July 16, 1963 F. A. MILITANA 3,097,786

OPENING MEANS FOR CONTAINERS

Filed Sept. 22, 1961 3 Sheets-Sheet 1

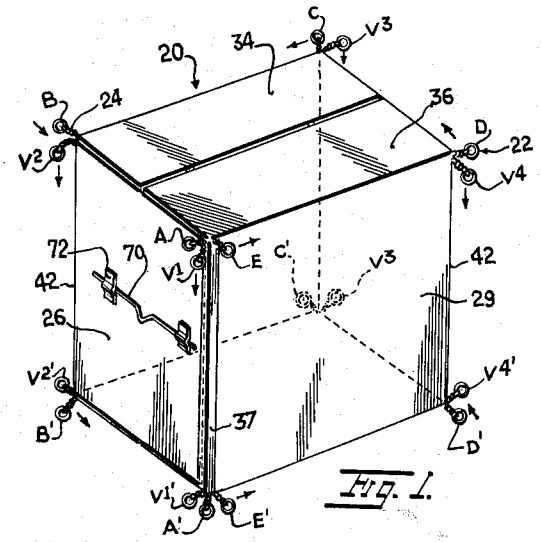


Fig. 1.

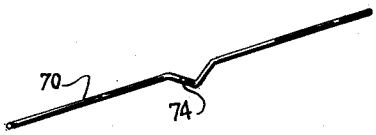


Fig. 5.

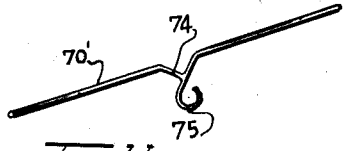


Fig. 11.

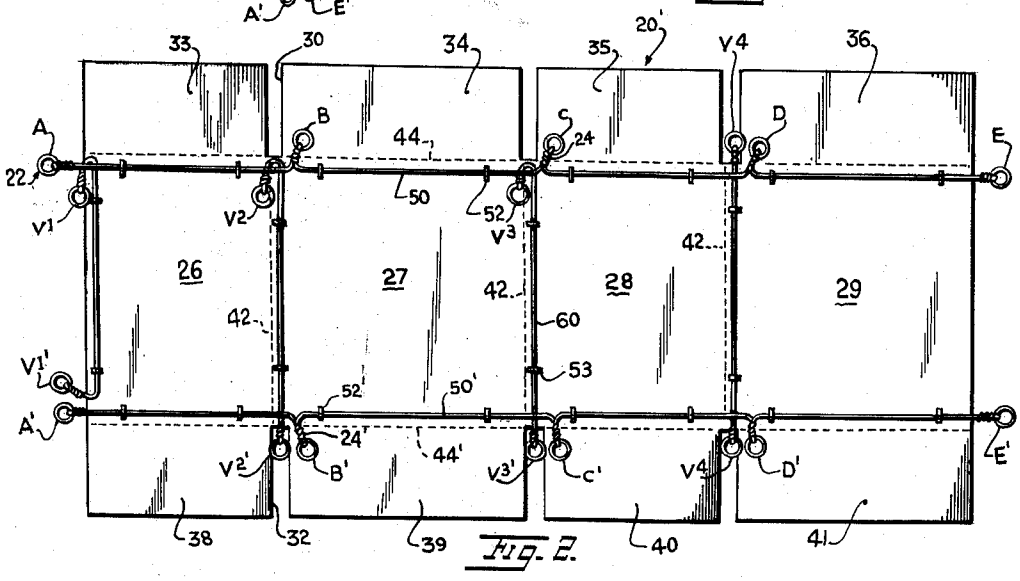


Fig. 2.

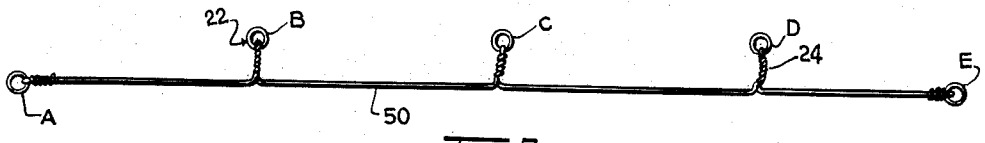


Fig. 3.

