ABSTRACT: A base pattern or form which may be selectively folded and locked together in such a manner as to provide a great variety of sizes for a box. A combination of variable fold and cut or trim lines with tab and slot arrangements which provide a multiplicity of sizes in both lateral and transverse directions and in height for boxes or packaging device.
VARIABLE SIZED BOX FORM

This invention relates to improvements in containers and more particularly but not by way of limitation to a base form or pattern which may be utilized in the construction of a box of multiple sizes.

In the packaging of goods it is usually necessary or desirable to provide a particular size box or container for storing or holding the particular goods to be packaged. For example, in a clothing store, department store, or the like, a great variety of sizes and shapes of goods are sold to customers. Generally it is desirable to package each type of goods in a box of a size for the convenience of the purchaser. As a result, the store normally maintains a stock of boxes of several different sizes, with an effort made to select the most convenient sizes for the goods. Many of these boxes are premade and require a substantial storage space. Other boxes of this type may be stored in a substantially flat condition but each box form or blank folds into only one size box and thus, a multiple number of sizes of box forms must be maintained. In addition, individuals often need boxes for packing goods themselves, such as for a gift, or the like, and it is usually difficult to find a box of the desired size.

The present invention contemplates a novel master pattern which may be folded and locked into a great number of sizes according to the most desirable packaging device or container requirements. The master pattern is provided with a plurality of spaced longitudinally extending lines or impressions for facilitating folding and/or cutting for various combinations for forming boxes of substantially any desired size. In addition, similar spaced transversely extending lines or impressions are provided as guides for folding or cutting of the pattern in the transverse direction in accordance with the desired box size. Tab members and complimentary slots are particularly positioned on the master pattern in such a manner as to provide simple and efficient means for locking the folded portions of the box in the proper position to provide a sturdy and substantially rigid construction for the box. The dimensions of the box in length, width, and height may be varied in substantially any desired relationship to provide a great flexibility of use for each master pattern. Patterns for box bottoms and patterns for box tops are of a generally similar construction with the general base dimension of the box top being slightly larger than the base dimensions of the box bottom, whereby the top may be easily disposed on the bottom. In order to provide a great number of box sizes, it is necessary to maintain a supply of only one size master pattern for box bottoms and one size master pattern for box tops. Since each master pattern is a flat sheet for storage, the great numbers of the pattern requires relatively little storage space.

It is an important object of this invention to provide a master pattern which may be folded to provide a container of substantially any desired size.

It is another object of this invention to provide a novel adjustable foldable box particularly designed for storage of great numbers thereof in a relatively small storage area.

A further object of this invention is to provide a master pattern which may be folded and/or cut and locked in a variety of ways to form a multiplicity of box sizes.

Another object of this invention is to provide a master pattern for boxes which may be quickly and easily assembled to provide a box of substantially any desired dimensions.

Other and further objects and advantageous features of the present invention will hereinafter more fully appear in connection with a detailed description of the drawings in which:

FIG. 1 is a plan view of a master pattern for a box embodying the invention.

FIG. 2 is a perspective view of a master pattern in a partially folded position for forming a box of one size.

FIG. 3 is a view similar to FIG. 2 showing a further folded condition for a box.

FIG. 4 is a perspective view of the completed box resulting from the illustrations of FIG. 2 and FIG. 3.

FIG. 5 is a perspective view of a master pattern in an initial position for being assembled into a box of a differing size than that depicted in FIGS. 1 through 4.

FIG. 6 is a perspective view depicting the master pattern of FIG. 5 in a further folded condition.

FIG. 7 is a perspective view of the completed box shown in FIGS. 5 and 6.

FIG. 8 is a view similar to FIG. 5 depicting another possible size box.

FIG. 9 is a perspective view depicting the box of FIG. 8 in a further folded condition.

FIG. 10 is a perspective view of the completed box shown in FIGS. 8 and 9.

