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C. P. HURLEY

1,973,317

CONTAINER

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Fig. 1.

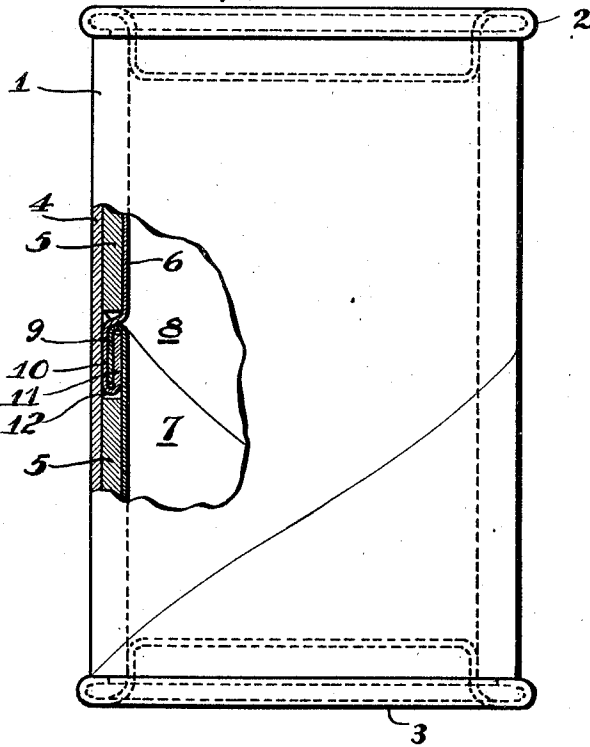


Fig. 2.

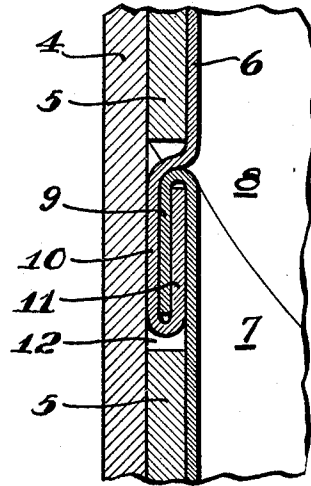


Fig. 3.

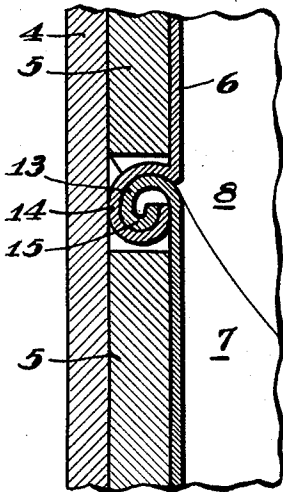


Fig. 4.

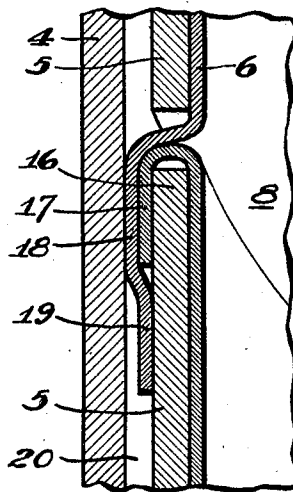
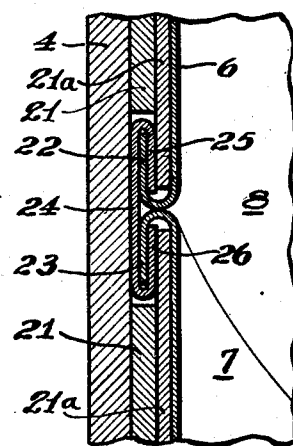


Fig. 5.



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UNITED STATES PATENT OFFICE

1,973,317

CONTAINER

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9 Claims. (Cl. 229-4.5)

The invention relates to containers for food-stuffs and other perishables. It has particular application to the type of container which comprises a cylindrical body portion of cardboard or other fibrous material.

