May 7, 1963 R. E. JACKE 3,088,646

FLEXIBLE CONTAINER ADAPTED FOR FLUIDS

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Fig. 1

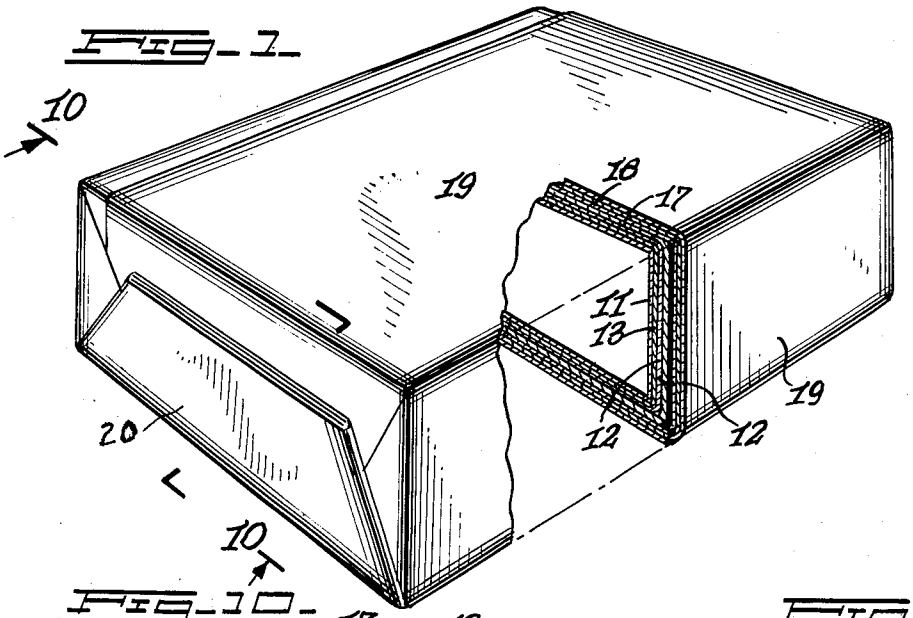


Fig. 10

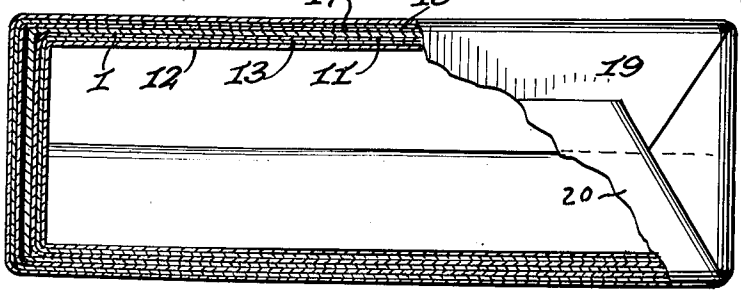


Fig. 11

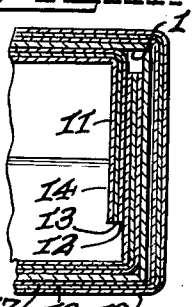


Fig. 12

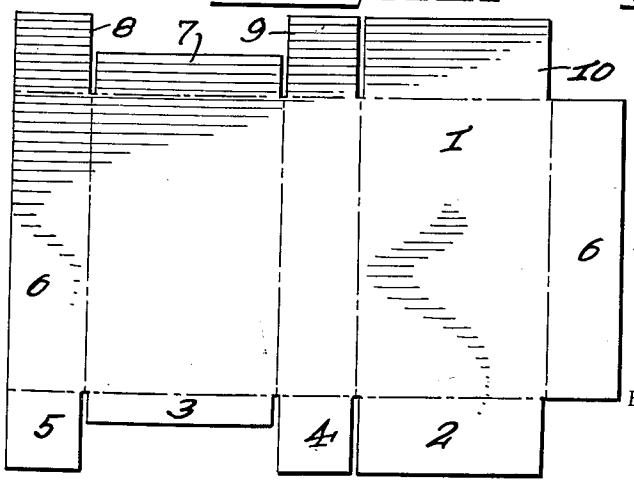
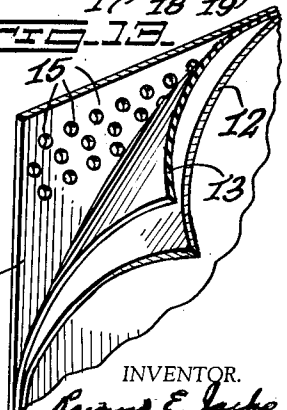


Fig. 13



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FIG. 2.

