May 12, 1936. G. H. GRAHAM ET AL 2,040,516

LINER

Filed April 11, 1934

Fig. 1.

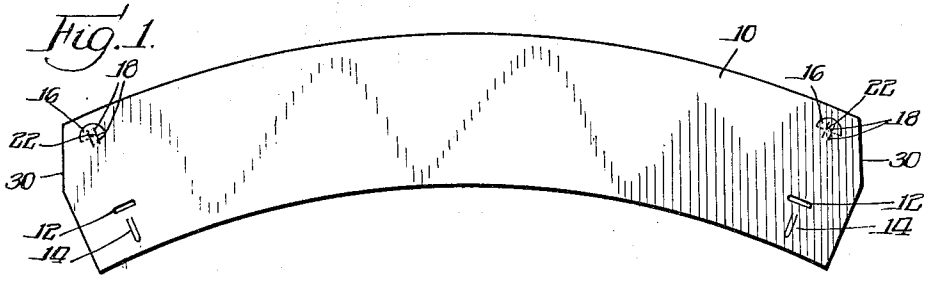


Fig. 2.

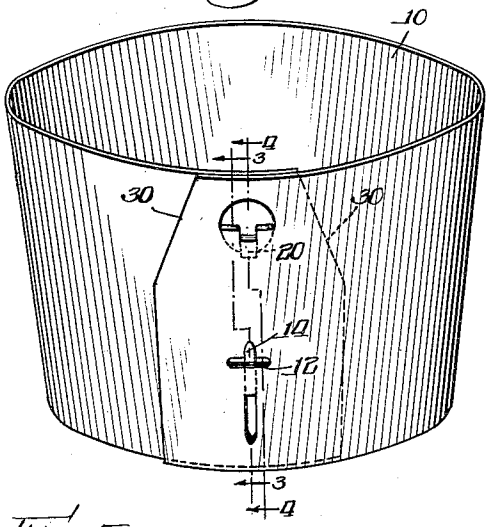


Fig. 3.

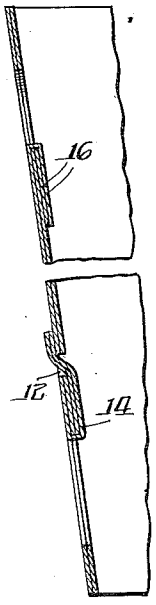


Fig. 4.

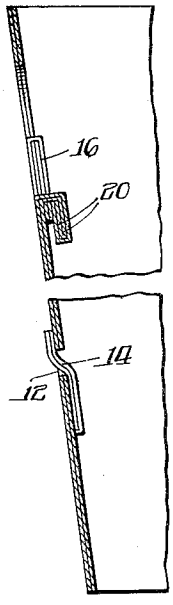


Fig. 5.

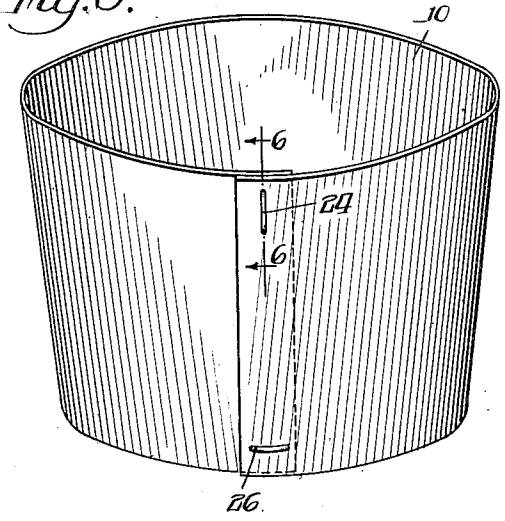
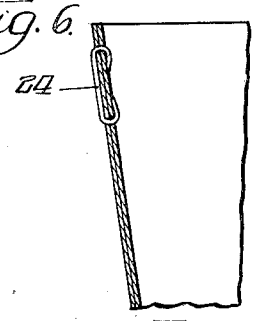


Fig. 6.



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UNITED STATES PATENT OFFICE

2,040,516

LINER

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Application April 11, 1934, Serial No. 720,024

4 Claims. (Cl. 217—3)

This invention relates to liners, and has been illustrated as embodied in one suitable for use in packing fruit or vegetables according to the well known method of packing in which a ring shaped liner is placed on a facing form with the small end of the liner up, whereupon it is filled with fruit, after which an inverted basket is placed over the filled liner and the entire assembly is turned over so that the fruit that was arranged on the facing form appears at the top of the basket, the facing form of course being removed.

