Sept. 12, 1967 T. W. MAY 3,341,103

FOLDING LENS BOX

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Fig. 1

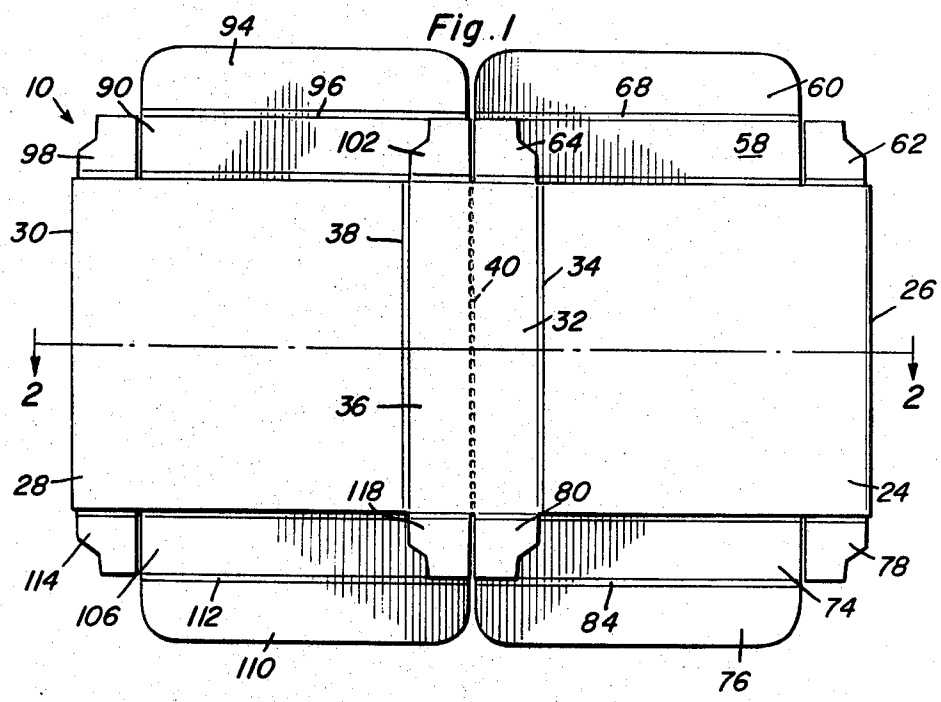


Fig. 2

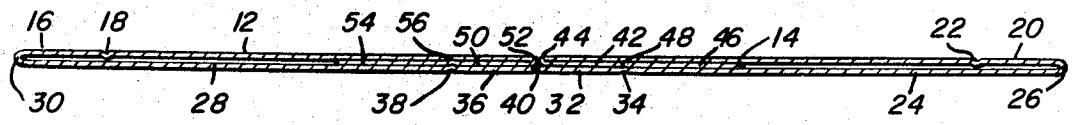
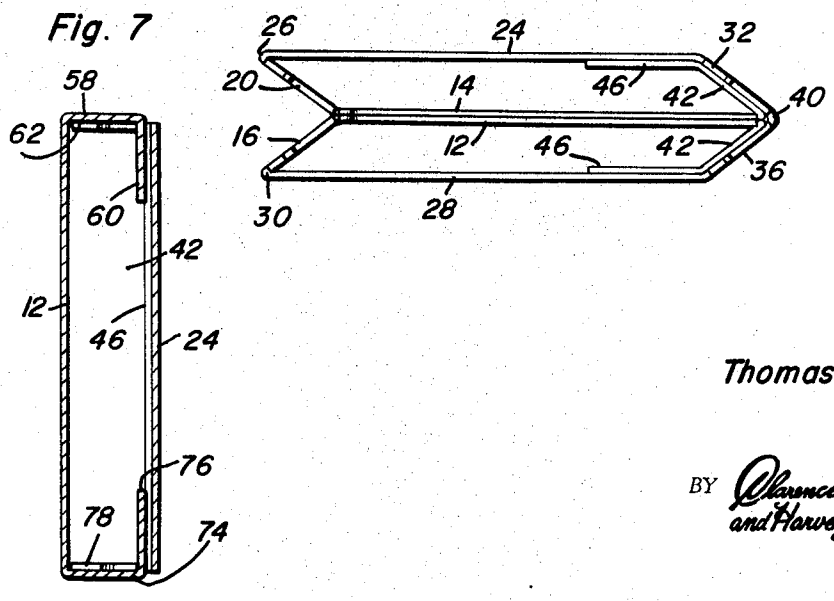


