

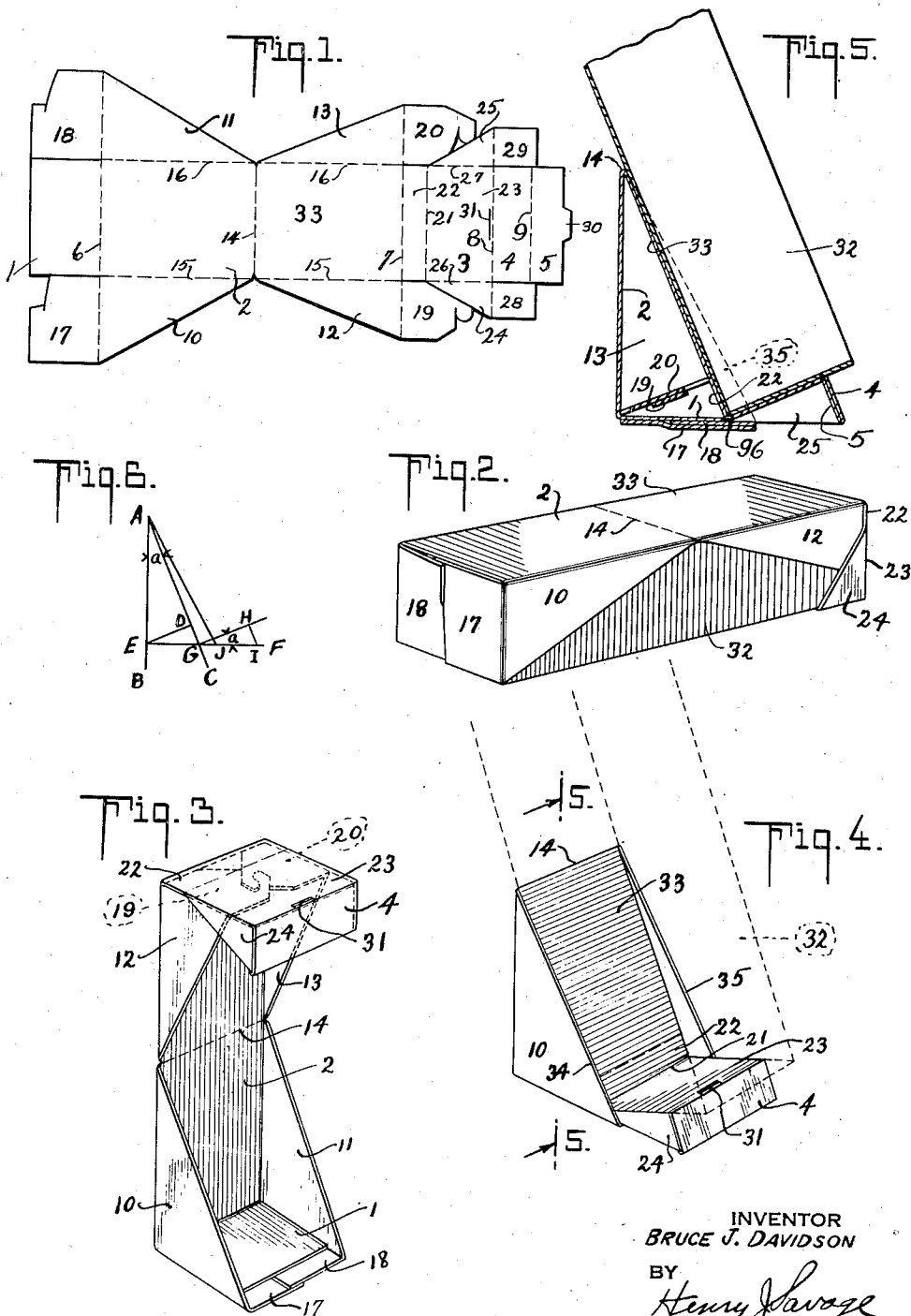
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B. J. DAVIDSON
DISPLAY BOX EASEL COVER

