7 Sheets-Sheet 1

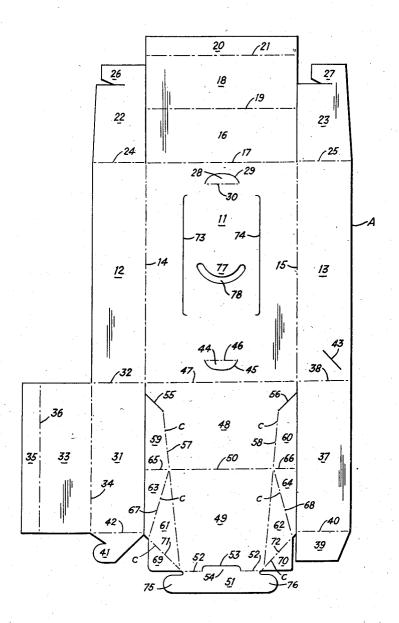


Fig. 1

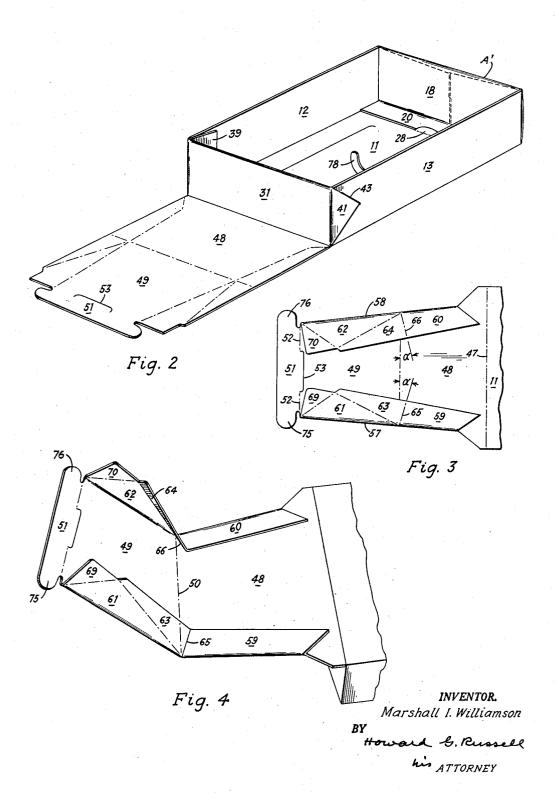
INVENTOR.

