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(54) **CONTAINER**

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(57) **ABSTRACT**

A container blank is formed with a plurality of side panels secured to a bottom panel. Adjacent side panels are further secured to each other by gusset panels. The gusset panels include a first region and second region formed along a substantially central fold line. The first region has an exposed area when folded over the second region. The gusset panels extend substantially along the length of the side panels. A polymeric material is secured to one-side of the blank. The gusset panels are dimension so that when the container blank is folded at least some portion of polymeric material on the first region and second region of the gusset panels are secured to each other. Then opposing gusset panels are folded so that at least some exposed area of two opposing gusset panels are in contact with each other.

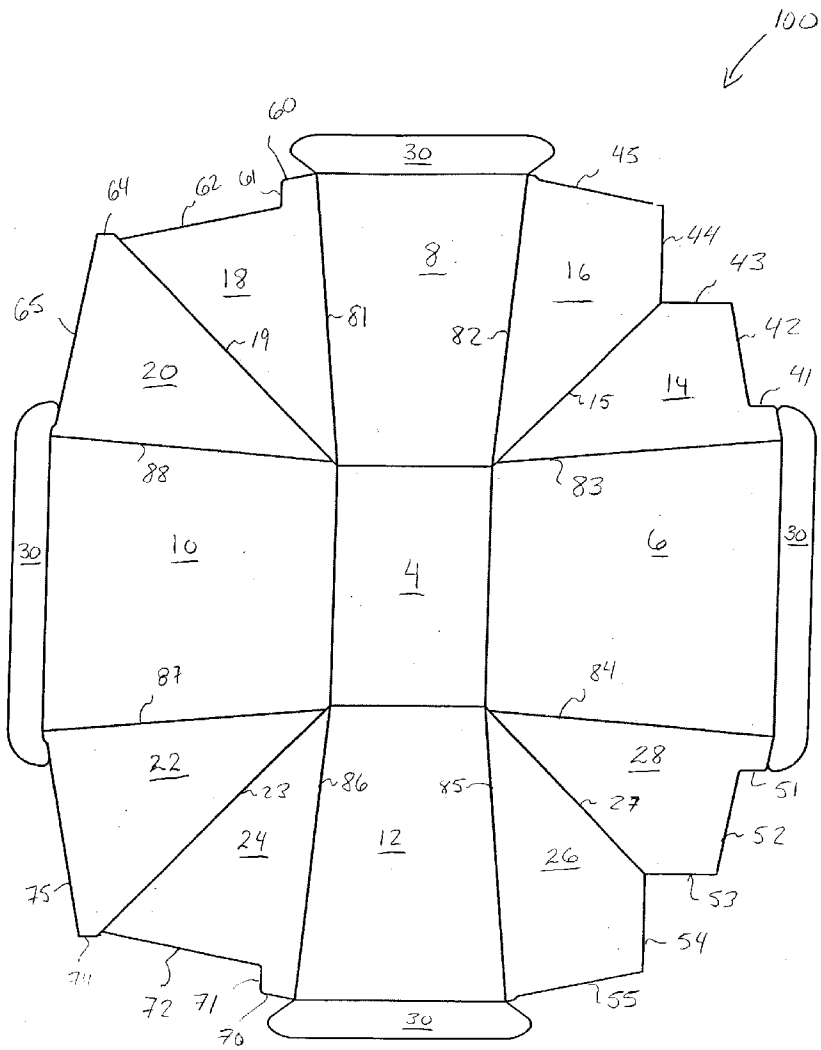
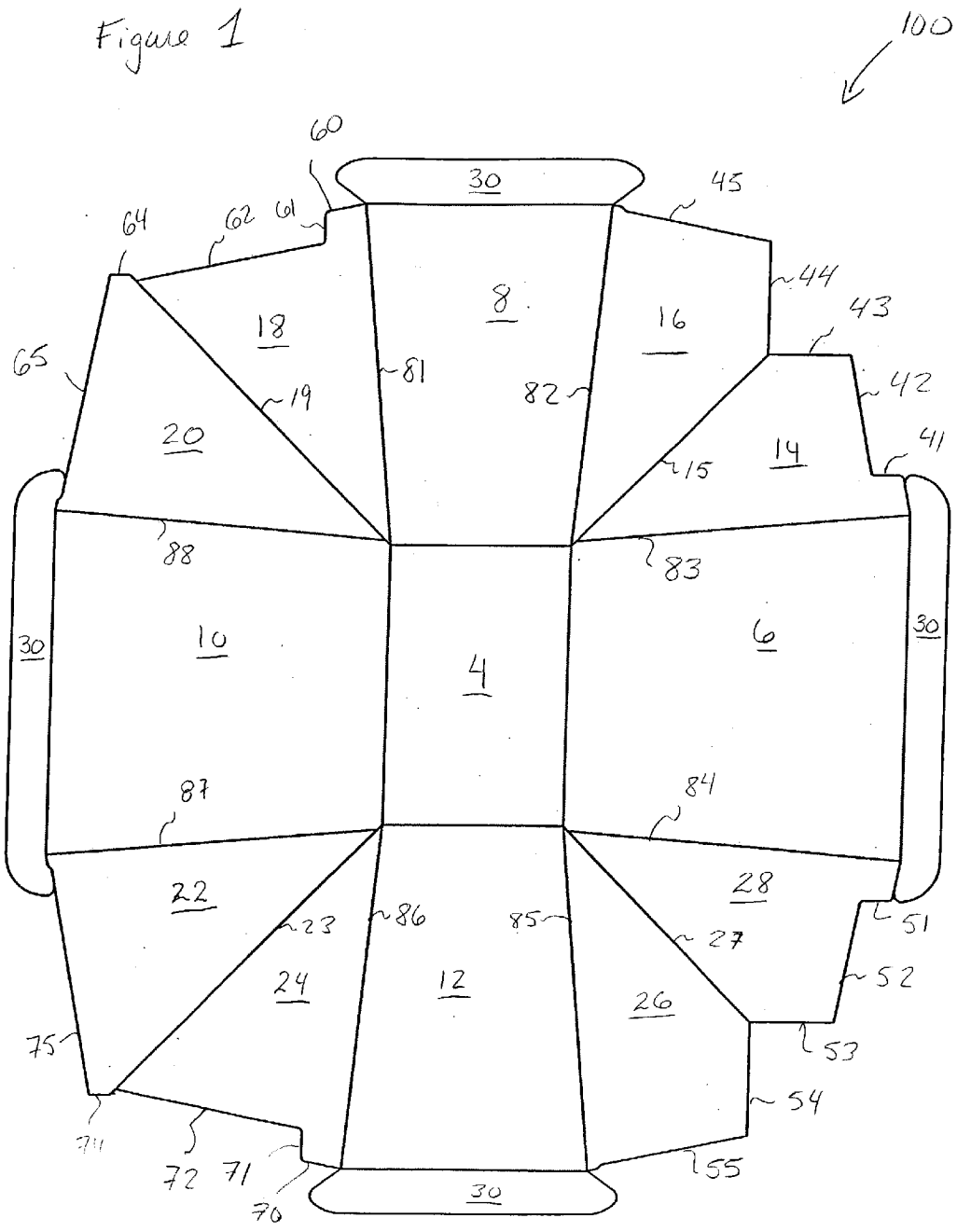


