This invention relates in general to corrugated paper containers, and more particularly to a container formation which is scored for improving its stacking strength.

A problem of considerable dimension which has existed in the container industry for some time arises out of the load bearing qualities of corrugated paper containers. Corrugated paper containers or cartons (which are sometimes referred to as cardboard containers), of conventional rectangular cross-sectional shape, have, when stacked, a tendency to buckle outwardly along all their sides.

The tendency to buckle is partly reduced by a very ingenious concept employed in the present invention. This concept entails the provision of an inverted V-shaped scoring applied to the exterior of the short ends of the cartons. Preferably, the apex of the V is provided at the midpoint of the top edge of the short side and the legs of the V extend to the respective opposite corners.

It is therefore an object of the present invention to provide a container with improved load bearing qualities and increased resistance to buckling forces thereon.

It is a further object of the invention to provide a regular slotted container having scoring thereon for improving the load bearing qualities of the container.

It is still another object of this invention to provide a reinforced regular slotted container, wherein the reinforcement may be added at a minimum of cost and without adding any separate parts to the container construction.

And a further object of this invention is to provide a regular slotted container with reinforcement against buckling such that when buckling does occur the sides buckle inwardly against the contents of the container so as to be further braced by the container's contents.

These and other objects of the present invention will become apparent on examination of the following specification, claims and drawings wherein:

FIGURE 1 is a perspective view of a completed carton or container which embodies my invention;
FIGURE 2 is a top plan view of a blank from which the carton of FIGURE 1 is formed;
FIGURE 3 is a diagrammatic elevational view of a plurality of containers in a stack formation with the scored sides facing outwardly of the drawing; and
FIGURE 4 is a side elevational view of the stack arrangement shown in FIGURE 3.

Referring now to the drawings, there is illustrated in FIG. 1 a regular slotted container of corrugated cardboard, or paper, indicated by the reference character 10 and commonly known in the trade as RSC. Such a container comprises opposed end walls, one of which is indicated at 12; opposed side walls, one of which is indicated at 14; and opposed top and bottom walls, the top wall being indicated at 16. The end wall is distinguished from the side wall in that the end wall is generally of lesser width than the side wall and, in any event, is of greater length than the side wall. When such containers are filed and stacked upon another, it has been observed that the lower containers tend to buckle under large loads thereon.

When such buckling occurs almost invariably it begins in the side wall of lesser width, and that wall tends to buckle, or box out inwardly.

Now, in the improved container, it will be seen that the legs 20 of the V-shaped scoring extending to and terminating at the opposite, or lower, corners of the end wall. The scoring is accomplished by sharply compressing the container wall material along the score lines, as is well known in the general art of scoring.

The carton or container 10 is ordinarily formed from a slotted blank, or development, 22 as shown in FIG. 2. The blank 22 is simply a rectangular length or web of cardboard slotted at 24 on the opposite longitudinal edges in a direction transecting the edges. The slotted edges 24 form the flaps 26, 28, 30 and 32 opposite opposite edges. These flaps are subsequently folded to form the top wall 16 and bottom wall of the container.

The body 34 of the blank 22 is scored at 36, 38 and 40 to enable the body to be folded to define the end and side walls 12 and 34 respectively. The end walls 12 are in addition provided with the respective V-shaped score marks 18 as described. The score marks may be provided during the normal scoring or printing operation by a rotary blade or flange that is moved into the desired scoring relationship with respect to the blank 22.

To form the container 10 from the blank 22, the body 34 is simply folded about the respective score lines 36, 38 and 40 until the edge of 14 meets with the edge of 12 and the two edges are conventionally united. The flaps 26 and 30 along one edge are then bent over to meet along one axis of the container and the flaps 28 and 32 are bent likewise, at right angles to flaps 26 and 30 and in overlapping engagement therewith to form the top wall 16. The other flaps 26, 28, 30 and 32 are similarly bent to form the bottom wall.

A number of filled cartons 10 may then be loaded and stacked as shown in front elevation FIG. 3 and in side elevation in FIG. 4. The lower the container or carton is in the stack, the greater the weight borne thereby. Therefore, any increase in the load bearing qualities of the cartons permits of higher stacking and consequent space savings. The inverted V-shaped scoring 18 enables the cartons to bear an increased load of about 14%. By providing the scoring 18 in the outer surfaces of the end walls 12, in the event that the walls do buckle, they buckle inwardly and tend to engage the contents of the carton to thereby further brace the walls by engagement with the contents of the containers.

While a number of theories may be advanced as to the reason for the successful results achieved by the present invention, it is believed that the score lines operate to distribute the forces so as to avoid a column effect which causes buckling, whereby an improvement ranging up to about 14% in load bearing qualities and stacking strength of the improved containers described has been achieved.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a regular slotted rectangular container of the type having a top, bottom, opposed side walls and opposed end walls, the improvement for increasing the stacking strength of such containers comprising an inverted V-shaped rigidifying scoring in each end wall, said rigidifying scoring being non-folding therealong in normal usage, with the apex of the V at the mid-point of the top edge of the end wall, and with the lower ends of the V-shaped scoring terminating at the lower corners of the end wall.
2. In a regular slotted rectangular container of the type having a top, bottom, opposed side walls and opposed end walls, the improvement for increasing the stacking strength of such containers comprising an inverted V-shaped rigidifying scoring in each end wall, said rigidifying scoring being non-folding therealong in normal usage, with the apex of the V at the mid-point of the top edge of the end wall and with the lower ends of the V-shaped scoring terminating at the lower corners of the end wall, said V-shaped scoring being in the outer surface of the end wall so that in the event of a buckling failure under a compressive force, said end walls will buckle inwardly.

3. In a cardboard blank for forming a regular slotted rectangular container of the type having a top, bottom, side walls and end walls, the improvement for increasing the stacking strength of such containers comprising a V-shaped rigidifying scoring of each end wall with the apex of the V at the mid-point of the top edge of the end wall and with the lower ends of the V-shaped scoring terminating at the lower corners of the end wall, and said V-shaped rigidifying scoring being non-foldable therealong in normal usage.

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