

July 7, 1953

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2,644,633

PAPERBOARD BOX CONSTRUCTION (HEXAGONAL)

Filed Jan. 8, 1949

2 Sheets-Sheet 1

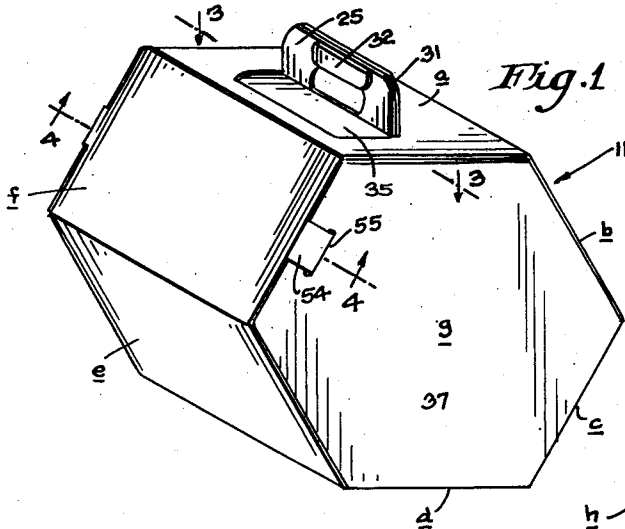


Fig. 1

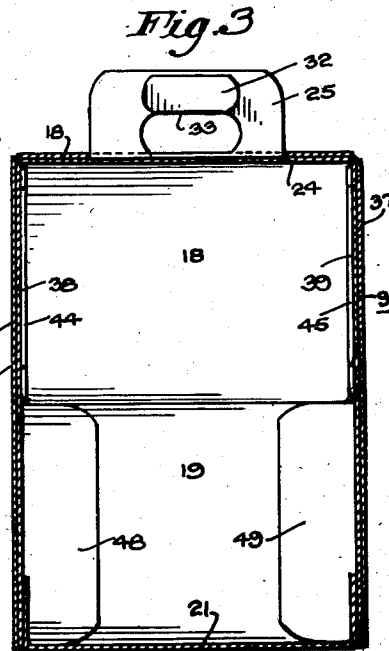


