June 9, 1931. A. M. BATES 1,809,103

SEALED PACKAGE AND METHOD OF MAKING THE SAME

Filed May 15, 1924 2 Sheets-Sheet 1

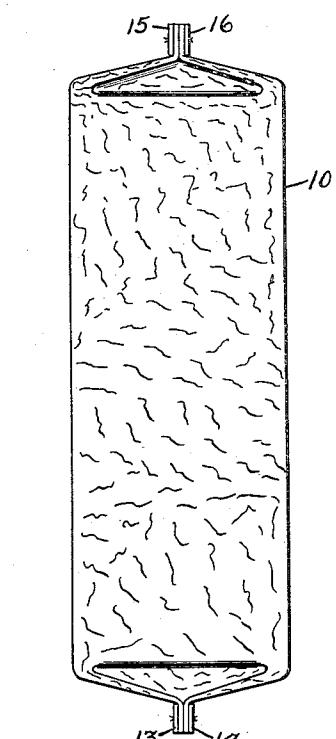


Fig. 2.

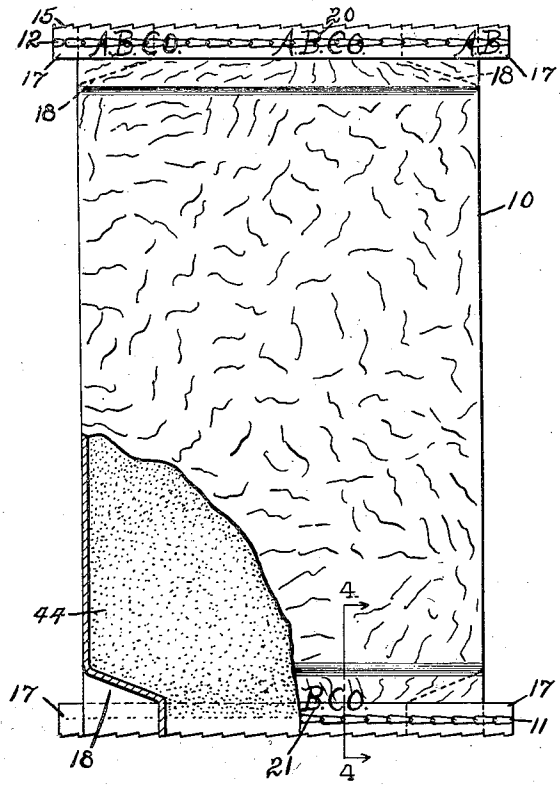


Fig. 1.

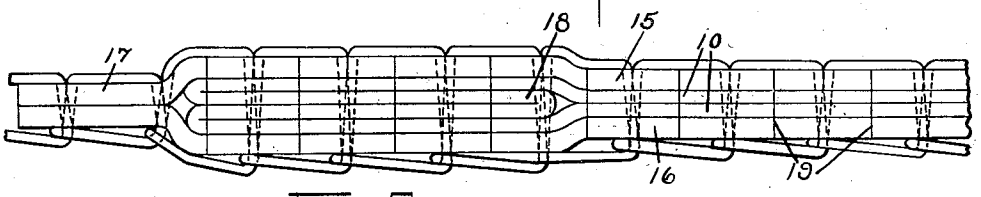


Fig. 3.

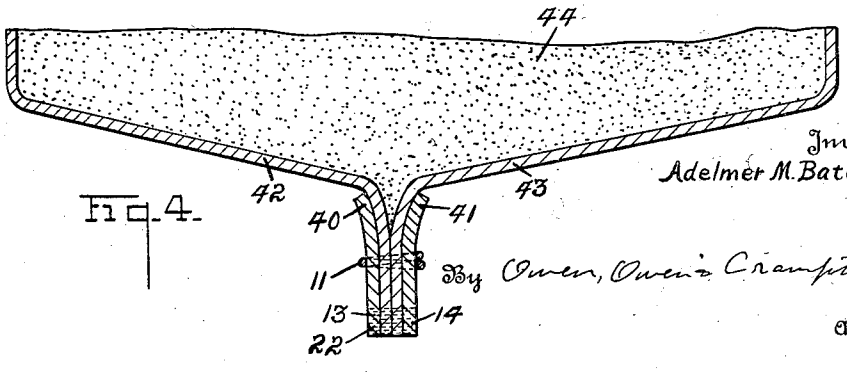


Fig. 4.

