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PACKAGING OF COILED TUBES

Ralph L. Wohlforth, Red Bank, N.J., assignor to Phelps Dodge Copper Products Corporation, New York, N.Y., a corporation of Delaware

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This invention relates to cartons and more particularly to an improved carton for packaging a generally annular-shaped article.

The carton of the present invention may be employed to advantage for packaging a length of tube in coiled form, such as a coil of copper tube of the type used as a water conduit. Accordingly, for the purpose of illustration, the invention will be described in connection with the packaging of coiled tubes, although it will be understood that the invention is applicable to the packaging of other articles of generally annular shape.

It is an object of this invention to provide a carton of the character described which is of simple construction and which can be readily assembled around the generally annular-shaped article to be packaged. A further object is to provide a carton of this character which facilitates transport and handling of the packaged article.

A carton made according to the invention comprises a pair of opposed sheet-like members, such as sheets of cardboard, each having a central opening and inner and outer peripheral portions. The inner peripheral portion of each member has cuts defining a series of inner tabs and also has fold lines forming a polygonal figure at the corners of which the cuts terminate. These inner tabs of each member are folded on the corresponding fold lines toward the opposing member and overlap the inner tabs thereof, and means are provided for securing each inner tab of each member in overlapping relation to a corresponding inner tab of the opposing member and with the inter-secured tabs extending in opposite directions from their respective sheet-like members, such securing means being preferably an adhesive applied to the tabs. The outer peripheral portion of each sheet-like member has cuts defining a series of otuer tabs and also has outer fold lines forming a generally circular figure at which these last cuts terminate. The outer tabs of each sheet-like member are folded on the respective outer fold lines toward the opposing member, and the outer periphery of the carton comprises a tape engaging the outer tabs of at least one of the sheet-like members, so as to hold the outer tabs in position to form a generally annular retaining wall surrounding the packaged article which, in turn, surrounds the polygonal closure formed by the inner tabs.

With this construction, the carton can be readily assembled around a coiled tube by placing the coil between the two opposed sheet-like members, folding the inner tabs and securing them as described, and applying the tape to the outer tabs after folding them to form the annular retaining wall. The resulting carton not only has an attractive appearance but also can be handled and transported easily. That is, the circular outer periphery of the carton allows it to be rolled smoothly along a floor, and by reason of the polygonal shape of the closure formed by the tabs at the inner periphery of the carton, the latter may be easily gripped and held manually from within the central opening of the carton.

In the preferred construction of the new carton, the opposed sheet-like members are identical to each other; and each cut in the inner peripheral portion of each member, when the inner tabs of the member lie in the plane thereof, intersects a radius of the corresponding circular figure (formed by the fold lines at the outer peripheral portion of the member) and diverges from a

next adjacent cut in extending from the central opening, whereby folding of the inner tabs of each member into overlapping relation to the inner tabs of the other member is facilitated. Also, the cuts defining the outer tabs of each sheet-like member extend radially with respect to the corresponding circular figure formed by the outer fold lines of the member and are spaced considerably closer to the adjacent cuts than are the cuts in the inner peripheral portion of the member. Thus, the fold line for each outer tab is relatively short so that the fold lines for the outer tabs can form substantially circular figures on the respective sheet-like members. The outer tabs are also preferably shorter than the inner tabs, whereby the folded outer tabs of each member terminate short of overlapping relation to the folded outer tabs of the opposing member. The tape may thus be secured by an adhesive to the folded outer tabs of both members.

For a better understanding of the invention, reference may be had to the accompanying drawings illustrating a preferred form of the new carton. In the drawings:

FIG. 1 is a plan view of one of the two sheet-like members, showing the inner an douter tabs before they are folded toward the opposing member;

FIG. 2 is a plan view of part of the sheet-like member illustrated in FIG. 1 but showing the opposite side of the member;

FIG. 3 is a plan view of the two sheet-like members arranged in opposed relation prior to folding of their respective tabs, parts of the upper member being broken away to show parts of the lower member;

FIG. 4 is a plan view of the completed carton, part of the upper sheet-like member being broken away to show the packaged article; and

FIG. 5 is an enlarged sectional view on the line 5—5 in FIG. 4.

Referring to the drawings, the carton there shown comprises two sheet-like members **10** and **10***a* (FIGS. 3–5). As these two members are identical to each other, only the member **10** will be described specifically by reference to FIGS. 1 and 2.

As shown in FIGS. 1 and 2, the sheet-like member **10** is a generally annular sheet of a foldable form-retaining material, such as multi-ply cardboard stock, having a central opening **11**. The sheet **10** has a substantially circular outer periphery and a polygonal inner periphery which defines the opening **11**. At its inner peripheral portion, the sheet has cuts **12** defining a series of inner tabs **13** and also has scoring or fold lines **14** forming a polygonal figure at the corners of which the cuts **12** terminate.

At its outer peripheral portion, the sheet-like member **10** has cuts **16** extending radially inward from the circular periphery and defining a series of outer tabs **17**. The outer peripheral portion also has scoring or outer fold lines **18** froming a substantially circular figure at which the cuts **16** terminate. The spacing between adjacent outer cuts **16** is considerably less than the spacing between adjacent inner cuts **12**, thereby providing a relatively short fold line **18** for each of the outer tabs **17**. The outer radial cuts **16** are somewhat V-shaped to facilitate folding the tabs **17** when assembling the carton, as will be described in detail presently.

The cuts **12** in the inner peripheral portion of the member **10** do not extend radially, but each of these cuts intersects a radius of the corresponding circular figure **18** formed by the outer fold lines for the tabs **17**. Also, each inner cut **12** diverges from a next adjacent cut **12** in extending from the central opening **11**, and each tab **13** has an edge overlapping an edge of one adjacent tab and has an opposite edge overlapped by an edge of the other adiacent tab.

In assembling the carton, the two sheet members **10**—**10***a* are placed in opposing relation with the outer