

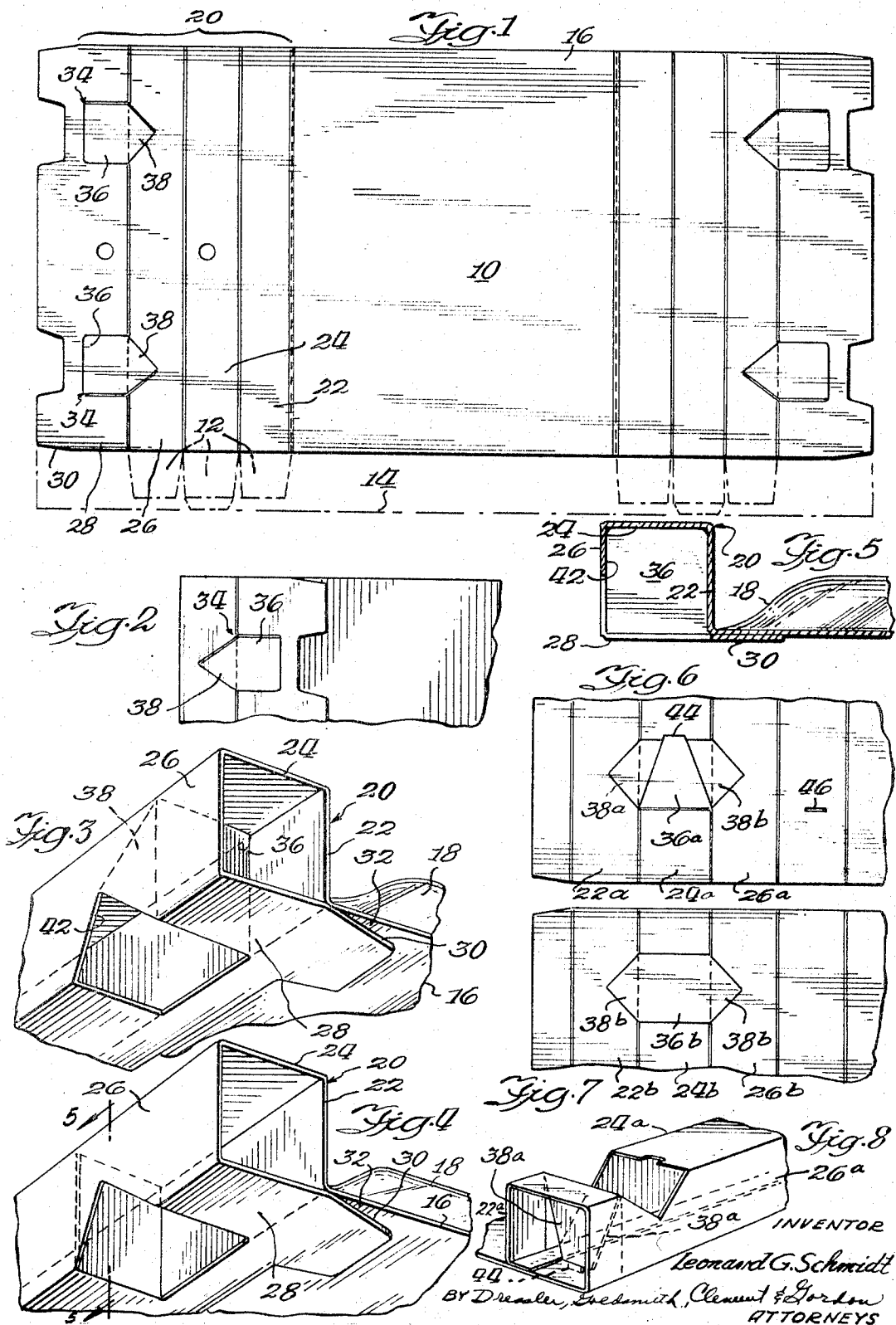
March 25, 1969

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3,434,646

SHADOW BOX

Filed April 19, 1967



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3,434,646

SHADOW BOX

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Filed Apr. 19, 1967, Ser. No. 632,042

Int. Cl. B65d 5/00, 5/48

U.S. Cl. 229—16

6 Claims

ABSTRACT OF THE DISCLOSURE

A knock-down shadow box in which frames constructed at opposite ends may be readily set up by the user of the box. When set up in their raised position, the frames assume a convenient shape, such as a closed tube. Each frame is maintained in its raised position by internal locking tabs formed in and hinged to at least two adjoining walls of the tube. The tabs are pushed into the set-up tube and lock in place to support the tube in its extended position. The tabs are locked in place with a support segment of each tab positioned normal to the walls of the tube and a locking flange, hinged to the support segment, lying against the inner surface of one wall after swinging through approximately an 180° arc.

