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SET UP BOX AND METHOD FOR PRODUCTION THEREOF

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2 Sheets-Sheet 1

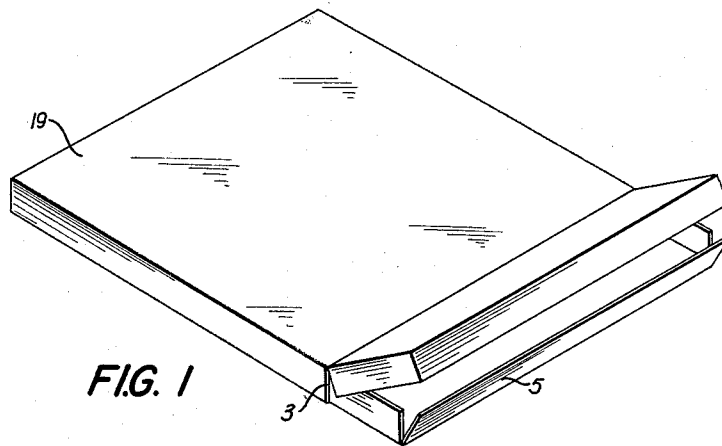
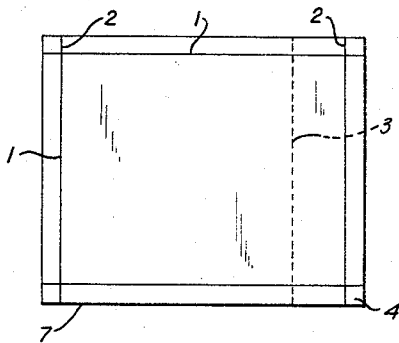
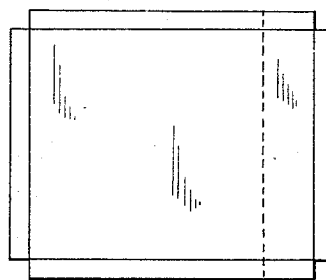