Figure 1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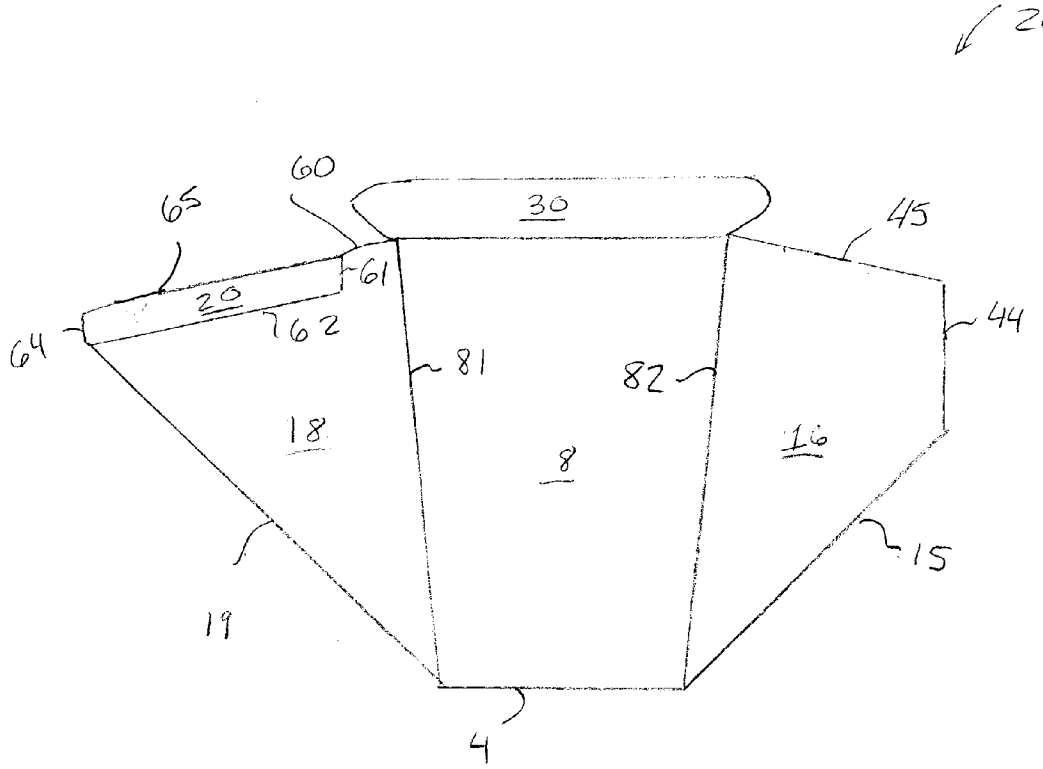