It is an object of the present invention to provide a foil lined container body which is impervious to moisture, which is light, strong, and can be manufactured at low cost. A specific object is the provision of a container body of this type which is made up of a plurality of layers of paper, cardboard, or other fibrous or substantially non-conducting material and metallic foil which are spirally wound on a mandrel to produce a continuous lamellar structure of cylindrical or other similar formation. A further object is to provide a spirally wound composite container body having a spirally wound metallic foil lining, the edges of the spirally wound foil being locked or seamed together in such a way as to form an hermetic metal to metal seal, these lock seams being formed exteriorly of the plane of the inside surface of the container so that the surface will be smooth and unbroken. It is also an object to provide such a composite foil lined container body without the use of a solder.

These and other objects and advantages which characterize the invention will appear more fully in the description of the drawing forming a part hereof in which

Fig. 1 is an elevational view partly broken away in central vertical cross section showing a preferred embodiment of the invention which has been selected for purposes of illustration;

Fig. 2 is a fragmentary sectional view similar to the cross sectional part of Fig. 1, but drawn to a greatly enlarged scale in order to more clearly show the construction; Figs. 3, 4 and 5 illustrate further embodiments of the invention in which different forms of lock seams are disclosed. Throughout the description of the drawing, similar reference characters will be used to designate like parts.

Referring to Fig. 1, a container constructed in accordance with my invention may consist in its general assembly of a body portion 1 and top and bottom caps 2 and 3 respectively. The caps 2 and 3 may conveniently be formed of metal, although this is not essential. The present invention is directed toward the construction of the body portion 1.

The container body 1, as seen in Figs. 1 and 2, is of composite lamellar construction, the component layers of which are spirally wound to form a continuous unitary structure comprising an

outer strip 4 of paper, cardboard or other fibrous material, an intermediate layer 5 which may be of fibrous composition and a liner 6 of moisture-impervious metallic foil, preferably aluminum foil. (In Fig. 1 the wall thickness has been proportionately exaggerated in order to clearly show the construction.) It would be possible to substitute for the metallic foil other moisture proof material possessing the characteristics desired for packaging any given product, but the advantages of my invention are realized to the fullest extent only by employing a metallic foil liner and in the remainder of the description it will be apparent that metallic foil, and specifically aluminum foil, is peculiarly adapted to the novel construction which I have devised.

Throughout the description it is to be distinctly understood that wherever paper, cardboard or fibrous material are referred to, other equivalent materials may be substituted therefor without departing from the invention. For some purposes it is possible that certain condensation products or synthetic compositions not of a fibrous nature could be employed with satisfactory results.

The outer, intermediate and liner strips 4, 5 and 6 respectively are all spirally wound over a suitable mandrel, and may be secured together by an adhesive. An adhesive which will be found satisfactory for securing the foil liner 6 to the intermediate strip 5 is one which has an asphaltic base. The spiral windings of the outer and intermediate strips may extend in the same or in opposite directions; if in the same direction, the meeting edges of the successive spiral turns should be so arranged that the edges of the outer strip 4 are offset or removed from the meeting edges of the intermediate strip 5. It will be apparent that either with the offset spiral windings in the same direction or with the strips spiralled in opposite directions, the meeting edges of the successive turns of the outer strip 4 will be arranged in a position substantially removed from the meeting edges of successive turns of the intermediate strip 5. It is essential that the intermediate strip 5 and the metallic liner strip 6 be spiralled in the same direction, as will now appear.