Fig. 3

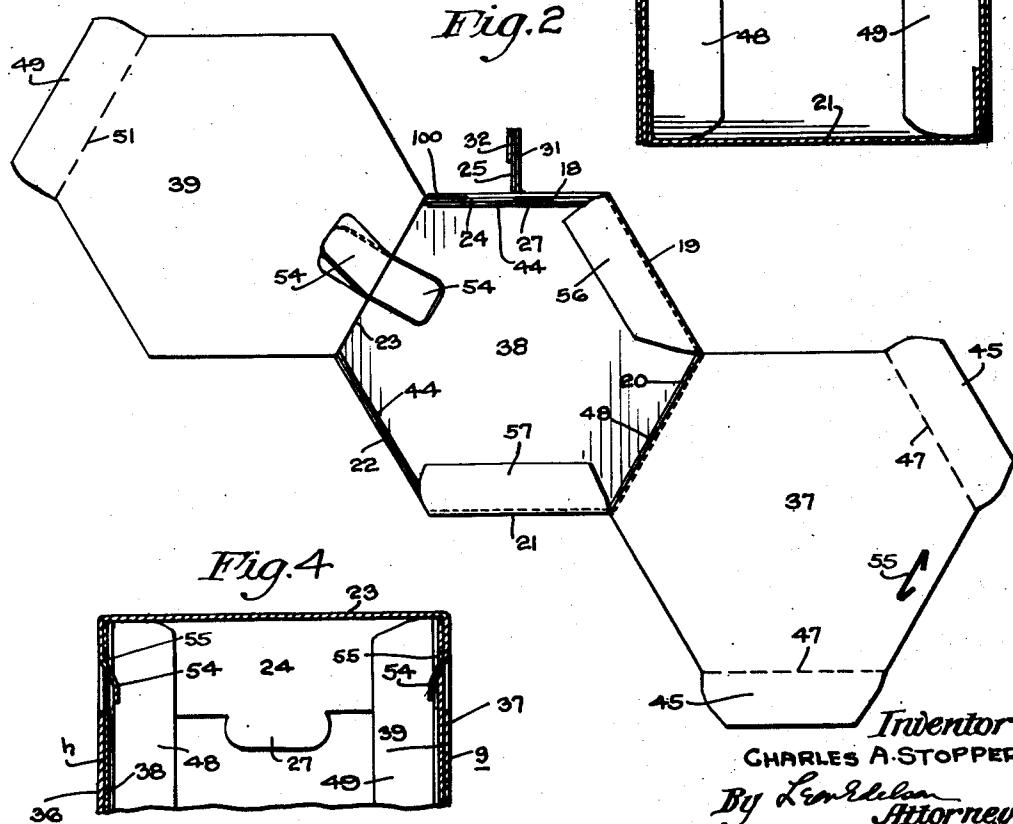


Fig. 2

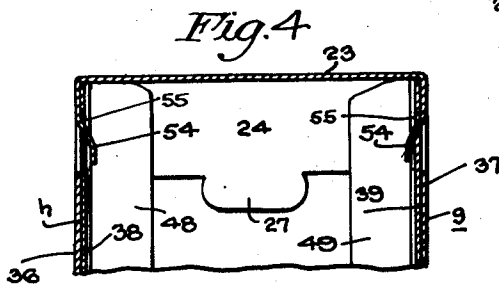


Fig. 4

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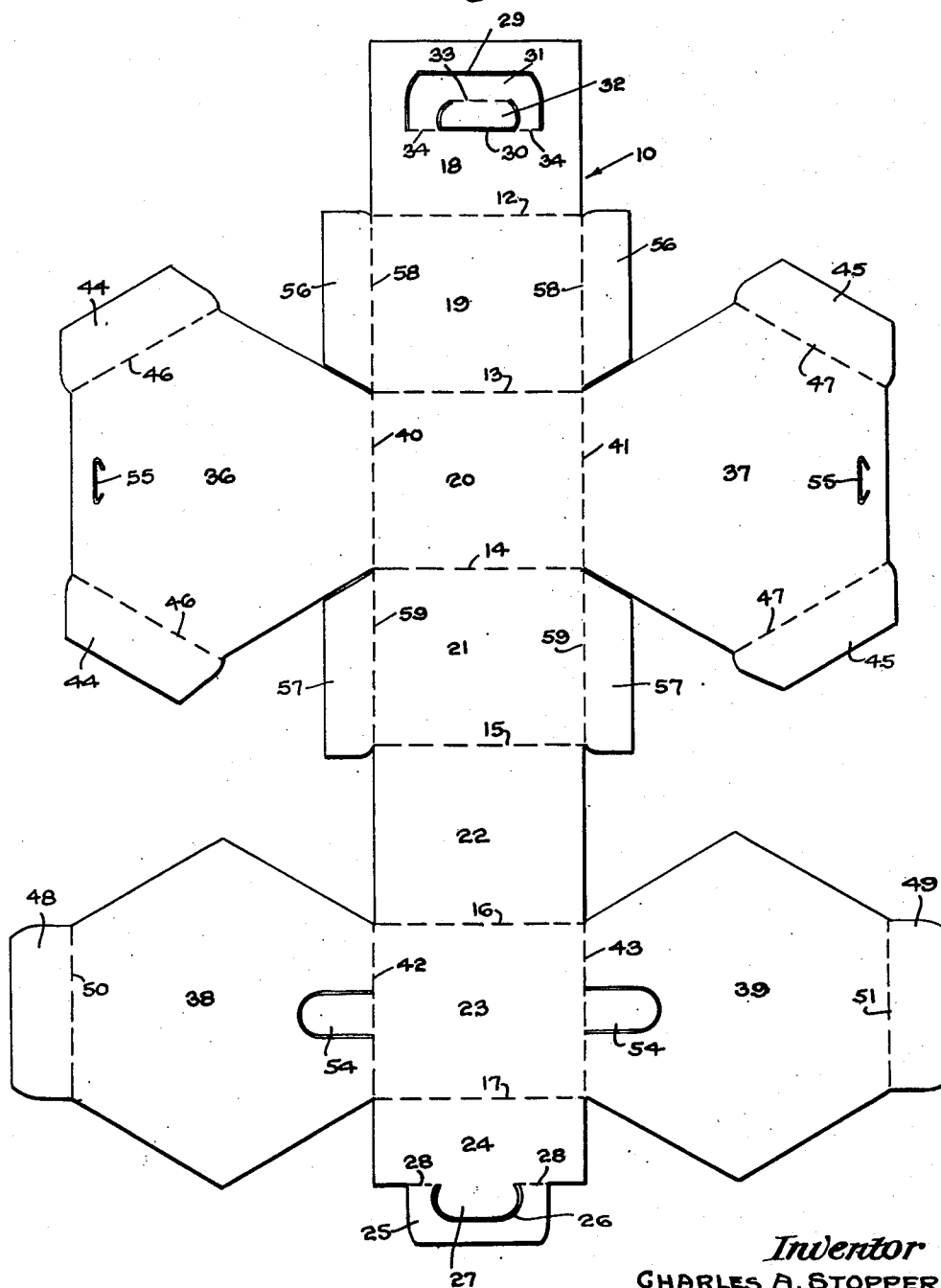
2,644,633

