Dec. 27, 1938. H. P. LUHN 2,141,399

MINIATURE STRUCTURE AND BLANK THEREFOR

Filed Jan. 3, 1936

Fig. 1

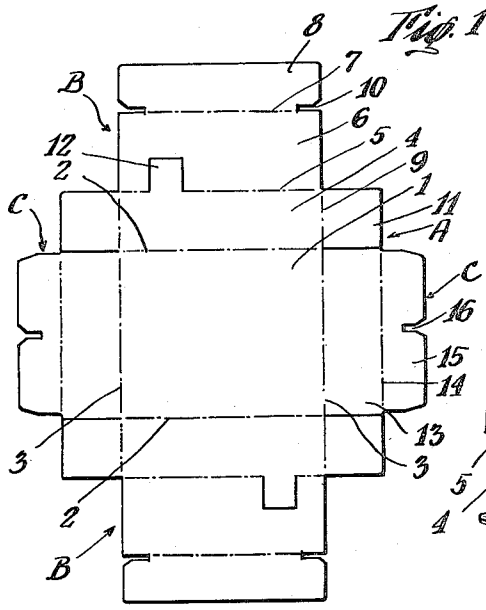


Fig. 2

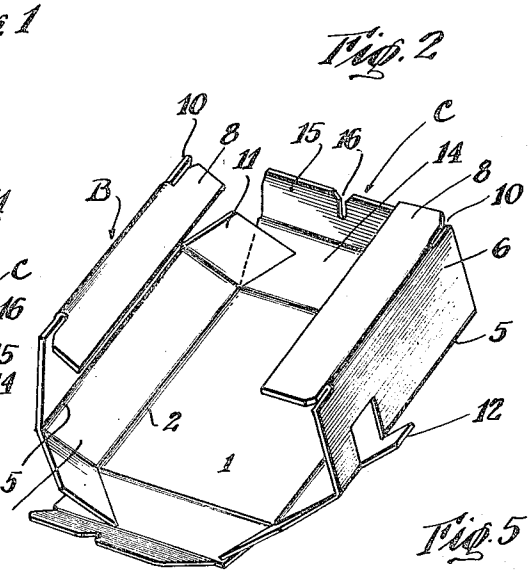


Fig. 5

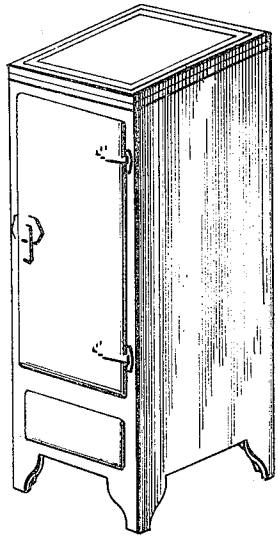


Fig. 3

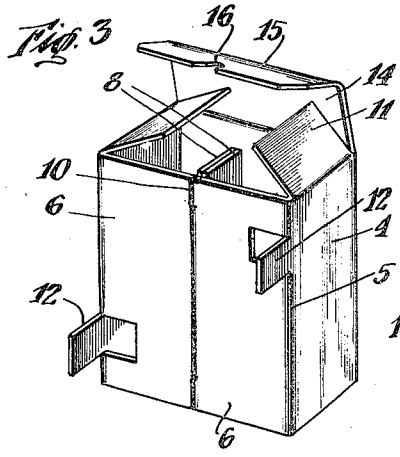
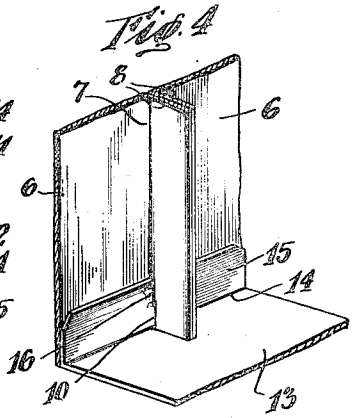


Fig. 4



INVENTOR
Hans P. Luhn
BY
Hoguet, Neary & Campbell
ATTORNEYS

Patented Dec. 27, 1938

2,141,399

UNITED STATES PATENT OFFICE

2,141,399

MINIATURE STRUCTURE AND BLANK THEREFOR

Hans P. Luhn, North Tarrytown, N. Y.

Application January 3, 1936, Serial No. 57,333

3 Claims. (Cl. 46—15)

This invention relates to miniature building structures and other structural units and parts thereof that are either in whole or in part enclosing in form, including containers for various purposes. One particular application of the invention has to do with the manufacture of articles simulating house furnishings and which may be used in planning the arrangement of furniture in rooms and in designing house plans. Another application of the invention that immediately suggests itself is that of forming toys and blanks for the same. The invention includes unitary blanks of a novel form for use in forming such structures and articles of manufacture or parts thereof.

