Aug. 11, 1964 S. A. SELINE, JR 3,144,192

CONTAINER AND METHOD OF MAKING SAME

Filed Nov. 4, 1960

Fig. 1.

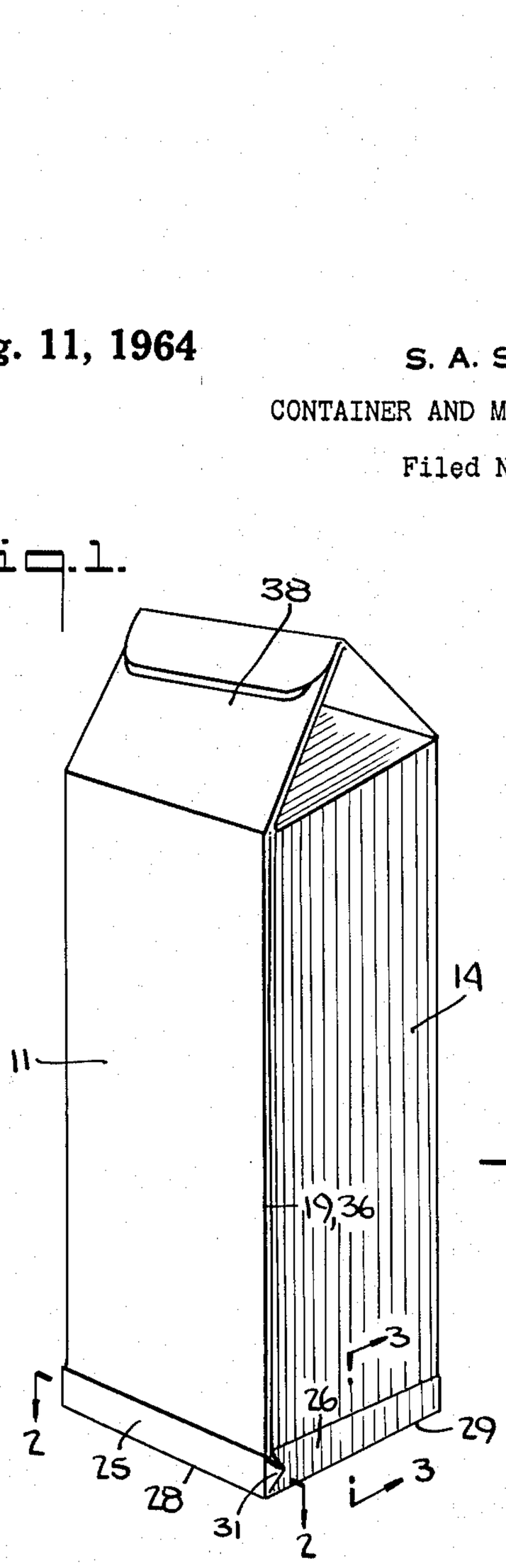


Fig. 3.

