge of the tape is folded back upon itself, preferably twice as shown, and a seam 27 is passed through the folded portion and the plies of the bag. Each loop of the stitches, or each individual staple, is therefore reinforced by three thicknesses of tape which prevent the seam from tearing through the walls of the bag. The corrugations of the tape and the folds thereof likewise act to absorb shocks upon the seam, thereby increasing its effectiveness.

As seen in Fig. 2, the preferred form of seam is provided by a thread 28 passing through the folded edge portions on each side of the bag. A common type of stitch is known as "double chain stitch", in which, on the rear side of the seam, the loops of the needle thread 28 are chained into loops of a looper thread 29. It has been found that the looper side of the seam is

ordinarily strong enough for most purposes, hence as shown in Fig. 3, it will suffice in many instances to omit the folded edge from the looper side and merely roll the front edge of the tape. In this instance, the tape is preferably adhered to the walls of the bag, especially on the rear or looper side. It is to be realized, of course, that the tape may likewise be adhered to the bag in the form shown in Fig. 2.

In Fig. 4 there is shown a portion of a bag consisting of a front wall **20'** and a rear wall **21'** collapsed upon a gusset **23'**. A tape **24'** is applied over the mouth of the bag, and in this instance its edges are rolled into as tight a roll as possible, as indicated at **30**. A seam **31**, preferably consisting of stitching, is applied over the rolled edge. The application of the stitching may be done by moving the needle from side to side of the rolled edge, but it is more advisable to move the rolled edge alternately from side to side of a needle traversing the same path at each stitch. Each loop of the thread passes about the rolled edge **30**, which not only prevents the seam from tearing through the bag, but acts as a shock absorber.

In the form of the invention shown in Fig. 5, the opposite edges of the tape are rolled and the stitching **31** passes about both rolls. It is apparent that the needle penetrates only two thicknesses of the tape and the walls of the bag, thereby permitting the use of lighter sewing machinery than would be necessary to stitch through a folded selvage edge. In Fig. 6, wherein the double chain stitch form of seam is disclosed, only the front or needle side of the tape is rolled to form a rolled edge **30** and the rear side of the tape is laid flat against the side of the bag, this side of the seam depending upon the looper thread **32** for its additional strength. In both Fig. 5 and Fig. 6, the closure may be additionally secured to the bag by an adhesive.

The means for forming the rolled or folded edge of the tape are disclosed in Figs. 7 to 15 inclusive, the exact former illustrated being designed preferably to form a folded edge as in Fig. 1. It is to be appreciated that slight modification might be necessary to form a rolled edge of as many turns as illustrated in Fig. 5, but that a rolled edge would be formed by the type disclosed. As the tape emerges from the former it can be flattened by the usual throat plate and presser foot of a sewing machine, or can be retained in rolled form by mechanism designed to apply the overseam of Fig. 4.

The former consists of two plates **40** and **41** spaced from each other a distance sufficient to permit relatively free movement of a tape therethrough but close together so as to prevent buckling of the tape along its central portion. The two plates are affixed together along their edges and the lower plate is rolled upon itself as illustrated. Both plates are bent along the median line of the former in order that a flat tape coming from its source of supply will not only have its edges formed as illustrated, but will be bent into U-shape to be applied to the end of a bag which is progressed through the former beneath the lower plate **40**.

In Fig. 9 there is diagrammatically illustrated a tape **24**, supplied from a roll **45**, entering the former. The former is so mounted with respect to the ends of a series of bags progressed relative thereto as to position the former tape upon the end of the bag. The bag may, of course, be in tubular form during its manufacture, or may be filled and progressed along a conveyor in the manner disclosed in the copending application of Robert N. Cundall and Lincoln A. Cundall, Serial No. 688,816, filed September 9, 1933. Adjacent the end of the former is positioned a seam-forming mechanism adapted to apply a seam such as the seam **27**, shown in Fig. 1. Adhesive-applying mechanism may be interposed between the roll **45** and the former as disclosed in the aforesaid copending application.

As seen in Fig. 8, the tape **24** may be treated during the process of slitting and reeling a large sheet of material, by creasing it as at **50** in order that the bending or rolling may be more easily accomplished, and may likewise be treated by crushing or otherwise weakening the same along the lines of bending or folding as indicated at **51** in order that the tape will easily follow the shape of the former.

The invention comprises in all its forms a closure consisting of a sealing tape, having at least one edge turned back to form a reinforcing selvage included in a seam.

Modifications and alterations will be apparent to those skilled in the art and the true scope of my invention is only to be determined by the following claims.

I claim:

1. A bag having a closure comprising a sealing tape over the end of the bag, said tape having at least one edge turned back upon itself a plurality of times to form a reinforcing selvage, and a seam passing through the walls of the bag and including said selvage.

2. A bag having a closure comprising a sealing tape over the end of the bag, said tape having at least one edge turned back upon itself a plurality of times to form a reinforcing selvage, and a seam passing through the walls of the bag and the reinforcing selvage.

3. A bag having a closure comprising a sealing tape over the end of the bag, said tape having at least one edge rolled upon itself a plurality of times to form a bead, and a seam passing through the walls of the bag and including said bead.

4. A bag having a closure comprising a sealing tape over the end of the bag, said tape having at least one edge turned back upon itself a plurality of times to form a reinforcing selvage, and stitches passing through the walls of the bag and the reinforcing selvage.

5. A bag having a closure comprising a sealing tape over the end of the bag, said tape having at least one edge rolled back upon itself a plurality of times to form a bead, and stitches passing through the walls of the bag, the loop of each stitch passing around said bead.

6. A tape for forming a reinforced bag closure comprising a strip of crinkled kraft paper having score lines adjacent to and parallel to its edges, and having weakened portions between said score lines, said score lines facilitating the rolling of said edges back upon themselves to form a bead and said weakened portions facilitating the folding of said strip into closure formation.

ORME E. CHEATHAM.