Marshall I. Williamson

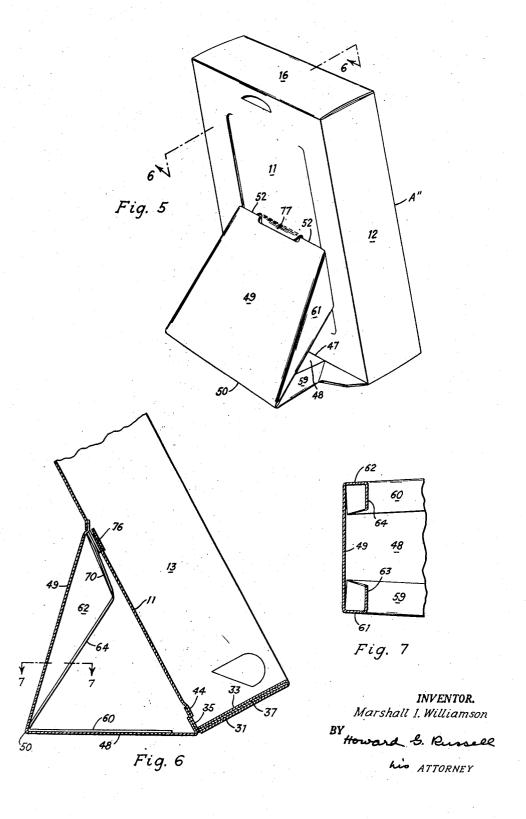
BY
Howard & Passell

his ATTORNEY

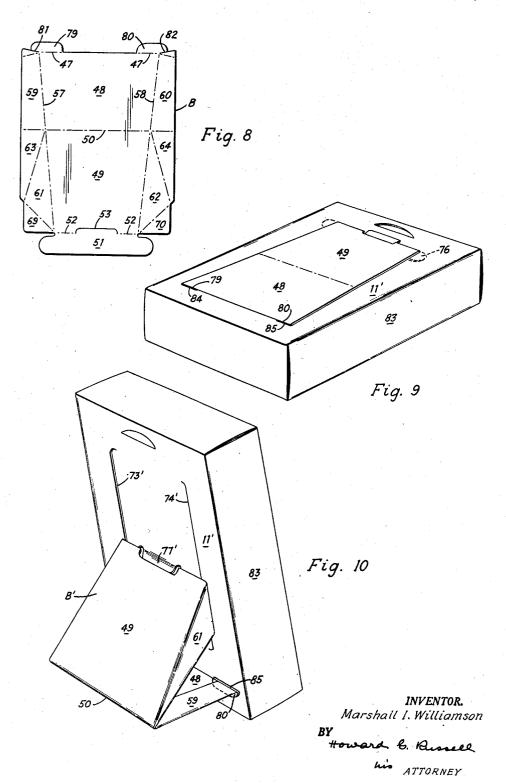
7 Sheets-Sheet 2



7 Sheets-Sheet 3



7 Sheets-Sheet 4



7 Sheets-Sheet 5

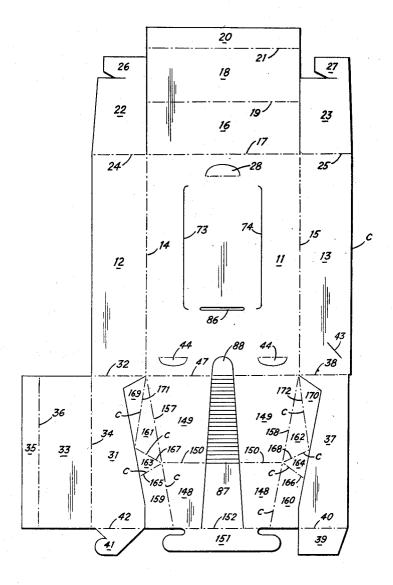


Fig. 11

INVENTOR.

Marshall I. Williamson

BY
Howard G. Russell
his ATTORNEY

7 Sheets-Sheet 6

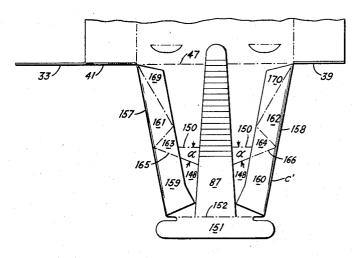


Fig. 12

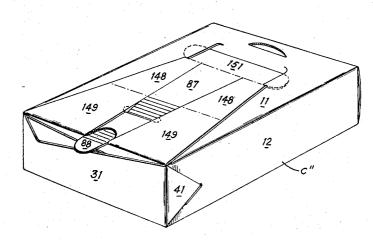


Fig. 13

INVENTOR.

Marshall I. Williamson

BY

Howard B. Russell his ATTORNEY

Feb. 26, 1957

M.I. WILLIAMSON REINFORCED EASEL CONSTRUCTION FOR FOLDING BOXES AND DISPLAY PANELS 2,783,013

Filed Jan. 7, 1955

7 Sheets-Sheet 7

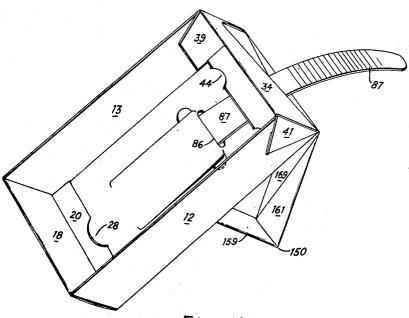


Fig. 14

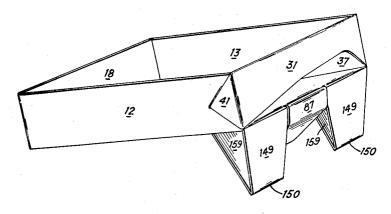


Fig. 15

INVENTOR.