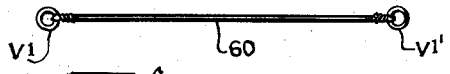


Fig. 4.

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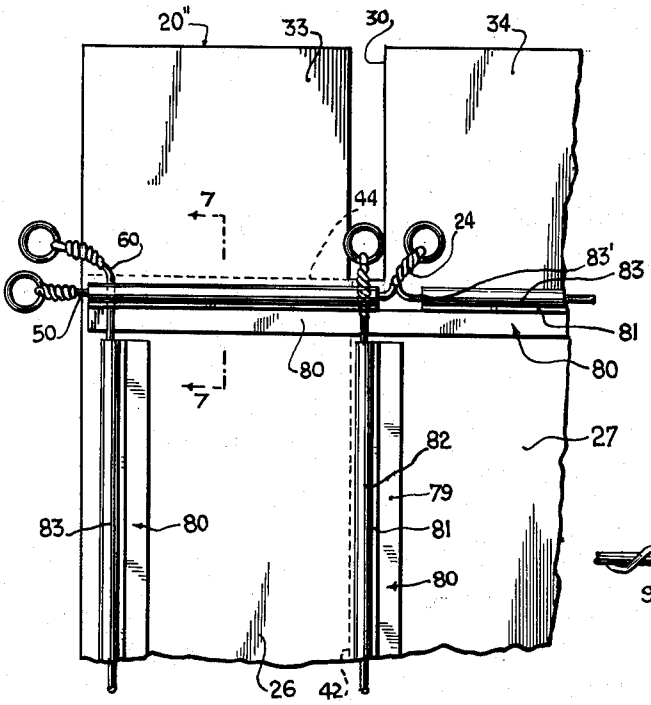


Fig. 6.

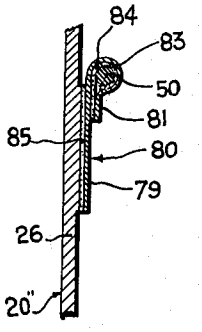


Fig. 7.



Fig. 8.

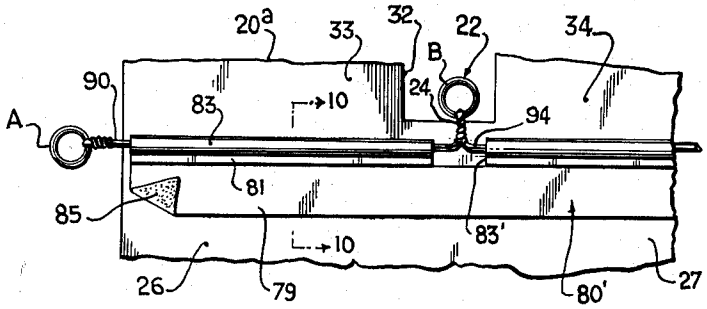


Fig. 9.

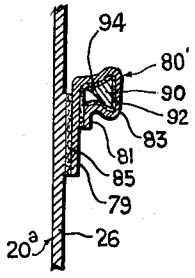


Fig. 10.

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OPENING MEANS FOR CONTAINERS

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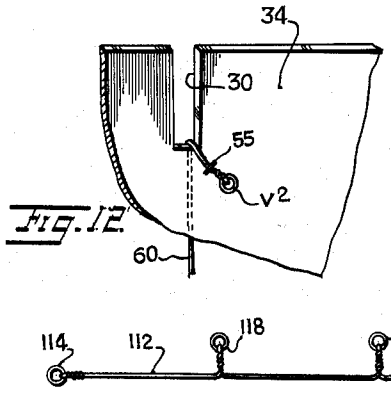


Fig. 12.

Fig. 14.

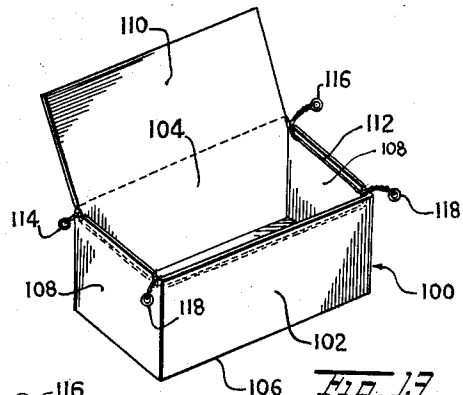


Fig. 13.

