March 17, 1936. D. E. LOWER ET AL 2,034,627

CORRUGATED LINER

Filed Sept. 19, 1934

Fig. 1.

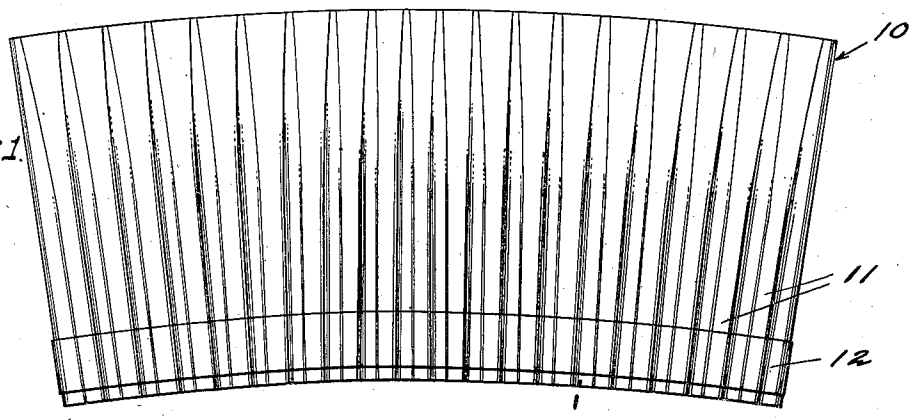


Fig. 2.

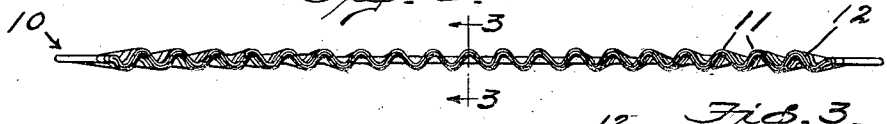


Fig. 3.



Fig. 4.

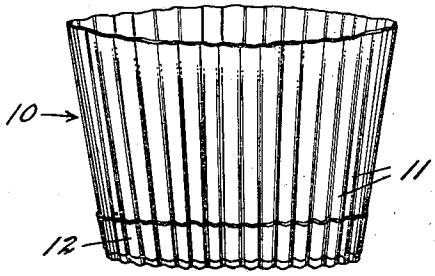


Fig. 6.

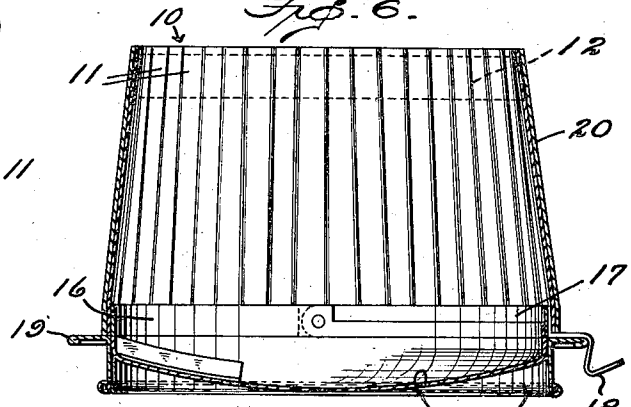


Fig. 5.

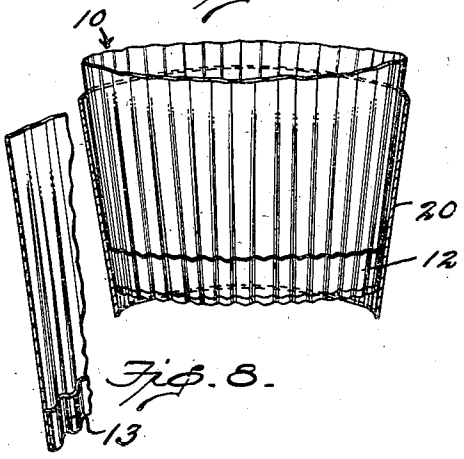


Fig. 7.

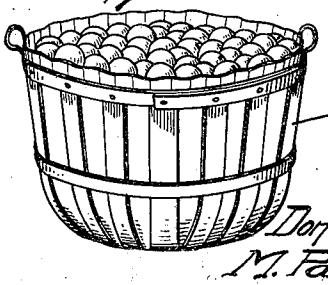


Fig. 8.

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CORRUGATED LINER

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Application September 19, 1934, Serial No. 744,714

7 Claims. (Cl. 217—3)

The invention relates to the packing of fruits, vegetables and the like and has special reference to that mode of packing wherein the products are placed within a paper or other similar liner held in shape initially by a surrounding shell which is later removed and replaced by a basket or the like.