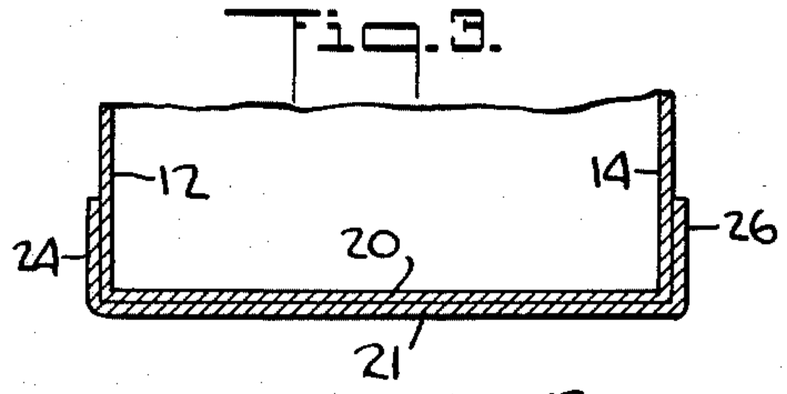
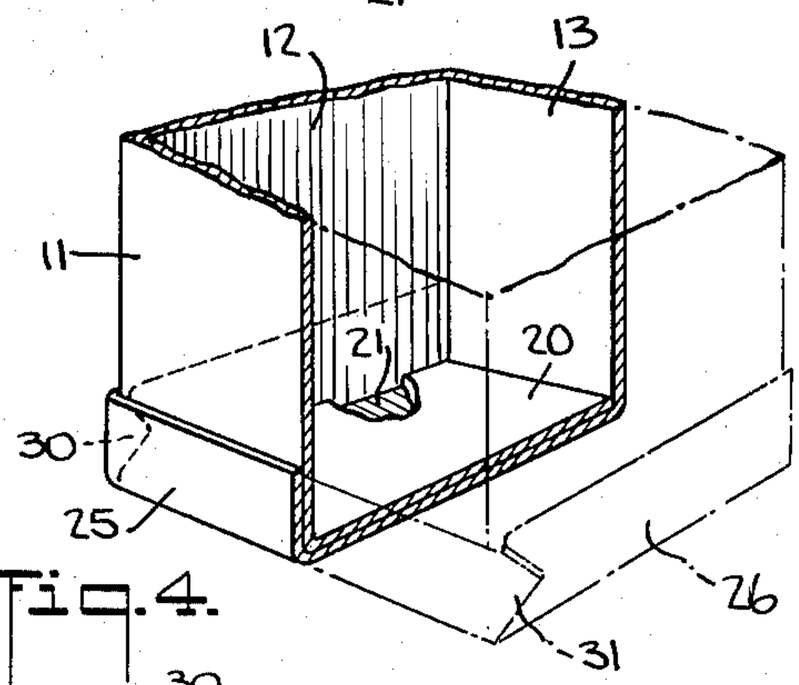


Fig. 4.