Referring to the drawings in detail, reference character 10 generally indicates a master sheet or pattern of a substantially flat configuration which may be constructed from any suitable material, such as a heavy cardboard, or the like. Whereas the pattern 10 may be either of a square or rectangular configuration, as desired, the particular representation illustrated herein is rectangular with the opposite side edges 12 and 14 extending throughout the length thereof and the opposite side edges 16 and 18 extending along the width thereof.

A plurality of longitudinally extending lines such as the lines A₁, B₁ and C₁ are suitably inscribed or impressed on the pattern 10 and extending throughout the length of the sheet 10 in spaced relationship with respect to each other and with respect to the side edge 12. The lines A₂, B₂ and C₂ may be printed on the surface of the sheet 10, may be scored thereon in any well-known manner, may be perforated in the sheet 10, or otherwise indicated for facilitating the handling of the sheet 10 during the use thereof. As particularly shown in FIG. 1, the lines A₁, B₁ and C₁ are mutually parallel with the side edge 12 and each defines a fold line and/or cut line for a purpose as will be hereinafter set forth. The lines A₂, B₂ and C₂ may be spaced apart at substantially any interval, such as at spaced intervals of 1 inch, or the like, as desired.

A similarity of lines A₃, B₃ and C₃ are provided on the sheet 10 in spaced relationship with respect to the side edge 14 in such a manner as to provide a substantially mirror image of the lines A₁, B₁ and C₁ and are utilized in a complementary manner with respect thereto as will be hereinafter set forth.

A plurality of transversely extending lines such as the lines D₁, E₁, F₁ and G₁ are suitably inscribed or impressed on the pattern 10 and extend throughout the width of the sheet 10 in spaced relationship with respect to each other and with respect to the side edge 16. The lines D₂, E₂, F₂ and G₂ are generally similar to the lines A₂, B₂ and C₂ and may be printed on the surface of the sheet 10, may be scored thereon in any well-known manner, may be perforated in the sheet 10, or otherwise indicated for facilitating the handling of the sheet 10 during the use thereof. The lines D₁, E₁, F₁ and G₁ are mutually parallel and are parallel with the side edge 16 and each line defines a fold line and/or cut line for a purpose as will be hereinafter set forth. The lines D₂, E₂, F₂ and G₂ may be spaced apart at substantially any interval, such as at spaced intervals on 1 inch, or the like, as desired, and are preferably spaced apart in such a manner as to be compatible or complementary to the spacing between the lines A₁, B₁ and C₁.

A plurality of similar lines D₃, E₃, F₃ and G₃ are provided on the sheet 10 in spaced relationship with respect to the side edge 18 in such a manner as to provide a substantially mirror image of the lines D₁, E₁, F₁ and G₁ and are utilized in a complementary manner with respect thereto as will be hereinafter set forth.

It is to be understood that substantially any number of the fold and/or cut lines may be provided on the pattern 10, as desired, and there is no intention to limit the number of those depicted herein, although as a practical matter the particular pattern shown in the drawings provides a great variety of possible uses for the pattern 10.

An outwardly extending tab member 20 is provided on the edge portion 16 and is preferably substantially centrally disposed thereon. A similar outwardly extending tab member...
The combination of longitudinally extending and transversely extending lines with the tabs and slots provides a multiplicity of folding and/or cutting and locking arrangements for the pattern 10 to provide a plurality of sizes of boxes, as will be hereinafter set forth. It is to be understood that box bottom portions and box top portions may be assembled from substantially identical master patterns, with the base dimensions of the top portions being slightly larger than the base dimensions of the box bottom portions. The base dimensions of the top and bottom box portions is determined by the area surrounded by or enclosed between the lines A1, A2, D1, and D2.

