Aug. 11, 1925. 1,549,645

F. WINDFUHR

FOLDABLE STRUCTURE

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Fig. 1

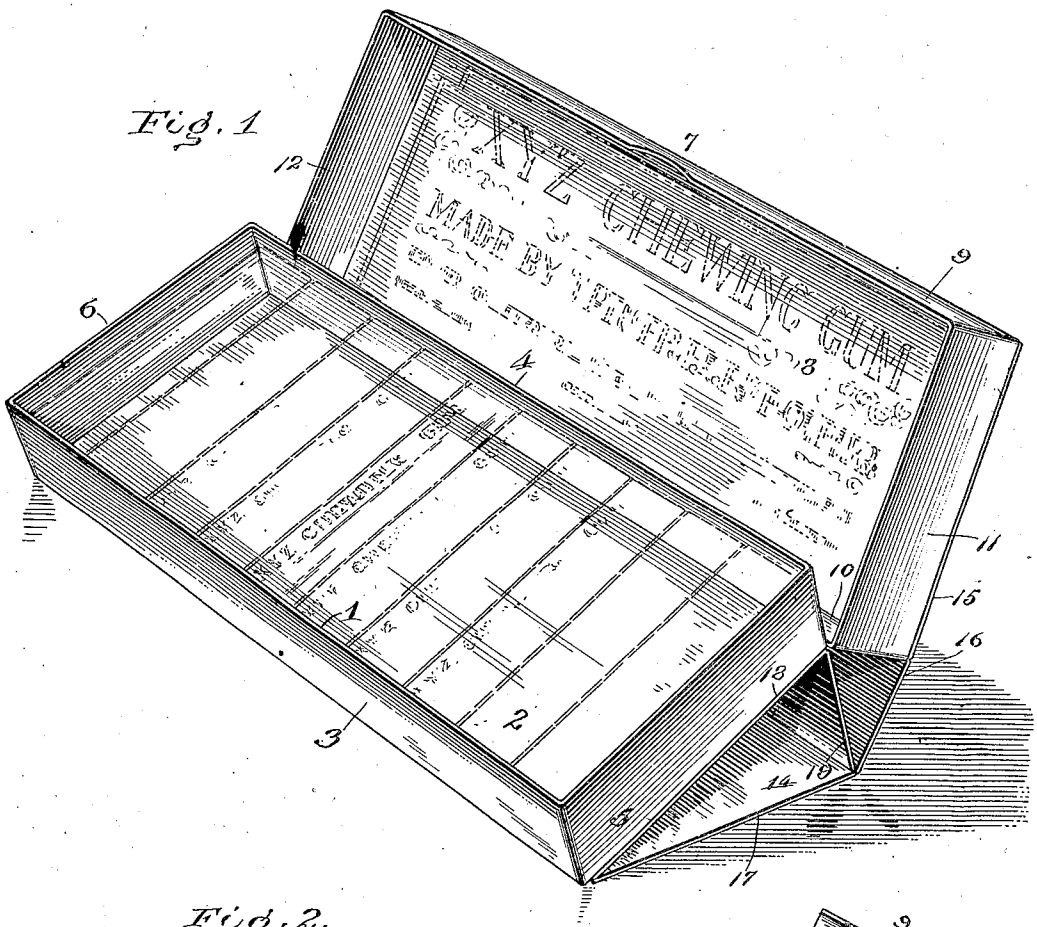



Fig. 2.

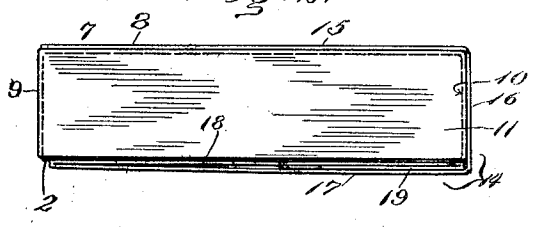



Fig. 3.




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Fig. 5.

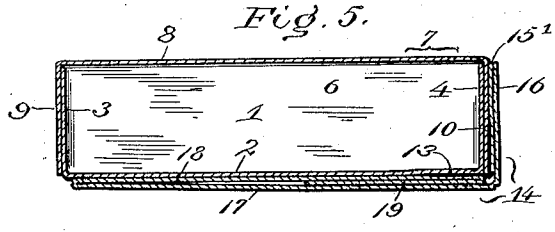



Fig. 4.