FIG. 3

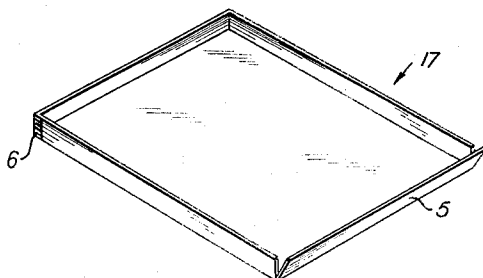


FIG. 4

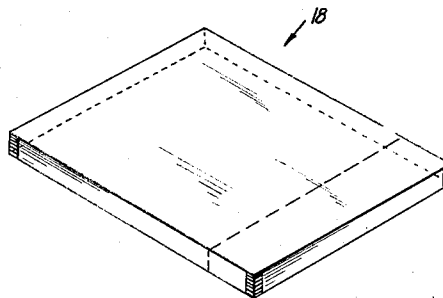


FIG. 5

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SET UP BOX AND METHOD FOR PRODUCTION THEREOF

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2 Sheets-Sheet 2

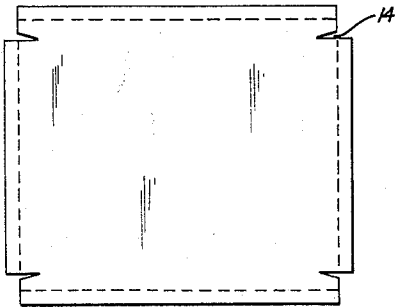


FIG. 6

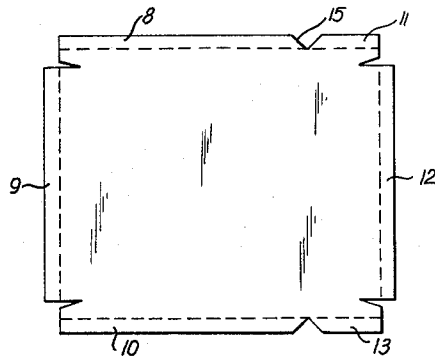


FIG. 7

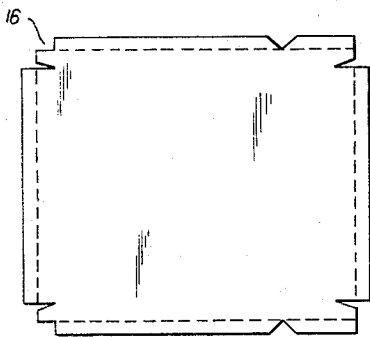


FIG. 8

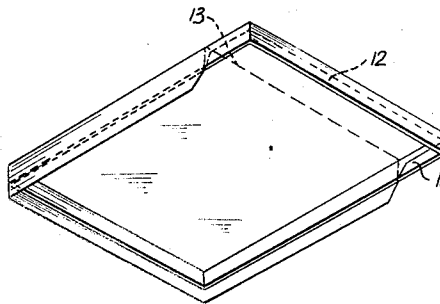


FIG. 9

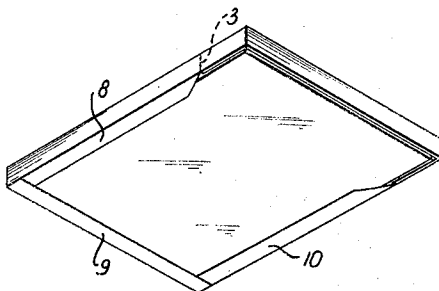


FIG. 10

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SET UP BOX AND METHOD FOR PRODUCTION THEREOF

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2 Claims. (Cl. 229—7)

This invention relates to a set up box and to a method for production thereof. More particularly the invention relates to the production of set up paper boxes.

It has heretofore been known to provide a set up paper box with an end flap adapted to be opened so that access may be gained to the contents of said box via the end portion of the container. It has also been well known to provide folding boxes with this type of end flap. However, the construction of a folding box is readily distinguishable from that of a set up box, which distinction is to be noted since the present invention is concerned with the latter form of container.

In producing a set up box the manufacturer is confronted with process problems which are peculiar to the art of set up box manufacture. These problems are not encountered by those producing folding boxes.

A set up box, in contradistinction to a folding box, is provided with rigid corners. It is a further distinguishing feature of a set up box that it is fabricated from two basic pieces, i.e. a base portion and a lid portion whereas a folding box is customarily produced from a single blank of material.

An object of the present invention is to provide an improved and simplified process for producing a set up paper box having a hinged end flap.

Another object of the invention is to provide an improved set up paper box.

The set up box of the present invention, due to the process by which it is made is believed to exhibit superior moisture-resistant properties and is also visually more attractive than previously known set up boxes possessing hinged end flaps.

According to the present invention there is provided a set up box having a hinged end flap, comprising a lid portion and a base portion disposed within and operatively connected to said lid portion, said lid portion being formed from a blank of material to provide an upper panel having integral end and side wall surfaces folded thereabout to extend perpendicularly therefrom, said base portion being formed from a second blank of material to provide a lower panel having integral end and side wall surfaces, one end and said side walls of said base portion being folded about and extending perpendicularly from said lower panel to provide three fixed wall surfaces, the second end wall of said base portion being adapted for folding about a score line on said lower panel, said base portion being disposed within said lid portion such that when the box is in a closed position the end and side walls of said base portion are adjacent to and in parallel relationship with the corresponding end and side walls of said lid portion, a sheath of a wrapping material being provided on the outer surface of said lid portion extending about a plurality of edges of the lower panel of said base portion and into sealing contact therewith in order to operatively connect said lid and base portions, a cut being provided in each of the side walls of said lid portion to permit pivotal movement of a segment of said lid

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portion about a hinge score line on the surface of said upper panel thereby providing said hinged end flap.