2,479,910

Filed July 17, 1944

2 Sheets-Sheet 1



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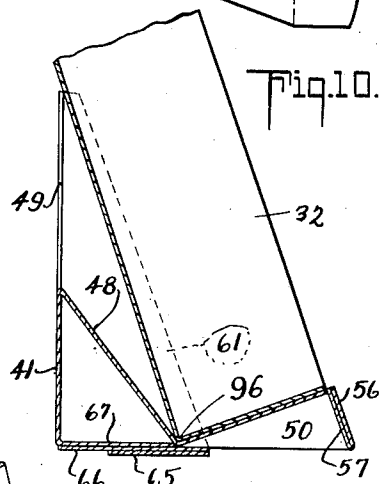
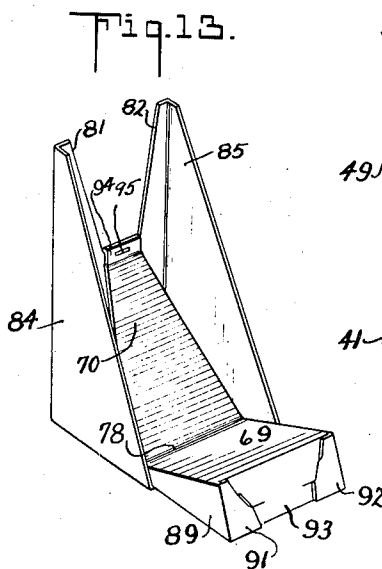
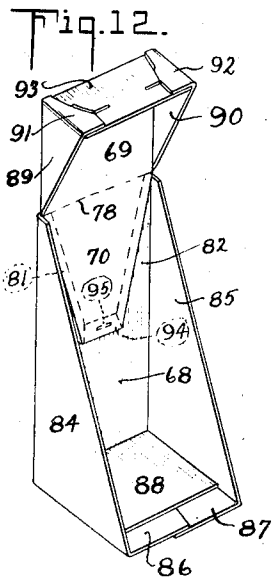
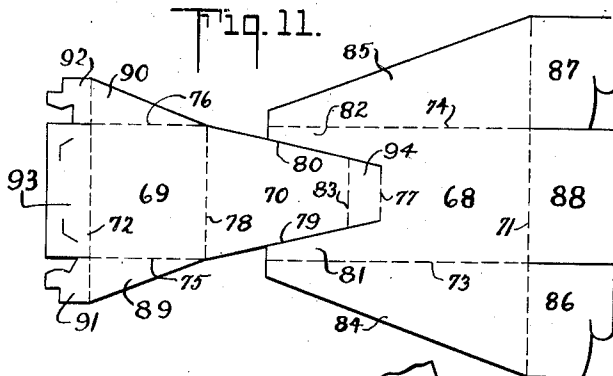
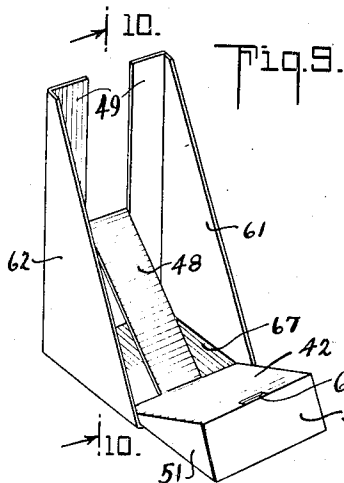
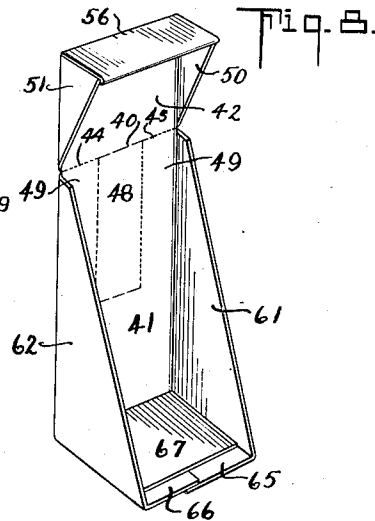
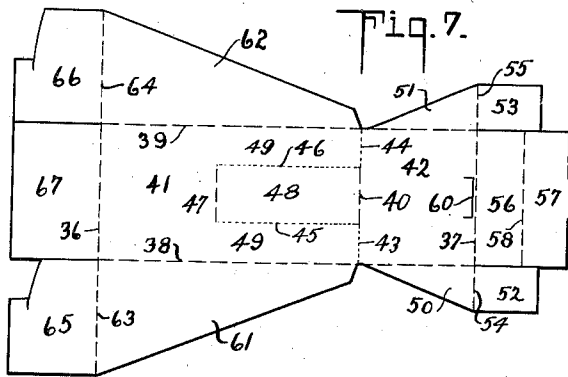
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DISPLAY BOX EASEL COVER