Fig. 3

Fig. 7



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Fig. 4

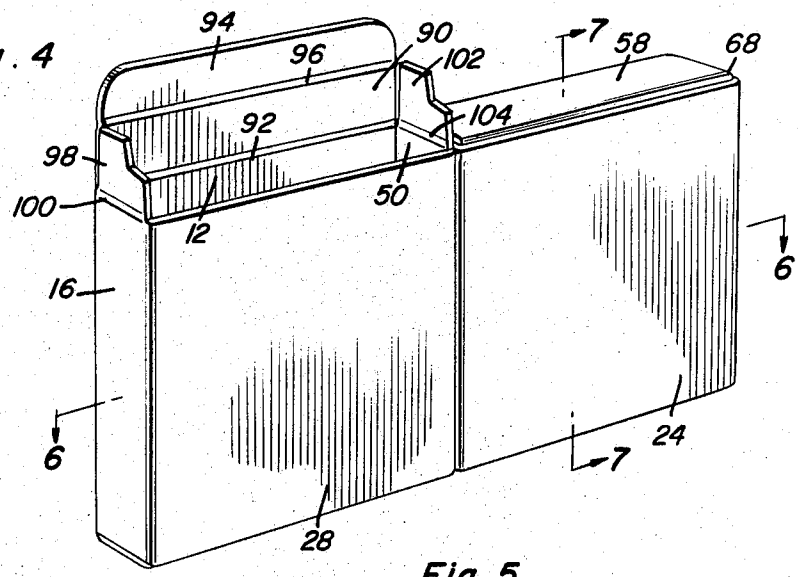


Fig. 5

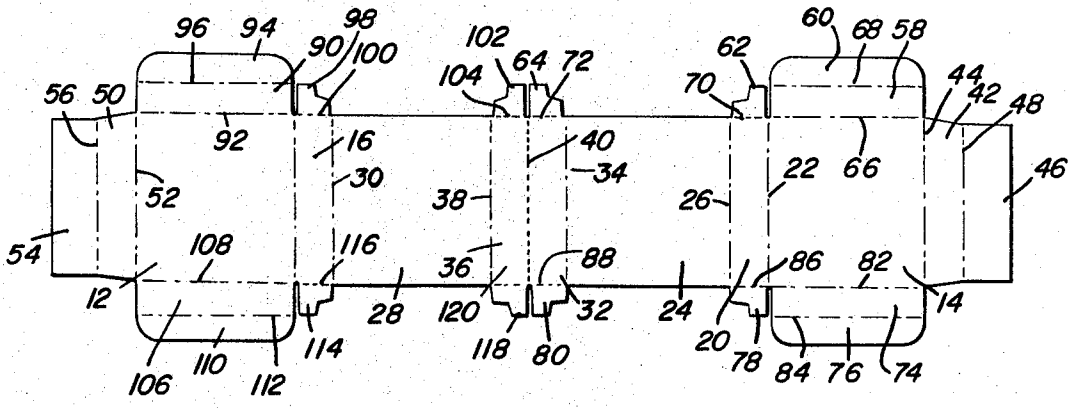
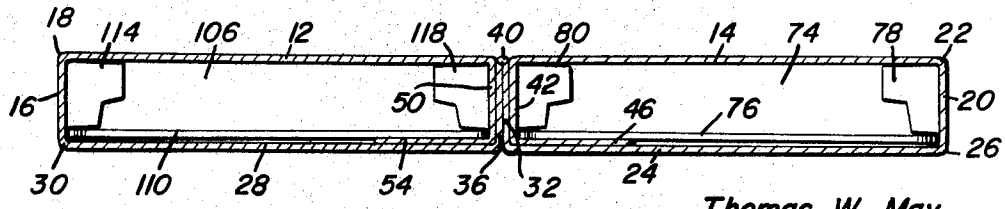


Fig. 6



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FOLDING LENS BOX

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ABSTRACT OF THE DISCLOSURE

A double compartment box of the folding type especially for use in packaging lenses or similar articles constructed from a single blank with the components being arranged in such a manner that when the two compartments of the box are folded or oriented in back-to-back relation to each other, the front wall of each compartment of the box will move away from the back wall to form a self-opening box to facilitate insertion of the lenses or other articles and to facilitate complete infolding of the top and bottom closure panel assemblies.