Marshall I. Williamson

BY

Howard B. Russell his ATTORNEY

1

2,783,013

REINFORCED EASEL CONSTRUCTION FOR FOLD-ING BOXES AND DISPLAY PANELS

Marshall I. Williamson, New Haven, Conn.

Application January 7, 1955, Serial No. 480,481

7 Claims. (Cl. 248—196)

This invention relates to display devices made from 15 paperboard, box board, and other suitable foldable sheet material.

More particularly, the invention provides improvements in the construction of easels for supporting a display panel or a box at a slant with regard to a supporting 20 surface for more prominent display of the panel or of the box contents.

The most commonly used form of easel is the wing type easel which comprises two leg panels foldable into angular position with regard to the display panel to which 25 they are attached. Wing easels have numerous disadvantages. They are relatively difficult to erect and they generally require a stiffer and heavier board than the board from which the box is made. For this reason wing easels are generally manufactured separately and are 30 then glued to the back of the display box or panel. In use, wing easels tend to collapse if the box or panel to which they are attached is moved about and the legs of the wing easel tend to spread apart under weight, leading to unsteadiness and danger of collapsing.

In my Patent 2,507,947, dated May 16, 1950, I disclosed a different type of easel construction which is particularly advantageous, if used in connection with folding boxes. In its preferred form, this type of easel is integral with the box and is readily set up from flat, collapsed to erected position without disturbing the box contents and without necessity of performing complex threading or locking operations, as are required in locking wing easels for example.

The present invention provides improvements in the construction of the type of easel disclosed in my aforementioned patent. The improved construction is particularly advantageous where the caliper of the board of a display box is light but, where merchandise of considerable weight must be securely supported.

The improved easel construction is characterized by a leg structure in which the load supporting portions are three-dimensional, rather than two-dimensional, by reason of reinforcing flanges which extend at an angle to the load bearing panels. These flanges prevent bending and buckling of the load bearing panels and also assist in the carrying of the load.

The improved easel may readily be set up into display position without disturbing the box contents, and it may also be recollapsed, if desired, but is secure against accidental collapsing under the load of the merchandise by reason of its construction. The construction is such that the three-dimensional elements of the easel automatically assume their shape when a guide flap is slid from one position which it assumes in the collapsed easel, to another position which it assumes in the erected easel. When the operation is reversed in order to collapse the easel, the three-dimensional load bearing flange leg structure automatically folds flat and is then ready for re-

The improved easel may form an integral part of a folding box, or it may be manufactured as a separate

2

unit which may be attached to and detached from a folding box or a display panel in order to convert an ordinary structure into a display structure by raising one end with regard to the other. The display panel or box then has an appropriate slant with regard to the supporting surface which may be a table, shelf, store counter, or the like.

The objects, features and advantages of the invention will appear more fully from the detailed description which follows accompanied by drawings showing, for the purpose of illustration, preferred embodiments of the invention. The invention also resides in certain new and original features of construction and combination of elements hereinafter set forth and claimed.