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2 Sheets-Sheet 2



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2,479,910

DISPLAY BOX EASEL COVER

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6 Claims. (Cl. 206—45.2)

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My invention pertains to display boxes and particularly to boxes that serve as shipping containers for the merchandise and, when received by the merchant, are adapted to provide an effectual display of the goods.

The present invention is an improvement upon the carton shown in my Patent No. 2,006,445, granted July 2, 1935, and has for its principal object to provide a display box wherein a box that is relatively long in relation to its depth may be stably supported at a high angle for display of its contents.

Another object is to provide a high angle display box that will occupy a minimum of counter space, yet will be stable at all stages of fullness, cheap to manufacture, easy to set up, and will display the merchandise attractively.

Another object is to provide a card board or other box having a removable cover, wherein the cover is cut and scored so that it can be folded to form an easel or support for the box to display the merchandise therein.

Another object is to provide a display box wherein an easel formed from the cover supports both the back and an end of the box, the box being supported at such an angle that nearly all of its weight at all stages of fullness is supported by the lower corner of the box and very little by the easel.

Another object is to form the cover of a box so that it may be folded to make an easel to support the back and an end of the box and the side flanges of the cover will engage the sides of the box to keep it from lateral displacement on the end support.

In the accompanying drawings, I have illustrated three forms or embodiments of my invention, each adapted to attain the foregoing and other objects and advantages.

Fig. 1 shows a card board blank adapted to form a cover for a box and to be folded to form an easel to support the box.

Fig. 2 shows a box closed by a cover formed from the blank of Fig. 1.

Fig. 3 shows the cover removed from the box.

Fig. 4 shows the cover folded to form an easel for supporting the box.

Fig. 5 is a section on line 5—5 of Fig. 4, showing the box supported on the easel.

Fig. 6 is a diagram showing how the dimensions of the blank of Fig. 1 may be determined graphically.

Fig. 7 shows a blank for making another form of box cover and easel.

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Fig. 8 shows a cover formed from the blank of Fig. 7.

Fig. 9 shows the cover of Fig. 7 folded to form an easel for supporting the box in display position.

Fig. 10 is a section on the line 10—10 of Fig. 9, showing the box supported on the cover.

Fig. 11 is another form of blank adapted to be folded to form a cover and easel.

Fig. 12 shows a cover formed from the blank of Fig. 11.

Fig. 13 shows an easel formed from the cover of Fig. 12.

The blank of Fig. 1 is cut and scored to form in succession thereon a cover end panel 1, a top panel 2, a cover end panel 3, an end support panel 4 and a locking flap 5, the adjoining sides of these parts being defined by score lines 6, 7, 8, and 9, on which the material may be folded when forming the cover. The parts of the blank that in ordinary covers would form rectangular sides are cut away to form pairs of triangular sides or flanges 10, 11 and 12, 13, the apices of the triangles meeting at the edges of the top panel 2 near its center, where those on opposite sides are joined by a score line 14 extending across the top. The sides of the triangles join the top along score lines 15, 16. The bases of the triangles 10, 11 have locking flaps 17, 18 adapted to lock together outside the end panel 1 to form the end of the cover, or the parts 1, 17, 18 may be glued or secured by stapling. The bases of triangles 12, 13 have locking flaps 19, 20 which lock together, or may be glued or stapled, inside of, but not fastened to the end panel 3 at one end of the cover.