Referring now to FIGS. 2 through 4, the method of manipulation of a pattern 10 for forming one particular size box is illustrated as follows: The sheet 10 is initially severed or cut along the lines C1 and C2 from the edge portion 16 to the line C1, thus forming two flap members 124 and 126. The edge 14 is then bent upwardly along the line C1 and the flaps 122 and 124 are bent inwardly along the line C1. Similarly, the sheet is severed or cut along the lines C1 and C2 from the edge 18 to the line D2, thus forming two additional flap members 128 and 130. The side 12 is then bent upwardly along the line C1 and the flaps 128 and 130 are bent inwardly along the line D2. The end portion 132 of the pattern 10 remaining between the flaps 124 and 126 is then folded upwardly along the line G1, and the end portion 134 of the pattern 10 remaining between the flaps 128 and 130 is similarly folded upwardly along the line D2.

The end portion 132 is then brought into engagement with the folded flaps 124 and 126 and the tabs 28 and 34 inserted through the slots 68 and 78, respectively, as shown in FIG. 4. When the slots 68 and 78 are double slots as shown herein, the respective tab is inserted initially through the first of the slots of the pair and then bent in a reverse direction and inserted back through the second slot of the pair in such a manner that the free end of the tab will be disposed in the interior of the box being formed. In this particular embodiment of the invention or in this particular size box the tab 20 is not needed and may be cut off or folded to an out-of-the-way position, if desired.

The end portion 134 is then brought into engagement with the folded land overlapped flaps 128 and 130, as shown in FIG. 3 and folded downwardly along the line E3 which will be in substantially alignment with the upper edge of the overlapped flaps 128 and 130. The end portion 134 is folded again along the line F1 in such a manner that the overlapped flaps 128 and 130 are completely covered by the end portion 134, and the unfolded portion of the end portion 134 lays flat along the upper or exposed surface of the sheet 10, as shown in FIG. 4. The tab 22 is now in a position substantially in alignment with the pair of slots 62 and may be inserted therein in the manner as hereinbefore set forth, thus locking the end portion 134 in position. It will be readily apparent that the pattern 10 is thus formed into a box bottom (or box top) of one particular preselected size.

Referring to FIG. 5 through 7, a second method of folding and/or cutting and locking of the pattern 10 is shown to provide another box size. Certain of the folding and/or cutting lines are eliminated from the views for purposes of clarity, and the assembly operation thereof is as follows: The pattern 10 is initially severed along the line B1 and B2 from the edge 16 to the line E1 to form two flaps 136 and 138. The outer end of each flap 136 and 138 is cut off along the line G1 and the flaps 136 and 138 are folded inwardly along the line E1. The pattern 10 is then severed along the line B1 and B2 from the edge 18 to the line D2 to form two flaps 140 and 142. The flaps 140 and 142 may then be folded along the line D2. The side edges 12 and 14 are folded upwardly along the lines B1 and B2, and are bent between the cut portions thereof to form sides for the box. The end flaps 140 and 142 will be in an overlapping position whereas the end flaps 136 and 138 are spaced apart as shown in FIG. 6. The end portion 144 is interposed between the flaps 136 and 138 may be folded upwardly along the line E1, and disposed adjacent the inwardly folded flaps 136 and 138. The end portion 144 may be folded again along the G1.
whereby the upper edge of the flaps 136 and 138 is surrounded by the end portion 144 and the tab 20 may be inserted through the slots 56 for locking the end portion 144 in position. The end portion 146 of the pattern 10 interposed between the end flaps 140 and 142 is folded upwardly along the line $D_2$ and disposed adjacent the overlapped flaps 140 and 142. The end portion 146 is further folded along the line $F_2$ whereby the upper edges of the flaps 140 and 142 are surrounded by the end portion 146 and the tab 22 is inserted through the slots 64. This locks the end flap 146 in position for completing the box as shown in FIG. 7.