The present invention further provides a method for producing a set up box having a hinged end flap, comprising providing a base portion by scoring a blank of sheet material to provide two pairs of parallel score lines adjacent to and around the perimeter thereof to form a substantially rectangular pattern, all of said score lines being imparted to the same side of said sheet, removing the corner pieces of said sheet defined by the intersection of said score lines, folding the sheet about said score lines to provide a lower panel and a pair of vertically extending side wall surfaces and a pair of end wall surfaces, joining said side walls to one of said end walls to form two rigid corners, providing a lid portion by scoring a second blank of sheet material to provide two pairs of parallel score lines adjacent to and around the perimeter thereof to form a substantially rectangular pattern, all of said score lines being imparted to one side of said sheet, placing upon the other side of said second blank a hinge score line parallel with but spaced from one end of said blank, removing the corner pieces of said sheet defined by the intersection of said two pairs of score lines, folding said second blank about said two pairs of score lines to provide an upper panel and a pair of vertically extending end wall surfaces and a pair of vertically extending side wall surfaces, joining said end and side walls to form four rigid corners, placing about said lid portion a sheath of substantially rectangularly shaped wrapping material which has previously had the corners thereof mitered and a notch preferably V shaped in configuration cut into the marginal edge portion of each side thereof an equal distance from an end of said wrapping material, said notches having been made at a predetermined position in order to permit registration of said notches with the hinge score line on said lid portion, turning in the marginal edge portion of said wrapping material which extends between said notches and about an end and a segment of each of the side walls of said lid portion which segments extend from said end to the hinge score line and securing said turned in material to the inner surfaces of said end wall and side wall segments, the marginal edge portion of the wrapping material which is not turned in extending beyond the other end and remaining segments of the side walls of said lid portion parallel thereto, inserting said base portion within said lid portion such that the end and side walls of said base portion are adjacent to and in parallel relationship with the corresponding end and side walls of said lid portion, folding the unturned marginal edge portion of wrapping material into sealing contact with the lower panel of said base portion to provide a completely closed box, and cutting through each side wall of the lid portion at the hinge score line to provide a hinged end flap.

The invention will now be further described and illustrated with reference to the accompanying drawings of which:

Figure 1 is an isometric view of the completed set up box with the end flap in an open position;

Figures 2 and 3 are planned views of the sheet of starting material used to form the lid portion of the box indicating the form which the sheet takes as the sequence of operations is performed upon said sheet;

Figure 4 is an isometric view of the base portion of the box ready for insertion into the lid portion;

Figure 5 is an isometric view of the lid portion of the box adapted to receive the base portion therein;

Figures 6-8 are planned views of the wrapping material and illustrate the changes in form which the wrap undergoes in being subjected to the sequence of process steps described hereinafter;

Figure 9 is an isometric view of the set up box with the wrap already secured to the lid portion of the box and the base portion inserted into the lid; and

Figure 10 is an isometric view of the set up box after the wrap has been folded and secured to the base portion of the box; the box being in a completely closed condition prior to the final operational step of cutting the side walls of the lid portion to provide the box illustrated in Figure 1.

In the manufacture of a set up paper box it is conventional to fabricate the base portion by scoring the initial board, which normally is supplied by the mill in sheet form, in a scoring machine. Two pairs of parallel score lines are placed upon the sheet adjacent the edges thereof with each of said pairs being perpendicularly disposed with relation to the other of said pairs. One or both pairs of score lines may be placed upon the sheet in a single operation depending upon the type of machine which is employed. However, all score lines are placed upon the same side of the board. The board, provided with the two pairs of scores, is then placed on a corner cutting machine which operates to remove the four corner pieces of board defined by the intersection of the score lines. Removal of these corner pieces permits the subsequent formation of the rigid corners of the box.

Following removal of the corner pieces the sheet is transported to either a single stayer or a quad stayer which operates upon the board to fold a pair of the oppositely disposed marginal edges and one of the other edges about the scores. The machine glues a piece of stay paper or like material to the two corners of the base portion so-formed in such a manner that two rigid corners result. The base portion with its two rigid corners is illustrated in Figure 4. It will be noted that one end still remains loose and the other end and both sides of the base extend vertically from the plane of the sheet before the staying operation. The material employed for the stay paper is customarily 90 lb. kraft which has been pre-gummed or may be kraft paper of a different weight which has a heat-seal adhesive coated upon the surface thereof. The base portion of the box is now ready for insertion into the lid portion.