A score line 21 extends across end panel 3 and divides it into a connecting section 22 and a base section 23. The line 21 joins the apices of triangular base wings 24, 25, which are connected to the base section along score lines 26, 27. Each wing 24, 25 has an end flap 28, 29. The locking flap 5 has a tongue 30 adapted to cooperate with a slit 31 in panel 4 adjacent the score line 8.

The blank is designed to form a cover for a rectangular box or carton 32 as shown in Fig. 2 that is relatively long in comparison with its height. Usually the length will be about three to four times the height. Heretofore, such boxes could not be supported stably at a high display angle.

To form a cover from the blank of Fig. 1, the end 1 and triangular sides 10, 11 are turned down along score lines 6, 15, 16 until they are perpen-

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dicular to the top panel 2. Then the flaps 17, 18 are turned in outside of end 1 and secured together. The triangular flanges 12, 13 are then turned down and the flaps 19, 20 turned in and secured together. The base wings 24, 25 are next turned down along score lines 26, 27 and the flaps 28, 29 turned in. Next the panel 4 is turned down outside the flaps 28, 29 and the locking flap 5 turned in over flaps 28, 29 so that the tongue 30 enters into the slip 31 to lock the parts 24, 25, 28, 29, 4, and 5 in operative position. The cover is now ready to be placed on the box as shown in Fig. 2 with the two sections 22, 23 of the end panel 3 covering one end of the box and the panel 4 tucked under it.

When the merchant receives the box filled with merchandise, the cover is removed and folded as shown in Fig. 4 to form a support for the box 32 as in Fig. 5. The sides or triangles 12, 13 are inside of the sides 10, 11, and the edges of the flaps 19, 20 have a bearing at the juncture of the flaps 17, 18 with the top panel 2 at the score line 6. The short connecting section 22 extends down until its edge at the score line 21 rests on the inside faces of the flaps 17, 18. The part 23 of the end panel forms a rest or stand for the end of the box and is supported by the base wings 24, 25, support 4 and locking flap 5. The part 33 of the top panel between the triangular flanges 12, 13, together with the connecting section 22, forms a hinge member which also acts as a support or rest for the back or bottom of the box. The triangles 10, 11 are wider at their bases than triangles 12, 13 so that they extend forwardly to provide guides 34, 35 to position the box centrally on the end support and prevent its displacement.

In Fig. 6, I illustrate how the blank of Fig. 1 may be laid out graphically, but the dimensions may be calculated since the dimensions of the parts and locations of the score lines are dependent upon the length of the box, its height and the trigonometric functions of the angle of display. However, it is simpler to determine the dimensions graphically. I show how this may be done in Fig. 6.

The length and height or depth of the box will always be known and also the display angle at which it is to be supported.

First, draw the vertical line AB somewhat longer than one-half the length of the top cover panel 2. From the point A draw line AC, making an angle α which is the angle that the box is to make with the vertical when in display position, in this case selected as $22\frac{1}{2}^\circ$. At a point D, determined by trial, draw DE at right angles to AC until it intersects AB at a point such that $EA + AD$ equals the length of the cover panel 2. At the point E, draw EF perpendicular to AB so that it intersects AC at G. At G draw GH making the angle α with line EF. Make the length GH equal to the height of the box less the distance DG. At H erect a perpendicular to GH and extend it to intersect EF at I. Lay off EJ equal to the height of the box and draw the line JA. This determines all essential dimensions of the cover except for its width, which, of course, is the width of the box and in no way effects these dimensions. In this diagram the dimensions EAD (length of the box), EJ (height of box) and angle α (angle of display) are known. From the figure the following dimensions are determined:

AE is the length of the top panel between scores 6 and 14.