The principal object of the invention, generally stated, is to provide a novel and improved form or type of liner which is well adapted for use in association with the packing apparatus disclosed in our co-pending application for Fruit packing accessories, filed April 8th, 1933 and given Serial No. 665,172, though it should be distinctly understood that the use of the liner is not limited in this respect as it is capable of employment in connection with other apparatus for the same purpose.

An important object of the invention is to provide a liner which is corrugated or of undulatory form so as to provide a cushion between the outer container such as a basket or the like and the fruit, vegetables or other products or articles, the construction of the liner being such as to insure its remaining in corrugated form even though the liners may be stacked in flattened out condition and stored for even quite a long period of time.

Another object is to provide a liner which has one edge or end restrained against expansion so that it may fit properly within a basket or the like and which has its opposite edge or end freely expansible so as to give or yield and be disposed against the inner surface of the basket or other outer container and thereby provide for a certain desirable amount of settling of the contents.

A further object is to provide a liner which will possess sufficient stiffness in itself to be capable of supporting a column of fruit, vegetables or the like prior to the disposition of the basket or other outer container thereabout.

Yet another object is to provide a liner possessing these advantageous characteristics and which will moreover be easy to press into place with respect to the supporting shell which is used as a temporary form during packing and which will subsequently be just as easily disposable within the enclosing basket or the like without there being danger of distortion or tearing at any state or step in the operation.

An additional object is to provide a liner having these advantages and which will at the same time be extremely simple and inexpensive to make, easy to use, positive in action, efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawing in which:

Figure 1 is a plan view of the liner showing it in folded or flat condition,

Figure 2 is an edge view thereof,

Figure 3 is a cross section taken on the line 3—3 of Figure 2,

Figure 4 is a perspective view showing the liner expanded,

Figure 5 is a similar view showing it disposed within a shell which is itself represented as being in cross section,

Figure 6 is a vertical cross sectional view showing the liner and the surrounding shell mounted upon a packing tray such as is disclosed in said co-pending application,

Figure 7 is a perspective view showing the liner within a basket and containing fruit, and

Figure 8 is a fragmentary sectional view showing a modification.

Referring more particularly to the drawing it will be observed that we have shown the liner as formed from a sheet of flexible material such as paper of proper thickness and toughness to stand the strain. This sheet is corrugated transversely and has its ends secured together to define a continuous member or annulus. The sheet may be described as of segmental or sector shape, the outer and inner edges being arcs of a circle of relatively large diameter. The sheet is indicated in Figures 1 and 2 by the numeral 10 and the corrugations by 11. Though the liner is intended to be expanded into frusto-conical form so as to fit within a shell or in a basket, depending upon the stage of the packing operation, it is quite natural that the liner be stored and shipped in flat condition as shown in Figures 1 and 2. As the result of the weight of a stack of such sheets and particularly as the result of moisture in the air it will be apparent that unless some means be provided for preventing it the liner will flatten out, that is to say the corrugations 11 will be mashed or smoothed out to a greater or less extent, thereby causing the small end of the liner to become larger than is desirable, thereby seriously interfering with the packing operation as such flattening of the corrugations and consequent spreading of the small end would make the small end too

large, when filled with fruit or vegetables, to fit within the outer basket or other container.

It is to overcome the above pointed out difficulties that we have conceived the idea of reinforcing the inner or smaller end of the liner so that regardless of what adverse conditions may exist the corrugations cannot flatten out. While this might be accomplished in different ways, we have shown two convenient expedients. In the preferred form of the invention we provide an auxiliary strip 12 upon each side of the sheet 10 glued or cemented thereto preferably in slightly spaced relation to the inner or shorter edge. The additional thickness provided by this reinforcement will give the liner such stiffness as to prevent undue flattening out of the corrugations. As an alternative, this inner edge of the sheet may be simply folded back and glued onto the body of the sheet as shown at 13 in Figure 8. Regardless of which one of these schemes is resorted to, the effect will be that the shorter or inner edge or end of the liner will be much more rigid than the outer or larger edge or end and will be prevented from undue expansion when filled with fruit or the like and prior to the disposition of the basket or outer container about the liner.