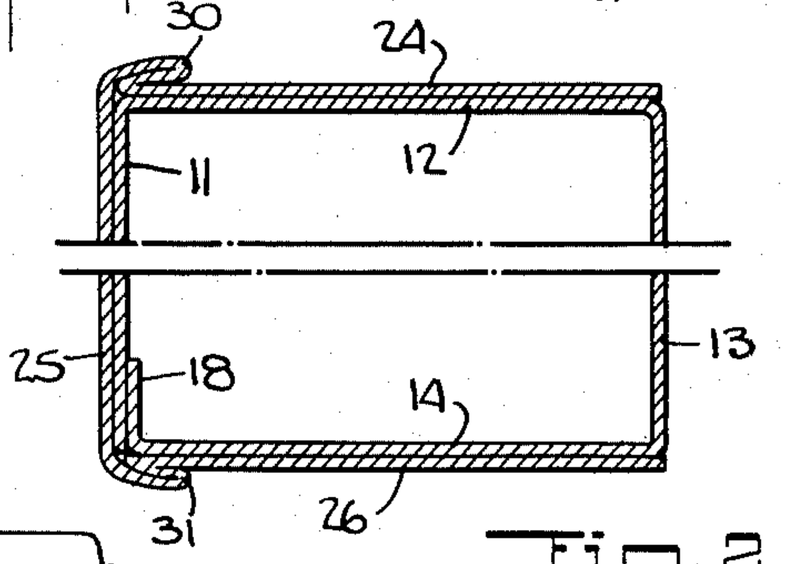
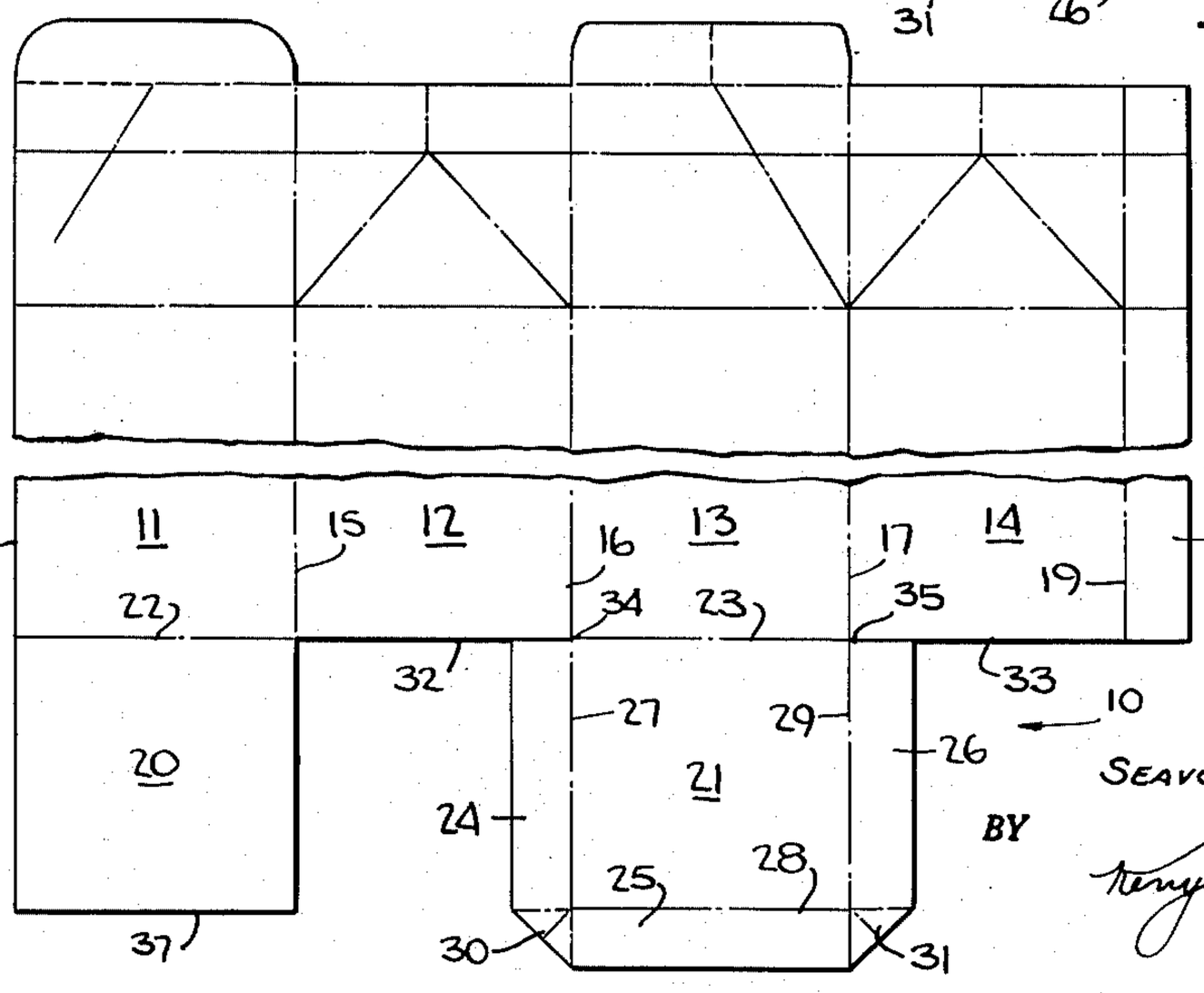


Fig. 2.

Fig. 5.



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CONTAINER AND METHOD OF MAKING SAME

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2 Claims. (Cl. 229—37)

This invention relates to an improved carton or container, and, more particularly, to a leakproof carton or container having increased liquid retaining properties and greater strength and durability than similar structures used or known in the prior art.

It has heretofore been necessary in improving the leakproof quality of liquid containers, such as the ordinary milk container, to pile up layers of material at weak areas and/or to construct interlocking seams such as for example are often found on recessed bases and the like. Such designs are expensive to manufacture because they require a great deal of extra container material, extra labor and, in some cases, special machinery. Furthermore, many of the older designs cannot readily be adapted to the newer heat sealing techniques which do away with the need to use wax or paraffin and thus eliminate the problem of wax particles flaking off into the contained food. The heat sealing techniques are most effective when the number of layers of material are kept to a minimum since the heat needed for sealing increases exponentially with the number of plies. If a great deal of heat is needed, the new coatings, e.g. silicones and plastics such as polyethylene and polyvinyl, may deteriorate or leave unpleasant odors and flavors in the packaged product.