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SEALED PACKAGE AND METHOD OF MAKING THE SAME

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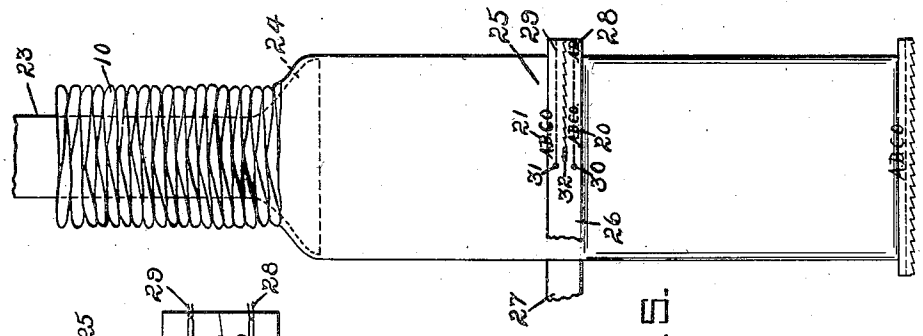


FIG. 5.

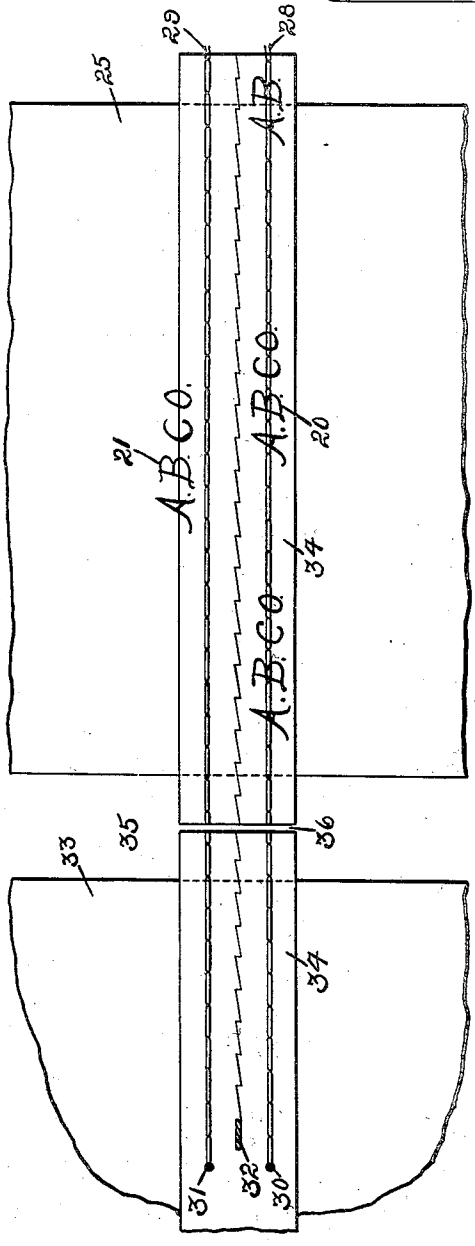


FIG. 6.

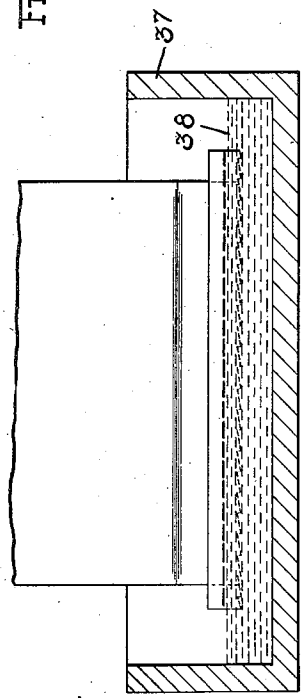


FIG. 7.

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UNITED STATES PATENT OFFICE

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SEALED PACKAGE AND METHOD OF MAKING THE SAME

Application filed May 15, 1924. Serial No. 713,636.

My invention relates to a sealed package and method of making the same.

My invention has for its object to produce a package of bagged material, which may be cheaply and easily produced, which will retain the materials with a minimum leakage and which cannot be opened and re-closed without showing evidences of the operation.

This application is a continuation in part of my former applications No. 506,366 filed October 8, 1921, and No. 517,451 filed November 25, 1921.