Fig. 7.

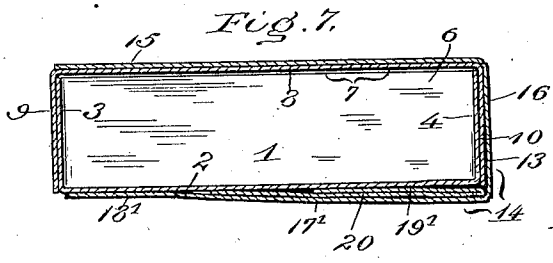



Fig. 6.




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# UNITED STATES PATENT OFFICE.

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## FOLDABLE STRUCTURE.

Application filed October 28, 1924. Serial No. 746,362.

*To all whom it may concern:*

Be it known that I, FRED WINDFUHR, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Foldable Structures, of which the following is a specification.

The present invention pertains to foldable structures provided with means for maintaining the parts of the structure, when desired, in a certain relation to each other and to the surface upon which the structure rests.

More particularly, the invention is directed to the construction of a box or the like in which it is desired to display articles of merchandise. However, the invention in its broader aspects is not intended to be restricted to this application.

In general, the invention consists in providing means for supporting the body of a box, when it is open, at an incline to the surface upon which it rests, so as to display the contents thereof, and at the same time, maintain the lid of the box in an upright position at the rear of the box body whereby advertising matter on the inside of the lid or even merchandise placed within the lid may be displayed.

An important object of the invention is the construction and arrangement of the parts of the body and lid-supporting means just referred to, so that when the box is closed the supporting means fold substantially into the planes of certain of the walls of the box. Thus, the box is not rendered bulky nor are the external appearance and the outside dimensions thereof changed materially. In other words it is intended to provide boxes or the like with supporting means of the character described which, when the boxes are closed, will permit them to be packed for shipment or other purposes in practically the same space as would be taken up by ordinary boxes of the same size not provided with body and lid-supporting means.

A further object is the provision of a foldable box structure having supporting means of the type described which do not detract from the appearance of the box either in its open or closed position. In fact, it is intended that the supporting means be so incorporated in the box structure or combined therewith as to render the appearance of the box, at least when closed, to all intents and purposes the same as an ordinary box.

Reference is had to the accompanying drawings showing several practical embodiments of the invention and in which the same reference numerals indicate like parts throughout the several views.

Figure 1 is a perspective view of one form of the invention embodied in a box structure, the lid of the box being open to display the contents thereof;

Fig. 2, an end view of the same box with the lid closed;

Fig. 3, a transverse section of the box as shown in open position in Fig. 1;

Fig. 4, a similar section of a modified form of the invention, the box being open;

Fig. 5, a similar section of the modification of Fig. 4 with the box closed;

Fig. 6, a similar section of a second modification, the box being open; and

Fig. 7, a similar section of the modification of Fig. 6, the box being closed.

In the drawings, Figs. 1–3, there is disclosed an embodiment of the invention in the form of a box made of cardboard or any other suitable material. As shown in these figures the box comprises a rectangular, open-top, body 1 having a bottom wall 2, a front wall 3, a rear wall 4 and end walls 5, 6.

The box lid 7, within which the body member 1 telescopes, is also of rectangular form and comprises a top wall 8, front wall 9, rear wall 10, and end walls 11, 12. Lid 7 is hingedly connected along the lower edge of its rear wall 10 to the body 1 along the lower rear edge thereof in any suitable manner, as by means of a paper hinge strip 13 secured to the parts by paste, or otherwise.

The means for supporting the body 1 in

a rearwardly and upwardly inclined position when the lid 7 is raised and for holding the lid itself in its open or display position, comprises a sheet or strip of cardboard 14 of a width substantially equal to the length of the bottom wall 2 of the box body and the top wall 8 of the box lid, i. e., the distance between the end walls of these members. Member 14 is scored or creased transversely at suitable intervals in its length to form hingedly connected sections 15, 16, 17, 18 and 19. Section 15 of member 14 is substantially co-extensive with the top wall 8 of the lid to the outer face of which it is pasted so as to bring its hinged connection with section 16 along the upper rear edge of the lid.