Although the characteristic features of this invention which are believed to be novel will be particularly pointed out in the claims appended hereto, the invention itself, its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part of it in which:

Fig. 1 is a plan view of a folding box blank comprising the new and improved easel construction in one of its forms, the inside surface of the blank facing the observer;

Fig. 2 is a perspective view of the blank of Fig. 1 after partial erection into box form, the easel portion being still unassembled;

Fig. 3 is a plan view of the easel portion of the box of Fig. 2 after an initial folding operation;

Fig. 4 is a perspective view of the easel portion illustrating the automatic formation of the angular flange structure initiated by the folding of one of the principal easel panels with respect to another;

Fig. 5 is a perspective view of the assembled and erected display box and easel made from the blank of Fig. 1; Fig. 6 is a side view, in section, of a portion of the display box of Fig. 5, the section being taken in plane 6—6 of Fig. 5;

Fig. 7 is a sectional plan view of a portion of the easel, the section being taken on line 7—7 of Fig. 6;

Fig. 8 is a plan view of an attachable and detachable easel of the style shown in Fig. 1;

Fig. 9 is a perspective view of a carton, turned upside down, with the flat collapsed easel of Fig. 8 attached to its back panel;

Fig. 10 is a perspective view of the box of Fig. 9 after erection of the easel;

Fig. 11 is a plan view of a box blank with an integral easel located at the far end of the display box with respect to an observer, the outside surface of the blank facing the observer;

Fig. 12 is a plan view of the easel portion of the blank of Fig. 11 after performance of a folding operation;

Fig. 13 is a perspective view of a display box assembled from the blank of Fig. 11, the box being turned upside down and the easel being shown in collapsed condition;

Fig. 14 is a perspective front view of the box of Fig. 13 after erection of the easel by means of a pull tab; and

Fig. 15 is a perspective view of the far end of the box of Fig. 14 showing the pull tab tucked in, and out of sight.

In the following description and in the claims various details will be identified by specific names for convenience. The names, however, are intended to be generic in their application. Corresponding reference numerals refer to corresponding parts in the several figures of the drawings.

The drawings accompanying, and forming part of, this specification, disclose certain specific details of the invention for the purpose of explanation of broader aspects of the invention, but it is understood that the details may be modified in various respects without departure from

the principles of the invention and that the invention may be applied to other structures than the one shown.

The blank A shown in Figure 1 comprises a display or bottom panel 11 to which side wall panels 12 and 13 are articulated along side fold lines 14 and 15.

One end wall structure comprises an outer end wall 16 articulated to the bottom panel 11 along an end fold line 17, an inner end wall panel 18 articulated to the outer end wall panel along a top end fold line 19, and a fold line 21. Hook flaps 22 and 23 are articulated to the side wall panels 12 and 13 along corner fold lines 24 and 25 and are provided with hooks 26, 27 for interlocking in a conventional manner. Interlocked, the hook between panels 16 and 18, as will later be seen.

A semi-circular tab 28 is cut from the body of the bottom panel 11 by a cut 29, and a crease line 30 may be provided at a distance from the end fold line 17 slightly greater than the length of the flap 20 to permit the flap 20 20 to be slid under the tab 28 when the box is assembled.

The opposite end wall structure comprises an outer end panel 31 articulated to the side wall panel 12 along a corner fold line 32, an inner end panel 33 articulated to the outer end panel along a top end fold line 34, and a 25 flap 35 articulated to the inner end panel 33 along a fold line 36.

An intermediate end panel 37 is articulated to the other side wall panel 13 along a corner fold line 38 and has an end flap 39 attached to it along a fold line 40 which, in 30 the assembled box, is in substantial coincidence with the corner fold line 32, as will later appear. The other end panel 31 is provided with a hook tab 41 articulated to the other end panel 31 along a fold line 42. The hook tab 41 is insertable into a slit or cut 43 in the side panel 13.

A semi-circular tab 44 is cut from the body of the bottom panel 11 by a cut 45, and a crease line 46 may be provided at a distance from the other end fold line 47 of the bottom panel 11 slightly greater than the length of the flap 35 to permit the flap 35 to be slid under the tab 44 when the box is assembled.