The specific embodiment of the invention, which I will now describe, consists of a filled bag, the bag being made of crinkled paper and being folded in on its opposite sides and closed across each end by a reinforced seam. The process which I disclose relates chiefly to the manner of forming the closures. The details of the package and the process of making it will appear as the description proceeds.

In the accompanying drawings, Fig. 1 is a face view of a package embodying my invention; Fig. 2 is a side view of the same; Fig. 3 is an end view of the package showing the appearance of the closing seam; Fig. 4 is a detail section on the line 4—4 of Fig. 1; Fig. 5 is a diagrammatic view showing a method of forming packages; Fig. 6 is an enlarged detail view illustrating the manner of forming successive closures; and Fig. 7 is a diagrammatic view illustrating the final step in sealing the package.

The preferred form of my package, as shown in the drawings, consists of a filled bag having a body 10 of crinkled paper. The ends of the bag are closed by seams 11 and 12. Reinforcing strips 13, 14, 15 and 16 extend across each side of each end of the bag. These reinforcing strips preferably extend beyond the sides of the body portion, as at 17, and the seams continue through the entire length of the strips. The sides of the body portion are folded in at the ends of the seams, as shown at 18. I prefer to make these folds of such depth that the length of the seam across the body portion of the bag is substantially equal to the diameter of the filled package parallel with the end closure.

The reinforcing strips may be made of any suitable material, but I prefer to make them of material relatively stiffer than that of which the body of the bag is made and cardboard or any relatively stiff paper is suitable for the purpose. The desirable qualities of the material are that it shall be relatively stiffer than the body of the bag and that it shall be of such material that needle holes made therein cannot be successfully filled up or disguised. Some of the advantages may be obtained by using strips of the same material as the bag-walls, and it is sometimes economically expedient to use such strips.

The ends of the walls of the body portion are cut off flush with the edges of the reinforcing strips and are preferably cut in such a manner that tool marks 19 extend across the flush edges from side to side, and I prefer to have these tool marks in fixed relation to the stitches of the seam. It is sometimes desirable to have the reinforcing strips bear trade-marks or similar marks identifying the producer of the package. These marks may be placed on the strips before they are applied to the package, and appear entirely on the strips, as at 20 on the upper end of Fig. 1, or they may be applied to the strip and adjacent wall of the bag after the strip is positioned on the package, so as to produce marks such as 21 on Fig. 1. The cut edges of the bag-walls may be glued together, or impregnated with any desired solution, as indicated by the shaded portion 22 in Fig. 4.

In forming these packages, there is first produced a tube 10 of crinkled paper long enough to form the walls of a plurality of packages. As indicated in Fig. 5, the tube of crinkled paper may be longitudinally collapsed about a feeding tube 23 having an enlarged lower end 24. The lower end of the tube is drawn down below the feeding tube. After the end of the paper tube is drawn down below the feeding tube, it is closed in any desired manner and a charge of material is fed through the feeding tube against such end closure. The paper tube is then collapsed above the charge, as at 25, and reinforcing strips 26 and 27 are progressively positioned across the collapsed portion of the

tube. Two parallel seams 28 and 29 are then sewed longitudinally of the reinforcing strips through the strips and the intervening walls of the tube. This sewing may be done by any suitable mechanism, needles 30 and 31 being indicated on Fig. 6.

The strips and the intervening bag-walls are severed between the seams, preferably by a knife 32 which is reciprocated synchronously with the needles so as to make a cut for each stitch. It is difficult to make an absolutely smooth cut with such a reciprocating knife, but I intentionally tilt the knife slightly so that there is a definite tool mark across the material at the severed edge, as shown at 19 in Fig. 3.

I prefer to operate a series of filling tubes in approximately parallel positions, so that continuous reinforcing strips may be progressively positioned across the tubes, and the sewing and severing may progress continuously longitudinally of the strips.

Fig. 6 diagrammatically indicated adjacent portions of two tubes 25, 33 across which the continuous reinforcing strip 34 has been fed. The figure indicates the parallel seams 28, 29 progressively formed by needles 30, 31. The strip and bag-walls are progressively severed by the reciprocating knife 32 and the connecting portion of the strip across space 35 between the tubes is severed at 36 in any suitable manner.