Until the novel structure herein described was invented the only way to avoid the above heat sealing problems was to use as simple a structure as was available and run the risk of undesirable leakage. The significant contribution to the art made by this invention is that a simple unitary structure is now provided which has enhanced leakproof qualities, strength and durability.

An object of the invention is to provide an improved structure for sealing the base of liquid carrying containers.

Another object of the invention is to strengthen the bottom of the container. One of the major advantages to strengthening the container bottom is to prevent buckling which weakens the seal along the seams, particularly at the corners of the container.

Another object of the invention is to produce an improved leakproof container which can be cut and assembled with existing machinery.

Still another object of the invention is to provide an improved leakproof container having greater strength and durability, with maximum utilization of material and at a minimum cost.

A further object of the invention is to produce an improved leakproof container from a single blank of flexible material such as cardboard or paperboard, thereby permitting the container blanks to be shipped flat and folded or assembled at the place where the containers are to be filled.

An additional object of the invention is to produce an improved leakproof container having a minimum number of thicknesses of container material, thus minimizing the heat needed to seal the seams thereof and avoiding damage to the sealing material as well as avoiding any undesirable flavor in the milk otherwise due to excessive temperatures. In general the attainment of this object makes more practical the use of new heat sealable types of coatings.

Briefly, the invention is a container made from a unitary cut and scored blank of flexible material coated with a heat sealable silicone. The container has sidewall panel members folded to provide a body portion having a polygonal (e.g. rectangular) cross-section. A side edge flap, integrally formed with one sidewall panel, is heat sealed to an adjoining sidewall panel to seal the vertical split edge. The container bottom comprises a pair of substantially equally dimensioned superimposed bottom plies. Each ply has a polygonal shape corresponding to the container cross-section and has a common folded edge with a respective one of a pair of alternate (e.g. opposed) sidewall panel members. The outer bottom ply has a plurality of edge flaps along its other edges folded upwardly against the adjacent bottom edge portions of the sidewall panel members. Integral with the adjacent ends of the edge flaps are triangular web members which are folded against themselves and against the edge flaps. The bottom plies are heat sealed to one another, the edge flaps are heat sealed to the sidewall panel members and the web members are heat sealed to the edge flaps.

Other objects and features of the invention will become apparent in the following description and claims, and in the drawings, in which:

FIG. 1 is a perspective view of a container constructed according to the present invention;

FIG. 2 is a fragmentary horizontal cross-section taken along lines **2—2** of FIG. 1;

FIG. 3 is a partial section taken along lines **3—3** of FIG. 1;

FIG. 4 is a cutaway perspective of the carton base shown in FIG. 1; and

FIG. 5 is a fragmentary plan view of the flat blank from which the structure in FIGS. 1–4 is constructed.

Referring now more particularly to the accompanying drawings, like numbers having like references throughout the several views, the entire container, including the base is formed from a single flexible sheet blank of paperboard or the like, referred to generally by numeral **10** in FIG. 5. The blank **10** is appropriately cut and scored as shown to provide adjacent rectangular panels **11, 12, 13** and **14** having respective common edges or fold lines **15, 16** and **17**. Elongated side edge flap **18** has a common edge or fold line **19** with a side panel **14**. Square bottom panels **20** and **21** are integrally formed on one side with alternate side panels **11** and **13** respectively and have common edges or fold lines **22** and **23** therewith. Outer bottom panel **21** has edge flaps **24, 25** and **26** along its respective edges or fold lines **27, 28** and **29**. Triangular corner web members **30** and **31** are integrally formed with the ends of adjoining base edge flaps **24, 25** and **26** as shown. All lines shown within blank **10** are score lines along which folds are to be made, except that lines **32** and **33** are cut all the way through to the corners **34** and **35** so that edge flap **24** is not integral with edge **32** of panel **12** and flap **26** is not integral with edge **33** of panel **14**.

The width of side panels **11, 12, 13** and **14** are the same. Base plies **20** and **21** are cut square. The width or height of base flaps **22, 23** and **24** is obviously not crucial, however a width between about one-half and three-quarters of an inch has been found to be acceptable.