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AD is the length of the top panel between scores 14 and 7.

ED is the length of the bases or short sides of triangles 12 and 13 and also the height of flaps 19, 20.

AED is the triangle 12 or 13.

A EJ is the triangle 10 or 11.

DG is the width of the end panel section 22.

GH is the width of the end panel section 23.

HI is the width of the parts 4 and 5.

GHI is the triangle 24 or 25.

Usually, the dimension HI as shown in Fig. 6 will be increased by about $\frac{1}{8}$ of an inch in the case of a box 12 inches long so that the angle HGA is slightly less than 90° . The cover when set up is somewhat yieldable and this slight distortion of angle HGA assures a firm bearing of the end of the box on the front edge of the support and of the back of the box against the top edge at the fold line 14.

In Figs. 7 to 10, I show another form of cover adapted to form a display easel. In Fig. 7, the one piece blank has a panel that forms the top of the cover and is bounded on its two ends by score lines 36, 37 and on its sides by score lines 38, 39. A transverse line 40 divides the panel into two sections 41, 42. The transverse line 40 is perforated at its two ends for a portion of its length 43, 44, and from these perforated portions other perforated lines 45, 46 extend to a score line 47 so as to define a hinge or tension member 43 connecting the sections 41 and 42 and two arms or braces 49 on the section 41. The length of the section 42 will equal the height of the box and may be less than its width, as illustrated. On each side of section 44 is a triangular flange or support 50, 51, the acute angle of which is equal to the display angle at which the box is to be displayed. The flanges have flaps 52, 53 connected to their bases along score lines 54, 55. An end panel or support 56 has a locking flap 57 connected along a score line 58. A tongue 59 is adapted to engage in a slit 60 adjacent score line 37.

At the other end of the blank there are two modified triangular sides or flanges 61, 62 extending from the line 40 to the end of the top panel. The width of these triangles at their bases is equal to the height of the box, and the bases are connected along score lines 63, 64, to end closing flaps 65, 66. An inner end flap 67 is connected to the top panel along score line 36.

Fig. 8 shows a cover formed from this blank ready to close a carton. The flanges 61, 62 and inner flap 67 are turned up, then the flaps 65, 66 are interlocked or otherwise secured together, as by stapling or gluing. The supporting flanges 50, 51 are then turned up and the flaps 52, 53 turned in. Next the end panel or support 56 is turned up outside of flaps 52, 53, the flap 57 is turned down and inside of flaps 52, 53 until the tongue 59 snaps into the slit 60. This completes the cover as shown in Fig. 8. The part of the cover to the right of line 40, Fig. 7, or above it in Fig. 8, is adapted to form a base or support for the lower end of the box and the part to the left of line 40, Fig. 7, or below it in Fig. 8, forms a brace for the back of the box.

To form an easel from this cover, it is removed from the box, as in Fig. 8, and the perforated lines 43, 44, 45, 46 broken so as to release the tongue 48 along its two sides but leave it attached at its two ends. The support is then brought down 75 within the flanges 61, 62, its movement being con-

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trolled by tongue 48, until the points of triangles 50, 51 strike the inside of the end flaps 65, 66 and the long sides of the triangles and edges of end 56 and flap 57 rest on the counter or other support. The position of the line 43, 40, 44, and length of the tension member or hinge 48 are determined so that when the cover is in display position, as in Fig. 9, the points of triangles 50, 51, and the top of the arms 49 on section 41 will lie in a plane that is perpendicular to the plane of section 42. The end of the box 32 will then rest on the section 42 and its back or bottom will be braced by the top of the arms 49 of section 41. This is clearly shown in Fig. 10. The flanges 61, 62 extend forward beyond the plane of the bottom of the box and form guides to prevent lateral displacement of the box on the support.