In the broader aspects of the invention, it is immaterial whether the closures made in accordance with the diagrammatic showing of Fig. 6 are across tubes having charges in their ends, as indicated in Fig. 5, or are across empty tubes. Closures could be made in a similar manner across empty tubes, and the bags thereafter filled in any desired manner. The closures could be made a single bag length apart, and so close both ends of the resultant bags, or they could be made at two-bag-lengths apart, thereby closing one end of each bag, or they could be made across a series of tubes each of the proper length to make two bags, so that empty bags would be completed by the process.

After the packages are filled, closed and separated in this manner, it is sometimes desirable to perfect the closure by impregnating the severed edges of the strips and bag-walls with glue or other liquid. For this purpose I have diagrammatically indicated in Fig. 7, a shallow glue pot 37 having glue therein up to the level 38, and the end of the bag may be dipped in this glue as indicated in that figure. Any other desired liquid may be substituted for the glue mentioned.

Identifying marks 20 may be placed on the strips before they are applied to the bags; but where marks 21 are used, appearing partly on the strip and partly on the bag-wall, they are impressed after the closure is formed.

The advantages of the several features of the preferred form of package are substantially as follows:

The crinkled paper is very suitable for this form of package, because a tube of such paper may be readily collapsed about a feeding tube and infolding of the sides of the bag at the ends of the seam does not put the extra strain upon a tube of crinkled paper that it would upon smooth paper, because the crinkled paper will stretch considerably before it will tear. However, the sealing purposes may be fully realized with other material, such as smooth paper.

The use of comparatively stiff reinforcing strips has several advantages. For one thing, the stiff strips act as clamps across the ends of the package, as indicated in Fig. 3. Strips 13 and 14, held together by the stitches of seam 11, will be spread apart somewhat at their upper edges 40, 41 by tension of bag walls 42, 43. The stiffness of the reinforcing strips causes them to resist this spreading apart so that the material 44 within the package does not reach seam 11 as readily as it would if the walls were not stiffened by these reinforcing strips. Furthermore, each strip acts as a lever with the seam for a fulcrum, so that the more the upper portions are spread apart, the tighter the lower edges are held together, and leakage is prevented.

In case one or two stitches break, the stiffness of the reinforcing strips enables them to act as clamps and prevent the opening up of holes where such stitches are broken; and even if the strips do separate slightly at any point, the comparatively long passage between such strips does not allow as much material to sift out as would sift out through the comparatively short passage of equal cross-section through an unreinforced seam.

Where a still more perfect seal is desired the severed edges may be dipped in glue or other liquid, as previously stated, and the comparatively porous severed edges will readily absorb the liquid.

Folding in the sides of the bag to the extent indicated results in packages of substantially uniform width throughout their length and is an advantage in storing and shipping such packages. Furthermore, the stiff reinforcing strips aid in maintaining the shape and sightly appearance of the package, and the flush edges parallel with the seam assist in accomplishing the same result.

The unauthorized opening of the packages and removal of part of their contents, or the unauthorized refilling of the packages, is rendered difficult by several features of the closure. In the first place the material of the reinforcing strips is such that a seam cannot be successfully ravelled and re-sewed without making new needle holes and leaving the evidence of the old needle holes to show that such ravelling and re-sewing has taken place.

The position of the reinforcing strips flush with the edges of the package walls, and the exactly parallel relation of the seam to the flush edges are features difficult to duplicate in a refilled bag, and, furthermore, the tool marks across the edges of the bag-walls and reinforcing strips render it impossible to remove and replace the strips in such a manner that the unauthorized tampering will not appear. The mark of the producer upon the reinforcing strips tends to prevent the discarding of the original reinforcing strips and the substitution of others therefor, and if such marks are placed on the package walls and strips after the strips are applied, the strips cannot be removed and replaced so as to have the mark on the strip match that on the package without an excessive amount of care. When the flush edges of the strips and walls are glued together, the package cannot be opened without tearing or cutting. As a result of these combined features, the package is one from which there is practically no leakage or sifting and one that cannot be opened and re-closed without leaving evidence of such operation.

While the cumulative result of the various features pointed out above renders unauthorized tampering with the package practically impossible, some of the features may be utilized without employing all of them. I have disclosed a preferred form of package and a complete process for forming it, but individual features of the article and steps of the process may be varied and may be used in other combinations without departing from the spirit of the invention. The scope of my invention is indicated, not by the details of the specific disclosure, but by the terms of the appended claims. The term "flat" is used in the claims to describe a strip which has a surface adapted to contact the bag-wall for a breadth relatively great when compared with the thickness of the strip, and does not necessarily imply a smooth surface.