Background

The use of shadow box display cartons of one form or another, particularly in combination with a plastic blister attached to the surface of a carton for enclosing a product to be displayed, is becoming increasingly more widespread. The problems of designing such display cartons are twofold in that they should show off the product to be sold in the most advantageous manner, while at the same time they should be designed to keep production costs to a minimum.

The primary elements of cost include the material used for the carton, any coatings applied to this base material, and the labor involved in setting up the shadow box display carton in its final configuration. Many display cartons are provided with raised frame portions around their periphery and have plastic blisters attached to the center portion thereof enclosing the product to be displayed and sold. Typically, the frame portions are in the form of raised tubes which, after being set up, are, in one way or another, locked in raised position. This is normally accomplished by the use of external tucks or flaps formed at the ends of such tubular frame structures.

Such shadow box display structures normally are stamped from large sheets of material and are then folded into their desired configuration. When the frame portions of shadow box display cartons are provided with external tucks or flaps, the total amount of material required is substantially greater than is required for the shadow box itself excluding such external tucks and flaps.

Furthermore, when such shadow boxes are shipped to a user, a considerable amount of labor time is required to set up the frame portions, i.e., to tuck in the external tucks and flaps. For example, in the normal configuration in which there are two flaps and a cover piece, such as are found at the ends of typical tubular boxes, the setup operation requires three folds at each end of the frame in addition to tucking in the cover piece in order to complete the setup of the frame portion. While the operation is basically a simple one, the amount of time required to accomplish the setup operation results in high labor costs in relation to the material costs and the usual cost of the item being packaged.

Summary of invention

In accordance with the present invention, there is provided a shadow box in which the amount of material re-

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quired is reduced and in which the amount of labor required to set up the shadow box in its raised position is also substantially reduced. In this way, a display carton is provided which is both attractive and inexpensive.

Such a shadow box has a generally central portion designed to support the article to be displayed. A frame portion is provided at opposite ends of the central display portion and is constructed to be readily set up by the user of the shadow box. When set up, the frame portion may assume any convenient shape, for example, a raised hollow tube.

The amount of material required for such shadow box display cartons is greatly reduced by the elimination of external tucks and flaps. This is accomplished by the use of internal locking tabs, which in the present invention allow for extremely rapid manual setup of the frame portions in their raised positions. When the tube is set up, the internal locking tabs, which are formed in at least two adjacent walls of the frame portion, are pushed into the frame portion until they are automatically locked in place to support the tube in its raised position.

The locking tabs are formed with at least two portions, a support segment and a locking flange, each hingedly connected to adjacent walls of the frame portion and to each other. When a locking tab is pushed into a set-up frame portion, its support segment assumes a position normal to the walls of the frame while the locking flange typically swings through an arc of 180° into a plane parallel to the wall from which it is cut. Not only does the support segment resist the collapse of the frame walls, but it also resists the swinging of the locking flange from its position against the wall from which it is hinged. The flange in turn resists rotation of the support segment from its final position. This coaction of the two portions of the locking tab results in the desired locking action.

In the shadow box of the present invention, it is not necessary to provide frame portions on all four sides of the central display area. If desired, frame portions can be located at only the ends of the central display portion, since each frame is capable of being locked in its raised position independently of any other frame portion. This also allows for a saving of material, since it is not necessary to provide frame portions on the sides of the box.

Advantages of invention

Since a plurality of shadow box blanks are usually stamped from a single sheet of material, the less material required for each blank, the more blanks can be obtained from each sheet. This material saving has an additional benefit when the shadow boxes are used for blister packaging. When so used, the entire sheet is usually coated with a thermoplastic resin, before stamping. This coat is used to adhere the blister to the surface of the display carton as is well known in the art. Since more blanks incorporating the present invention may be stamped from each sheet of material, there is less scrap material, and, therefore, less resin wasted, resulting in obvious cost savings.

Furthermore, by use of the internal locking tabs, the shadow box can be set up by the user easily and in less time than previously possible, i.e., approximately twenty-five percent of the time needed for presently known configurations. The value of such time savings and the resulting lower labor costs are particularly important in the production of such a low price item.

The structural strength of the frame portion of this shadow box is considerable. The support segment of the locking tab is perpendicular to the walls it supports in their extended positions, and hence provides a very strong resistance to collapse of the extended frame.