Section 18 of member 14 is likewise secured, as by pasting, to the exterior surface of the bottom wall 2 of the box body so as to locate its hinged connection with section 19 along the lower rear edge of the body 1. It will be noted that section 19 of member 14 is free to swing about its hinged connection with section 18 so that, as shown in Fig. 2, it may be swung up flat against the lower face of section 18 when it is desired to close the box or, as shown in Fig. 3, when the box is opened, it may be swung downwardly until its free, lower edge is located in the apex of the angle formed by hingedly connected sections 16 and 17 of member 14. Sections 16 and 17, because of the connection of sections 15 and 18 to the box lid and body, respectively, automatically move to the positions shown in Fig. 3 when the box lid is swung open about its hinged connection 13 to the box body.

When the parts are positioned as in Fig. 3, it will be seen that member 14 not only serves as an efficient truss, having a strut or prop formed by its section 19 and a chord comprising sections 16 and 17 thereof, for maintaining the body and lid in the desired angular relationship to each other, but it also acts as an easel for the body of the box. The body of the box being thereby supported in an upwardly and rearwardly inclined position on the surface upon which section 17 of member 14 rests, the contents thereof will be fully displayed to view. Likewise, a full view of the interior of the box lid will be had so that advertising matter or even merchandise may be displayed therein.

Preferably the sections of member 14 are proportioned and are attached to the parts of the box so that, when the box is closed, before which operation, of course, section 19 is swung flat against section 18, sections 16 and 17 of member 14 will lie flat against the bottom and rear walls of the box, respectively. The bottom wall of the box structure being made up of the bottom wall 2 of body 1 and the rear wall of the box consisting of the rear wall 4 of the body and rear wall 10 of the lid, when the box is closed, as in Fig. 2, the sections of truss 14, including strut section 19, will lie substantially in the planes of the bottom, top and rear side walls of the box structure. The closed box therefore does not present a bulky appearance, which is a characteristic fault of most boxes provided with easel or similar attachments, and is not appreciably increased in thickness, as will be observed from Fig. 2. In addition, boxes constructed in accordance with the present invention do not depart materially from the rectangular cross section, either longitudinally or transversely, of standard boxes, which would be a serious hindrance in packing and storing them.

Reference is now had to the modified form of the invention shown in Figs. 4 and 5. Here the box body 1 and its lid 7 are the same as they appear in Figs. 1–3. These parts are also connected by the hinge strip 13 as in the first form described. The body-easel and lid-supporting member 14 is the same as regards all of its hingedly connected sections, except that section 15 is replaced by a somewhat narrower section 15′. This section 15′ is secured to the outer surface of rear wall 10 of the box lid with which it is preferably substantially co-extensive. In this form of the invention, it will therefore be seen that, since the parts all function in the same manner as described with reference to the first form of the invention, when the box is closed, the parts of the truss member 14, including its section 19, will all lie substantially in the planes of the bottom and rear side walls of the box, as shown in Fig. 5. There is thereby provided a box structure which is practically as compact in form as that disclosed in Figs. 1–3. It is also to be noted that this modification of the form of member 14 effects a saving in material, since section 15′ of the member in the modification is considerably narrower than the corresponding section 15 in the first form of the box.

The second modification of the invention as applied to a box structure of the type shown in the other figures of the drawings is disclosed in Figs. 6 and 7, which will now be described.

From these figures it will be seen that the member 14 is substantially the same as regards the form and mode of attachment of its sections 15 and 16, as the member 14 appears in the form of the invention shown in Figs. 1–3. Hingedly connected to one edge of section 16 is a section 17′, to the opposite edge of which latter is hingedly connected a section 18′. Section 18′ is attached, as by pasting, to the under surface of the bottom wall 2 of the box body, just to the rear of its forward edge. In this form of the invention, the strut for bracing the member 14 when the box is in open or display position,