What I claim is:

1. A seal for flexible walled packages, comprising a flat strip of reinforcing material, less flexible than the walls of the package, on each side of two adjacent edges of the package walls, and a sewed seam passing through the strips and the walls at a distance from either edge of the strips.

2. A sealing closure for flexible walled packages, comprising flat reinforcing strips engaging opposed package walls adjacent their edges, a sewn seam passing through the strips and walls and holding them firmly together, the outer edges of the walls and strips being flush with each other and parallel with the seam.

3. A sealing closure for flexible walled packages, comprising flat reinforcing strips engaging opposed package walls adjacent their edges, a seam sewed through the strips and walls and holding them firmly together, the outer edges of the walls and strips being flush with each other and being glued together.

4. A seal for packages and the like, comprising a pair of opposed reinforcing strips arranged one on each side of two opposed layers of package material and a sewn seam passing through the strips and the package material and holding them together, the reinforcing strips extending beyond the seam and terminating flush with the edges of the package material held between them, there being a series of tool marks on the adjacent edges of the reinforcing strips and the package material.

5. A seal for packages and the like, comprising a pair of opposed reinforcing strips arranged one on each side of two opposed layers of package material and a sewn seam passing through the strips and the package material and holding them together, the reinforcing strips extending beyond the seam and terminating flush with the edges of the package material held between them, there being a series of tool marks on the adjacent edges of the reinforcing strips and the package material, the tool marks bearing a fixed relation to the individual stitches.

6. A seal for packages and the like, comprising a pair of opposed reinforcing strips arranged one on each side of two opposed layers of package material and a sewn seam passing through the strips and the package material and holding them together, the reinforcing strips extending beyond the seam and terminating flush with the edges of the package material held between them, there being a series of tool marks on the adjacent edges of the reinforcing strips and the package material, the reinforcing strips bearing conspicuous marks identifying the producer of the package.

7. A seal for packages and the like, comprising a pair of opposed reinforcing strips of such material that a perforation therethrough is permanently undisguisable and cannot be removed or filled up arranged one on each side of two opposed layers of package material, and a sewn seam passing through the strips and the package material and holding them together, the reinforcing strips extending beyond the seam and terminating flush with the edges of the package material held between them, there being a series of tool marks on the adjacent edges of the reinforcing strips and the package material.

8. A seal for flexible walled packages, comprising a pair of opposed reinforcing strips of material stiffer than the package walls arranged one on each side of two opposed layers of package material, and a sewn seam passing through the strips and the package material and holding them together, the re-

inforcing strips extending beyond the seam and terminating flush with the edges of the package material held between them, there being a series of tool marks on the adjacent edges of the reinforcing strips and the package material.

9. A seal for packages, comprising a reinforcing strip and a straight line closure across an end of the package and uniting the reinforcing strip and the package walls, the strip and walls being cut off flush with each other and having tool marks extending continuously across the flush edges.

10. A seal for packages, comprising a reinforcing strip, a sewed seam across an end of the package and uniting the reinforcing strip with the package walls, the strip and walls being cut off flush with each other outside of the seam and having tool marks extending continuously across the flush edges.

11. A seal for flexible walled packages, comprising a reinforcing strip of stiffer material than the package walls, a sewn seam across an end of the package and uniting the reinforcing strip and the package walls, the strip and the walls being cut off flush with each other beyond the seam and having tool marks extending continuously across the flush edges.

12. A sealing closure for flexible walled packages, comprising flat reinforcing strips engaging opposed package walls adjacent their edges, a sewn seam passing through the strips and walls and holding them firmly together, the outer edges of the walls and strips being flush with each other, there being a series of tool marks on the adjacent edges of the reinforcing strips and the package walls.

13. A sealing closure for flexible walled packages, comprising flat reinforcing strips engaging opposed package walls adjacent their edges, a sewn seam passing through the strips and walls and holding them firmly together, the outer edges of the walls and strips being flush with each other, the reinforcing strips being of such material that needle marks therein remain permanently visible.

In testimony whereof I have hereunto subscribed my name to this specification.

ADELMER M. BATES.