CONTAINER AND DRAW CORD COMBINATION

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This invention relates to a container and draw-cord combination, and more particularly to a container designed to be quickly opened through the pulling of a cutting cord.

Various types of containers have heretofore been developed which have been equipped with cords, stitched or otherwise, placed therein for the opening of the container through the drawing of the cord. Such structures, however, have not been satisfactory, particularly where used with heavy material such as cardboard containers, and where the containers are to be employed for the storing of foods or other types of materials which may be injured by the presence of small amounts of moisture, etc. Cardboard, which is needed for the protection of most food and similar products, presents a serious problem because of the resistance of the cardboard to the action of the cord in tearing through the same, and also because of its tendency to weaken the fibers of the cord in the tearing operation, causing the cord to be spread and causing it to break. Large cords formed of fibrous material such as cotton, wool, and which might present the necessary strength for the tearing operation, fail as satisfactory draw cords because an unslightly tear is produced, and also because the fibrous material tends to absorb moisture and creates an opening in the container for the ingress and egress of moisture, gases, etc.

While a relatively large size cord is desired from the standpoint of conveniently grasping the same to draw the cord through the box, there is at the same time a great need for a cord which will in the cutting operation reduce its size so as to present a relatively sharp edge against the cardboard, enabling it to be drawn rapidly through the cardboard to form a sharp cut therein.

An object of the invention is to provide a container and draw-cord combination in which the draw-cord, while of convenient size for grasping, presents against the cardboard to be severed a reduced and sharpened edge, causing it to move quickly and smoothly, like a knife, through the cardboard. Yet another object is to provide a container and draw-cord combination which excludes moisture, vapors, etc., from the interior of the container while at the same time providing a cord structure which contracts and presents a sharp edge against the cardboard in the severing operation. Other specific objects and advantages will appear as the specification proceeds.

The invention is shown in illustrative embodiments by the accompanying drawing, in which:

1. Fig. 1 is a perspective view of a draw-cord and container combination embodying our invention; Fig. 2, a broken vertical sectional view, the section being taken as indicated at line 2—2 of Fig. 1; Fig. 3, a view similar to Fig. 1 but showing the cord partly drawn about the end of the container; Fig. 4, a view similar to Fig. 3, but with the end of the container severed on three sides, and an end-portion of the container partly opened; Fig. 5, an enlarged broken detail view showing the action of the nylon-plastic cord in cutting through the cardboard wall; Fig. 6, a broken detail sectional view showing the cord secured to the interior of a container and adjacent an inwardly creased corner of the container; and Fig. 7, a view similar to Fig. 6 but showing the corner portion of the container creased outwardly, and with the cord lying within the recess of the crease.

In the illustration given in Figs. 1 to 5, inclusive, 10 designates a cardboard container and 11 designates a paper cover or wrapper about the container 10. In the specific form of box illustrated, the box is provided with inwardly-turned end flaps 12 and an outer end flap 13 having a downwardly-turn lip 14. The paper wrapper is folded over the end of the container in the manner illustrated in Fig. 1.

As shown more clearly in Fig. 2, the rear wall of the carton 10 is extended over the end flap 13 to provide an outer end 10a.

Extending under the top portion of the wrapper 11 is a Nylon-plastic cord 15, which may be equipped at its end with a plastic button or strip 16. The cord 15 extends under the wrapper 11 along the diagonal line 17 to the rear corner of the container 10, and then extends below the container as indicated by dotted lines in Fig. 1. The cord 15 then extends under the front wall of the top portion 10a of the carton, as shown more clearly in Figs. 1 and 2. The cord 15 may then be extended, as indicated by dotted lines in Fig. 1, back to the rear corner of the carton and opposite the rear corner from which the tearing of the carton began.

The cord 15 which extends along the corner between the rear wall of container 10 and the outer end 10a, as shown more clearly in Fig. 2, may be secured within the fold of the corner by glue, or by any other suitable means. The cord may be allowed to lie without attachment along the line of the fold, and if desired the end of the cord may be secured by cementing it to the inner wall of the container, or it may be drawn within a cut in the container wall to lodge it firmly.
in position. In some containers it is possible to have effective drawing of the cord where the cord is not attached at all but lies about a number of surfaces, which thus create a resistance to the drawing of the cord from the container. We believe that best results are obtained where the cord is either anchored throughout its length to the inner portion of the container wall, or the end portion of the cord is anchored to the container wall.

The container, along the edge which is to be severed, may be scored either on the inner or the outer side, and such scoring facilitates the severing of the container by the cord along the dotted line. If desired, the line along which the thread is glued or positioned may be creased either inwardly or outwardly. A perforated line is also found satisfactory, small cuts being formed at spaced intervals along the line of severance. Finally, with some containers, fair results have been obtained where neither creasing, scoring or perforations are employed, but where the cord is drawn against the fibers of the container in the direction of the grain of the board. Our best results have been obtained where there is a fold of some form, either in the nature of scoring, creasing or perforating, and particularly where there is a slight cut in the container wall where the cord is placed to initiate the cutting operation.