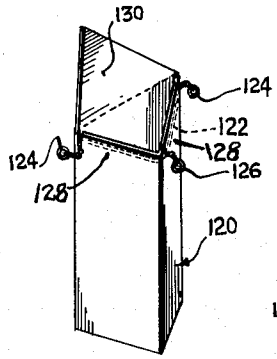


Fig. 15.

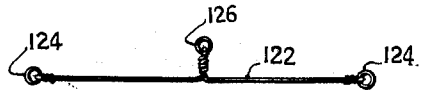


Fig. 16.

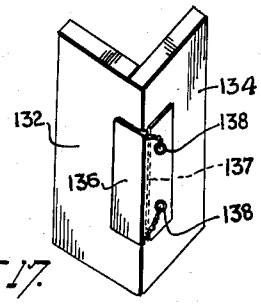


Fig. 17.

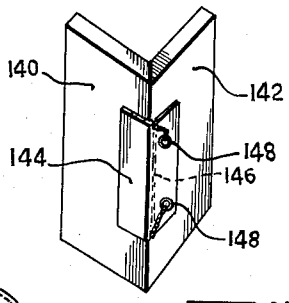


Fig. 18.

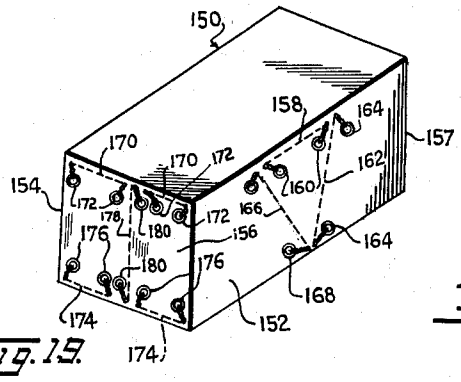


Fig. 19.

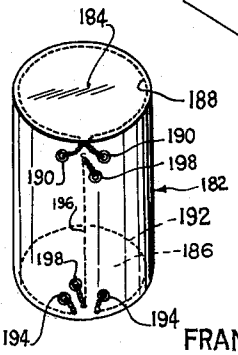


Fig. 20.

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OPENING MEANS FOR CONTAINERS

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Filed Sept. 22, 1961, Ser. No. 139,899
2 Claims. (Cl. 229—51)

This invention relates to a quick opening container, and particularly concerns novel opening means for the container.

According to the invention there is provided a cutting strand of wire, cord or the like secured along one or more inner folds of a corrugated or paperboard folded carton. Attached to the cutting strand are loops which can be grasped for pulling the strand to cut the carton. The strand may be attached to the inner sides of the carton by suitable fastening means. The strand may be round in cross section or, for more efficient cutting action, the strand may be multilateral in cross section and may be twisted helically or may have a helical ridge thereon. The cutting strands may be arranged in the carton so that any side or panel thereof can be cut open.

It is therefore one object of the invention to provide a quick opening folded container including cutting strands extending along inner folds for cutting open the container.

Another object is to provide a quick opening folded carton with cutting strands including wires having loops extending outwardly of the carton at corners thereof with the strands extending along inner sides of folds of the carton.

Still another object is to provide cutting strands for cartons inclosed in adhesive wrapping to facilitate attachment to inner sides of the cartons.

A still further object is to provide carton cutting strands as described which are multilateral in cross section or which have helical ridges to facilitate cutting action.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a perspective view of a carton provided with opening means according to the invention.

FIG. 2 is a plan view of a blank from which the carton in FIG. 1 is formed, showing opening strands secured to the blank.

FIG. 3 is a side view of a cutting strand according to the invention.

FIG. 4 is a side view of another cutting strand.

FIG. 5 is a perspective view of an opening tool useful in opening large cartons, according to the invention.

FIG. 6 is a plan view on an enlarged scale similar to a portion of FIG. 2 illustrating another embodiment of the invention.

FIG. 7 is a sectional view taken on line 7—7 of FIG. 6.

FIG. 8 is an oblique side view of a portion of another cutting strand.