Figure 2

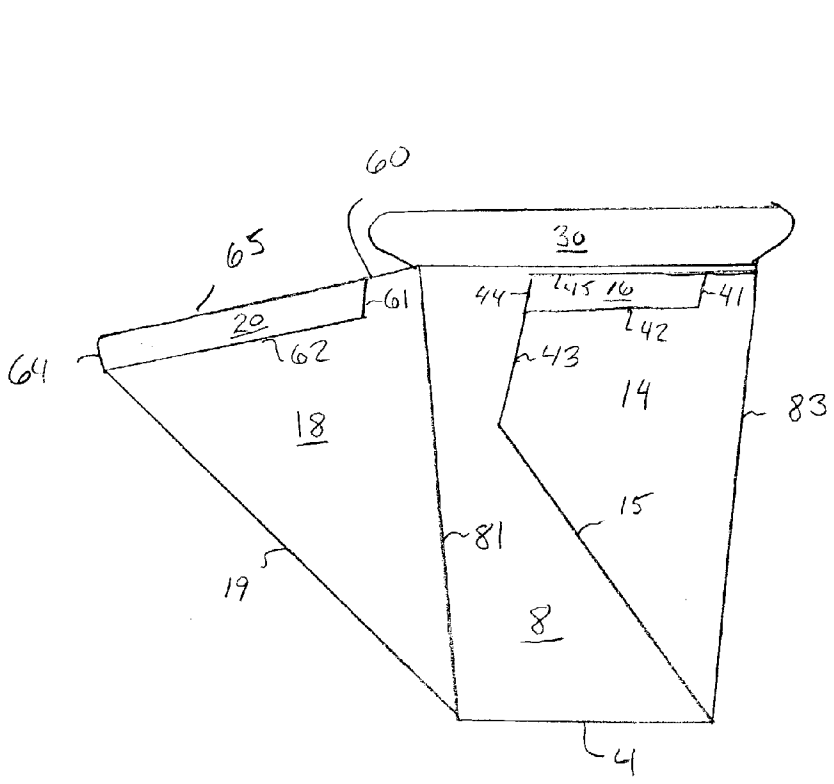
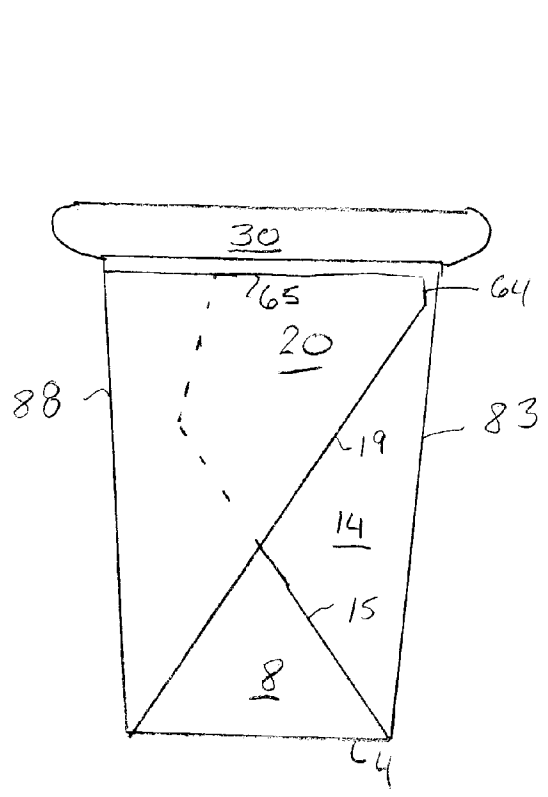


FIGURE 3

FIGURE 4



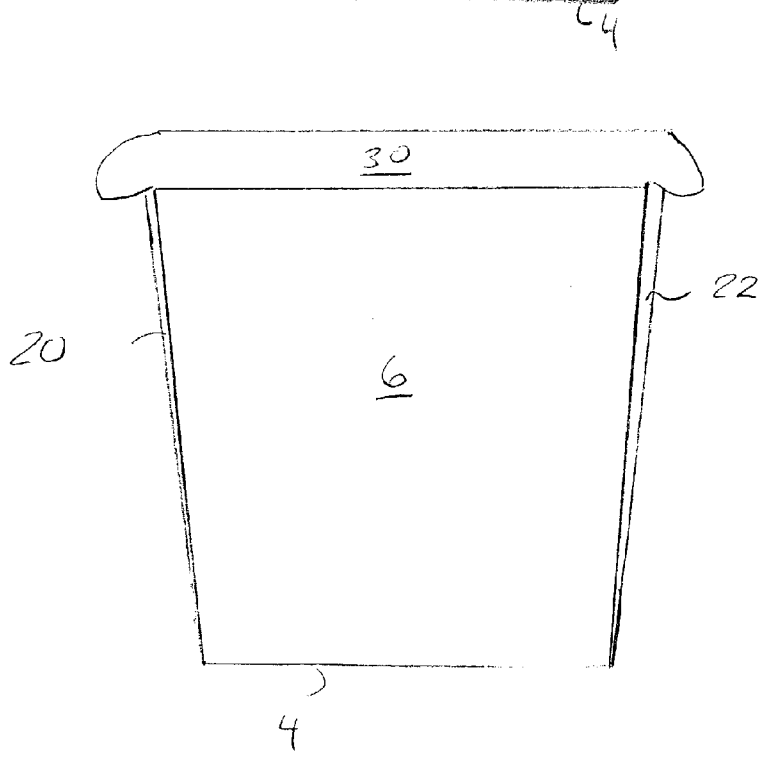


FIGURE 5

400

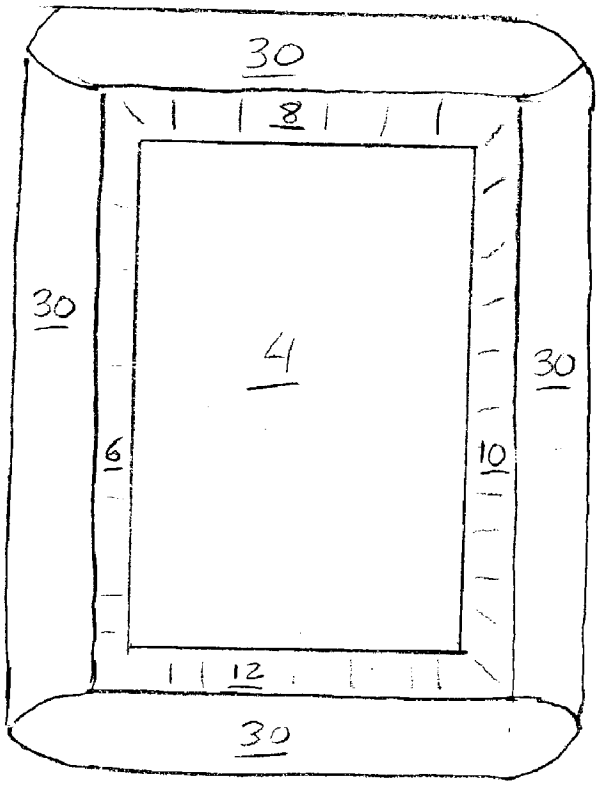


FIGURE 6

CONTAINER

CROSS-RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional application No. 60/364,767 filed Mar. 18, 2002.

FIELD OF THE INVENTION

[0002] This invention relates to a container having a bottom panel for supporting container content, side panels for at least partially surrounding the content, and an access opening intended for the insertion or removal of content.

DESCRIPTION OF THE RELATED ART

[0003] It is known to make a container from a blank with a bottom panel, side panels, and gusset panels. Exemplary of such prior art is U.S. Pat. No. 5,411,204 ('204) issued to K. F. DeMay, entitled "Reclosable Food Tray and Tray Blank". The DeMay patent teaches a method of forming a tray by sealing with adhesives the gusset panels to the side panels. However, at least one deficiency of this method is that the application of the adhesive increases the costs of forming the tray.

[0004] U.S. Pat. No. 5, 873, 220 ('220) issued to Rune Haraldsson, et al entitled "Method for Producing a Self-Locking, Paperboard Pail-Like Container and Product Thereof" describes a method for forming a container from a blank without the use of adhesives taught in the DeMay patent. The Haraldsson patent teaches a container blank with a bottom panel, side panels, and gusset panels. One side of the blank is coated with a polymeric material. The other side of the blank is coated with a particulate mineral. At least some portion of the particulate mineral layer is "masked" in the sealing area. In addition, at least some portion of the gusset panels is "cut-away" in the sealing area. The gusset panels are folded so that the gusset panels are partially overlapped and sealed to each other in the "masked" and "cut-away" area without the use of adhesives. However the "masking" and "cut-away" steps adds to the container's costs.

SUMMARY OF THE INVENTION

[0005] A container blank is formed with a plurality of side panels secured to a bottom panel. Adjacent side panels are further secured to each other by gusset panels. The gusset panels include a first region and second region formed along a substantially central fold line. The first region has an exposed area when folded over the second region. The gusset panels extend substantially along the length of the side panels. A polymeric material is secured to one-side of the blank. The gusset panels are dimension so that when the container blank is folded at least some portion of polymeric material on the first region and second region of the gusset panels are secured to each other. Then opposing gusset panels are folded so that at least some exposed area of two opposing gusset panels are in contact with each other.

BRIEF DESCRIPTION OF THE FIGURES

[0006] **FIG. 1** is a plan view of an exemplary container blank according to the invention.

[0007] **FIG. 2** is an end elevation view of a partially formed container.

[0008] **FIG. 3** is an end elevation view after a gusset panel is partially folded.

[0009] **FIG. 4** is an end view of a formed container.

[0010] **FIG. 5** is a side view of a formed container.

[0011] **FIG. 6** is a top view of a formed container.

[0012] The features of the invention are best understood by considering the following detailed description in conjunction with the accompanying figures.

DETAILED DESCRIPTION OF THE INVENTION

[0013] **FIG. 1** illustrates an exemplary container blank **100** according to the invention. FIGS. **2-6** illustrate how the blank **100** is folded and various parts secured to each other to form a container **400** (FIGS. **4-6**). Blank **100** can be formed from any suitable substrate, such as paperboard, and of any suitable thickness. An exemplary thickness is about 0.008 to 0.028 inches.

[0014] Blank **100** is exemplary coated on one side with a mineral coating. In an exemplary method, the exterior side is coated with a fluidized mixture of minerals, such as clay and calcium, and binders to form a smooth surface. The surface may undergo additional mechanical smoothing treatments. In an exemplary method graphic and advertising information is printed on the exterior side of a formed container **400** (FIGS. **4-6**).

[0015] The other side of blank **100** is exemplary coated with a polymeric material, such as an extruded polymeric material. In a conventional extrusion process, the polymeric material is heated to a viscous flow temperature and extruded as a curtain onto the surface of the substrate. Typical coat weights are about 5 to about 20 pounds of extruded material per ream (3,000 $ft.^2$) of substrate surface. Exemplary polymeric materials include polyethylene, polyethylene terephthalate (PET), and polypropylene. It is to be understood that the blank could also be coated with an aqueous emulsion coating, such as for example Styrene Acrylate or Ethele Vinyl Choloride. The polymeric material makes the container substantially moisture proof and allows various parts of the blank **100** to be heat sealed to each other as described below.

[0016] Exemplary blank **100** is illustrated with a bottom panel **4**, side panels **6**, **8**, **10**, and **12**, gussets panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28**. Optional flange panels **30** are also illustrated secured to the side panels **6**, **8**, **10**, **12**. Blank **100** may be made using any conventional blank forming techniques.

[0017] Gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** are illustrated with exemplary central fold lines **15**, **19**, **23**, **27**. The gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** are secured to the side panels **6**, **8**, **10**, **12** along exemplary fold lines **81-88**. The gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** are illustrated with exemplary exterior perimeters **41-45**, **51-55**, **60-65**, and **70-75**. The perimeters are formed using conventional techniques. The exterior perimeters **41-45**, **51-55**, **60-65**, and **70-75** allow gussets panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** to be contacted with each other along central axis fold line **15**, **19**, **23**, **27** as illustrated in **FIG. 2**. It is to be understood that blank **100** and its various parts can be dimensioned and shaped into many container configurations

and that the scope of the invention is not limited to the exemplary container and shape shown in the exemplary Figures.

[0018] In an exemplary method, the blank **100** is inserted in a container forming apparatus (not shown). The polymeric material is heated (not shown), for example with hot air. A container platen (not shown) contacts (not shown) the blank **100** and forces the blank **100** into a container die (not shown). In an exemplary method the gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** are pressed together, for example, using spring loaded rollers, so that the gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** are secured to each other by the "heated" polymeric material. It is also possible to combine heating and pressure after folding the blank **100** using for example ultrasonic welding or heated sealing plates. It is also to be understood that the gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** may simply be folded together without actually sealing in accordance with the invention. **FIG. 2** illustrates an end view of a partially formed container **200**. Side panel **8** and gusset panels **16**, **18** are visible. Also illustrated is an exposed area of gusset panel **20** surrounded by perimeter **61**, **62**, **64**, **65**.

[0019] **FIG. 3** illustrates the container **300** after gusset panels **14**, **16** of **FIG. 2** are folded toward side panel **8**. The exposed polymeric material region of gusset panel **16** with perimeter, **41**, **42**, **44**, **45** and gusset panel **20** with perimeter **61**, **62**, **64**, **65** are illustrated.

