April 23, 1940. R. E. KRENGEL 2,198,119

CONTAINER

Filed July 9, 1937

FIG. 1.

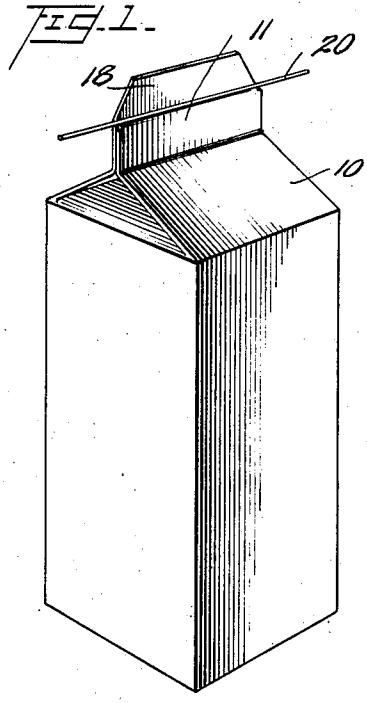


FIG. 2.

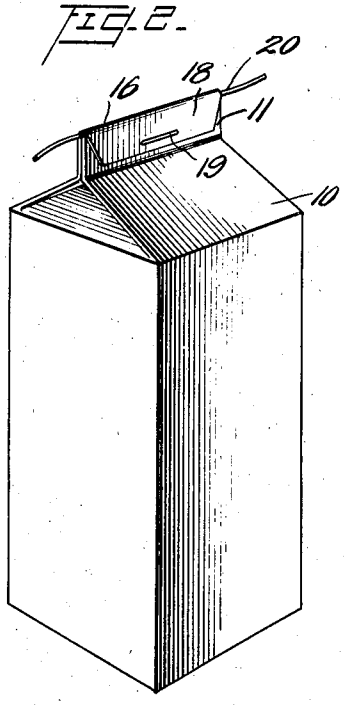


FIG. 3.

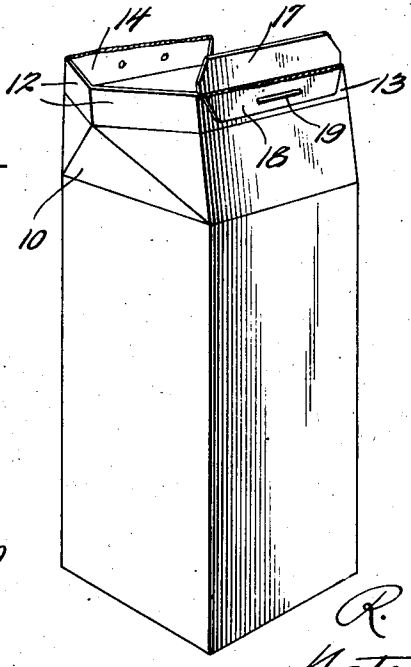


FIG. 4.

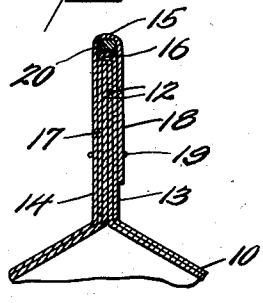
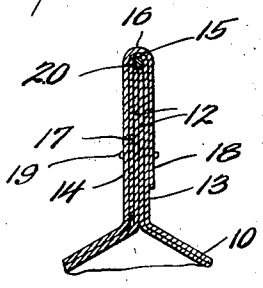


FIG. 5.



Inventor

R. E. Krengel,

By Watson, Coit, Morse & Grindle

Attorneys

Patented Apr. 23, 1940

2,198,119

UNITED STATES PATENT OFFICE

2,198,119

CONTAINER

Richard E. Krengel, Detroit, Mich., assignor to The American Paper Bottle Company, a corporation of Ohio

Application July 9, 1937, Serial No. 152,819

5 Claims. (Cl. 229—51)

The present invention relates to paper containers and particularly containers designed and intended for use in the storage, transportation and distribution of liquid products.

In Patent No. 2,047,891, issued to Henry T. Scott July 14, 1936, is disclosed a coated paper container which has proven eminently successful in the packaging and dispensing of liquids such as milk. The container is fabricated from a single paper sheet or blank, such blank being first divided into panels by score lines and the panels being thereafter relatively folded about such score lines as hinge lines, the ultimate article being rectangular in cross-section with a flat bottom and a peaked closure portion at its other end which terminates in a relatively stiff centrally located and transversely extending rib comprising a plurality of panels brought into parallel relationship and secured in such relationship as by means of a staple or a suitable adhesive.