Successive turns of the metallic foil liner 6 are indicated at 7 and 8. The leading edge of liner strip 6 is folded over at 9 and the trailing edge thereof (see portion 8 of the strip) is offset as at 10 and the offset portion folded over in a direction reverse to the folded portion 9 of the leading edge, as at 11. The folded portions 9 and 11 of the leading and trailing edges of the succes-

sive turns 7 and 8 are interlocked in the manner shown, and the joint so formed is tightly pressed together to provide an hermetic seal. It will now be noted that the meeting edges of successive turns of the intermediate strip 5 are spaced apart as at 12 an amount sufficient to receive therebetween the lock joint or seam between successive turns of the foil liner 6. The joint between the foil turns is thus offset laterally with respect to the inside surface of the container, and being positioned exteriorly of the plane of the inside surface, leaves it smooth and unbroken. This is an important feature of my invention and is advantageous both from the standpoint of appearance and ease of removal of the contents of the container. With the improved construction herein disclosed, the contents may be freely removed and will not lodge in the spiral seam of the metallic liner nor have any tendency to tear the metallic foil at the seam when the container is filled. The intermediate layer 5 supports the foil liner 6 adjacent the seams and serves as a spacer between the inner metallic wall and the outer wall 4. This feature will also be found to be present in the other embodiments of the invention now to be described.

Fig. 3 shows a modified form of lock seam in which the flat hooked seam of Figs. 1 and 2 is replaced by a roll seam, the construction of which is clearly indicated in the drawing. In this construction, the edges of the successive turns 7 and 8 are turned or folded over in the same direction as at 13 and 14 and, as before, pressed tightly together to form an hermetic seal. The roll seam 15 so formed is positioned substantially exteriorly of the plane of the inner surface of the container and the foil liner 6 is supported adjacent the seam 15 by means of the intermediate strip 5, the meeting edges of which are spaced apart sufficiently to receive therebetween the seam 15 just referred to.

In Fig. 4 a further modification is shown in which the joint between successive turns of the metallic foil liner comprises what is known as a "lapped and hemmed" seam. The leading edge of the liner strip 6 is folded over the leading edge 16 of the intermediate strip 5, as at 17, and the trailing edge of the adjacent turn 8 of the liner strip is offset at 18 and extended over the leading edge 16 of the intermediate strip 5 and beyond the folded portion 17 of the leading edge of the liner strip as at 19. The extended portion 19 of the trailing edge of the liner is pressed over the end of the folded portion 17 and tightly against the intermediate strip 5, to which it may be secured by an adhesive if desired. A space 20 may be left between the outer and intermediate strips 4 and 5 which will serve as an insulating dead air space. Alternatively, the space 20 may be filled with a second intermediate layer of fibrous or composition material.

The embodiment shown in Fig. 5 utilizes in addition to the outer strip 4 and metallic foil liner 6, two intermediate strips 21 and 21a which will be designated respectively as outer and inner intermediate strips. The meeting edges of the foil lining are folded over in opposite directions as at 22, 23. A joining strip 24 of the same material as the liner strip 6 is provided. The edges of the joining strip 24 are folded at 25, 26 to engage the folded edges 22, 23 of the liner strip. The folded portions of the metallic liner and joining strips are pressed together as in the previous constructions to form an hermetically sealed joint. In this construction the meeting edges of the outer

intermediate strip 21 are spaced apart sufficiently to accommodate therebetween the metallic joining strip, and the joining strip after formation lies between the outer strip 4 and the inner intermediate strip 21a. If desired, the outer intermediate strip 21 may be omitted, leaving a dead air space between the outer wall 4 and the intermediate strip 21a, the intermediate strip 21a still serving to support the foil liner 6 adjacent the lock seam.

A feature of all of the embodiments which have been described is the simplicity of their construction with reference to ease of manufacture. The constructions are adapted to fabrication by means of the usual spiral winding machinery now in use commercially, and the folded, lapped and seamed joints between the meeting edges of successive turns of the foil liner may be formed coincidentally with the winding of the composite container body, the entire fabrication being conducted in a single winding operation in which the material used for the outer and intermediate layers and the metallic foil may be fed into the machine from separate rolls, the metal to metal foil joint being formed simultaneously with the wrapping of the two outer layers around the mandrel of the machine.

It should be understood that further modifications may be made without departing from the invention as defined in the appended claims, of which the illustrative examples hereinabove described are typical.