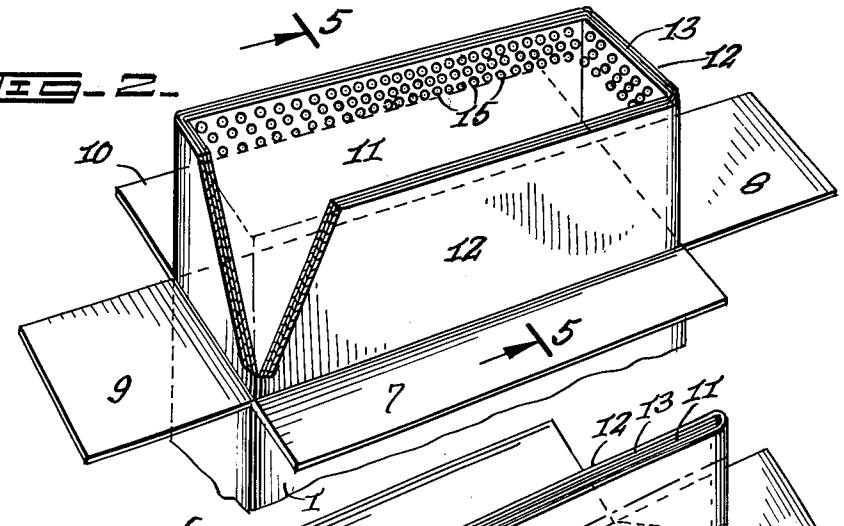


FIG. 3.

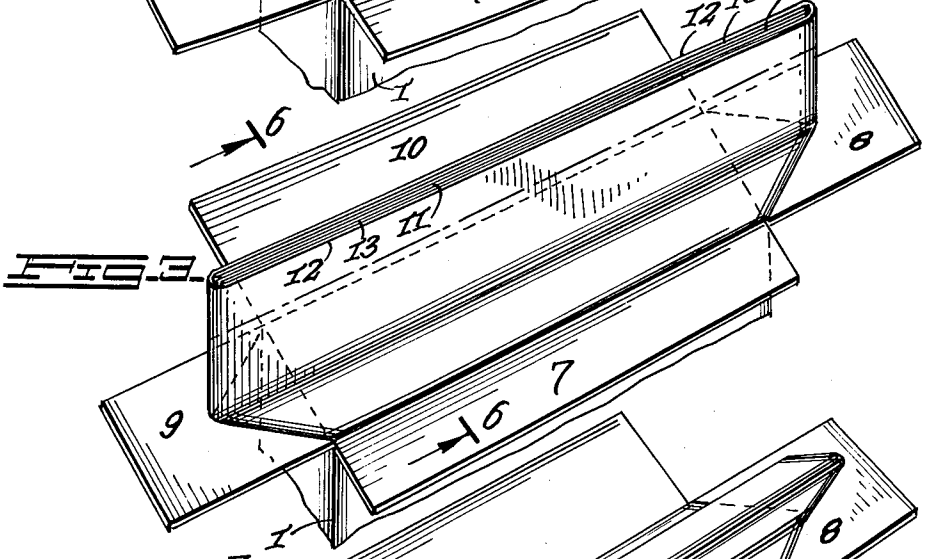
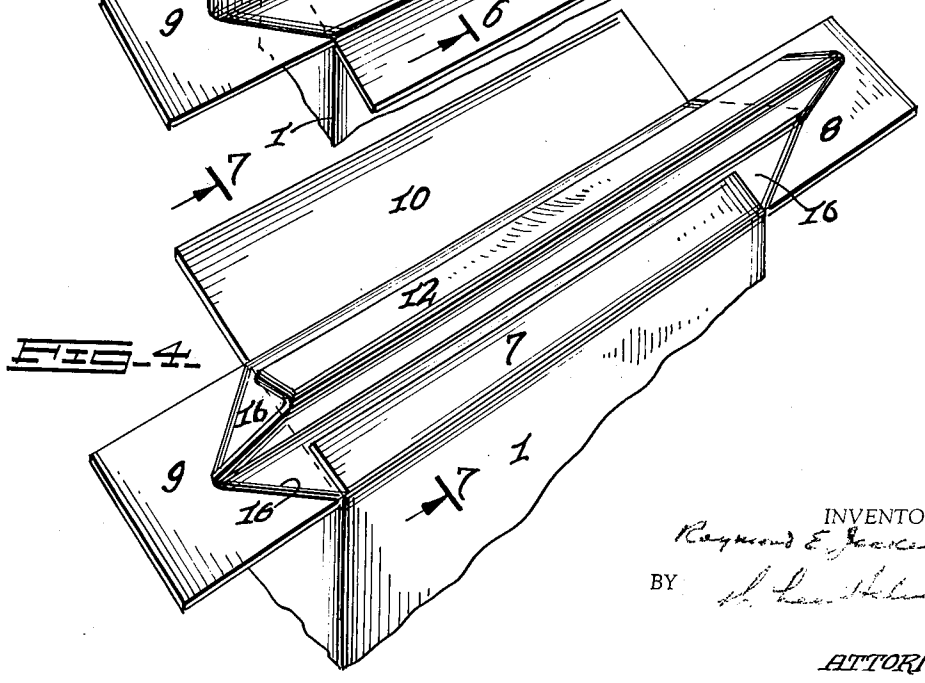