The present invention generally relates to boxes or cartons of the foldable type having a plurality of compartments for receiving articles.

In the packaging of certain articles, it has been customary to provide cardboard or paperboard boxes in the form of relatively planar blanks which may be "set up" by persons engaged in assembling the articles in the boxes for subsequent delivery to retain outlets or the like. In some instances, such as when packaging eyeglass lenses, the boxes are arranged in pairs and are interconnected so that the lens may be placed in each box of the pair and delivered in this manner. Such boxes are relatively small and it requires considerable time to set up the boxes and insert the lens in each separate compartment of the box. In the set-up formed, the two compartments of the box are arranged in edge to edge relation and are packaged with a plurality of double boxes incorporated into a larger package for shipment to the ultimate point of distribution.

Accordingly, it is the primary object of the present invention to provide a folding box especially adapted for use with lens but not necessarily restricted to since other articles may be packaged therein with the significant feature of the box being that when the two compartments of the box are oriented in back-to-back relation to each other, the front wall of each compartment of the box will be spaced from the back wall thereof thus forming a self-opening box that will facilitate insertion of the lenses or oher articles in the compartments of the box inasmuch as when the folded blank structure is oriented with the back panels in back-to-back contacting relation, the edge walls, being integrally connected to the back wall and front wall and being formed in planar condition with the front wall will move the front wall away from the back wall but yet maintain substantially the parallelism therebetween. This construction thus forms a multiple compartment carton or box which is normally disposed in a flattened condition but which will be automatically and self-opened when the back walls of the two compartments are oriented in back-to-back contacting relation.

A further object of the present invention is to provide a multiple compartment box having back walls which are normally disposed in alignment with each other when in the folded condition and also in the set up condition but in the procedure of setting up the box, the back walls are disposed in contacting relation to each other to thus open the box by moving the front walls away from the back walls thus eliminating the necessity of squeezing the box to open it, insert fingers to open it or perform a relatively difficult manipulative procedure in order to open the box.

Yet another object of the present invention is to provide a self-opening folding box for lenses or other articles which is relatively simple in construction, easy to set up, effective for packing articles and relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a plan view of the folding box of the present invention illustrating the orientation of the box when in flattened or folded condition prior to assembly with the lens or other articles;

FIGURE 2 is a sectional view taken substantially upon a plane passing along section line 2—2 of FIGURE 1 illustrating the structural arrangement of the component panels of the box;

FIGURE 3 is a plan view illustrating the orientation of the compartments of the box during the set-up operation in which the back walls or panels are oriented in back-to-back contacting relation thus moving the front walls away from the back walls to enable insertion of articles therebetween;

FIGURE 4 is a perspective view of the set-up box with one end of one compartment being illustrated in open position;

FIGURE 5 is a plan view of the blank from which the folding box of the present invention is formed;

FIGURE 6 is a sectional view taken substantially upon a plane passing along section line 6—6 of FIGURE 4 illustrating further structural details of the box when set up; and

FIGURE 7 is a vertical sectional view taken substantially upon a plane passing along section line 7—7 of FIGURE 4 illustrating further structural details of the box when set up.

Referring now specifically to the drawings, the numeral **10** generally designates the folding box with it being in folded position in FIGURE 1 which is the condition it will be supplied to the packager and being illustrated in a flat blank form in FIGURE 5 and illustrated in the set-up position in FIGURE 4.