Opening of the container for the purpose of removal of its contents is ordinarily effected by removal of the staple, if one is used, and unfolding and separating the several panels which together comprise the rib. Prior to closure, all portions of the surface of the container are coated with paraffin or like liquid proofing substance and, after the container is charged and the panels of the end closure are relatively folded and the rib formed, the rib is compressed so that the panels are caused to tightly engage each other and the paraffin coating is caused to fill all interstices of the rib, which thereby becomes a solid element comprising paper panels and paraffin, which prevents the egress of liquid, even upon inversion of the container. When the container is opened, the paraffin seals intermediate the panels are broken. The rib preferably has a thickness of six plies or panels. The two innermost or central panels are unprovided with closure flaps and the free upper edges of these panels terminate in a plane disposed normally to the axis of the container. Two of the outer panels are provided with closure flaps and, in the final closing operation, one of these flaps is folded over the free upper edges of the inner panels in one direction and the other flap is folded over the rib in the opposite direction, the flaps being brought into parallel relationship with the inner panels and a six-ply rib resulting.

In accordance with the present invention means is provided for facilitating the opening of the container, which means likewise assists in the sealing of the container against the accidental escape of liquid prior to opening. This means comprises a cord, a part of which is retained within or embedded in the rib and a part of which projects from the end of the rib so that it may be readily grasped by anyone holding the container and desiring to effect opening thereof. The cord is either caused to lie directly upon the free upper edges of the inner panels of the rib, in which event it will underlie both of the curved webs which connect the outer panels, and their attached flaps, or is caused to lie intermediate the upper and lower panel and flap connecting webs. In the first instance the operator, by pulling the exposed end of the cord in a direction transverse to the rib, can cause the cord to cut or sever both such connecting webs. In the second instance the outer or uppermost connecting web only will be severed when the cord is pulled in the specified manner. In either case, however, by the action of the cord, opening of the container is facilitated and likewise the container seal is more effective while the cord is in position. The invention will be particularly effective in the event that an adhesive is used which causes a stronger bond between the panels of the rib than paraffin, and where the use of the staple or other positive securing device is dispensed with. In such a case the action of the cord is to sever one or both of the panel and flap interconnecting webs, depending upon the positioning of the cord, so that spreading apart of the inner panels of the rib can be readily effected by simple pulling or prizing operations, it being unnecessary to dislodge and unfold either or both of the rib flaps.

Notwithstanding, however, that the invention finds its greatest field of usefulness in cases where strong adhesives are made use of, for securing the rib panels together, it is of great utility where the weaker adhesives, such as paraffin, are employed, and mechanical means such as staples or stitches used to further strengthen the rib.

The invention may be embodied in containers which vary in design but, as has been previously pointed out, it is particularly useful in the fabrication of containers of the type described and illustrated in the Scott Patent No. 2,047,891 and will be specifically described as incorporated in such a container.

In the drawing:

Figure 1 illustrates in perspective a container of the type shown in Patent 2,047,891, the container being substantially completed, the outer rib flap, however, yet remaining unfolded and

the cord having been positioned so as to be retained beneath the outer flap after this is finally folded;

Figure 2 is a perspective view of the completed container;

Figure 3 is a perspective view of the container after the cord has been manipulated to sever the web between the outer panels and after the container has been further acted upon and fully opened;

Figure 4 is a transverse section through the container rib of Figure 2, the rib being shown, however, upon a somewhat larger scale;

Figure 5 is a section similar to that of Figure 4 but showing the cord differently positioned.

For a complete description of the details of construction of the container, and the method of folding the same, reference may be had to Patent No. 2,047,891, previously mentioned. It need only be said that the container comprises a plurality of panels, folded relatively to each other along intermediate score lines into the tubular shapes shown, the bottom being flat and the top or end closure, generally indicated at 10, being peaked and having a central transverse rib indicated at 11. In cross-section this rib comprises a plurality of plies or panel thicknesses, two inner panels 12 having their free upper edges terminating in a plane transverse to the axis of the container body and the outer panels 13 and 14 being connected respectively by means of curved elongated webs 15 and 16, which pass over the upper edges of the inner panels 12, with the inner flap 17 and the outer flap 18 respectively. The various rib panels are all parallel to each other and tightly pressed together, the surfaces of these panels as well as all panel surfaces of the container being coated with paraffin or like liquid proofing substance.