FIG. 9 is a fragmentary plan view similar to a portion of FIG. 6 illustrating still another embodiment of the invention.

FIG. 10 is a sectional view on a further enlarged scale taken on line 10—10 of FIG. 9.

FIG. 11 is a perspective view of another carton opening tool.

FIG. 12 is an elevational view of a fragment of a carton showing a modified manner of fastening the end of a strand to the outer wall of the carton.

FIG. 13 is a top perspective view of a carton, with the cover open, embodying another modified form of the invention.

FIG. 14 is a plan view of a modified form of cutting strand used in the carton of FIG. 13.

FIG. 15 is a top perspective view of a carton with the cover open, embodying still another modified form of the invention.

FIG. 16 is a top plan view of the cutting strand used in the carton of FIG. 15.

FIG. 17 is a top perspective view of a fragment of a carton embodying yet another modified form of the invention.

FIG. 18 is a view similar to FIG. 17 of a further modified form of the invention.

FIG. 19 is a top perspective view of a carton, embodying a still further modified form of the invention.

FIG. 20 is a top perspective view of a carton, embodying yet a further modified form of the invention.

Referring to FIG. 1, there is shown a closed rectangular carton **20** formed of folded cardboard, corrugated fiberboard, metal foil or other relatively light tearable sheet material. The carton has two or more rigid rings **22** at each corner. These rings are attached by twisted wire loops **24** to cutting strands best shown in FIGS. 2–4.

FIG. 2 shows a rectangular blank **20′** from which the carton **20** is made. The blank includes four rectangular walls **26–29** formed with spaced slots **30**, **32** extending inwardly from opposite edges to define four flaps **33–36** at the upper edge and four flaps **38–41** at the lower edge. The flaps and panels are foldable along dotted lines **42** and **44**, **44′** so that the inner sections of walls **26–29** define four sides of the carton while flaps **33**, **35** can be abutted and lapped over abutted flaps **34**, **36** to define the top of the carton, and flaps **38**, **40** can be abutted and lapped over abutted flaps **39**, **41** to form the bottom of the carton. An adhesive tape **37** seals abutting edges of walls **26**, **29** of the carton. The tape may also seal a tab extending from a wall.

A first cutting strand **50** is located adjacent upper fold line **44** and secured to the blank by staples **52** on the inner side of the blank. A second similar cutting strand **50′** is located adjacent lower fold line **44′** and secured by further staples **52′**. Rings A and E are attached to opposite ends of strand **50**. Intermediate rings B, C and D are attached by twisted loops **24** located at the slots **30**. Rings A′ and E′ are attached to opposite ends of strand **50′**. Intermediate rings B′, C′ and D′ are attached by twisted loops **24′** located at slots **32**.

Perpendicularly disposed to the strands **50**, **50′** are strands **60**. These strands have no intermediate loops or rings. The strands have rings V1–V4 attached to the respective upper looped and twisted ends. Rings V1′–V4′ are attached to the respective lower looped and twisted ends of the strands **60**. The strands **60** are attached by staples **53** adjacent to fold lines **42** perpendicular to fold lines **44**, **44′**. The rings at ends of the several strands are located near slots **30**, **32** and are located outwardly of the corners of the carton **20** as indicated in FIG. 1. The strands are arranged so that ring A can be pulled to cut the carton at the fold between flap **33** and side wall **26**. Then ring B can be pulled outwardly to cut the carton on the fold between flap **34** and wall **27**. Then ring C can be pulled to cut the carton on the fold between flap **35** and wall **28**. Finally, ring D can be pulled to cut the carton on the fold between flap **36** and wall **29**. Alternatively, the cutting can be done in reverse direction starting with the pulling of ring E and ending with the pulling of ring B. This will sever the entire top of the carton. Similar pulling of the rings A′–D′ or E′–B′ will sever the bottom of the carton. Any side panel can be cut off by further pulling of appropriate top rings V1–V4 at

adjacent corners of the carton. Thus, pulling rings V1–V2 downwardly will open wall **26** if either the top or bottom edges or both are first cut open. While the rings are shown loose on the outside of the carton, such rings may be fastened removably to the outside surface by staples such as the staple **55** shown in FIG. 12, or may be fastened by glue or in any other suitable manner.