The easel structure comprises a stay panel 48 articulated to the bottom panel 11 along an end fold line 47, a main panel 49 articulated to the stay panel along a knee fold line 50, and a guide flap 51 articulated to the main panel along a fold line 52 which may be interrupted by an arcuate cut 53 to form a tab 54 integral with the guide flap 51. It is obvious that upon folding of the guide flap 51 with respect to the main panel 49 a self-opening aperture will be formed at the fold line 52 by displacement of the tab 54.

The panels of the easel are bounded by cuts 55, 56 and lateral fold lines 57 and 58 which preferably converge towards the guide flap 51.

The lateral fold lines 57 and 58 set apart lateral flange panels articulated to the stay panel and the main panel of the easel.

These lateral flange panels comprise stay flanges 59 and 60 alongside the stay panel 48 and main flanges 61 and 60 62 alongside the main panel 49.

Substantially triangular gussets 63 and 64 lie between the stay flanges 59, 60 and the main flanges 61, 62, respectively. These gussets are bounded by lines of articulation 65 and 66 towards the stay flanges 59 and 60, and 65 by lines of articulation 67 and 68 towards the main flanges 61 and 62.

In the illustrated blank the lines 65 and 66 lie in line with the knee fold line 50. This, however, is of no significance, the important orientation of the fold lines 65 and 66 involving an angle being later described by reference to Figure 3.

Ridge flaps 69 and 70 are articulated to the main flanges 61 and 62 along ridge fold lines 71 and 72.

the body of the bottom panel 11. These cuts are so spaced as to permit the guide flap 51 to slide freely with respect to the bottom panel 11 when the terminal ears 75 and 76 of the guide flap are inserted through the slits formed by the cuts 73 and 74. A lock tab 77 is formed by removal of stock from the area 78. The tab 77 fits the self-opening aperture formed by the tab 54 on the guide

flap 51. In order to facilitate the folding of the easel struca flap 20 articulated to the inner end wall panel 18 along 10 ture certain of the fold lines may be weakened by interrupted cuts, such cuts being indicated at C.

The assembly of a box A' from the blank A may proceed as follows:

The side wall panels 12 and 13 are first folded upflaps 22 and 23 constitute an intermediate end wall panel 15 right with respect to the bottom panel 11. The far end wall of the box may then be formed by folding and interlocking of the hook flaps 22 and 23, whereafter the outer end wall panel 16 and the inner end wall panel 18 are folded around the intermediate end wall formed by the hook flaps 22 and 23. The end wall is locked in assembled position by insertion of the flap 20 under the tab 28.

Next, the opposite end wall is formed by folding of the intermediate end panel 37 into the position which the end panel assumes in the assembled box. The other end panel 31 is then folded over the outside of the intermediate end panel 37, and its hook tab 41 is inserted through the cut 43. Thereafter the inner end wall panel 33 is folded over the inside of the intermediate end panel 37 and the flap 35 is inserted under the tab 44.

After these operations are performed, the box structure has the appearance shown in Figure 2. The easel assembly is still in its flat unfolded form. The folding of the easel may then proceed as follows:

Conveniently, the box is first turned upside down, the 35 flange panels are then folded over the stay panel 48 and the main panel 49 along the fold lines 57 and 58, respectively. The resulting structure is shown in Figure 3. It will be noted that the lines of articulation 65 and 66 form a definite angle α with the knee fold line 50, the orientation of the lines 65 and 66 being such that they overlie the stay panel 48 and not the main panel 49.

If the easel assembly is then folded along the knee fold line 50, as illustrated in Figure 4, the stay flanges 59 and 60 remain in overlying position with regard to the stay panel 43 while the remainder of the flanges assume an angular position with regard to the main panel This is a result of the angular misalignment of the lines of articulation 65 and 66 with the knee fold line. Folding of the easel assembly at the knee fold line tends to force the creases 65 and 66 as close to the knee fold line 50 as possible, resulting in a stress on the gussets 63 and 64 which, in turn, causes the main flanges 61 and 62 to assume an upright position with regard to the main panel 49.

In actual practice the erection and formation of the flange structure need not be carried out before insertion of the guide flap 51 into the cuts 73 and 74 of the box.