Numerous other advantages and features of the present invention will become readily apparent from the following detailed description of the invention and several embodiments thereof, from the claims and from the accompanying drawings, in which each and every detail shown is fully and completely disclosed as a part of this specification, and in which like reference numerals refer to like parts and in which:

FIGURE 1 is a plan view showing a blank cut and scored to allow for formation of the shadow box;

FIGURE 2 is a partial bottom plan view showing one corner of the shadow box with the frame folded over but still in its collapsed position;

FIGURE 3 is a partial bottom perspective view showing the frame set up in its raised position with the locking tab in its supporting position;

FIGURE 4 is a partial bottom perspective view showing a modification of the embodiment of FIGURE 3 in which the locking tabs define a closed compartment within the frame;

FIGURE 5 is a cross-section taken along the line 5—5 in FIGURE 4;

FIGURES 6 and 7 are partial bottom plan views showing alternative embodiments of the locking tab of the present invention; and

FIGURE 8 is a perspective view showing the frame in its raised position with the use of the alternative embodiment of the locking tab shown in FIGURE 6.

The shadow box of the present invention is formed from a blank 10 cut from a larger sheet of material. Since the shadow box of the present invention does not require external tucks and flaps, a considerable amount of material is saved when compared to the amount required for existing structures. It can be seen that if external tucks and flaps, indicated at 12 by the dotted lines in FIGURE 1, were used, extra material in the sheet from which the blank is cut, as indicated by the phantom lines 14 in FIGURE 1, would have to be allocated for both sides of every blank. This excess material amounts to an extra 25 percent or so, as indicated by the shaded area within lines 14. Moreover, over half the extra material would not be utilized in making up the shadow box, and would become nothing but waste paper. By the present invention, however, all the material allocated for the blank 10 is utilized in making the shadow box.

The blank 10 consists of a central area 16 on which the item to be displayed is mounted. If a blister package is to be used, the blank may be precoated with a suitable resin used for attachment of the plastic blister 18, such as illustrated in FIGURES 3 to 5.

The blank 10 also includes a frame portion 20 formed at each end of the central display area 16. The frame portion 20 illustrated in the drawings consists of four walls, a front wall 22, a top wall 24, a back wall 26, and a bottom wall 28. The outer edge of the bottom wall 28 terminates in an attachment lip 30, which, as seen in FIGURES 2 and 3, may be folded back and suitably attached, such as by adhesive, to the bottom 32 of the display area.

In its collapsed position, as shown in FIGURE 2, the walls of the frame 20 lie in a plane parallel to each other and to the central display area 16. In this collapsed position, the shadow boxes may be readily stacked on each other without wasting space. Furthermore, if a blister packing is used, the blister can be more easily attached while the box is collapsed. The shadow box is set up by pushing each frame 20 towards the display area 16 until it is in its raised position. As shown in FIGURES 3, 4 and 5, the frame 20 assumes the shape of a hollow tube having a square cross section. It should be understood that the frame portion may be formed from various number of walls and may conveniently assume a number of different shapes.

In one form of the present invention, shown in FIGURES 1-5, internal locking tabs are formed in two ad-

jacent walls, e.g., in the back wall 26 and the bottom wall 28. Each locking tab 34 includes a support segment 36 cut from and hinged to the bottom wall 28 and having the same shape as the cross section of the frame 20 in its raised position, and a locking flange 38 formed from the back wall 26 and hinged not only to the back wall, but to the support segment 36 along the junction of the two walls. As shown in the drawings, the locking flange 38 is in the shape of an isosceles triangle with its base hinged to the support segment.

In setting up the frame portion 20 of the shadow box, the frame is first pressed into its raised position, as shown in FIGURES 3 and 4. The locking tab 34 is then pushed into the raised frame until it locks in place to support the frame in its raised position. The frame 20 is supported by having each tab 34 in its final position disposed with its support segment 36 normal to the walls of the frame 20. Locking of the support segment 36 in place is achieved by rotation of locking flange 38 180° out of the plane of the back wall 26 from which it is cut, and into a plane parallel to the back wall lying at the inner surface 42 thereof, as can be seen most clearly in FIGURE 3.

In this position, the support segment 36 of the locking tab 34 not only resists collapse of the frame 20, but also resists the swinging of the locking flange 38 out of its final locked position. The locking flange 38 in turn resists rotation of the support segment 36 from its final structural position normal to the frame walls. It is this coaction of the two portions 36, 38 of the locking tabs 34 that results in its locking action.

Depending upon the particular arrangement of the cuts and scores, the locking tabs may also form a closed compartment in the raised frame 20, as shown in FIGURE 4, if it is desired to retain some product, such as a tube of adhesive, therein.

In the alternative embodiments shown in FIGURES 6, 7 and 8, two locking flanges 38a and 38b are provided to improve the locking action of each locking tab 34a and 34b, respectively. In FIGURE 6, the support segment 36a is provided with an end lip 44 which fits into a slot 46, formed in the wall opposite from the wall in which the support segment 36a is hinged, to provide additional locking action.