The vertically disposed strands **60** inside folds **42** can be pulled outwardly starting with the bottom rings to open any side panel. The staples **52** or **53** cooperate in holding each length of cutting strand in place while the operating ring is pulled in a direction generally perpendicularly outwardly of the fold being cut. If the strand should have a tendency to slip through the staples, slippage will be stopped at a carton corner by the ring located at the uncut end of the fold line being cut. If desired, the operator can grasp the rings at opposite ends of the fold line being cut and can hold both rings while one is being pulled.

FIGS. 1 and 5 show a tool **70** which can be employed for cutting cartons having thick walls or fold lines of considerable length. This tool is shown removably attached to wall **26** by clips **72**. The clips could be fastened to the wall **26** by a tape or any other suitable means. The tool is a rigid straight bar or rod formed with a V-shaped bend **74** intermediate its ends. The bar can be inserted in any ring **22** and the ring can be engaged in bend **74**. The operator will then grasp the aligned ends of the tool as handles and pull outwardly to effect the desired cutting of the carton fold. In FIG. 11 is shown an alternate tool construction in which the tool **70′** is provided with an integral central hook **75** at bend **74** which can be engaged in a ring **22** to be pulled.

FIGS. 6 and 7 illustrate means for attaching the cutting strands in place on the inner side of the blank and carton without use of staples. The strands **50**, **60** are shown enclosed in tapes **80** with rolled edges forming tubes **83** having an inner adhesive coating **84** to engage the strands with margin **81** adhering to side **79** of the tape. The tubes are cut away at **83′** where the twisted wire loops **24** project. A further adhesive coating **85** is applied between the outer side of the tape **80** and the inner side of the carton blank **20″**, to which the tape is secured. This coating can be a pressure sensitive substance coated on the tape prior to assembly on the carton blank **20″**.

Instead of forming the cutting strands of round wire or cord, they can be formed of wire which is multilateral. FIGS. 9 and 10 show blank **20ª** with cutting strands formed of wire **90** which is triangular in cross section. The sides **92** of the wire can be concave to define sharp cutting ridges **94**. If desired, this multilateral wire can be helically twisted. Other parts are numbered to correspond with similar parts on blanks **20′** and **20″**.

FIG. 8 shows carton cutting wire **95** which has a cylindrical body integrally formed with a helical ridge **96**. This ridge acts as a cutting element to facilitate severing of the carton folds for cutting thereof. The helically ridged wire **95** and multilateral wire **90** can be wrapped in attaching tape **80** or **80′** illustrated in FIGS. 6, 7, 9 and 10.

Instead of employing separate rings made of metal or plastic, the rings can be integrally formed of the wire strands themselves.

The invention makes it possible to open cartons having walls which are several feet in length and considerable thickness. Any wall and plurality of walls can be opened as required. The cutting strands and rings can be supplied in large rolls on spools, and desired lengths can be cut off as required. The strands enclosed in tapes **80**, **80′** can also be supplied in rolls with the outer side precoated with adhesive coating **85**.

In FIGS. 13 and 14, there is illustrated a rectangular-shaped carton **100** having front and rear walls **102** and **104**, respectively, bottom wall **106** and end walls **108**, **108**, and a hinged cover **110** for closing the open top. A strand **112** having end rings **114** and **116** and two intermediate rings **118**, **118** extends around the top of the front, rear and end walls on the inside thereof with the rings extending to the outside. Pulling on the rings will open three folds of the top leaving one fold for a hinge for the cover **10**. The strand could be arranged so that it opens three folds on the bottom or sides if desired.

FIG. 15 shows a carton **120** triangular in cross section. A strand **122** shown in FIG. 16 with end rings **124**, **124** and a single intermediate ring **126** extends around the side walls **128** of the carton adjacent the top of the carton, with the rings extending outwardly. One fold of the carton constitutes a hinge for a cover **130**. The strand, by pulling on the rings, will open two folds leaving the one fold for the hinge cover.

In FIG. 17, two abutting walls **132** and **134** of a carton are shown composed of non-severable material connected by a strip **136** of severable material. A strand **137** having two end rings **138** is placed inside the strip along one of the long edges of wall **134**, with the rings **138** exposed. Pulling on the rings and severing the strip **136** will open the carton.