Referring to Figure 3, the folding of the flange portions over the easel panels 48 and 49 is followed by folding of the guide flap 51 over the main panel 49 and over the ridge flaps 69 and 70 which were previously folded over the main panel. The entire easel assembly is then folded back over the box bottom. This involves folding of the board at the end fold line 47. The ears 75 and 76 can then be tucked through the cuts or slits 73 and 74, respectively.

In order to set up the easel, the guide flap is simply slid along the cuts 73 and 74 towards the end fold line 47 until the self-opening cut at the fold line 52 moves past the lock tab 77. The lock tab 77 can then readily be inserted into the self-opening cut whereafter the box structure A" has the appearance shown in Figure 5.

Figure 8 illustrates a modification of the easel construction of Figure 1 to permit the easel to be attached Substantially parallel cuts 73 and 74 extend through 75 to and removed from an ordinary folding box or an ordi-

The easel blank B is provided with lock tabs 79 and 80 articulated to the stay panel 48 along the fold line 47'. The lock tabs 79 and 80 have cut edges 81 and 82 with 5 which the tabs make an edge-to-panel type engagement with a box panel after insertion of the lock tabs 79 and 80 through appropriate slits in the box panel.

Figure 9 shows a folding box 83 of optional construction comprising a bottom panel 11'. Slits 84 and 85 10 permit insertion of the lock tabs 79 and 80.

The box 83 with the attached easel B' is shown in Figure 10 in the position in which the easel is set up. The lock tab 80 is shown in broken lines and its slit 85 is clearly visible. The bottom panel 11' of the box is provided with cuts 73' and 74' to form guideways for the down folded guide flap 51 which is not visible in Figure 10. A lock tab 77' is provided in the same manner as in the box shown in Figure 5. After collapsing of the easel the box has the appearance as shown in Figure 9.

In the foregoing examples the easel may be considered as being hinged to the near or forward end of the box, considering the box in display position. The invention also permits hinged attachment of the easel to the rear or far end of the box. A box blank C with an integral easel of the latter style is shown in Figure 11.

The box portion of the blank corresponds in all material details to the construction shown in Figure 1 and the same reference numerals are used to identify corresponding elements. A slit or aperture 86 is cut in the bottom panel 11, and two tabs 44 are provided for the flap 35 on the inner end wall 33. This is necessary because of removal of a portion of the stock from that portion of the bottom panel at which the tab 44 is located in the blank A.

Turning now to the easel portion of the blank the main panel 149 is articulated to the bottom panel 11 along the end fold line 47 and the stay panel 148 lies between the guide flap 151 and the main panel 149. The stay panel 148 and the main panel 149 are articulated along the knee fold line 150. The main flanges 161 and 162 lie to either side of the main panel 149 which is divided into two portions by a pull tab 87 having a finger operable grip portion 88. The pull tab is articulated to the guide flap 151 along the fold line 152. The stay flanges 159 and 160 flank the stay panel 148 which is also split into two portions by the pull tab 87. The gussets 163 and 164 lie between the main flanges 161, 162 and the stay flanges 159, 160, respectively. The ridge flaps 169 and 170 which facilitate guidance and recollapsing of the easel structure are articulated to the main flanges 161 and 162 along the ridge fold lines 171 and 172. The gusset 163 is bounded by fold lines 167 and 165 and the gusset 164 is bounded by fold lines 168 and 166, re-

Figure 12 shows the easel in partially folded condition C' the flange panels being folded over the easel panels along the fold lines 157 and 158. It will be noted that the lines of articulation 165 and 166 form an angle with the knee fold line 150, the orientation of the lines 165 and 166 being such that they overlie the stay panels 148. The assembly of the box may proceed in the same way as was described in connection with the blank A. The resulting box C' is shown in Figure 13, the flat collapsed easel being folded over the bottom panel. The pull tab 87 is threaded through the slit or aperture 86 and its finger operable end portion 88 projects beyond the end wall 31.