The folding box **10** includes a left rear wall or panel **12** and a right rear wall or panel **14** which also may be considered the back walls as illustrated in FIGURES 1 and 2. Integral with the left rear wall **12** is an edge wall **16** joined thereto along fold line **18**. The right rear wall **14** includes an edge wall **20** integral therewith and joined thereto along fold line **22**. Integral with the edge wall **20** is a right front wall **24** joined thereto along fold line **26** and the edge wall **16** is integral with a left front wall **28** and is connected thereto along fold line **30**. Integral with the right front wall is provided with an end wall or edge wall **32** joined thereto along fold line **34** and the left front panel **28** is provided with a corresponding edge wall **36** joined thereto along fold line **38**. The terminal edges of the two edge walls **32** and **36** are indetachably interconnected along a perforated line **40** which also serves as a fold line but enables the two compartments of the box to be separated from each other if desired. Also, the right back wall **14** is provided with an edge panel **42** joined thereto along fold line **44** and an extension panel or connecting panel **46** joined to the edge panel **42** along fold line **48**. The surface of the edge panel **42** and connecting panel **46** which faces remotely from the back wall **14** underlies and is adhesively connected to the edge wall **32** and the left edge portion of the front wall **24** with the fold line **48** coinciding with the fold line **32** and the fold line **44** generally coinciding with the perforated fold line **40**. The right edge of the back panel

12 is provided with a similar construction including an edge panel 50 joined to the back panel 12 along fold line 52 which coincides with the perforated fold line 40. An extension or connecting panel 54 is connetced to the edge panel 50 along fold line 56 which coincides with the fold line 38 and the front surfaces of the panels 50 and 54 are adhesively secured to the inner surfaces of the edge panel 36 and corresponding portion of the front panel 28.

The top edge of the back wall 14 is provided with a top wall 58 and a closure flap 60 and the edge wall 20 is provided with a partial closure flap 62 and the edge wall 32 is provided with a partial top closure flap 64. The top wall 58 is joined to the back wall 14 along fold line 66 and the top flap 60 is joined to the top wall panel 58 along fold line 68. The closure flap 62 is joined to the edge wall 20 along fold lines 70 and the top flap 64 is joined to the edge panel 32 along fold line 72. This construction enables the closure flaps 62 and 64 to be folded inwardly and the top panel 58 disposed in overlying relation thereto with the closure flap 60 inserted under the front panel 64 in a conventional manner of closing a box.

The rear wall 14 also includes a bottom closure wall 74, a closure flap 76 integral therewith and the edge wall 20 includes a bottom closure flap 78 and the edge wall 32 includes a bottom closure flap 80. The top wall 74 is joined to the back wall 14 along fold line 82 and the closure flap 76 is joined to the top wall 74 along fold line 84. The bottom closure flap 78 is joined to the edge wall 20 along fold line 86 and the bottom closure flap 80 is joined to the edge wall 32 along fold line 88 thus enabling the bottom of the box to be formed in a conventional manner by first in-folding the closure flaps 78 and 80 and then folding the top panel 74 and closure flap 76 into overlying relation thereto thus forming the set-up box as illustrated in FIGURE 4.

The left back wall 12 is provided with a similar construction including a top closure wall 90 joined to the top edge along fold line 92 and a closure flap 94 joined to the top wall 90 along fold line 96. The top of the edge wall 16 is provided with a closure flap 98 joined to the top edge thereof along fold line 100. The edge wall 32 is provided with a closure flap 102 joined to the top edge thereof along fold line 104. The bottom edge of the rear wall 12 is provided with a closure wall 106 joined thereto along fold line 108 and the closure flap 110 is joined to the bottom wall 106 along fold line 112. The lower edge of the edge wall 16 is provided with a closure flap 114 joined thereto along fold line 116 and the bottom edge of the end wall 32 is provided with a closure flap 118 joined thereto along fold line 120 with this compartment of the box being set up in the same manner as the right hand compartment. Tabs 46 and 54 may be omitted in certain instances.

In assembling the blank of FIGURE 5, it is only necessary to fold the edge panel 42 and connecting panel 46 inwardly along fold line 44, coat the exposed surface of panels 42 and 46 with glue and then fold this arrangement inwardly along with back panel 14 and edge panel 20 inwardly along fold line 26 with the adhesive coating then securing the edge panel 42 in underlying relation to the edge panel 32 and the connection panel 46 to the undersurface of the corresponding portion of the back panel 24 adjacent the edge panel 32. This same procedure is carried out either simultaneously or sequentially on the other half of the box thus forming the blank into a folded box which is supplied to the packager in the knockdown position of FIGURE 1 or the packager may actually reform the blank into the knocked down or folded position illustrated in FIGURE 1 and also in FIGURE 2. In any event, the box is ultimately supplied to the packager in the condition illustrated in FIGURES 1 and 2.