While the embodiments illustrated in FIGURES 6, 7 and 8, the support segments 36a, 36b are hinged to the top wall 24a, 24b, respectively, and the locking flanges 38a, 38b are formed in the front walls 22a, 22b and back walls 26a, 26b, respectively. It should be clear, however, that any adjacent walls may be used for formation of the locking tabs.

Thus, there has been disclosed a shadow box display carton having raised frame portions with internal locking tabs which provide for extremely fast operation when it is desired to set up the shadow box in its raised position. In addition, the amount of material used is less than the amount required for structures utilizing the usual external tucks and flaps. In addition, the use of the configuration of the present invention eliminates the necessity of having frame portions surrounding the entire central display area of the shadow box resulting in a further saving of material, and set up time.

Typically, the amount of material saved by the use of such internal locking tabs over the configuration having the external tucks and flaps is of the order of 25 percent, and the labor required for setup time will be approximately 25 percent of that required for existing configurations. This time savings results from the simple set up procedure. Thus when the frame is set up, the locking tab is simply pushed into the raised frame.

This positions the support segment normal to the frame walls, causes the locking flange to swing through its arc into position against the inside surface of one wall and automatically locks the tab in place. The result is a

strong shadow box, with reliably positioned structural members, having an attractive appearance.

It will be readily observed from the foregoing detailed description of the invention and the illustrated embodiments thereof that numerous variations and modifications may be effected without departing from the true spirit and scope of the novel concept of the principles of this invention.

I claim:

1. A shadow box comprising a planar central portion, a frame portion formed integrally with each end of said central portion and movable between a collapsed position and a raised position, each said frame portion being formed with front, top, back, and bottom walls, each of said walls having first and second opposed edges, said front wall being hinged along its first edge to one end of said central portion, said top wall being hinged along its first edge to said front wall along the latter's second edge, said back wall being hinged along its first edge to said top wall along the latter's second edge, said bottom wall being hinged along its first edge to said back wall along the latter's second edge and being attached adjacent its second edge to the bottom surface of said central portion adjacent said one end thereof, the walls of said frame portion when in its collapsed position being substantially parallel to said central portion with said front and top walls being coplanar therewith, the walls of said frame portion when in its raised position forming a closed tube having a rectilinear cross section with said top and bottom walls generally parallel to said central portion and said front and back walls generally perpendicular to said central portion, and an internal locking tab formed from at least two adjacent walls of said frame portion for maintaining said frame in its raised position, said locking tab including a support segment hinged to said bottom wall and pivotable when the frame is in its raised position to a position normal to the walls of said frame, whereby the entire periphery of said support portion contacts the inner surfaces of said walls, and a locking flange hinged to one of said front and back walls and to said support segments and movable, upon the pivoting of said support segment into its position normal to the frame walls, through an arc of approximately 180° to a position against the inner surface of said wall to which it is hinged, thereby locking said support segment in said normal position and said frame in its raised position.

2. A shadow box comprising a central portion, a frame portion formed integrally with at least one end of said central portion and movable between a collapsed position and a raised position, each said frame portion

being formed with a plurality of walls, the walls of said frame portion when in its collapsed position being substantially parallel to said central portion and to each other, the walls of said frame portion when in its raised position forming a closed tube, and at least one internal locking tab formed from adjacent walls of said frame portion for maintaining said frame in its raised position, each said locking tab including a support segment hinged to one wall and a locking flange hinged to said support segment along one entire edge thereof and to another wall adjacent to said one wall, said support segment pivotable into said raised frame to a position perpendicular to the walls thereof, said support segment when in said perpendicular position being in contact with all the walls of said raised frame, and said locking flange simultaneously movable to a position against the inner surface of said other wall whereby said tab is locked in position supporting said frame in its raised position.

3. A shadow box as claimed in claim 2 in which the cross section of said frame in its raised position is substantially square, and in which the shape of the support segment of said locking tab is also square.

4. A shadow box as claimed in claim 2 in which the wall opposite said one wall is provided with a slot and the edge of said support portion engaging said opposite wall has a lip engageable with the slot to further retain the support segment in its position perpendicular to the walls of said frame.

5. A shadow box as claimed in claim 2 in which the support segment is hinged to said one wall and locking flanges are formed in both walls adjacent said one wall.

6. A shadow box as claimed in claim 1 in which said locking flange when in position against the inner surface of said one wall to which it is hinged extends between the first and second opposed edges of said one wall.

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U.S. Cl. X.R.

229—28; 206—45.33