The liner is intended to be used in connection with a circular packing tray and a shell disposable thereon in surrounding relation to the liner for instance as disclosed in our above identified co-pending application. However, in order that the present case may stand on its own feet, we have shown in Figure 6 a supporting base 14 including a concavo-convex or dished tray 15 at the outer edge of which is an upstanding collar 16 with which cooperates a curved yoke 17 having a latch handle 18. The base also has an outstanding flange 19. In the use of the liner, the larger end therof is engaged exteriorly upon the collar 16 and yoke 17 while the latter is in upwardly swung position, after which the latch handle 18 is swung down and engaged with the flange 19 as shown, the result being that the liner will be frictionally gripped at its interior and drawn down into snug or taut embracing relation to the collar 16. The removable shell 20 is then telescoped onto and about the liner, subsequently to which the fruit, vegetables or other products to be shipped are packed within the liner, the facing layer of fruit being of course disposed upon the tray 15. Packing is continued until the assembled liner and shell are filled to the desired extent. By referring to Figure 5 it will be seen that when the shell is placed over the liner the small end thereof will contact with the small end of the liner before the larger end contacts so that as the shell is forced down onto the outstanding flange 19 of the base the smaller end of the liner will be held constricted. After the liner has been filled with articles as above mentioned the shell is removed whereupon the articles will be supported by the liner in column form. Owing to the previous constriction of the smaller end it will be seen that upon removal of the liner the articles contained therewithin may settle to a proper extent as the smaller end of the liner is capable of expansion to a degree limited by the presence of the reinforcing strips 12 or the folded over edge 13, as the case may be. Owing to the presence of the rather deep corrugations the liner will be stiffened so that it will be capable of maintaining the articles in column form without danger of distortion. As mentioned before, the reinforcing strips or edge will prevent undue expansion. After removal of the shell the basket or other outer container 21 is placed in inverted position over the filled liner, after which the whole packing device is turned over so that the basket or container will be in normal or upright position containing the product as clearly indicated in Figure 7.

From the foregoing description and a study of the drawing it will be apparent that we have thus provided a very simply constructed and yet inexpensive corrugated liner for use in packing fruits, vegetables or other products and in which means is provided for preventing flattening out of the corrugations even though a large number of the liners be stacked in superposed relation and stored for a considerable period of time. Regardless of whether we resort to the expedient of providing a reinforcing strip of paper, cloth or other appropriate material upon either or both sides of the liner or whether we simply fold over the smaller or inner edge and glue it or otherwise secure it to the body of the liner is immaterial as the fact remains that in either instance or by any other equivalent means the liner is so strongly reinforced that the corrugations will not flatten out and will not permit, at any time, distortion of the liner when it is filled with products preparatory to disposition within an outer container of any desired type. From the above it is believed that the construction, use and advantages will be readily apparent to one skilled in the art without further explanation.

While we have shown and described preferred embodiments of the invention it should be understood that the disclosure is merely an exemplification of the general idea and that the right is reserved to make any and all such changes as may widen the scope or field of utility of the invention provided such modifications or variations constitute no departure from the spirit of the invention or the scope of the claims hereunto appended.

Having thus described the invention, we claim:

1. A corrugated liner having one end or edge restrained against expansion and its other end or edge unrestrained, said restrained edge having a correspondingly corrugated reinforcement.

2. A corrugated liner of flexible material, and means at only one end or edge of the liner for preventing excessive expansion thereof, said means being relatively narrow as compared with the width of the liner and being correspondingly corrugated.

3. A liner for packing purposes comprising a continuous flexible member adapted to be stacked in flattened out form, the liner being corrugated and equipped at only one end or edge with a relatively narrow strip secured thereto for reinforcing and stiffening the same and preventing excessive expansion, said strip being corrugated to conform to the liner.

4. A liner for disposition within a container and adapted to be filled with products, said liner comprising a continuous flexible member of annular form and frusto-conical shape and corrugated throughout, and a relatively narrow strip secured to the flexible member at the smaller diameter thereof for limiting expansion, said strip being likewise corrugated and conforming to the corrugations in the flexible member.

5. A packing liner disposable within an enclosing container for cushioning perishable objects disposed therewithin, comprising a continuous member of flexible material and frusto-conical shape and corrugated throughout, and

strips secured on both sides of the smaller end of the liner for reinforcing and stiffening the same and limiting expansion, said strips being likewise corrugated to conform to the corrugations in the flexible member.

6. A packing liner disposable within an enclosing container for cushioning objects disposed therewithin, comprising a continuous member of flexible material and frusto-conical shape and corrugated throughout, and a strip of relatively narrow width compared with the width of the continuous member secured upon the continuous member at the smaller end thereof, said strip being likewise corrugated and conforming to the corrugations in the continuous member.

7. A packing liner disposable within an enclosing container, comprising a continuous member of flexible material and frusto-conical shape and corrugated throughout, said member having its smaller diameter edge folded back and secured thereto for reinforcing and stiffening the liner and limiting expansion at the smaller end, said folded-back edge being correspondingly corrugated.

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