The fabrication of the paper wrap will now be described with reference to Figures 6-8 of the drawings. The paper is generally supplied by the mill in the form of a roll although it is possible for the paper to be supplied in sheets of the desired dimensions. Once the paper has been given the desired dimensions and is in substantially rectangular form it is inserted into a corner mitering machine to remove the corners of the sheet in order to eliminate the excess paper which would otherwise be exposed when the sheet is secured to the lid portion of the box in a subsequent step. At this stage of fabrication the paper sheet may properly be referred to as wrap 14 illustrated in Figure 6. Wrap 14 is then provided with V notches 15 as shown in figure at oppositely disposed marginal edge portions thereof. V-shaped pieces of material are removed from the wrap during the notching procedure. The notches are placed in the wrap at a point remote from the end thereof by a predetermined distance in order to provide proper alignment of the notches with the location of the hinge score on the lid portion of the box. The disposition of the hinge score on the lid portion of the box to be hereinafter described. Wrap 14 is then subjected to a further cutting operation in order to remove a relatively small section indication as 16 in Figure 8 to facilitate folding of the wrap about the base portion in one of the final process steps. It is also within the scope of this invention to provide wrap 14 with the corner miters, V notches and cuts 16 in a single operation as by employing a steel rule die on a cutting press.

The fabrication of the lid portion of the box will now be described with reference to Figures 2, 3 and 5 of the drawings. The board is generally of the same material

as the material from which the base portion is formed, and may be chipboard, kraft, etc. These boards can vary in weight, finish and color. The only limitations as regards selection of the proper material are dictated by practical considerations and thus the material should be neither too thin nor too thick in order to avoid difficulty in handling during the various manipulative steps of the process. The weight of the board may vary from 0.018 to 0.120 inch in thickness with the preferred caliper lying near the center of this range. Finishes in cardboard range from very smooth to very rough and any finish can be utilized for the materials employed in this invention.

The board in the form of a blank sheet is scored with two pairs of parallel scores 1 and 2 as shown in Figure 2. These scores may be placed upon the board in the same manner as previously described in connection with preparation of the base portion. It will be observed that corner pieces 4 are formed by the intersection of the pairs of scores 1 and 2. These corner pieces correspond to the corner pieces which were also formed in preparing the base portion and are subsequently removed in the same manner as previously described in connection with preparation of the base portion.

Either before or after scores 1 and 2 are placed upon the board, the board is scored as indicated at 3 in order to place upon board 7 a score on the side thereof reverse from the side which bears scores 1 and 2. The reverse score 3 will be referred to as the hinge score. The distance of score 3 from the end of the board may be selected by the manufacturer in accordance with the intended use of the completed box. Generally the hinge score will be positioned approximately one third of the distance from one end of the box to the other end.

As indicated above the board, provided with scores 1, 2 and 3, is then subjected to the known step of corner cutting in order to remove corner pieces 4 therefrom. The board with the corner pieces removed is illustrated in Figure 3.

Board 7 is then placed in the single stayer or quad stayer described hereinabove in connection with preparation of the base portion and four rigid corners are formed. It should be noted at this time that the base portion is distinguished from the lid portion by having only two rigid corners whereas the lid portion has four such corners and also by the fact that the lid portion is provided with hinge score 3. The lid portion with its four rigid corners is depicted in Figure 5. The lid portion is now ready for combination with wrap 14. It should be observed that it is not essential to die cut the lid portion at the hinge score as is customary in previously known processes. By eliminating this step there is a resultant savings in time and expense involved in the actual step of cutting the lid portion and a further advantage in eliminating the need for aligning this cut in the lid portion with the notch 15 on wrap 14 when assembling the wrap and lid portion. A further advantage is provided in not cutting the lid portion at the hinge score at this time since the turning in by hand of the wrap around the cut in the lid portion is avoided in the situation where additional wrap material is provided as has been customary where the art has attempted to avoid the problems which arise in attempting to obtain exact registration of the cut in the lid portion and the cut in the wrap at the hinge score.

Wrap 14, mitered, notched and provided with end cut 16 which cut is preferably of square configuration, is then fed to a gluer where a film of an adhesive material is deposited on one surface thereof. The wrap, bearing the adhesive material thereon in an uncured or unset condition, is delivered to a wrapper such as the Stokes and Smith Wrapper. However, any of the known wrapping machines may be employed and the Stokes and Smith Wrapper is mentioned only by way of example. Lid portion 18 of the box is brought into juxtaposed position with respect to wrap 14 in such a manner that the surface of the wrap having the adhesive material is brought

into sealing contact with the outer surface of the upper panel. Turn-in sections 11, 12 and 13 of the wrap are folded about the open edges of the lid portion and into sealing engagement with the inside of the end and side wall surfaces lying between the hinge score line. Sections 8, 9 and 10 of the wrap are folded about lid portion 18 and extend beyond the edges in parallel relationship with the other end and remaining side wall segments of lid portion 18. Reference may be made to Figure 9 of the drawings at this point. It will be noted that the only portions of the marginal edges of wrap 14 which are turned in are portions extending from V cut miter to V cut miter around the perimeter of what is destined to be the hinge end flap of the completed box.

Base portion 17 is then inserted into the lid portion and sections 8, 9 and 10 are folded into sealing relationship with the bottom of base portion 17 as shown in Figure 10 to result in a completely closed box.

The final step in production of the novel set up box comprises subjecting the sides of the closed box to the operation of a cutting device such as a table saw in order to cut the lid portion on each side wall where score 3 appears, the cut being made to a depth sufficient to enable one to lift the hinge lid. Care is to be exercised during the cutting step in order to avoid marking the underlying base portion of the box. Proper regulation of the depth of cut can avoid improper cutting. The completed box with the hinged end flap in an open position is indicated as 19 in Figure 1. It will be observed that flap 5, which is an end wall of base portion 17, is folded about its score line into a vertical position so that it will register with the corresponding end wall of the lid portion when the box is closed. This flap can readily be pivoted about its score line in order to facilitate filling or emptying of the box.

It is to be understood that a plurality of cutting devices such as table saws can be arranged to simultaneously provide the final cut at hinge score 3 in any number of boxes in order to mass produce the set up box of the present invention.

It has been discovered that, when employing a table saw to effect the final cut, by reversing the direction in which the teeth of the table saw blade are disposed the operator can obtain a smooth finished cut as contrasted with a slightly burred cut which results from utilizing a table saw in the conventional manner.

As will be well understood by those skilled in the art of set up box manufacture, an angle cut can be made as the final cut in order to provide the hinged end flap although a straight cut as illustrated in Figure 1 is preferred at the present time.

It is also within the scope of the present invention to provide a lining for the entire box in addition to or in substitution of wrap 14, the preferred embodiment comprising the use of wrap 14 merely for the lid portion as has been hereinabove described. Polyethylene may, if desired, be utilized as either the liner or as wrap 14. Also, the base portion may be lined in the manner well known to those skilled in the art in addition to provid-

ing wrap 14 for the lid portion. Further, dividers or partitions can be inserted into the box prior to its being sealed or after the final cut is made at the hinge score line in the side walls of the lid portion.

While certain novel features of the invention have been disclosed and are pointed out in the claims annexed hereto, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit and scope of the invention.

What I claim is:

1. A set up box having a hinged end flap, comprising a lid portion and a base portion disposed within and operatively connected to said lid portion, said lid portion being formed from a blank of material to provide an upper panel having integral end and side wall surfaces folded thereabout to extend perpendicularly therefrom, said base portion being formed from a second blank of material to provide a lower panel having integral end and side wall surfaces, one end and said side walls of said base portion being folded about and extending perpendicularly from said lower panel to provide three fixed wall surfaces, the second end wall of said base portion being adapted for folding about a score line on said lower panel, said base portion being disposed within said lid portion such that when the box is in a closed position the ends and side walls of said base portion are adjacent to and in parallel relationship with the corresponding ends and side walls of said lid portion, a sheath of a wrapping material being provided on the entire outer surface of said lid portion extending about a plurality of edges of the lower panel of said base portion and into sealing contact therewith in order to operatively connect said lid and base portions, a cut being provided in each of the side walls of said lid portion subsequent to application of said wrapping material to said lid portion to permit pivotal movement of a segment of said lid portion about a hinge score line on the surface of said upper panel thereby providing said hinged end flap.

2. A set up box according to claim 1, wherein said sheath of wrapping material is turned under and secured to the inner surfaces of the end and side wall portions of said lid portion which form the hinged end flap, said wrapping material having marginal edge portions thereof extending about the lower panel of said base portion to form a substantially U-shaped sealing surface.

References Cited in the file of this patent

UNITED STATES PATENTS

466,479	Winchester	Jan. 5, 1892
1,641,861	Moss	Sept. 6, 1927
1,769,596	Neidich	July 1, 1930
1,797,941	Carle	Mar. 24, 1931
1,895,070	Czerweny	Jan. 24, 1933
2,147,614	Sidebotham	Feb. 14, 1939
2,581,615	Whitelaw	Jan. 8, 1952
2,604,253	Turner	July 22, 1952