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Fig 5



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2,644,633

PAPERBOARD BOX CONSTRUCTION
(HEXAGONAL)

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Application January 8, 1949, Serial No. 69,917

3 Claims. (Cl. 229—37)

1

The present invention relates generally to boxes and more particularly to such containers as are made from unitary blanks of foldable material.

Among the principal objects of the present invention is to provide a single blank of relatively stiff material which is so suitably cut, scored and slitted as to enable it to be readily expanded into a box having the shape of a hexagonal prism with access openings in opposite side walls thereof and a carrying handle at the top thereof.

It is another object of the present invention to provide such a box in the shape of a hexagonal prism in which a rectangular face of the prism forms the bottom wall of the box and in which the opposite hexagonally shaped parallel side walls of the box are each formed of a pair of superimposed panels releasably secured together, each pair of said side wall panels serving not only to rigidify the box but also as a closure for a side opening through which access is had into the interior of the expanded box.

Other objects of the present invention will appear more fully hereinafter, it being understood that the invention consists substantially in the combination, construction, location and relative arrangement of parts, all as described more fully hereinafter, as shown in the accompanying drawings and as defined in the appended claims.

Figure 1 is a perspective view of a box as constructed in accordance with the present invention showing the same in its fully expanded shape;

Figure 2 is a side view of the box partially assembled;

Figure 3 is a vertical sectional view through the box as taken on line 3—3 of Figure 1;

Figure 4 is a sectional view of a detail as taken on line 4—4 of Figure 1; and

Figure 5 is a plan view of the blank from which the box is formed.

Referring to the drawings, the invention is shown as being embodied in the specially cut, scored and slitted unitary blank 10 of the novel shape shown in Figure 5 and in the box 11 formed of a blank and expanded into the shape of a hexagonal prism, as shown in Figure 1. The blank 10 is formed of any suitable relatively stiff material, such as paperboard or the like, which is foldable along prescribed scoring lines and which has sufficient rigidity when expanded into box form as to be self-sustaining in its expanded shape.

The angularly related walls *a*, *b*, *c*, *d*, *e* and *f*

2

of the box are respectively formed from the central longitudinal section of the blank 10 shown in Figure 5, said blank being suitably scored transversely along lines 12, 13, 14, 15, 16 and 17 to form a plurality of rectangular shaped panels 18, 19, 20, 21, 22, 23 and 24. The panels aforesaid when relatively folded along their transverse score lines form a structure hexagonally shaped in cross-section having walls of similar shape and equal area, the top wall *a* being formed of the end-most panels 18 and 24 arranged in superimposed relation and secured together, as at 100 by adhesive, stitching or the like, while the remaining walls *b*, *c*, *d*, *e* and *f* are respectively formed of the panels 19, 20, 21, 22 and 23.

The end panels 18 and 24 comprising the top of box 11 are specially cut and scored so that portions thereof acting conjointly form a handle for the box when the latter is expanded into shape. Thus, panel 24 is provided at its outer free end with an extension 25 of reduced width, this extension being interiorly slitted along the line 26 to provide a central tab 27. A pair of score lines 28—29 project oppositely from the base line of the tab 27 in parallel relation to the transverse score line 17 to provide a hinged connection between the extension 25 and the panel 24, the extension 25 being thus adapted to be bent at right angles to the plane of the panel 24 and its integral tab 27. In this latter condition, the extension 25 is in the form of a U-shaped handle member for the box.

The opposite end panel 18 of the box blank is interiorly slitted along a pair of spaced lines 29 and 30 to provide a pair of tabs 31 and 32 foldable relatively to the panel 18 about the parallel score lines 33 and 34, the tab 32 being disposed interiorly of the area of the tab 31 and adapted to be folded flatwise thereagainst about the fold line 33. When the tab 31 is bent normal to the panel 18 along the score line 34, it forms a second U-shaped handle member for the box.