Figs. 11, 12 and 13 show another form of cover embodying my invention. The single piece blank is cut and scored so that the top panel is divided into two sections 68, 69 connected by a tension member or hinge section 70. Score lines 71, 72 limit the ends of the top panel and the sides are formed by the score lines 73, 74, 75, 76. The hinge 70 is cut in part from the section 68, and lies between a short score line 77 and a score line 78 where it is connected to section 69. The hinge section is formed by diverging cuts 79, 80 that extend from the score line 77 to 78 and form two arms or braces 81, 82 on section 68. A transverse score line 83 provides a means whereby the tongue or hinge may be folded upon itself.

Triangular side flanges 84, 85 are connected to section 68 along the score lines 73, 74 and their bases or wide ends are equal to the height of the box. End closing flaps 86, 87, are connected to the flanges 84, 85 and are adapted to be secured together outside of an inner end flap 88 that adjoins section 68 along score line 71.

Triangular supporting flanges 89, 90 are joined to section 69 along score lines 75, 76 and the angle that their outer edges makes with the score lines is the display angle for the box. Locking flaps 91, 92 connected to the bases of the triangular sections are adapted to interlock with an end support panel 93 connected to section 69 along the score line 72.

To form a cover from the blank of Fig. 11, the hinge section 70 is turned over along score line 77 until it lies flat against section 68. The part 94 between scores 77, 83 is secured to section 68 in any suitable manner as by a staple 95 (Fig. 13) or gluing. The hinge is then turned on score line 83 back to its original position, in which its sloping sides now will overlap the sloping edges of the braces 81, 82. The distance between the score line 78 and ends of the braces 81, 82 is twice the distance between lines 77, 83 so that when the hinge is secured in position, the points of flanges 89, 90 will meet or substantially meet the ends of braces 81, 82.

The next operation is to turn up flanges 84, 85, and end 88, and secure the flaps 86, 87 together, as in other forms of the invention. Next, the supporting flanges 89, 90 and end 93 are turned up and the flaps 91, 92 interlocked with end 93. The cover is now completed, as shown in Fig. 12, ready to form a closure for the box.

When the merchant removes the cover from the box, he may stand it on end on the counter as shown in Fig. 12. The top or support section is then swung out and down to the position shown in Fig. 13, the tension member 70 controlling the position of the support section. The length of

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the tension member 70 is chosen so that in the position shown in Fig. 13, the line 78 and tops of the braces 81, 82 will lie in a plane perpendicular to the section 69. When the end of a box is placed on the support section, the back or bottom of the box will rest against and be supported against overturning by the arms 81, 82. The flanges 84, 85 extend forward so as to engage the sides of the box and prevent its displacement.

The present invention is most efficient when applied to a box or carton that is relatively long as compared to its depth. When the length of the carton is two and one-half or more times its depth, it can be supported at a high angle of display and most of its weight will be supported on the lower corner of the box 96 (Figs. 5 and 10) and there will be very little load on either the support or the brace. In some cases the most effective angle of display may be determined as that at which the filled box is in equilibrium on its edge 96, but this is not a fixed rule for determining the best angle.

It will be seen from the foregoing illustrations and description of several adaptations of my invention that I have provided a cover for a carton that is adapted to be folded to form an easel to support the carton at a high display angle and hold it stably in display position. The cover has three principal parts or assemblies which may be called the back brace, the support and the hinge or tension member connecting the two and determining their relative positions as parts of the easel. Thus, in Figs. 1 to 6, the parts 1, 2, 10, 11, 17 and 18 as a unit form a back support or brace for the carton 33 to prevent its being overturned backwards. The parts 23, 4, 5, 24, 25, 28, 29 as a unit form an end support for the box 33 to prevent it from tilting forward. The parts 33, 22, 12, 13, 19 and 20, and particularly the parts 33, 22, form a hinge or tension member connecting the other two parts and determining the position of the end support with respect to the rear brace.