FIG. 4.



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Fig. 5.

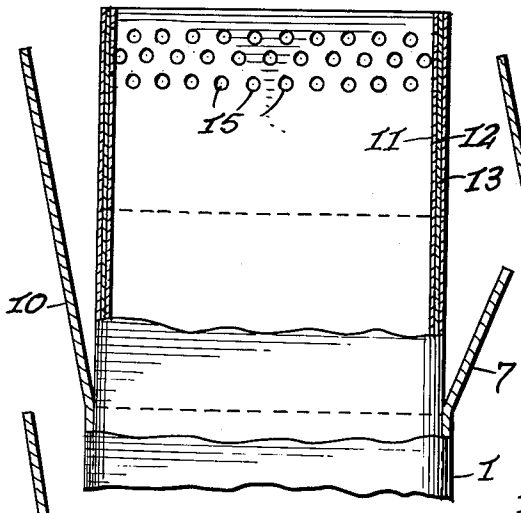


Fig. 6.

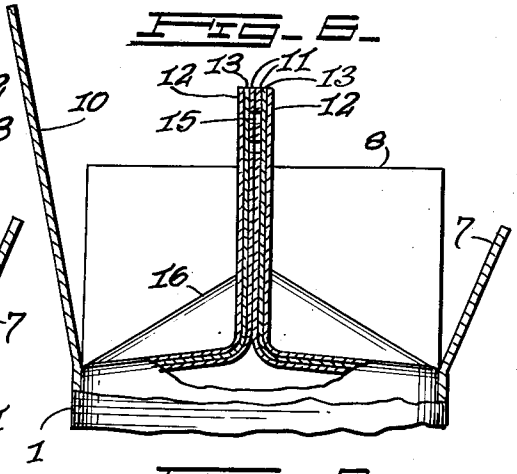


Fig. 7

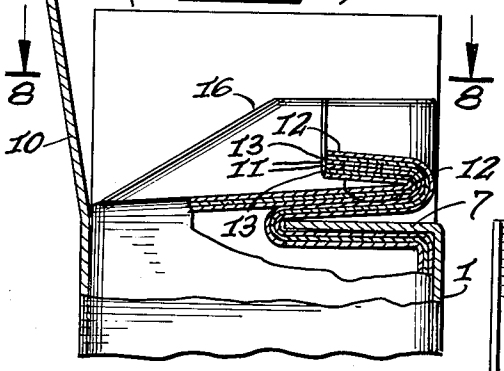


Fig. 9.