To form the completed handle of the box 11, the separate handle members 25 and 31 are each turned upwardly about their respective fold lines from their flat positions of Figure 5 to positions in which they are normal to the panels 24 and 18 respectively. The handle member 31, when turned upwardly from the panel 18 about the score line 34, provides an opening 35 in the panel 18 (see Figure 1) through which the upright handle member 25 may project as the panel members 18 through 24 are angularly related to form the six-sided perimetral surface of the

3

expanded box 11. The tab 27 will then lie beneath the panel 18 with the handle members 25 and 31 in upright juxtaposition, in which condition of the parts the internal tab 32 of the handle member 31 will be in position for folding upwardly against the outer face of the handle member 25. In this connection, it will be noted that when the internal tab 32 is projected through the central opening of the handle member 25 and then folded upwardly about its fold line 33 to overlie the outer face of the handle member 25, the tab 32 serves to interlock the handle members 25 and 31 together in their superposed flatwise relation best shown in Figure 1.

In addition to the central longitudinal section comprising the panels 18 through 24, the blank 10 is also provided with two pairs of laterally extending wing members each of hexagonal shape in outline. One pair of these wing members, designated 36 and 37, project from opposite sides of the panel 20 of the blank, while the second pair thereof, designated 38 and 39, project from opposite sides of the panel 23 of the blank. The wing members 36 and 37 are foldable normal to the panel 20 along score lines 40 and 41, respectively, while the wing members 38 and 39 are similarly foldable relatively to the panel 23 along the score lines 42 and 43. The wing members 36 and 37 are each provided with a pair of foldable flaps, designated 44—44 for the wing member 36 and 45—45 for the wing member 37, the flaps 44—44 being foldable along the score lines 46—46 and the flaps 45—45 along the score lines 47—47. The wing members 38 and 39 are each provided with a single flap, designated 48 for member 38 and 49 for member 39, the single flap 48 being foldable along score line 50 and the flap 49 along the score line 51. It will be noted that the single flaps 48 and 49 are each connected to the outermost edges of the wing members 38 and 39 and thus occupy an intermediate relation with respect to the flaps 44—44 and 45—45 of the wing members 36 and 37, which latter pairs of flaps are connected to laterally spaced outer edges of their associated wing members. Preferably, all of the flaps 44, 45, 48 and 49 are of generally trapezoidal shape.

The wing members 36 and 38 conjointly form one double-paneled side wall *g* of the expanded box, while the wing members 37 and 39 similarly form the double-paneled opposite side wall *h* of the box. Inasmuch as the wing members are all of identical hexagonal form, the corresponding edges of each superposed pair thereof on either side of the box are disposed in exact registry. The wing members 38 and 39 are respectively disposed interiorly of their superposed wing members 36 and 37 and are each provided with a struck-out tongue 54 adapted for insertion through a slit 55 suitably formed in each of the members 36 and 37. It will be noted that the tongues 54—54 project from the opposite side edges of the panel 23 of the box and that the slits 55—55 are located adjacent the free edges of the members 36 and 37, in consequence of which said free edges of the latter are detachably held against the perimetral edge of the box when the box is expanded into shape and the tongues are projected into their receiving slits.

In addition to the side and end walls just described, reinforcing flaps 56—56 and 57—57 are provided in the blank 10 for the box 11, these flaps extending beyond score lines 58—58 and 59—59 at opposite edges of the blank panels 19

4

and 21 respectively, the said panels being on opposite sides of the panel 20 forming the bottom of the box 11. These reinforcing flaps are substantially rectangular in shape except at the edges thereof adjacent the side wall members 36 and 37 where said flaps are necessarily beveled in order that they may be formed without waste from the same unitary piece of material as the rest of the blank 10.

Upon angularly relating the panels 18 through 24 to form the perimetral walls of the hexagonal box 11, further assembly proceeds with the folding of flaps 56—56 and 57—57 into position normal to the panels 19 and 21 and toward the box interior. Thereafter, the single flaps 48 and 49 of the side wall members 38 and 39 are turned normal to said members simultaneously as the latter are brought into parallel relation to respectively close the opposite sides of the hexagonal shell of the box, the flaps 48 and 49 being then tucked into the box interior to underlie opposite ends of the panel 20 forming the wall *c* of the box. When the side wall inner members 38 and 39 are thus disposed in parallel relation, they respectively overlie the intumed flaps 56—56 of the panel 19 and the flaps 57—57 of the panel 21, the flaps 56 and 57 on each side of the box being, of course, disposed in coplanar relation.