Usually a reinforcing shell is placed around the liner while the fruit is being packed into the liner, but the shell is removed before the basket is placed over the liner, and therefore it is necessary that the liner be sufficiently strong to retain the fruit when the reinforcing shell is removed. It is desirable, however, it should yield sufficiently to conform to the basket when the liner with the basket around it is inverted, and that if necessary to this end it should break readily.

It is particularly desirable that the bottom edge of the liner when it is in the basket be easily expandible as by severance. On the other hand, during the packing process, the greater stress is on the other edge of the liner, that is the larger edge which engages the facing form during packing, and which bears the major portion of the strain resulting from the weight of the contents of the liner. One feature of the present invention therefore consists in making the small edge of the liner weaker than the large edge so that the large edge will have the necessary strength when it is lowermost during packing, and so that the small edge will have the necessary weakness when it is lowermost in the basket.

A further object of the invention is to connect the two ends by a joinder of a type which can be effected by means of a simple joining machine, such as a stapler or a similar machine which joins two members by merely folding and possibly cutting them in such manner as to cause an interlocking of its folded portions.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawing and claims appended hereto.

In the drawing, which illustrates an embodiment of the device, and wherein like reference characters are used to designate like parts,

Figure 1 is a view showing a liner blank of the preferred form of the invention;

Figure 2 is a perspective view showing the liner with its two ends joined together;

Figure 3 is a fragmentary cross-section taken along the line 3—3 of Figure 2;

Figure 4 is a fragmentary cross-section taken along the line 4—4 of Figure 2;

Figure 5 is a perspective view showing a modified form of the liner; and

Figure 6 is a fragmentary cross-section taken along the line 6—6 of Figure 5.

Although my invention may take many forms, only two have been chosen for illustration. The preferred form is illustrated in Figures 1 to 4. The liner 10 may be formed either perfectly blank with the outer shape as shown, or it may have formed therein all or any of the slots 12, the tabs 14, the flaps 16, and the pairs of spaced slits 18. If these slots, tabs, flaps and slits are initially formed in the blank during the original cutting step, the blank may very easily be formed into a liner by hand. It is contemplated, however, to leave the blank intact during the original cutting step except possibly for the slots 12, and do the entire joining by suitable mechanism in subsequent steps. When the ends of the blank are joined to form a liner as seen in Figure 2, the joinder at the large end comprises the flaps 16 which are folded downwardly, i. e., toward the small end of the liner and the folds 20. This joinder is secured by placing the two ends of the liner in such position that the flaps 16 coincide with one another, simultaneously doubling both of said flaps preferably toward the inside of the liner, and further doubling the folds 20 either in the same direction as shown or in the opposite direction. If the folds 20 are doubled in the other direction, i. e. in the outward direction, the joinder would be much stronger than is shown at present, and where there is no chance that the expansion of the outer portion of the liner would be desired, such outward folding is preferred. For an even stronger joinder the folds may be separated along a vertical middle line, one folded inwardly and the other outwardly. The separation may be accomplished by providing an extra slot between the two sets of slots. However, the weaker joinder illustrated is fairly strong in its resistance to an expansion of the upper or larger portion of the liner because such expansion is resisted both by the interlocking of the outer flap 16 with the hole formed by the inner flap, and because of the interlocking of the three outer folds 20 with the holes formed by bending down said folds.

In other words, the expansion of the liner is re-

sisted by approximately five contacting edges of the cardboard of which the liner is made. However, inasmuch as only the outer flap 16 and the extreme outer one of the flaps 20 directly engages the end portion of the liner (the other members engaging only the relatively unstable flaps) the joinder is nevertheless sufficiently weak so that a rupture will occur at this point more readily than it will at any other point of the liner, referring of course to the larger or upper end only.

It should be noted that the manipulation of the folds 20 is facilitated by the fact that each slit 18 is not continuous, but is separated by a small web 22 which prevents a premature doubling up of the folds 20 as the flaps 16 are folded. These webs 22 are small enough, however, so that after the flaps 16 are folded the webs may be severed with a very slight pressure.