FIGS. 8 through 10 illustrate still another method of folding and/or cutting and locking of the pattern 10 to provide still another box size. Here again some of the folding and/or cutting lines are eliminated from the views shown in FIGS. 8 through 10 for purposes of clarity and the assembly operation thereof may be as follows: The pattern 10 is initially severed along the lines $A_1$ and $A_3$ from the edge 16 to the line $E_1$ to form flaps 148 and 150. These flaps may be folded along the line $E_1$. The sheet 10 may then be severed along lines $A_1$ and $A_5$ from the edge 18 to the line $D_3$ to form flaps 152 and 154. Each flap 152 or 154 is cut off or cut away along the line $F_2$ and the flaps 152 and 154 may be folded along the line $D_3$. The side 12 and 14 may be folded upwardly to form the sides of the box along the lines $A_3$ and $A_5$. In this position the flaps 148 and 150 will be overlapped whereas the flaps 152 and 154 will be spaced apart as particularly shown in FIG. 9. The end portion 156 interposed between the flaps 148 and 150 may then be folded along the line $E_1$ and disposed adjacent the overlapped flaps 148 and 150 and the tabs 24 and 36 may be inserted in the slots 88 and 90 and the tabs 30 and 38 may be inserted in the slots 92 and 94. The end portion 158 interposed between the flaps 152 and 154 may be folded upwardly along the line $D_3$ and disposed adjacent the flaps 152 and 154. The end portion 158 may again be further folded along the line $G_4$ whereby the upper edge of the flaps 152 and 154 are completely surrounded by the end member 158. The tab 22 may then be inserted through the slots 66 for locking the end portion 158 in place thus forming the completed box position shown in FIG. 10. In this particular embodiment the tab 20 is not necessary and may be folded downwardly to an out-of-the-way position or may be cut off as desired.

The particular arrangement of cutting and/or folding lines and complementary tabs and slots on the pattern 10 provide a variety of combinations for forming boxes of a great number of sizes. As a practical matter the particular embodiment of the invention depicted herein permits a combination of 51 possible box sizes. Thus, substantially any desired box size may be provided by maintaining a supply of the flat pattern 10 wherein one size pattern 10 provides box top portions, and another size pattern 10 provides bottom portions.

From the foregoing it will be apparent that the present invention contemplates a base form, blank, or master pattern which may be folded and/or cut and locked into a great variety of substantially rectangular shapes for providing substantially any desired size for a box, carton, or container. The master pattern is premarked or impressed with folding and/or cutting lines and is provided with a plurality of particularly spaced and arranged complementary tabs and slots for locking the folded sheet into a variety of positions for forming rigid and substantial boxes or containers.

Whereas the present invention has been described in particular relation to the drawings attached hereto, it should be understood that other and further modifications, apart from those shown or suggested herein, may be made within the spirit and scope of this invention.

1. A box forming pattern comprising a flat sheet of rectangular configuration, a plurality of spaced longitudinally extending lines impressed on one surface of the sheet, a plurality of spaced transversely extending lines impressed on said surface of the sheet and intersecting the longitudinal lines, said sheet being selectively foldable and cuttable along said lines to form an open box portion of variable height and length and width, a plurality of spaced tab members provided on the sheet, a plurality of spaced slots provided on the sheet for receiving the tabs therethrough in the folded condition of the sheet for locking the sheet in the folded position for forming the open box wherein the transversely extending lines comprise a first set of lines substantially uniformly spaced from one transverse side edge of the sheet, a second set of lines substantially uniformly spaced from the opposite transverse side edge of the sheet, a second set of lines substantially uniformly spaced from the opposite transverse side edge to provide a mirror image of the first set of transverse lines, the longitudinally extending lines comprise a first set of lines substantially uniformly spaced from one longitudinal side edge of the sheet, a second set of lines substantially uniformly spaced from the opposite longitudinal side of the sheet to provide a mirror image of the first set of longitudinal lines, the tab members comprise a plurality of tab members spaced on the surface of the sheet in a substantial mirror image pattern, and the slots comprise a plurality of complementary pairs of slots arranged on the sheet in a substantial mirror image pattern for receiving complementary tab members therein for locking the folded sheet in the open box position.