In order to erect the easel it is only necessary to pull the tab 87 which causes the guide flap 51 to slide towards the end wall 31. This takes place even though the box 70 may be filled with heavy merchandise, for example a book.

The easel may be locked in erected position simply by tucking the pull tab 87 between the two legs of the easel as shown in Figure 15.

What is claimed is:

1. A collapsible display device comprising a wall and a reinforced easel for supporting the wall at a slant to a supporting surface, the wall including two substantially parallel slits therein, the easel comprising, a main panel, a stay panel articulated to the main panel along a knee line, one of said panels being attached to and foldable with regard to said wall along a fixed hinge line normal to said slits, the other panel having a guide flap articulated to it for sliding engagement with the slits in said wall, and a flange structure articulated to at least one lateral edge of said panels, said flange structure being traversed by fold lines to define at least three flange portions, namely, a stay flange articulated to, and folded over, the stay panel, a main flange articulated to, and extending at an angle with regard to said main panel considering the easel in set-up condition, and a gusset articulated to said stay flange and to said main flange, respectively, along fold lines aimed towards the intersection of the knee line with said lateral edge, the fold line between said stay flange and said gusset forming an angle with said knee line in the position in which the stay flange is folded flat over said stay panel.

2. A collapsible display device comprising a wall and a reinforced easel for supporting the wall at a slant to a supporting surface, the wall including two substantially parallel slits therein, the easel comprising, a main panel, a stay panel articulated to the main panel along a knee line, one of said panels being attached to and foldable with regard to said wall along a fixed hinge line normal to said slits, the other panel having a guide flap articulated to it for sliding engagement with the slits in said wall, and a flange structure articulated to each of the lateral edges of said panels, said lateral edges converging towards said guide flap, said flange structure being traversed by fold lines to define at least three flange portions, namely, a stay flange articulated to, and folded over, the stay panel, a main flange articulated to, and extending at an angle with regard to said main panel, considering the easel in set-up condition, and a substantially triangular gusset between, and articulated to, said stay flange and said main flange, respectively, along fold lines aimed towards the intersection of the knee line with the respective lateral edge, the fold line between said stay flange and said gusset forming an angle with said knee line in the position in which the stay flange is folded flat over

3. A collapsible display device comprising a wall and a reinforced easel for supporting the wall at a slant to a supporting surface, the wall including two substantially parallel slits therein, the easel comprising, a main panel, a stay panel articulated to the main panel along a knee line, one of said panels being attached to and foldable with regard to said wall along a fixed hinge line normal to said slits, the other panel having a guide flap articulated to it for sliding engagement with the slits in said wall, and a flange structure articulated to at least one lateral edge of said panels, said flange structure being traversed by fold lines to define four flange portions, namely, a stay flange articulated to and folded over, the stay panel, a substantially triangular main flange articulated to, and extending at an angle with regard to, said main panel. considering the easel in set-up condition, a gusset articulated to said stay flange and to said main flange, respectively, along fold lines aimed towards the intersection of the knee line with said lateral edge, the fold line between said stay flange and said gusset forming an angle with said knee line in the position in which the stay flange is folded flat over said stay panel, and a ridge flap articulated to the third side of the triangular main flange along a ridge fold line, said ridge flap being folded back upon said main flange, thereby resilient bearing against said wall.