In Fig. 6, the container 18, which does not have a paper wrapper, is scored or creased at 19 and the plastic thread 15 is on the reverse side of the score line 18. In this structure, the cord 15 is shown secured by glue 10, or cement, along the reverse side of the score line, and the end portion 10* of the cord is also secured by cement 10 to the wall of the carton.

In Fig. 7, the container 18 is provided with a score line or crease 20 on the inner side, and the cord 15 lies in the crease or score line 20. In this example, the cord 15 lies freely within the groove, but the end 10* of the cord is secured by a spot of cement 10.

The draw-cord 15 is formed of Nylon, which is described in Hack's Chemical Dictionary as “a link-chain synthetic polymeric amide which has recurring amide groups as an integral part of the main polymer chain, and which is capable of forming into a filament in which the structural elements are oriented in the direction of the axis.” The inherent quality of this cord which is formed effective in the draw-cord combination with the container is the characteristic of the Nylon in stretching to form a reduced cutting edge when placed under stress, and the further tendency of the plastic material to narrow its edge portion nearest the cardboard against which pressure is exerted so as thus to form a knife-edge like. The Nylon may be formed of a single fiber body or it may be formed of a large number of continuous fibers which are brought together in twisted or other cord relationship. We found that the twisted Nylon cord is particularly effective in that the separate threads, when stretched, tend to form individual cuts in the cardboard, and the multiple cuts thus formed tend to form a quick severance of the cardboard fibers.

The Nylon-plastic material described is odorless and does not absorb odors or moisture or other vapors. Since it does not absorb or hold moisture, it does not transmit moisture into the container and there is no tendency for vapors to pass via the cord into or out of the container. It is not susceptible to abrasion as is cotton, linen and like fiber cords, but has the property of stretching to a certain extent, and in the stretched condition presenting an extremely strong, cutting edge against the cardboard fibers. There is no tendency for the cord to rot, mildew, and the same is resistant to fungus, vermin, etc.

It will be understood that the container which is set out in the drawings is merely illustrated of containers that may be used. The containers may be of all shapes and types, and the lines of severance may be located at any particular points or lines on the containers for effecting an opening therein.

Operation

In the operation of the structure, the draw-cord 15 is pulled, causing it to tear first along the diagonal line 17, as illustrated in Fig. 3. This brings the cord 15 to the point where it enters the container 18, and begins its course under the top walls of the container 18. It will be understood that the cord 15 is placed, in the illustration given, under the top flap provided by the paper cover 11 as a matter of convenience and for locating the draw-cord 15 at a desirable point for the beginning of the drawing operation. The paper wrapper 11 offers very little resistance to the drawing of the cord 15, and the first real resistance encountered is where the cord engages the under-side of the container 11 adjacent to the rear wall. At this point, the cardboard wall offers sharp resistance, and it is found that the cord 15 sharply narrows, as indicated at 21 in Fig. 5, and further the plastic material tends to flow backwards along the rear side of the cord so as to present a somewhat knife-edge-like shape. The result is a cutting or shearing of the cardboard along the folds at three sides of the end of the box, as illustrated best in Figs. 3 and 4. The cover 11 is cut at the same time that the cardboard top portion is cut, so that the end flap 13, which bears the severed end wall 18* of the container, may be lifted to open the container, as illustrated in Fig. 4.

The portion of the cord 15 which is grasped is of the normal size of a cord and may be conveniently held in the hand, and the portion of the cord which narrows to the reduced size is that between the hand and the container wall which is being severed. Particularly at the point near the carton wall where the severing action takes place does the plastic cord tend to reduce in size adjacent the cardboard, so as to present a sharp edge against the board.

The carton may be formed according to the usual methods of manufacture, and the placing of the cord may be accomplished with accuracy and a minimum of expense in the container-forming operation. Tough and heavy containers may be readily opened with a minimum of effort through the use of the structure herein described, while at the same time, by reason of the qualities of the Nylon thread with respect to vapors, moisture, etc., the containers employed may be used for foodstuffs and other commodities requiring dry and sealed containers.

Following the foregoing specification, we have set forth specific structures in considerable detail for the purpose of illustrating embodiments of our invention. It will be understood that such details of structure may be varied widely by those skilled in the art without departing from the spirit of our invention.
We claim:

1. In combination with a cardboard wrapper united to form a container, a plastic cord secured within the container along a line of severance, and having one end of the cord extended outside the container to provide a draw-cord portion for grasping, said plastic being formed of a link-chain, synthetic polymeric amide which has recurring amide groups as an integral part of the main polymer chain, and which is capable of being formed into a filament in which the structural elements are oriented in the direction of the axis.

2. In combination with a container having lines that fold along one end, a plastic cord secured within the container and lying along a line of fold thereof, said cord having a portion thereof extending outside the container to provide a pull-cord portion to be grasped, said plastic being a link-chain, synthetic polymeric amide which has recurring amide groups as an integral part of the main polymer chain, and which is capable of being formed into a filament in which the structural elements are oriented in the direction of the axis.

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