Due to the fact that the perforated fold line 40 is located at the front of the folded box illustrated in FIGURE 1, the two edges of the folded box represented by fold lines 26 and 30 may then be swung rearwardly toward each other as the perforated fold line 40 is swung upwardly out of the plane of the drawing illustrated in FIGURE 1 or the fold line 40 may be left still while the edges 26 and 30 are swung rearwardly in order to bring the two back walls 14 and 12 in overlying relation to each other in the position illustrated in FIGURE 3 in which condition the walls 12 and 14 are orientated in surface to surface contact and the wall 24 and the wall 28 are orientated in spaced relation to each other. This orientation is caused due to the construction of the cardboard box and the fact that the fold lines 52 and 54 more or less abut each other which causes fulcruming of the edge panels 32 and 36 into angular relation to the front walls 24 and 28 respectively thus moving the walls 24 and 28 away from the walls 12 and 14 in the position illustrated in FIGURE 3. In this position, it is then quite easy to grasp the end walls 32 and 36 with the inner surface of the thumb and the end walls 20 and 16 with the forefinger which actually will probably engage the fold lines 22 and 18 and the thumb will engage the perforated line 40 and by squeezing the thumb and forefinger toward each other, the end walls may be orientated substantially in perpendicular relation to the front and back walls thereby enabling the other hand to quickly and rapidly fold in the closure flaps attached to the bottom edges of the end walls and then fold in the bottom closure flap and bottom wall to form a box with the two compartments orientated in the manner illustrated in FIGURE 3 with the bottom structure being formed thereby leaving the top structure open. In this position, the box may be retained while the lenses or other articles are inserted therein and the top panels and closure flaps properly orientated or the set-up box with the two open top ends may be supplied to another person in order for the lenses to be inserted therein or in order for other articles to be inserted therein after which a final closing operation is conducted by folding the closure flaps on the end walls inwardly and then folding the closure flap and top closure wall into proper position.

The fact that the front and back walls are automatically spread apart when the back walls 12 and 14 are brought into contact with each other provides a self-opening feature for the box to enable the box to be more rapidly and easily set-up into an operative position for receiving the lenses or other articles.

With the folded box in the condition illustrated in FIGURES 1 and 2, many of these boxes can be shipped to the lens manufacturer or other manufacturer in a relatively small package. Then, it is a very simple matter to cause the box to be automatically opened so that it is then only necessary to close the lower end of each compartment of the box before the lenses or other articles are put in and the tops closed. Even though the box contains two glued portions, it will still be quite economical to manufacture since it can be run through a high speed gluing machine or the like and the considerable time saved in packing the lenses will introduce savings considerably more than any additional cost that may be incurred by employing a glued box.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A folding box comprising a pair of compartments orientated in edge-to-edge aligned relation and each including a front wall and rear wall disposed generally in parallel relation, edge walls disposed generally parallel to each other and perpendicular to the front and rear

walls, a bottom closure and a top closure connected with said rear walls, the end edge of the front wall being straight and uninterrupted, each edge wall having an extending tab on each end thereof folded under the closures, and a perforated fold line interconnecting the compartments at the adjacent edges of the rear surface of the compartments thereby urging the adjacent edge walls away from the inner surface of the rear walls when the rear walls are moved towards each other about the perforated fold line, the adjacent edge walls of the compartments being unitary with the front walls thereof, each rear wall having an edge wall underlying and glued to the adjacent edge wall integral with the front wall and including a connecting wall extending inwardly of and glued to the inner surface of the front wall adjacent the edge wall.

2. A blank for a folding double compartment box comprising an elongated, generally rectangular planar member having identical halves joined together by a perforated central fold line, each half of the blank including sequentially from the central fold line, a first edge wall panel, a front wall panel joined to the edge wall panel along a fold line, a second edge wall panel joined to the front wall panel along a fold line remote from

said first edge wall panel, a back wall panel connected to the second edge wall panel along a fold line, a third edge wall panel joined to the back wall panel remote from the second edge wall panel and adapted to underlie and be secured to the first edge wall panel, and a connecting panel connected to the third edge wall panel along a fold line and adapted to underlie and be secured to the front wall panel, said first and second edge wall panels having closure flaps at the top and bottom edge thereof, said back wall panel having closure flaps at the top and bottom edge thereof for forming a closed compartment.

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