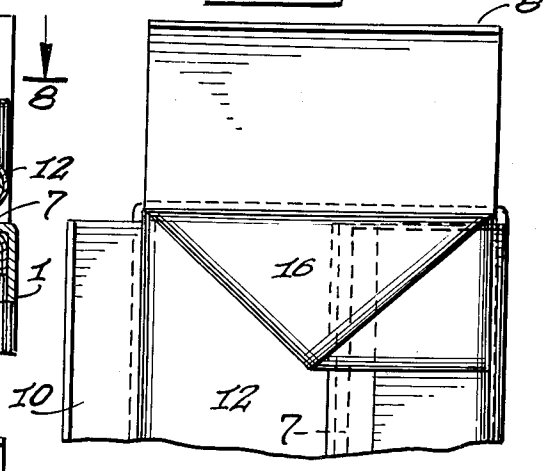
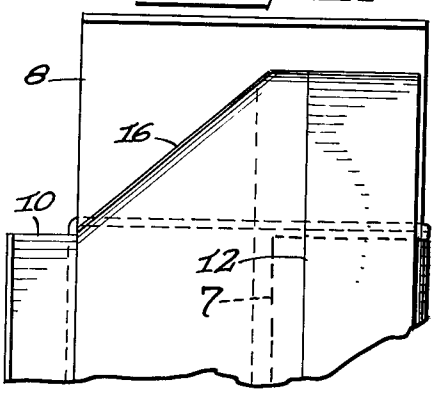


Fig. 8.



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FLEXIBLE CONTAINER ADAPTED FOR FLUIDS

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Filed Aug. 29, 1956, Ser. No. 606,873
1 Claim. (Cl. 229—14)

The object of the present invention is primarily to provide a low-cost container which will serve many of the purposes of tin plate containers, including cans, which will obviate the use of metal, may be initially constructed and shipped in flat condition, and which will be completely protective for foodstuffs, etc., which require in a container the factors of hermetical seal, easy opening, convenient disposal, production on conventional equipment standard in the packaging industry, etc. The constituents of the container are paperboard, aluminum foil, or other suitable metallic foil, wax, and screening tissue, and metal surfaces inside and outside.

The invention will be described with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view, partly broken away, showing an embodiment of the invention in set-up and sealed form, the plies being substantially enlarged for better visualization;

FIG. 2 is a fragmentary, isometric view, partly broken away, showing the top of the package open and ready for sealing;

FIG. 3 is a view similar to FIG. 2 showing the position of the top elements after a first closing-sealing step;

FIG. 4 is a view similar to FIG. 3 showing the result of a folding operation after the step of FIG. 3;

FIG. 5 is a vertical section taken along the line **5—5** (FIG. 2);

FIG. 6 is a vertical section taken along the line **6—6** (FIG. 3);

FIG. 7 is a vertical section taken along the line **7—7** (FIG. 4);

FIG. 8 is an enlarged fragmentary view taken on the line **8—8** (FIG. 7);

FIG. 9 is a view similar to FIG. 8 showing the extended liner "wing" of the latter when folded inwardly and brought flat against the underlying walls of the lining;

FIG.10 is an end view of the structure shown in FIG. 1 and partly in section along the line **10—10** (FIG. 1);

FIG. 11 is a fragmentary view in section taken vertically through the right-hand end of FIG. 10 to illustrate the laps of the fold forming a side seam in the foil, wax and screening tissue of the liner material;

FIG. 12 is a plan view of the cardboard blank; and

FIG. 13 is a schematic view showing separated the layers of foil, wax, and screening tissue, the foil being perforated, of one liner wall at the sealing end of the liner.

Referring to the drawings, I have shown at **1** in FIG. 12 and in the remaining figures a cardboard form-retaining member, which will be box-like in form, the specific form in the drawings being illustrative. Referring to FIG. 12 it may be assumed that bottom flaps are shown at **2** and **3** with coacting lips **4** and **5**, that the elements **6** are side-lapping flaps, that the lips **7**, **8**, and **9** coact with the flap **10** in the sealing of the top of the container.

The internal member of the container is a liner composed, as shown in FIG. 13, of a layer of foil, preferably aluminum foil **11**, a layer of screening or foraminous tissue **12**, and a layer of heat sealing wax composition, which generally will include both paraffin and microcrystalline waxes, **13**.