The blank is a coated piece of paperboard or cardboard material. The coating may be paraffin wax or one of the newer plastic or silicone coatings or any other suitable coating as desired. The preferred embodiment for the invention uses a blank coated with a silicone, e.g.: methyl, dimethyl or phenyl siloxane or dimethyl polysiloxane.

With the cut and scored blank lying as flat stock, it is folded along the score lines **15, 16, 17** and **19** between the side panels, placing score line **19** along edge **36** and placing vertical edge flap **18** flush with the inside of side panel **11**. Edge flap **18** is then sealed to panel **11** by subjecting it to heat and pressure, or by other suitable well known means as desired.

Base ply **20** is then folded at right angles so that edge **37** meets score line **23**, thus making base ply **20** the inner base ply. Base ply **21** is next folded at right angles so that score line **28** meets score line **22**, thus making base ply **21** the outer base ply (see FIGS. 3 and 4).

Base flaps **24**, **25** and **26** are then folded at right angles so that they are flush with the outside of sides **12**, **11** and **14** respectively (see FIGS. 1 and 3). Corner wings **30** and **31** are next folded over against base edge flaps **24** and **26** respectively as shown in FIG. 2.

Heat and pressure is then applied to the bottom to seal the base plies to one another, the edge flaps to the sides, and the wings to the edge flaps. The heat sealing operations can be carried out stepwise if desired.

The top **38** may be of any desired shape and design such as the conventional gable form shown in FIG. 1.

From the foregoing it is thus seen that the base or end enclosure of this invention uniquely combines a rigid durable base made out of lightweight flexible material with the absence of edge and corner slits, and is made from a single blank of flexible sheet material by a simple, quick and inexpensive process which is adaptable to the newer heat sealing techniques. Thus the invention accomplishes all the objects mentioned earlier and solves the problems posed by the prior art and discussed previously.

The carton provided by this invention has particular adaptability to diary products such as milk, cream, cottage cheese, etc., and it has been found to provide a carton having superior shelf life in use, greater strength and durability, and marked improvement in leakproof properties and significantly increased resistance to bulging and buckling.

While one embodiment has been described in detail, it is to be understood that changes and additions can be made by those skilled in the art without departing from the scope and spirit of the invention.

What is claimed is:

1. In a fluid container having a plurality of integrally formed sidewall panel members folded to provide a body portion having a polygonal cross-section, a base integrally formed with said body and being folded to close the bottom of said container comprising a pair of substantially equally dimensioned superimposed bottom plies having a polygonal shape corresponding to said cross-section, each of said plies having a common folded edge with a respective one of a pair of opposed sidewall panel members, the outer bottom ply having a plurality of edge flaps along its other edges folded upwardly against the adjacent

outer bottom edge portions of said sidewall panel members, integrally formed triangular members interconnecting adjacent ends of said edge flaps and having outer edges interconnecting the outer edges of said edge flaps, said web members being folded against themselves and said edge flaps, a heat sealable coating on said container, said plies being heat sealed to one another and said edge flaps and said web members being heat sealed to said sidewall panel members and said ends of said edge flaps, respectively.

2. In a fluid container having a plurality of integrally formed sidewall panel members folded to provide a body portion having a polygonal cross-section, a base integrally formed with said body and being folded to close the bottom of said container comprising a pair of substantially equally dimensioned superimposed bottom plies having a polygonal shape corresponding to said cross-section, each of said plies having a common folded edge with a respective one of a pair of opposed sidewall panel members, the outer bottom ply having a plurality of edge flaps along its other edges folded upwardly against the adjacent outer bottom edge portions of said sidewall panel members, integrally formed triangular web members interconnecting adjacent ends of said edge flaps and having outer edges interconnecting the outer edges of said edge flaps, said web members being folded against themselves and said edge flaps, a heat sealable silicone coating on said container, said plies being heat sealed to one another and said edge flaps and said web members being heat sealed to said sidewall panel members and said ends of said edge flaps, respectively.

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CERTIFICATE OF CORRECTION

Patent No. 3,144,192 August 11, 1964

Seaver A. Seline, Jr.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 27, for "diary" read -- dairy --; column 4, line 2, after "triangular" insert -- web --.

Signed and sealed this 12th day of January 1965.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents