April 28, 1959 J. C. WILSON 2,884,175

CARTON

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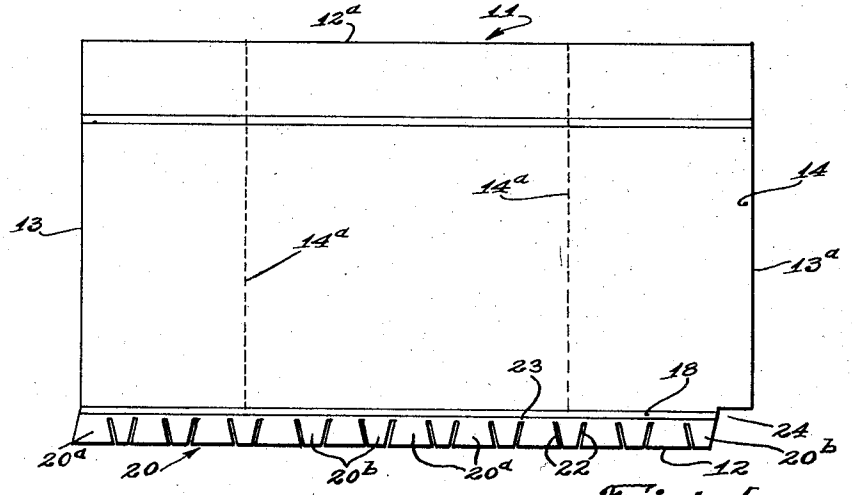


FIG. 1.

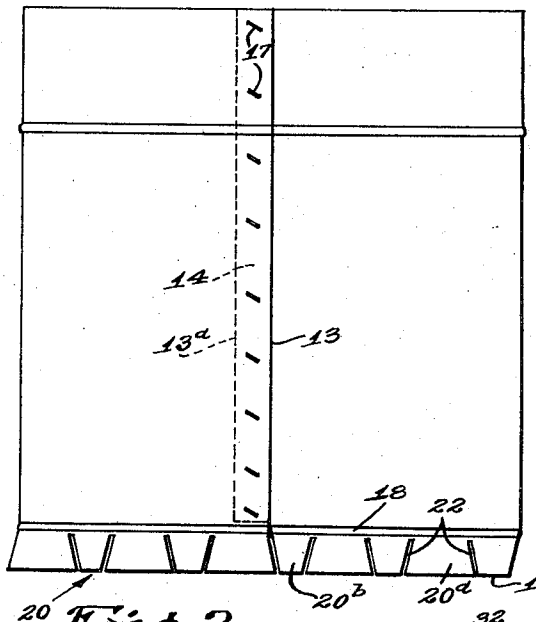


FIG. 2.

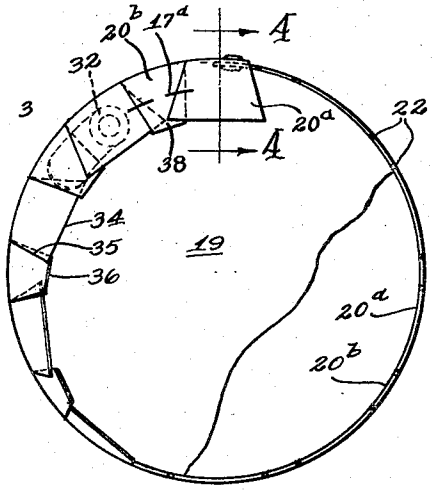


FIG. 3.

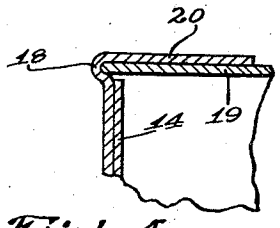


FIG. 4.

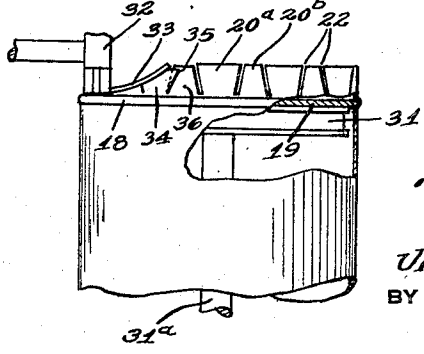


FIG. 5.

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CARTON

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5 Claims. (Cl. 229—5.5)

This invention generally relates to cartons. More particularly, the present invention relates to a carton which includes a hollow tubular body or drum, a disc closure, and arrangements for forming these components into a unitary package.

The arrangements with which this invention is specifically concerned are those in which tabs or tongues are employed at one end of the tubular body or drum, which tabs or tongues are inwardly foldable to lie in surface abutment with the disc closure, and which, when fastened thereto by suitable means, yield a unitary package.

Prior to this invention, the tab or tongue members referred to have been formed in any one of several shapes. Conventionally, the tab or tongue members are formed along one edge of a rectangular blank formed of flexible sheet material, of which material paperboard or so-called "chip-board" are illustrative.

One arrangement used heretofore has been tabs having the configuration of a square. The square tabs are achieved by a series of slits perpendicular to the bottom edge of the rectangular blank. When the two edges transverse to the slitted edge are then brought together and fastened, there is defined a tubular body having a plurality of square tab extensions which can be utilized in the fashion described hereinbefore.

Another arrangement which has been used heretofore is to form triangular tabs by imparting to one edge of the blank a series of inverted V-shaped notches so spaced that the outermost extremity of the tab defines the apex of a triangle. Another arrangement which has been used heretofore are tabs likewise defined by a series of inverted V-shaped notches; however, in this arrangement, the inverted V-shaped notches are spaced further apart so that the tab portions, left by the notches, define trapezoids having their minor base constituting the outermost extremity of the tab and their major base thereafter. As indicated hereinbefore, after the tabs, whether they be square, triangular, or uniform trapezoids, have been formed in the edge of a rectangular blank, the two side edges transverse to that edge are brought together in overlapping relationship and fastened by stitching, stapling, or an adhesive. Thereupon, a disc having a diameter approximating the diameter of the thus formed cylinder is inserted so that its circumference is in substantial registry with the bases of the tabs, or in registry with a score line impressed adjacent the bases of the tabs in the body member. While the disc is supported in this position, a stitching operation is performed in which motion between a suitable stitching head and the supported drum structure is effected, whereby the tab members are folded under into surface abutment with the closure disc and stitched, stapled, or otherwise affixed to the disc member to form a unitary package.

Cartons of this general type are manufactured for the purpose of providing non-leaking containers for flowable material such as powder, grain, and a variety of viscous materials such as asphalt, tar, and the like.

Unfortunately, it is found that tabs of the type and

shape described are undesirable in many respects. Thus, it is found that the triangular tabs do not yield a unitary package which is sufficiently leak-proof for many products, particularly of the liquid variety. Furtherfore, the drum tabs formed in any of the shapes described above are beset with one very serious difficulty. Thus, it is found particularly distressing that the stitching or stapling operation, wherein the tab is folded into abutment with the disc and stitched or stapled, is frequently accompanied by a jamming of the stitching or stapling machine. It is obvious that frequent jamming of stitching and stapling machines must result in material and expensive loss in time in clearing such machines of the jammed carton in order that operation of the machine may be resumed. The jamming difficulty also frequently results in the production of drums evidencing poor fastening, which drums thereafter are characterized by unsatisfactory seal.

Accordingly, it is an object of this invention to provide a carton structure, and particularly, a carton structure employing a closure arrangement which overcomes the above enumerated objections.

It is a particular object of this invention to provide a drum construction which is formed from a minimum of the material of construction, and is easily and economically formed into a unitary non-leaking package, and which is easily and speedily utilized in conventional stitching, stapling, or other fastening operations.

The specific nature of this invention, as well as other objects and advantages thereof, will become apparent to those skilled in the art from the following detailed description, taken in conjunction with the annexed drawings, on which by way of example only, are illustrated the preferred embodiments of this invention.

In the drawings:

Fig. 1 is a plan view of a blank utilized in forming a principal body member used in the construction of this invention.

Fig. 2 is a side elevation view of a construction formed from the blank shown in Fig. 1.

Fig. 3 is a bottom plan view, partially broken, of a partially assembled drum employing the construction of this invention.

Fig. 4 is an enlarged sectional view with parts broken away, taken on the line 4—4 of Fig. 3.

Fig. 5 is a side elevational view with parts broken away, illustrating the assembly of a carton employing the construction of this invention.

Basically, the present invention comprises a drum construction including a disc closure and employing tabs extending axially from the drum for foldable surface abutment with the disc, which tabs are in the form of a series of trapezoids, and in which series adjacent tabs are in inverted relationship with respect to each other.

Referring now more specifically to the drawings, there is illustrated in Fig. 1 a generally rectangular blank **11**. The blank has opposed side edges **13** and **13***a*, and an upper edge **12***a* transverse thereto. Along the lower edge **12** of the blank there is formed a series, designated **20**, of tabs, as more particularly described hereinafter. The blank also has a cutaway corner **24** at the juncture of edge **13***a* and the edge **12**. The cutaway serves to provide a flap portion **14** thereabove which may be brought into overlapping relationship with the edge **13**, as at **16** (Fig. 2), to form the blank into the form of a cylinder. Staples **17** may be employed at the area of overlap **16** to hold the structure in cylindrical form. The blank is provided with score lines **14***a* which are parallel to the edges **13** and **13***a* and permit the blank to be formed into cylindrical shape and then compressed laterally and about the score lines **14***a* to yield a flat package for convenience of shipping from the manufacturer to the customer. The blank also

contains a score line **18** transverse to the score lines **14***a*, and spaced adjacent the series of tabs **20**. This latter score line permits foldability of the tabs and may also serve as a seat for the closure disc in forming the ultimate unitary package. In accordance with this invention, it has been found that the series of tabs **20** should be of a particular shape in order to achieve the objectives of the invention. The tabs are formed by a plurality of slits **22** which are angular to the axis of the ultimate cylinder, and are such as to define a series of trapezoidal tabs in which half of the trapezoids, designated **20***a*, are upright (have their minor base adjacent the score line **18**), and the other half, **20***b*, are inverted (have their major base adjacent the score line **18**). Adjacent trapezoidal tabs are thereby inverted with respect to each other and, preferably, the series of tabs will consist of an even number so that the end tab in the series and also the cut-out corner **24** will fit in the cut-out corner adjacent to the tab at the other end of the series and thereby provide a uniform series of alternatingly inverted trapezoidal tabs which, in their axially extending position, are not overlapped. The slits **22** which define the tabs should not extend all the way to the score line **18**, but should leave a portion **23** therebetween. This promotes sealing efficiency of the construction. The tabs designated **20***a* may be conveniently referred to as major tabs and the tabs designated **20***b* may be conveniently referred to as minor tabs.

The tubular construction illustrated in Fig. 2 is then positioned over a circular table **31** mounted on a supporting shaft **31***a*, with the tabs extending upwardly and with the score line in alignment with the top surface of the table. A disc **19** is then placed on the top surface of the table member in alignment with the score line **18**. A stitching head **32**, suitably mounted, including an upwardly curving shoe member **33** is swung into a position above the tabs, whereupon relative movement is effected between the mounted tubular construction and the stitching head so that the shoe member successively contacts the tabs, forcing them inwardly into abutment with the disc **19***a*, whereupon they are immediately and successively stitched as shown in Figs. 3 and 5. It can be seen that as a tab **34** is inclined inwardly from the vertical by the shoe member **33**, an inner portion **35** thereof engages the next succeding tab **36**, inclining it inwardly. It, in turn, engages the next tab in like fashion, etc. When the tabs are completely bent over in surface abutment with the disc **19**, and stitched thereto as by staple **17***a* (Fig. 3), ear portions of the major tab either overlap or underlie the minor tab. This overlap promotes the sealing efficiency of the unitary package. Preferably, the major tabs (designated **20***a*) are formed to be larger than the minor tabs (designated **20***b*) so that the area of overlap will be greater, but should should not be so large that the lower extremities of the major tabs themselves overlap, inasmuch as there would then be provided three layers of tabs at this portion of the overlap. The most ideal situation is illustrated in Fig. 3, wherein the relative size of the major and minor tabs is such that the lower corners of the ear portions of the major tabs just meet when the tabs are in folded over position, as indicated at **39** (Fig. 3). Utilizing tabs formed in accordance with the teachings of this invention, it was found that a stapling operation was completed with little or no difficulty, in that no jamming of the stitching machine occurred and the tabs folded easily inwardly into abutting surface contact with the disc member. As indicated hereinbefore, utilization of square tabs or the trapezoidal tabs caused frequent jamming of the stapling machine. While it is not intended to be bound by theory, it is believed that this jamming was caused by frictional contact between adjacent edges of adjacent tabs. The frictional contact is apparently sufficient to resist relative movement between the adjacent edges of adjacent tabs. While it is not known why the tabs according to this invention do not involve this difficulty, it is believed that the angular relationship as between the adjacent edges of adjacent tabs and the transverse motion of the shoe member serve to reduce the frictional sliding contact therebetween to a minimum, thereby permitting easy folding over of the tabs with a minimum of interference.

Variations may be resorted to within the spirit of this invention and without departing from the scope thereover as defined in the appended claims.

I claim:

1. A closure construction for a container, formed from a hollow cylindrical body and a disc adapted to fit within said cylinder, said construction comprising an annular series of inwardly foldable tongue members extending axially from said cylinder, said tongue members being constructed in the form of trapezoids with their bases perpendicular to the axial height of said cylinder and each being inverted with respect to members adjacent thereto, the slant edges of adjacent members being separated by a slit, whereby portions of adjacent members will overlap when said members are folded inwardly into surface abutment with said disc.

2. A carton formed of flexible sheet material, said carton comprising a principal body member having a score line spaced from an edge to define a major section and a minor section, said major section having edges extending away from said score line and being adapted to overlap to form a tubular construction, a disc closure adapted to fit within said tubular construction in registry with said score line, and a plurality of trapezoidal tongue members formed in said minor section by a plurality of slits extending angularly from said first-mentioned edge to a point short of said score line and arranged to define a series of said trapezoidal tongue members, in which each member is inverted with respect to members adjacent thereto, whereby the adjacent edges of adjacent tongue members will overlap when folded about said score line into abutment with said disc closure.

3. A carton construction comprising a body member having a flap portion for overlapping engagement with said body member to form a tube, a tongue-forming portion extending axially from said body and having a transverse score line therein, a disc closure adapted to register with said score line, and a plurality of trapezoidally shaped tongue members formed by slits in said tongue-forming portion, said tongues constituting an annular series containing an even number of trapezoidal tongue members, one-half of which have their minor base adjacent the score line and one-half have their major base adjacent the score line in regular alternating sequence.

4. A carton structure as claimed in claim 3, in which the tongue members which have their minor base adjacent the score line are larger than the other tongue members in the series.

5. In a drum formed of flexible sheet material, said drum including a tubular body formed by overlapping end portions of a blank and a disc closure for an otherwise open end of said tubular body, the improvement which comprises a series of trapezoidal tabs extending integrally from said body in non-overlapping relationship, each of said tabs in said series being inverted with respect to tabs on either side thereof, said tabs being adapted to fold into abutting relationship with said disc.

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