The liner is assembled with the cardboard box member in such manner that the screening tissue **12** abuts the inner wall of the box, and the aluminum or other foil

provides the inner exposed surface of the container. The liner is of sufficient length to provide adequate folding and sealing areas at the bottom of the box, and the bottom folds of the liner may be made in any customary manner, or if desired may be made generally in the manner provided for the top of the liner and as hereinafter described. In either case, as a result of the fact that the screening tissue abuts the inner walls of the box, the application of heat and pressure to the sealing folds and laps of the folds at the bottom of the liner will adhere these folds to themselves and to the bottom of the box. The side surfaces of the liner are also preferably adhered to the inner walls of the box.

The liner may, when folded, have one side wall provided with a lap seam **14** as indicated in FIG. 11, and the length of the liner will be such that it projects a substantial distance beyond the open top of the cardboard box, as indicated in FIGS. 2 to 5 inclusive. At such top-extended area of the liner the foil is marginally provided with a plurality of small slits or perforations **15**, the latter being enlarged in FIGS. 2, 5, and 13. In heat sealing with a foil to foil abutment the wax will flow through such apertures for bonding of the thus abutted foil surfaces.

When the container is filled, the extended top area of the liner may have its walls abutted in the manner of FIG. 3, and with heat and pressure so as to seal the open top of the liner. Thereupon the sealed liner top may be folded upon itself, as shown in FIG. 4, thence the folded area may be pressed down to and beyond the formation shown in FIG. 7. Preliminary thereto the lip or flap **7** of the cardboard box may be folded inwardly to provide some resistance to the heat sealing iron or plate which will effect a flow of wax through the abutting surfaces of the screening tissue for bonding the laps of the folds. The next step is the folding over of the wings or lateral extensions of the folded liner top, these wings being shown more particularly in FIG. 4.

If desired the container of the invention may be provided with an overwrap, an example being illustrated in FIG. 1. In its preferred form this overwrap is of a construction similar to that of the inner liner. Thus it may have an inner layer of porous tissue **17**, an intermediate layer of wax **18**, and an outer foil layer **19**. The overwrap may be folded and heat sealed at the ends of the container, as shown at **20**. Its side surfaces are preferably adhered by heat sealing to the outer walls of the member **1**.

It will be understood that various modifications may be made in the embodiment of the invention illustrated in the drawings. For example, the cardboard member **1** can be substituted by a similar box-like member of any relatively strong material, including heavy craft paper. Also, it would be possible to eliminate the perforations **15** at the upper end of the foil layer **11** of the liner. As a still further modification, it would be possible to fold the lip **7** over, rather than beneath the pressed down portion of the liner top. Other possible modifications will be readily apparent to those skilled in the art.

A feature of the invention is the bonding together of virtually a unitary member of the metal foil and cellulosic plies of the structure by the application of heat and pressure and particularly at the major walls of the container. The wax layer, in each case, may be carried directly by the metal foil, or it may be carried by a paper layer reinforcing the foil and carried thereby. Also with respect to the perforations in the foil, the top closing folds of the package, similar perforations in the bottom closing areas may be employed.

Having now described my invention what I claim and desire to secure by Letters Patent is as follows:

A flexible container comprising, in combination, a sub-

stantially rigid box-like member having a plurality of overlapping flaps adjacent to at least one end, an inner liner for said member comprising a layer of tissue porous to the extent of passing a heat sealing composition therethrough on application of heat and pressure adjacent to the inner walls of said member, an intermediate layer of a heat sealing composition, and a surface layer of metallic foil, the liner being positioned to be sealed, by its wax and porous tissues, to the box-like member, said liner having a closure formed by the end portions thereof abutted together, the outermost area of the abutted liner end portions being folded back upon itself to a substantially flat position with the closed end of the liner forming a laterally extending pocket and a laterally outwardly extending wing at each end of said pocket, a laterally extending one of said flaps extending transversely into said pocket between said closed end of the liner and said folded back abutted area of the liner, said wings being folded back flat upon the top of said folded back abutted area of the liner, and the folds of said closure being heat sealed together with said one of said flaps in relatively fixed position within said pocket.

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