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BAG WITH INTERRUPTED LONGITUDINAL SEAM

Filed April 25, 1962

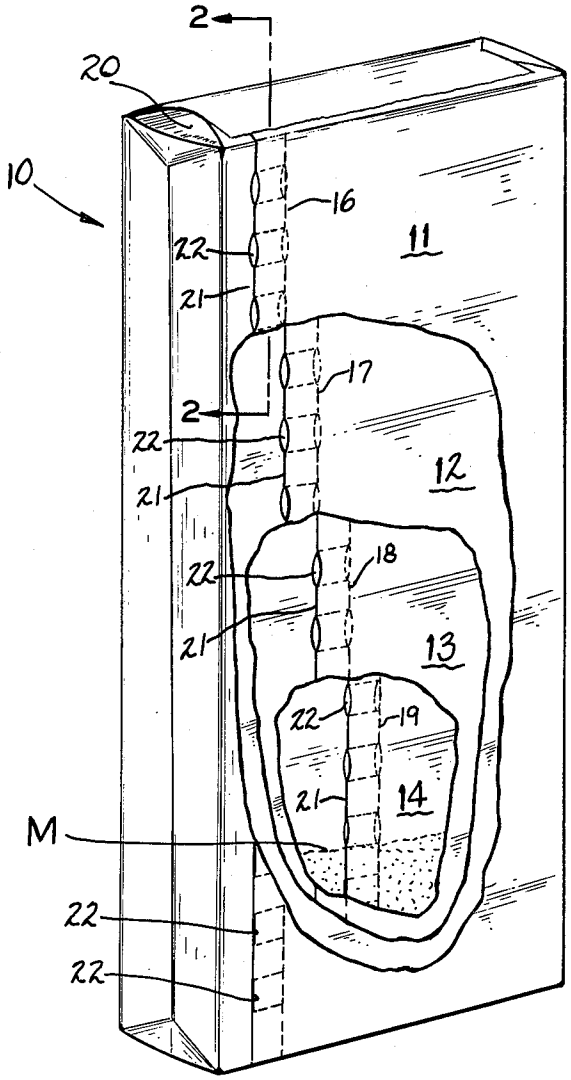

FIG - 1

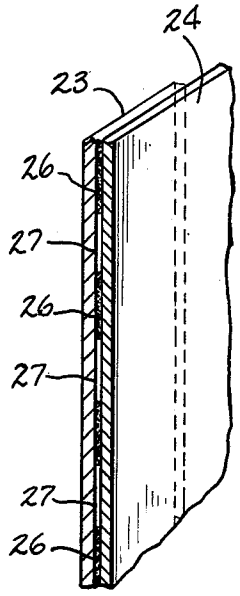

FIG - 2

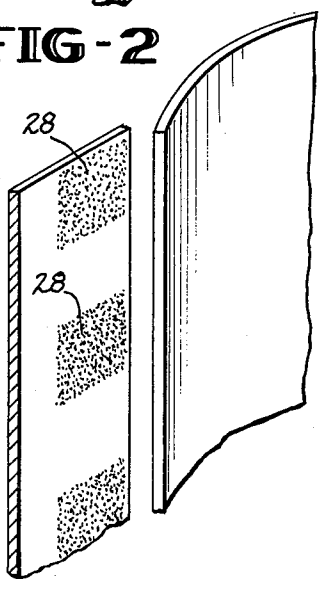

FIG - 3

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BAG WITH INTERRUPTED LONGITUDINAL SEAM

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The present invention relates to bag or sack structures and in particular relates to bags or sacks which are useful for packaging bulk material such as flour, cement and similar powdery or fined granular material.

A particular feature of the invention is the provision of a novel vented sack structure which provides a continuous outlet for entrapped air that must be displaced while the bag is being filled with bulk material.

An additional feature of the invention is the provision of a sack for receiving or packaging bulk material having a novel seam structure.

A further feature of the invention is the provision of a multi-wall kraft paper sack of the type having a single opening through which bulk material is introduced and having separate and independent vent means operative to release entrapped air continuously while the sack is being filled.

A further feature of the invention is the provision of a sack structure having a single opening for introducing bulk material disposed in a first location and having a separate and independent vent structure located in a second remote location.

A further feature of the present invention is the provision of a paper sack structure having a longitudinal seam provided with spaced securing means thereby effecting a plurality of discrete openings providing communication from the interior of the sack to the atmosphere through the seam.

A further feature of the invention is the provision of a novel multi-wall sack structure in which each wall is defined by an individual sack having a longitudinal lap seam individual thereto, the lap seam individual to each sack being fastened intermittently or at spaced points along the seam.

A vented sack structure embracing certain principles of the present invention and useful for packaging bulk materials such as flour, cement and the like may comprise a body portion fabricated of packaging material having a generally tubular structure including a longitudinal lap seam, said lap seam defining overlapping margins of said packaging material secured intermittently to provide spaced regions along said lap seam wherein said overlapping margins are fixed against relative motion with intervening spaced regions wherein the overlapped margins are freely separable and susceptible of relative motion.

Other features and advantages of the present invention will become more apparent from an examination of the succeeding specification when read in conjunction with the appended drawings in which:

FIG. 1 discloses a representative embodiment of the invention, in perspective, with certain portions thereof broken away for clarity.

FIG. 2 is an enlarged view of a portion of the illustration of FIG. 1, and

FIG. 3 is a similar view showing a typical glue pattern for securing overlapped margins of packaging material.

Referring now to the drawings, FIG. 1 shows a multi-wall sack structure indicated by the reference numeral **10** fabricated from kraft paper. The sack embraces four concentric tubes or sleeves **11**, **12**, **13** and **14** each having overlapped margins defining longitudinal lap seams **16**, **17**, **18** and **19**, respectively.

The sack **10** forms an enclosure for receiving bulk material introduced through an opening **20** in well known fashion.

The lap seams **16** through **19** are disposed longitudinally and are defined by overlapping margins secured together at spaced intervals as by gluing, stitching or heat sealing to provide a longitudinally disposed vent structure along each wall of the multi-wall sack **10** defining a plurality of spaced joints **21—21** which are fixed against relative motion. The seam further defines a plurality of intervening spaced gaps **22—22** where the overlapped margins of packaging material are freely separable and susceptible of relative motion.

A typical longitudinal lap seam having vented structure in accordance with the present invention is disclosed in FIG. 2 wherein overlapped margins **23** and **24** are fixed relative to one another at spaced regions or points defined by the reference numerals **26—26** while the reference numerals **27—27** define intervening points at which the overlapped margins **23—24** are free to move relative to one another thus providing a conduit for entrapped air from within a given wall structure.

FIG. 3 further shows a suitable pattern of glue indicated by the reference numerals **28—28** providing a longitudinal vent structure at the lap seam of a sack wall fabricated of conventional kraft paper.

While the disclosed embodiment of the present invention embraces four concentric sacks, it is entirely within the spirit and scope of the invention that it take the form of a single walled sack structure having one or more longitudinal lap seams defining one or more longitudinal vents. Furthermore, it is intended that the invention may be practiced by utilizing any suitable packaging material such as plastic films, kraft paper and similar webs or sheets.

As a practical matter, it is probably most suitable to utilize at least two concentric sacks developing at least one longitudinal vent in each sack.

It is preferred that the vents be staggered as shown in FIG. 1 to provide a tortuous path for the escape of air as the bulk materials are introduced through the sack opening indicated by the reference numeral **20**.

Referring in more detail to FIG. 1, note that the broken line referenced M represents the instantaneous level of bulk material being continuously introduced through the opening **20**.

The feature to note is that while the individual vents or gaps **22—22** are normally distended or opened when the bag is empty, by virtue of the natural resilience of the paper, the vents tend to close automatically as the material M rises within the sack.

Note the condition of the openings **22—22** below the line referenced M as against the condition of the corresponding openings above line M.

Then vent seam operates as follows:

Prior to introduction of bulk material the sack is erected or inflated to the condition shown in FIG. 1 by any suitable means. In this condition the vents **22—22** are generally in the condition shown above the line referenced M. As bulk material is introduced through the opening **20**, entrapped air within the sack **10** bleeds from the interior of the sack through the openings **22—22** in the lap seam of sack **14** thence through the corresponding openings in the sacks **13** and **12** until finally the air vents to atmosphere through the openings **22—22** in the outer wall **11**. As the level M of the bulk material progresses upwardly within the sack the internal pressure developed by the bulk material tends to draw the vent seam taut to snap the vents **22—22** closed to retain the contents of the sack.

It is anticipated that a variety of packaging materials may be utilized and that a great number of sack structures can be devised, including those embracing a single wall or a multi-wall structure each with one or more vent

seams, without departing from the spirit and scope of the longitudinal vent structure disclosed and claimed herein.

What is claimed is:

1. A vented sack for receiving and packaging bulk material such as flour, cement and the like comprising a body portion fabricated of packaging material having a generally tubular structure including a longitudinal lap seam, said lap seam having overlapped margins secured intermittently to provide spaced regions along said lap seam wherein said margins are fixed against relative motion with intervening spaced regions wherein the overlapped margins are freely separable and susceptible of relative motion.

2. The vented sack structure as defined in claim 1 wherein the body portion is fabricated of a plurality of generally tubular structures arranged concentrically and each having a longitudinal lap seam characterized by overlapped margins secured intermittently.

3. The vented sack structure as defined in claim 1 wherein the body portion is fabricated of a plurality of generally tubular structures arranged concentrically, each tubular structure having a longitudinal lap seam characterized by overlapped margins secured intermittently, the lap seam of each tubular structure being spaced from or staggered relative to the lap seam of the next adjacent wall.

4. In a multi-wall bag, a body portion of concentrically arranged plies of material, each of said plies having overlapped margins defining a longitudinal seam, said margins being joined together at intermittent intervals to provide alternate gaps and joints, the longitudinal seams of each ply being arranged in staggered relation so that no two adjacent seams are in overlapping relation.

5. The structure of claim 4 in which the gaps in adjacent seams are staggered to define a tortuous path for air to escape as the bag is filled.

6. A method of venting a multi-wall bag having a plurality of plies of material including the steps of, providing each of said plies with overlapped margins defining a longitudinal seam, joining the overlapped margins of each longitudinal seam at spaced intervals to provide alternate joints and gaps, and staggering the seams of the plies so that no two adjacent seams are in overlapping relation.

7. The method of claim 6 further including the step of staggering the gaps so that the gaps in adjacent plies are misaligned to provide a tortuous path for air to escape as the bag is filled.

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