FIG. 18 shows two walls **140** and **142** of a carton joined by a mitre joint. A strip **144** of severable material secures the walls together. A strand **146** is placed inside the strip along the mitre joint with its end rings **148**, **148** exposed. Pulling on the rings will open the carton at the mitre joint.

In FIG. 19, a rectangular-shaped carton **150** is shown with front and rear walls **152** and **154**, respectively, and end walls **156**, **157**. A strand **158** is shown along the top center of the front wall **152**, with its end rings **160**, **160** outside the wall. Another strand **162** extends on the inside of the front wall from one end of the strand **158** downwardly and inwardly to the center of the front wall. The end rings **164** of string **162** are disposed on the outside of the front wall. Another similar strand **166** extends from the other end of strand **158** downwardly and inwardly to the center of the front wall on the inside thereof. The end rings **168**, **168** thereof are on the outside of the front wall. By actuating the rings, the carton may be opened at the front top, or downwardly along the front wall at various points.

The end wall **156** is provided with a pair of strands **170**, **170** along the top at both sides of the center thereof, on the inside of the wall, with the end rings **172**, **172** thereof on the outside of the wall. Another pair of strands **174**, **174** extend along the bottom at both sides of the center thereof, on the inside of the wall, with the end rings **176**, **176** on the outside. Another strand **178** extends vertically from the top to the bottom at the center with its end rings **180**, **180** on the outside. By reason of this arrangement of strands, the center of the end wall may be opened either top or bottom thereof on either side of the center by merely pulling on the end rings.

FIG. 20 illustrates a hollow cylindrical or round carton **182** closed at both top and bottom by top and bottom walls **184** and **186**, respectively. A strand **188** is placed inside the top wall **184** with its end rings **190**, **190** extending outwardly of the carton. A similar strand **192** extends around the inside of the bottom wall **186**, with its end rings **194**, **194** extending outwardly. Another strand **196** extends from the top to the bottom wall between the points of exit of the strands **188** and **192**. The end rings **198**, **198** of the strand **196** are disposed on the outside of the carton. By reason of this arrangement of strands, by pulling on the rings the carton may be opened at the top and bottom and at the side from top to bottom.

It will be understood that a single strand or a plurality of strands may be fastened by glue or in any suitable manner to the inner surface of the carton, and the loops or rings may be fastened to the outer surface of the carton at any desired point by glue or in any other suit-

able manner. The container may be of any size, shape or form desired.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A quick opening carton comprising a rectangular-shaped box-like structure having front, rear, end, top and bottom walls, a flexible strand along the top of the front wall at its center, on the inside thereof, rings on the ends of the strand disposed outside the wall, a strand extending from one end of said top strand downwardly to the bottom and inwardly toward the center of the front wall, rings on the ends of the latter strand disposed outside the front wall, another strand extending downwardly to the bottom and inwardly toward the center of the front wall, rings on the ends of the latter strand disposed outside the front wall, said arrangement of strands being such that pulling on the rings opens the carton along the front wall top and at points to each side of the center of the front wall, a pair of strands on the top of one of said end walls on both sides of the center thereof, rings on the ends of said strands disposed outside the end wall, a pair of strands on the bottom of said one end wall on both sides of its center, rings on the ends of the latter pair of strands, disposed outside the structure, a strand at the center of said one end wall extending from the top to the bottom thereof, rings on the ends of the latter strand disposed outside the end wall, the arrangement of rings on said one end wall being such that pulling on the rings opens the end wall along the top and bottom thereof and at the center thereof.

2. A quick opening carton comprising a rectangular-shaped box-like structure having front, rear, end, top and bottom walls, a pair of flexible strands on the top of one of said end walls on both sides of the center thereof, rings on the ends of said strands disposed outside the end wall, a pair of strands on the bottom of said one end wall on both sides of its center, rings on the ends of the latter pair of strands, disposed outside the structure, a strand at the center of said one end wall extending from the top to the bottom thereof, rings on the ends of the latter strand disposed outside the end wall, the arrangement of rings on said one end wall being such that pulling on the rings opens the end wall along the top and bottom thereof and at the center thereof.

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