[0020] **FIG. 4** shows gusset panels **18**, **20** folded over gusset panels **16**, **14**. In an exemplary method at least some portion of the polymeric material of gusset panel **20** is in contact with at least some a portion of the polymeric material of gusset panel **16**. It is to be understood that the exemplary perimeters **41-45**, **51-55**, **60-65**, and **70-75** of the gusset panels **14**, **16**, **18**, **20**, **22**, **24**, **26**, **28** are arranged to allow the gusset panels to overlap and secure to each other without adhesives. It is to be understood that the other gussets panels **22**, **24**, **26**, **28** (not shown in FIGS. **2-6**) are folded and secured in the same manner (not shown). Using an exemplary method of a platen (not shown) and container die (not shown) a container **400** (FIGS. **4-6**) can be formed in a single process using conventional container forming equipment and techniques. It is to be understood that the sealed gussets may or may not be further secured to the sidewall panels. It is to further be understood that the order and manner of forming the container is not to be limited by the above exemplary method.

[0021] **FIG. 6** illustrates optional flange panels **30** folded and secured to each other. It is to be understood that an optional lid of various shapes and sizes could be secured to the flange panels **30**. An exemplary lid would have a suitable material that could be secured to the exposed polymeric material of the flange panels **30**. It is to be further understood that optional flange panels **30** could be configured in numerous ways, such as overlapping panels to form a lid with various closure arrangements, such as a tab **38** and slot **40** arrangement (not shown).

[0022] Once given the above disclosure, many other features, modifications or improvements will become apparent to the skilled artisan. Such features, modifications or improvements are, therefore, considered to be a part of this invention, the scope of which is to be determined by the following claims.

1. An apparatus comprising:

a bottom panel;

a plurality of side panels secured to each side of said bottom panels;

a plurality of gusset panels secured to said plurality of side panels, wherein said gusset panels are dimensioned so that an interior region of one gusset panels can be folded and placed in contact with an interior region of an opposing gusset panel.

2. The apparatus of claim 1 wherein at least one flange panel is secured to a side panel.

3. The apparatus of claim 1 wherein said gusset panels form a first region and second region along a central axis fold line.

4. The apparatus of claim 3 wherein said gusset panels are dimension so that said first region has more surface area than said second region.

5. The apparatus of claim 4 wherein said first region is folded and contacted with said second region so that at least some portion of said first region is exposed and not in contact with said second region.

6. The apparatus of claim 5 wherein opposing gusset panels are folded and contacted so that at least some exposed area of a first region of a gusset panel is in contact with an exposed area of a first region of an opposing gusset panel.

7. The apparatus of claim 1 wherein at least one surface of said apparatus comprises a polymeric material.

8. The apparatus of claim 7 wherein said polymeric material comprises at least one of the following: polyethylene, polyethylene phteraphalate, polypropylene, styrene acrylate, and ethele vinyl chloride.

9. The apparatus of claim 7 wherein said polymeric material is heat sealable.

10. A method for forming an apparatus comprising the steps of:

providing a substrate;

forming said substrate into a container blank comprising a bottom panel, a plurality of side panels secured to each side of said bottom panels; and a plurality of gusset panels secured to said side panels, wherein said gusset panels are dimensioned so that an interior region of one gusset panel can be folded to contact an interior region of an opposing gusset panel.

11. The method of claim 10 wherein said apparatus further comprises at least one flange panel secured to a side panel.

12. The method of claim 10 wherein said gusset panels form a first region and second region along a central axis fold line.

13. The method of claim 12 wherein said gusset panels are dimension so that said first region has more surface area than said second region.

14. The method of claim 13 wherein said first region is folded and contacted with said second region so that at least some portion of said first region is exposed and not in contact with said second region.

15. The method of claim 14 wherein opposing gusset panels are folded and contacted so that at least some exposed area of a first region of a gusset panel is in contact with an exposed area of a first region of an opposing gusset panel.

16. The method of claim 10 wherein at least one surface of said substrate comprises a polymeric material.

17. The method of claim 16 wherein said polymeric material comprises at least one of the following: polyethylene, polyethylene phteraphalate, polypropylene, styrene acrylate, and ethele vinyl chloride.

18. The method of claim 17 wherein said polymeric material is heat sealable.

19. The method of claim 18 wherein said polymeric material is heated and said apparatus is folded so that the gusset panels of an interior region of one gusset panel is secured to an interior region of an opposing gusset panel.

20. The method of claim 10 wherein said apparatus comprises a four-sided bottom panel and four side panels.

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