One of the prior methods of producing miniature building structures and structural units, as well as containers of various kinds and other box-like articles, from pre-cut blanks, has involved joining the free ends of the blank by means of an adhesive applied to a side-wall and tab which overlap two adjacent side-walls. This construction results in a corner edge in which there are two layers of material, which renders it difficult to bend the material at this edge, and difficult, if not impossible, to produce an edge with the same appearance as the single-thickness edges. For the same reason, projecting portions such as legs on a miniature cabinet cannot be uniformly folded, the leg having a double-thickness not being foldable into as neat a shape as the legs on the other corners. Furthermore, if these blanks are sold to the user in a flat form it is necessary to provide at least one tab coated with an adhesive, or an adhesive must be applied by the user of the blank prior to assembling in final form, in either case resulting in an additional step in the preparation of the container or other article and involving a task that is generally inefficient and annoying.

In the type of box which is formed merely by folding a pre-formed blank, the joint also, heretofore, has been placed at a corner. Usually this type of box has but one layer of material at each corner, due to the fact that the tab on one wall merely abuts a side of an adjacent wall. The result of this construction is that the wall against which the tab abuts tends to assume a curvature or a bulge and does not make a smooth even connection with the tab-carrying wall.

According to the present invention, structures and structural units of the general types hereinbefore mentioned are formed from unitary pre-formed blanks having scored portions and slots so arranged that the blank may be folded and brought into the desired final shape with portions thereof in interlocking and bracing relationships such that an improved, rigid, non-collapsible article or part of an article results without the use of an adhesive. At the same time, such article or part may be disassembled and returned to its original blank form if desired.

More specifically, the invention comprises a blank having a body portion and extended end and side portions appropriately scored to permit folding, and which is slotted so that when opposite portions in the sides, or ends, of the blank are brought, in the folding of the blank, into coincidence with one another, the slots in said opposite portions are brought into alignment, and a foldable portion of one of the cooperating ends or sides, as the case may be is folded over and fitted into the slots with the result that the coinciding opposite portions above mentioned are held firmly together; and at the same time, said cooperating end, or side portion, when so fitted in the slot, lies closely against the adjacent side wall formed by the aforesaid coinciding portions, forming therewith a double thickness along the edge of the unit at the end and thereby bracing it against thrusts and strains. In addition, enfolding tab portions are provided on the intermediate side wall portions of the blank so that when the blank is folded as above described, such tabs are folded in and lie beneath the cooperating end portion above mentioned and cooperate with it and the side walls to resist thrusts at right angles to those most strongly resisted by the cooperating end portion first mentioned. The result of these various interlocking relationships is an end structure that is reinforced on all four edges by a double thickness of material, and in which the various folded portions are held in interlocking relationship to present a rigid, practically undeformable structure.

The objects and advantages of the invention will become more fully apparent from a reference to the detailed description of the invention and the drawing in which:

Fig. 1 is a plan view of one type of blank;

Fig. 2 is a perspective view of the blank in a partially folded condition;

Fig. 3 is a perspective view of the blank in a more completely folded condition;

Fig. 4 is a perspective view, partially broken away, of the interlocking tabs and slots; and

Fig. 5 is a perspective view of an article made

from a completely folded blank of the type generally disclosed in Figs. 1 to 4;

Referring to the drawing, A indicates generally a blank made from heavy paper, cardboard, or other pliable material, having a rectangular center portion 1 defined by scorings 2 and 3 to permit bending of the tab portions B and C on sharp lines relatively to the center portion 1.

In the drawing, tab portions B, B are identical, as are tab portions C, C so only one of each will be hereinafter described.

Tab B consists of three sections 4, 6 and 8 with scorings 5 and 7 between sections 4 and 6 and sections 6 and 8 respectively, so that the sections 4, 6 and 8 may be bent on the scored lines to produce clean sharp edge portions. In alignment with scoring 7 are two shallow slots 10 extending inwardly from the side-edges of the tab B, for a purpose hereinafter to be described. The width of section 4 is determined by the desired depth of the box-like article from front to back. The width of the section 6 is shown as equal to approximately one-half the distance between the scorings 2, as disclosed in Fig. 1 of the drawing. At the ends of section 4 are additional tabs 11 with scorings 9 therebetween to facilitate bending them relatively to section 4. In addition there may be provided small tabs 12 attached to section 4 and cut out from section 6, so that upon bending the latter relatively to section 4 the tabs 12 will remain in the plane of section 4. The function of tabs 12 will be later described.

Tabs C consist of two sections, 13 and 15, between which is scoring 14 to facilitate relative bending therebetween. At the outer edge of each tab C in section 15 there is shown a centrally located inwardly extending shallow slot 16. These slots, in conjunction with slots 10, constitute the means for locking the folded article in its assembled condition.

Having described the structure of the blank disclosed in Fig. 1, reference is now made to Figs. 2, 3 and 4 for disclosure of the manner in which the blank is folded to produce the completed article.