To proceed with the assembly, the flaps 44—44 and 45—45 of the outer side members 36 and 37 are bent normal to their flat positions shown in Figure 5 and then the members 36 and 37 themselves are also bent normal to the panel 20 and toward the box interior, to thereby present said members in parallel relation respectively overlying the inner members 38 and 39. In this position the folded flaps 44—44 and 45—45 are adapted to be positioned interiorly of the box, extending beyond the outer edges of the inner side wall members 38 and 39 and lying beneath the opposite extremities of the panel 22 and the overlapped panels 18 and 24. With the outer side wall members 36 and 37 in such parallel relation, the tongues 54—54 may then be inserted respectively in the slits 55—55 to thereby detachably secure the outer side wall members in box closing position.

It will be understood, of course, that the present invention is susceptible of various changes and modifications which may be made from time to time without departing from the general principles or real spirit thereof, and it is accordingly intended to claim the same broadly, as well as specifically, as indicated in the appended claims.

What is claimed as new and useful is:

1. An integral blank of foldable sheet material for forming a box in the shape of a hexagonal prism comprising a central body portion of generally rectangular shape transversely scored along spaced parallel lines to provide a plurality of panel sections of equal size adapted to be angularly related to form the side walls of the box, the opposite endmost panel sections being adapted for disposition in overlapping relation to conjointly form one of said side walls of the box, hexagonal end closure members for the box extending oppositely from each of two said panel sections which are spaced from one another by an intermediate pair of panel sections, the hexagonal end closure members extending oppositely from one of said side wall panel sections being respectively adapted to overlie the corresponding members extending op-

positely from the other of said side wall panel sections whereby each end closure for the box is formed of a pair of said members disposed in overlapping relation, one member of each last-mentioned pair thereof being provided with a slit adjacent its freely extending outer extremity and the other member of said pair thereof being provided adjacent its hinged inner extremity with a tongue element adapted for projection through the slit aforesaid to releasably interlock the pair of overlapping members to provide a double-paneled end closure wall for the box.

2. An integral blank of foldable sheet material for forming a box having parallel end walls of polygonal outline comprising a central body portion of generally rectangular shape transversely scored along spaced parallel lines to provide a plurality of panel sections adapted to be angularly related to form the perimetral side walls of the box, a first pair of polygonal end closure members extending oppositely from one of said panel sections, a second pair of polygonal end closure members extending oppositely from another of said panel sections, the panel sections so provided with oppositely extending members being spaced from one another by at least one intervening panel section, the end closure members of said first pair thereof being respectively adapted to overlie the end closure members of said second pair thereof when the blank is expanded into box shape, each of said first pair of members being provided with flaps foldable along laterally spaced outer edges thereof and each of said second pair of members being provided with a foldable flap along an outer edge thereof intermediate those which are in correspondence with the aforesaid laterally spaced outer edges of the first pair of members, and coacting means respectively provided wholly within the members of said first and second pairs thereof for releasably securing together the overlying end closure members of the expanded box.

3. An integral blank of foldable sheet ma-

terial for forming a box having parallel end walls of polygonal outline comprising a central body portion of generally rectangular shape transversely scored along spaced parallel lines to provide a plurality of panel sections adapted to be angularly related to form the perimetral side walls of the box, a first pair of polygonal end closure members extending oppositely from one of said panel sections, a second pair of polygonal end closure members extending oppositely from another of said panel sections, the panel sections so provided with oppositely extending members being spaced from one another by at least one intervening panel section, the end closure members of said first pair thereof being respectively adapted to overlie the end closure members of said second pair thereof when the blank is expanded into box shape, and coacting means respectively provided wholly within the members of said first and second pairs thereof for releasably securing together the overlying end closure members of the expanded box, said last-mentioned coacting means including a slit formed in each of the second pair of wing members adjacent the outer free edge thereof and a tongue struck out of each of the first pair of wing members adjacent the inner hinged edge thereof, the tongue of one member being adapted for projection through the slit of the overlying member.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,123,147	Snyder	July 5, 1938
2,365,863	Cantor	Dec. 26, 1944
2,400,443	Stopper	May 14, 1946
2,517,552	Field	Aug. 8, 1950
2,540,707	Beukelman	Feb. 6, 1951

FOREIGN PATENTS

Number	Country	Date
340,091	France	May 3, 1904