A staple is indicated at 19, this staple passing through the completed rib and preventing separation of the panels due to shock or impact, the usual liquid proofing substance, such as paraffin, having insufficient bonding strength to cause the various panels of the rib to adhere to each other under all conditions, without the use of mechanical securing means. In the form of the invention shown in Figures 1, 2 and 4, the cord which is provided for facilitating opening of the container is indicated at 20 and is seen to have a part which lies intermediate the webs 15 and 16 of the rib, so as to be in effect embedded in the rib, and parts which project from the ends of the rib, as indicated in Figure 2. The cord is fabricated of any suitable fibrous material, such as cotton and, when finally positioned in the completed rib, has accommodated itself to the space available and is completely surrounded and coated with paraffin. The paper of which the container is made, while relatively stiff and of good quality, may nevertheless be readily torn or severed by one who grasps one free end of the cord and pulls it in a direction transverse to the longitudinal axis of the rib, preferably pulling the end of the cord in a direction parallel to the axis of the container so that the web 16, in the form of the invention shown in Figure 4, is most easily cut or severed by the cord. To effect complete opening of the container after the cord has thus been manipulated, it is only necessary to loosen the staple 19 and pull the outer panels of the rib in opposite directions, the inner flap 17 being readily withdrawn from the position in which it is shown in Figure 4 and the inner panels being drawn into position substantially normal to the outer panels, from which positions they may be readily moved into container pouring position, as shown in Figure 3. The severed flap 18 will continue to adhere to the outer panel 13, as shown in Figure 3.

In the event that the cord is positioned directly in contact with the free upper edges of the panels 12, and beneath both of the cross-connecting webs 15 and 16, a cross-section through the rib will be as illustrated in Figure 5. By means of the cord, therefore, both of the cross-connecting webs 15 and 16 can be severed at one time, thus making it unnecessary to dislodge the inner flap 17 in the opening of the container. The cord may therefore be used as means for severing either one or both of the cross-connecting webs of the outer rib panels. When it is positioned as shown in Figure 5 it is particularly useful in the event that an adhesive stronger than paraffin has been used to secure the several rib panels together since, after the cross-connecting webs 15 and 16 are severed and the cord removed, the bond between the mutually engaging surfaces 12 of the inner panels may be broken, either by the insertion of a knife or by forcible pulling apart of the side panels. The cord likewise, in either form of the invention, serves as a cushioning means, absorbing shock due to impact of the rib against objects during transportation and thus tending to prevent material injury to the rib.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A paper bottle having a folded end closure which includes a rib comprising a plurality of panels secured in fixed relationship, an adhesive sealing said closure and securing said panels together, a cord having a part within the rib and a part projecting therefrom, the portion of the rib overlying the cord being adapted to be severed when the free end of the cord is pulled in a direction transverse to the rib, said adhesive coating said cord and said coated cord filling and sealing a fold in said rib to prevent transverse leakage therein.

2. A paper bottle having a folded end closure which includes a rib, the outer members of the rib comprising spaced parallel panels connected by a web and forming a fold channel, and a cord having a part intermediate said parallel panels, filling the fold channel, and underlying said web, said cord also having a part projecting from the rib, the inner portion of said cord being coated with an adhesive to fill and seal said channel against leakage.

3. A closure rib construction for paper containers comprising abutting inner parallel panels having free edges terminating in a plane and outer parallel panels engaging the inner panels, a cord disposed parallel to and on said free edges and having a projecting part, a web overlying and retaining said cord, said web connecting the two outer panels of the rib, and adhesive coating all meeting parts of the rib and cord whereby the cord assists in forming a seal over said edges.

4. A closure rib construction for paper containers comprising abutting inner parallel panels having free edges terminating in a plane, a web overlying said free edges and connecting panels disposed parallel to and lying without said inner panels, a cord overlying said web and having a projecting free end, a second web overlying said cord, connecting the two outer panels of the rib, and pressing said cord against said first web to

hold the same into engagement with said free edges, and sealing adhesive sticking all parts of the rib and cord together.

5. A closure rib construction for paper containers comprising inner parallel panels having free edges terminating in a plane, a cord disposed parallel to said free edges and having a part projecting from the rib, adhesive on said cord and edges to form a seal over the edges, and two webs overlying and retaining said cord, each web connecting two parallel panels of the rib.

RICHARD E. KRENGEL.