All of the sections are creased along the scored lines in the same direction toward the center portion 1 to produce sharp folds. Tabs B including sections 4, 6, 8 and 11 are then folded to produce two trough-like sections, with the opposed sections 8 adjacent to one another and extending toward the center portion 1, as shown in Fig. 2. The sections 8 are then forced into abutting parallel relationship as shown in Fig. 3, and the sections 11 are folded inwardly at right angles to sections 4. The sections C are then folded over and section 15 is thrust into the interior of the container and within the slots 10 at the adjacent ends of the sections 8 and with the slot 16 in overlapping and engaging relation with those portions of sections 8 that are in line with and immediately adjacent to the slots 10 in such sections 8, all as shown in Figs. 3 and 4. By providing the slots 16 in the section 15 and effecting the overlapping and engaging relationship above mentioned, maximum bracing and resistance to edgewise thrusts is assured. However, it is to be understood that this slot may be omitted and that the depth of the slots 10 may be correspondingly increased without departing from the invention in its broader aspects.

As previously indicated, the sections 6 are of a width equal to one-half the distance between scorings 2 in Fig. 1, which results, as disclosed in Fig. 3, in locating the joint in the center of the wall formed by the joining of sections 6, 6. It will be evident that the joint may be placed to one side of the center, if desired, by merely varying the width of sections 6, 6 so that when one is narrowed the other is widened, the sum of their widths remaining equal to that of the front wall. The slot 16 would, of course, be shifted to receive the sections 8, 8 forming the joint.

The article produced from this type of blank will be characterized by its rigidity and resistance to changes in form because the folding and interlocking arrangement shown provides reinforcement in a most effective manner. This reinforcement is provided by the double wall effect along the edges at the opposite ends of the structure. Furthermore, every wall and end will be in the form of an angle bar; that is, every plane surface has at its edge portion another surface connected and at right angles thereto, and these walls are held in their rigid angular relation because of the interlocking effected through the medium of the slots 10 and 16 and the interrelated end and side wall tabs as described. This results in each of the walls being held in a single plane, and reinforced along the edges.

The tab portions 12, disclosed in their projecting positions as in Fig. 3, are provided for attaching the article, an adjacent structure, or another article, for example, to a prefabricated structure such as that disclosed in my Patent No. 2,028,229, dated January 21, 1936.

In addition to the wall cabinet type of structure disclosed in Figs. 1 to 3, it is possible to so form the blanks that they may be used in forming structures simulating various articles of manufacture, for example, refrigerators as shown in Figure 5, which in their normal use are provided with legs. In blanks for forming these articles additional tabs are provided for projection beyond the bottom wall of the article to form legs, the tabs being folded on a line in alignment with the adjacent corner edge of the article and having portions lying in the planes of the side walls adjacent the corner.

Articles made in accordance with my invention and many other articles which may be formed similarly from blanks may be used in the planning of rooms and in furnishing and decorating rooms in conjunction with miniature building structures and units and sections thereof, such for example, as those disclosed in my Patent No. 2,028,229.

Also, articles of this character may be used as toys by children, and because of their superior construction are very satisfactory from the standpoint of durability; and are excellent educational toys because of the novel manner in which they can be assembled and disassembled.

The blanks may be prepared and bound together to be sold in book form, with an attaching portion bound into the backing and severable therefrom along a perforated line by tearing. Thus, sufficient furnishings may be provided in a single book to simulate the furnishings of an entire house or a room or other space.

Although, as hereinbefore described, the slots are shown in the drawing, it will be understood that when the blanks are made of relatively thin materials, a slit will suffice to give the same effect; that is, thin material will give sufficiently so that the slit will function as a slot for the purposes stated.

While the invention has been described with particular reference to articles of manufacture intended to be used as house furnishings, it will

be understood that many other structures and articles of manufacture may be represented by the construction disclosed; also, as hereinbefore noted, the invention may be applied in making boxes and containers for various purposes. It will be understood that the various changes in the details of the construction may be made without departing from the invention, which is not to be deemed as limited other than as indicated in the appended claims.

I claim:

1. A box-like article, comprising end walls and side walls, one of said side walls consisting of two narrow abutting wall members, having adjacent abutting tab members, slots having parallel edges at the junction of the narrow wall members with the tab members and an end wall having a tab member, a slot having parallel edges extending only partially across the end wall tab member, said first-mentioned slots receiving the end wall tab member, and said end wall tab member slot receiving the side wall tab members to lock the wall members in edge abutment and in a common plane and the tab members in substantially parallel abutment.

2. The article set forth in claim 1 comprising integral tab members projecting in the same direction from opposite side walls and perpendicular to an adjacent side wall, whereby said tab members are adapted to be connected to a supporting structure.

3. The article set forth in claim 1 comprising tabs at and in alignment with the edges of the article and projecting beyond an end wall to simulate legs, each tab being folded on a line in alignment with an edge of the article and having a portion lying in the planes of and of the thickness of the side walls adjacent the edge.

HANS P. LUHN.