I claim:

1. A container body comprising a spirally wound outer strip, a spirally wound liner strip, and a spirally wound intermediate strip, the adjacent edges of said liner strip being interlocked to form an hermetically sealed joint, said joint being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip.
2. A container body comprising a spirally wound outer strip of a fibrous material, a spirally wound metallic liner strip, and a spirally wound intermediate strip, the adjacent edges of said metallic liner strip being interlocked to form an hermetically sealed joint, said joint being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip.
3. A container body comprising a spirally wound outer strip of a fibrous material, a spirally wound liner strip of aluminum foil, and a spirally wound intermediate strip, the adjacent edges of said foil liner strip being interlocked to form an hermetically sealed joint, said joint being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip.
4. A container body comprising a spirally wound outer strip of a fibrous material, a spirally wound metallic liner strip, and a spirally wound intermediate strip, the edge of said metallic liner strip being folded over to interlockingly engage the reversely folded edge of an adjacent turn of said liner strip, the interlocking portions being pressed together to form an hermetically sealed joint, said joint being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip, the meeting edges of the intermediate strip being spaced apart sufficiently to allow the joint to lie substantially therebetween whereby said joint is formed exteriorly of the

plane of the inside surface of the container body and the surface is smooth and unbroken.

5. A container body comprising a spirally wound outer strip of a fibrous material, a spirally wound metallic liner strip, and a spirally wound intermediate strip, the meeting edges of the metallic liner strip being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip, the leading edge of the liner strip being folded over the leading edge of the intermediate strip and the trailing edge of the adjacent turn of said liner strip being extended over said leading edge of the intermediate strip and beyond the folded portion of the leading edge of the liner strip.

6. A spirally wound container body comprising an inner strip of a fibrous material, a metallic liner strip, a metallic joining strip, and an outer and an inner intermediate strip, all of said strips being spirally wound to form a composite unit, the meeting edges of the metallic liner strip being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip, the edges of the liner strip being folded over the edges of the inner intermediate strip, the meeting edges of the outer intermediate strip being spaced apart sufficiently to accommodate therebetween the metallic joining strip, the edges of said joining strip being folded over to engage the folded edges of said liner strip, said joining strip lying wholly between the outer strip and the inner intermediate strip, the folded portions of said metallic liner and joining strips being pressed together to form a hermetically sealed joint.

7. A spirally wound container body comprising an outer strip of a fibrous material, a metallic liner strip, a metallic joining strip, and an intermediate strip, all of said strips being spirally

wound to form a composite unit, the meeting edges of the metallic liner strip being arranged in a position removed from the meeting edges of the outer strip but adjacent the meeting edges of the intermediate strip, the meeting edges of the intermediate strip being spaced apart sufficiently to accommodate therebetween the metallic joining strip and the edges of said joining strip being folded inwardly, the edges of the liner strip being folded over to interlockingly engage the folded portions of the joining strip, the folded portions of said metallic liner and joining strips being pressed together to form a hermetically sealed joint, the folded portions of which lie between the meeting edges of the intermediate strip whereby the inside surface of the container body thus formed is smooth and unbroken.

8. A container body comprising a spirally wound outer strip of substantially non-conducting material, a spirally wound aluminum liner strip, and a spirally wound intermediate strip, the adjacent edges of said liner strip being interlocked to form an hermetically sealed joint, said joint being arranged adjacent the meeting edges of the intermediate strip.

9. A container body comprising a spirally wound outer strip of substantially non-conducting material, a spirally wound aluminum liner strip, and a spirally wound intermediate strip, the adjacent edges of said liner strip being interlocked to form an hermetically sealed joint, said joint being arranged adjacent the meeting edges of the intermediate strip, the meeting edges of the intermediate strip being spaced apart sufficiently to allow the joint to lie substantially therebetween whereby said joint is formed exteriorly of the plane of the inside surface of the container body.

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