There are similar or corresponding parts in Figs. 7 to 10, wherein 41, 49, 61, 62, 65, 66, 67 as a unit form the back brace. The parts 42, 50, 51, 52, 53, 56, 57 form the end support. The tongue or hinge 48 connects the two.

In Figs. 11 to 13 there also are similarly functioning parts. The parts 68, 81, 82, 84, 85, 86, 87, 88 form the back brace unit. The parts 69, 89, 90, 91, 92, 93 form the end support. The hinge or tension member 70 connects the two.

In all three forms, the cover side flanges extend forward far enough to embrace the sides of the box and hold it in proper position on the support.

In the modifications of Figs. 10 and 13, the widths of the parts 56, 57, 93 will be made slightly longer than shown, usually about $\frac{1}{8}$ inch, so that the angle of the cradle for holding the box is slightly less than a right angle, as described in connection with Fig. 5. This gives a firm bearing of the back or bottom of the box against the top of the back brace. When the box is in display position as shown in Figs. 5 and 10, the weight of the box on the support causes a pull or tension in the hinge or tension member that pulls the top of the back support snugly forward against the bottom of the box. This also applies to Fig. 13 when a box is displayed thereon.

Having thus described my invention and what I now believe to be the best mode of applying the same, I claim all modifications, adaptations and equivalents thereof that may come within the scope or intent of my claims.

My claims are:

1. An easel for supporting a box in display position formed from the cover for the box comprising a back brace section having triangular sides and a closed lower end at the bases of the triangular sides, a triangular support having an inclined supporting surface and having its apex resting on said closed lower end and between said triangular sides, and a hinge and tension section connecting the apex of said support with said back brace at a point spaced from the bottom of said brace.

2. An easel for supporting a box in display position formed from the cover for the box comprising a back brace section having triangular sides and a closed lower end at the bases of the triangular sides, a triangular support having an inclined supporting surface and having its apex resting on said closed lower end and between said triangular sides, and a hinge and tension section connecting the apex of said support with said back brace at a point spaced from the bottom of said brace, the apex of said support and the top of the back brace lying in a plane that is substantially perpendicular to said inclined supporting surface.

3. An easel for supporting a box in display position formed from the cover for the box comprising a back brace section having triangular sides and a closed lower end at the bases of the triangular sides, a triangular support having an inclined supporting surface and having its apex resting on said closed lower end and between said triangular sides, and a hinge section connecting the apex of said support with said back brace at its top edge.

4. An easel for supporting a box in display position formed from the cover for the box comprising a back brace section having triangular sides and a closed lower end at the bases of the triangular sides, a triangular support having an inclined supporting surface and having its apex resting on said closed lower end and between said triangular sides, and a hinge section connecting the apex of said support with said back brace intermediate its top and bottom.

5. An easel formed from card board or the like for supporting a box in display position comprising

a back brace section with forwardly extending triangular sides and a closed lower end at the bases of the triangular sides, a support for the end of the box connected to the back brace by a tension member, said tension member being secured to the brace at a point substantially spaced from said lower end said support comprising a supporting panel and locking member forming a double thickness of material that extends substantially at right angles to the end of the box when supported thereon in display position.

6. An easel formed from the cover of a box for supporting the box in display position, comprising a cover top panel, a first end panel normal to one end of the top panel, triangular sides each extending from a point on a side edge of the top panel to a side edge of the end panel, a hinge member hingedly connected at one of its edges to a line on the top panel spaced from said first end panel and movable between a position where it forms a part of the cover top and another position where it bridges a space between the cover top and the inside of the end panel at a point spaced inwardly from the free edge of the end panel, and a second end support panel with triangular sides, hingedly connected with the edge opposite the first hinged edge of the hinge member and movable between a position where it forms an end for the cover and another position where it forms a wedge-like support for the lower end of the box with the edge of the wedge located inwardly from the edge of the first end panel and between its triangular sides when said hinge member is in its bridging position.

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