takes the form of a separate member having a base portion 20 secured, as by pasting, to the upper face of section 17′ of member 14, and a pivoted section 19′ hingedly connected to the base portion 20 along one edge thereof. It will thus be seen that, when the lid 7 is raised, the truss member 14 will automatically assume the position shown in Fig. 6 by reason of the fact that its sections 15 and 18′ are rigidly connected to the lid and body of the box, respectively. The box being so opened, section 19′ of the strut may then be swung upwardly to engage within the apex of the angle formed by the rear wall 10 of the lid and the bottom wall 2 of the body of the box. The parts will be firmly held in this position until section 19′ is swung down so as to permit the truss member 14 to collapse. When this takes place, and the box is closed, section 19′ of the strut will fold flat against the upper surface of its base 20, and the parts being properly proportioned, all of the sections of truss member 14 and the parts of the strut will move into a position so that they lie substantially in the planes of the top, bottom, and rear side walls of the box structure.

It is intended of course that numerous modifications may be made in the structures hereinbefore described and illustrated in the drawings. Of course, it is unnecessary for carrying out the purposes of the invention that the relative size of the body-easel and lid-supporting means, as compared with the parts of the box, be the same as shown in the drawings, but this may be varied in numerous ways so as to include the features of the invention. The supporting means, although preferably used in the forms shown in the drawings, i. e., of the same width as the box, may be made much narrower and located centrally of the box, or several such devices may be used on the box at suitable intervals for the purpose of supporting the body in the desired inclined position, and the lid in a position so as to disclose the interior thereof. Likewise, the invention is not intended to be restricted to a box of the character shown in the drawing, but may be utilized wherever it is desired to support two elements in a desired relationship to each other and the surface upon which the structure rests.

What I claim is:

1. A foldable structure comprising a pair of elements hingedly connected to each other; a member extending across the line of connection of the elements and having its ends secured to said elements, the middle portion of the member being free; and a strut for propping said free middle portion of the member so as to provide a supporting easel for one of said pair of elements and a truss to support the other of said elements at an angle to the first.

2. A display box comprising a body; a lid hingedly connected thereto; a member extending across the connection between and attached to the bottom of the body and the lid, said member having an intermediate free portion; and means arranged for adjustment to prop said free portion of the member to support the body in an inclined position and the lid at an angle thereto.

3. A display box comprising a body element; a lid therefor having a side wall hingedly connected along its lower edge to one edge of the body element; a combined body-easel and lid-supporting element crossing the line of junction between said parts, said easel and support element being connected to the bottom of the body element and to the lid and having an intermediate free portion; and a strut hingedly connected to one of said elements for adjustment to prop said free portion, the easel and support element and the strut lying substantially in the planes of the bottom and a side wall of the box when the box is closed.

4. A display box comprising a body; a lid therefor having a side wall hingedly connected along its lower edge to one edge of the body; a foldable, combined body-easel and lid-supporting member extending across the line of junction of the body and the lid, said member being attached to the body and the lid and having an intermediate free portion; and a hinged extension formed on one end of said member for adjustment to prop said free portion of the member.

5. A display box comprising a rectangular body having a bottom wall and a rear side wall; a rectangular lid within which the body is adapted to telescope, said lid having a top wall and a rear side wall hingedly connected along its lower edge to the body at the junction of the bottom wall and rear side wall of the body; a foldable, combined body-easel and lid-supporting member extending across the line of junction of the body and the lid, said member being attached to the bottom wall of the body forward of its rear edge and to the lid at the junction of its top wall and rear side wall and having an intermediate free portion; and foldable means associated with said member to prop the free portion thereof, said member and said propping means lying substantially in the planes of the bottom and rear walls of the box when the lid is closed.

6. A display box comprising a body having a bottom wall and a side wall; a lid having a top wall and a side wall, said lid being hingedly connected along the lower edge of its said side wall to the body at the junction of the bottom wall and said side wall of the body; a foldable, combined body-easel and lid-supporting member extending across the line of junction between the body and the lid, said member being attached to

the bottom wall of the body forward of its rear edge and to the exterior of the top wall of the lid so as to substantially cover the same and having an intermediate free portion; and foldable means associated with said member to prop the free portion thereof, said member and the propping means lying substantially in the planes of the bottom, top and side walls of the box when the lid is closed.

In testimony whereof I have signed my name to this specification.

FRED WINDFUHR.