 A collapsible display device comprising a wall panel and a reinforced easel for supporting the wall at a slant
 to a supporting surface, the wall including two substana, (00,01)

tially parallel slits therein, the easel comprising, a main panel, a stay panel articulated to the main panel along a knee line, one of said panels being attached to and foldable with regard to said wall along a fixed hinge line normal to said slits, the other panel having a guide flap articulated to it for sliding engagement with the slits in said wall, and a flange structure articulated to each of the lateral edges of said panels, said lateral edges converging toward said guide flap, said flange structure being traversed by fold lines to define four flange portions, namely, a stay 10 flange articulated to, and folded over, the stay panel, a main flange articulated to, and extending at an angle with regard to, said main panel, considering the easel in set-up condition, and a gusset between, and articulated to, said stay flange and said main flange respectively, along 15 fold lines extending from the intersection of the knee line with the respective lateral edge, the fold line between said stay flange and said gusset forming an angle with said knee line in the position in which the stay flange is folded flat over said stay panel, and a ridge flap articu- 20 lated to the third side of the main flange along a ridge fold line, said ridge flap being folded back upon said main flange, thereby resiliently bearing against said wall.

5. A reinforced collapsible easel assembly for supporting a display panel at a slant to a supporting surface, the 25 assembly comprising, a display panel, a stay panel attached to and foldable with regard to the display panel along a fixed base fold line, a load bearing main panel articulated to said stay panel along a knee fold line, means for releasably securing said main panel to said display panel at a portion of said display panel elevated with respect to said base fold line, and a flange structure articulated to each of the lateral edges of said stay panel and the main panel, said flange structure being traversed by fold lines to define at least three flange portions, namely, a stay flange articulated to, and folded over, the stay panel, a main flange articulated to, and extending at an angle with regard to, said main panel when the easel assembly is set up, and a gusset between, and articulated to, said stay flange and said main flange, respectively, along fold lines extending from the intersection of the knee line with the respective lateral edge, the fold line between the stay flange and said gusset being substantially in contact with, and overlying, the area of said stay panel and forming an angle with said knee line in the position in which 45 the stay flange is folded flat over the stay panel.

6. A reinforced collapsible easel assembly for supporting a display panel at a slant to a supporting surface, the assembly comprising, a display panel, a main panel attached to and foldable with regard to the display panel along a fixed elevated fold line, a stay panel articulated to said main panel along a knee fold line with which the

easel rests on the supporting surface, means for releasably securing said stay panel to said display panel at a portion of the display panel lower than said fixed elevated fold line, and a flange structure articulated to each of the lateral edges of said stay panel and said main panel, said flange structure being traversed by fold lines to define at least three flange portions, namely, a stay flange articulated to, and folded over, the stay panel, a main flange articulated to, and extending at an angle with regard to said main panel when the easel assembly is set up, and a gusset between, and articulated to, said stay flange and to said main flange, respectively, along fold lines extending from the intersection of the knee line with the respective lateral edge, the fold line between the stay flange and said gusset being substantially in contact with, and overlying, said stay panel and forming an angle with said knee line in the position in which the easel assembly is erected.

7. A reinforced collapsible easel assembly for supporting a display panel at a slant to a supporting surface, the assembly comprising, a display panel, a stay panel attached to and foldable with regard to the display panel along a fixed base fold line, a load bearing main panel articulated to said stay panel along a knee fold line, slit and tongue means on said display panel and the main panel for locking said main panel to said display panel in the position in which the assembly is erected, and a flange structure articulated to each of the lateral edges of said main panel and said stay panel, said lateral edges diverging towards said base fold line, said flange structure being traversed by fold lines to define at least three flange portions, namely, a stay flange articulated to, and folded over, the stay panel, a main flange articulated to, and extending at an angle with regard to, said main panel when the easel assembly is set up, and a gusset between, and articulated to, said stay flange and said main flange, respectively, along fold lines extending from the intersection of the knee line with the respective lateral edge, the fold line between the stay flange and said gusset being substantially in contact with, and overlying, the area of said stay panel and forming an angle with said knee line in the position in which the stay flange is folded flat over the stay panel.

References Cited in the file of this patent UNITED STATES PATENTS

527,694	Jones Oct. 16, 1894
1,330,946	Locke Feb. 17, 1920
1,860,324	Einson May 24, 1932
2,507,947	Williamson May 16, 1950
2,585,361	Williamson Feb. 12, 1952

,

.

.