The lower and smaller end of the liner is joined simply by bending the tabs 14 toward the large or upper end of the liner, inserting them through aligned slots 12. The slots 12 are preferably considerably wider than the tabs 14 both to facilitate insertion of the tabs therein and so as not to have any reinforcing effect initially. It follows therefore that the smaller end of the liner is held against expansion only by the interlocking of the outer tab 14 with the slot of the inner end of the liner formed by these tabs. This being the case, the lower end of the liner yields very easily, shearing off the single thickness of the tab.

Because the tab may be sheared off so easily, it may occasionally be sheared off during the packing process, before the basket has been placed over the liner. In that event the interlocking action between the two tabs 14 and the two slots 12 prevent a complete separation of the ends of the liner. It will usually be possible therefore to place the basket over the liner in the usual manner, although the fit will not be quite as perfect as if no expansion had taken place. Once the basket has been placed over the liner and the assembly inverted, the two tabs 14 and the slots 12 will not be too strong to prevent the expansion under the weight of the fruit, for the slots 12 will tear quite readily.

It is very desirable that the upper and lower joinders be bent in opposite directions, as in the illustrated form. Thus the flaps 16 and folds 20 are all bent downwardly, while the tabs 14 are all bent upwardly. This securely locks the two parts against relative vertical movement in either direction, for the downward folds of flaps 16 and folds 20 prevent an upward movement of the inner end of the liner with respect to the outer end, and the upward folds of the tabs 14 prevent a downward movement of the inner end of the liner with respect to the outer end of the liner. It is true that the folds 20 have a tendency to prevent downward movement of the inner end of the liner, and if they were folded outwardly they would be very effective to this end as long as they remained properly folded down. The use of another joinder folded in the opposite direction, however, has a tendency to protect the folds 20 against the application of a downward force on the inner end of the liner, which downward force would tend to open up the folds 20 and cause their release.

According to a modified form of the invention, simple staples are used near the two edges of the liner, the staple 24 at the large end of the liner being placed in a vertical position as shown in Figures 5 and 6. This staple may be heavier and tighter than the other staple 26 if desired. Staple 26 is preferably placed in a horizontal position, as shown in Figure 5 for the reason that it is weaker in this position from the standpoint of resistance to circumferential expansion. As previously discussed, this differential strength has the advantage that the end contacting the facing form may be quite strong, while the end that is most necessarily expanded in the basket may be quite weak.

There is another form of joinder which, however, is too simple to need illustration, the general principle being made clear by the present drawing. This form of joinder would comprise simply a large pasted spot near the large edge of the liner, and a small pasted spot near the small edge of the liner. The small pasted spot would part more readily than would the large spot, and either or both would part sufficiently readily to insure severance when necessary.

Another feature of the invention comprises so shaping the blank that it may be formed from a narrower strip of cardboard stock than if it had the ordinary shape. For this purpose the ends are terminated along the lines 30, which are preferably parallel to the radius of curvature of either the top or bottom edge of the liner which is located midway between its ends. This enables the liner to be cut from a sheet which is only the width, or slightly more than the width of the distance between the two lines 30.

It is to be understood that many other embodiments of the invention, including some in improved form, will be apparent, and in the course of time more will be devised by those skilled in the art. It is not desired that this invention be limited to the details described, for its scope includes all such forms or improvements as come within the spirit of the following claims, construed as broadly as the prior art will permit.

What is claimed is:

1. A liner for baskets or the like adapted to hold fruit or vegetables on a facing form before the basket is placed thereon comprising a strip blank connected at its ends to form an endless band by a joinder on one vertical half of the liner and a joinder on the other vertical half of the liner, one of said joinders being stronger than the other in resistance to expansion of the liner, said liner having sufficient strength to dependably hold itself together when furnishing the sole lateral support for a column of fruit or vegetables, and being of sufficiently weak stock to yield to the point of rupturing or tearing upon normal jolting down in the basket during packing if necessary to conform to the basket.

2. A liner for baskets or the like adapted to hold fruit or vegetables on a facing form before the basket is placed thereon and subsequently to yield beyond its elasticity to fit the basket comprising a strip blank connected at its ends to form an endless band by a joinder on one vertical half of the liner and a joinder on the other vertical half of the liner, one of said joinders being stronger than the other in resistance to expansion of the liner, and the weaker of said joinders comprising a main joinder and an auxiliary joinder, the auxiliary joinder being ineffective until some expansion has taken place, but when effective being stronger than the main joinder.

3. A tapered basket liner adapted to hold fruit or vegetables on a facing form before the basket is placed thereon, comprising an endless band having a predetermined zone of yield to expanding forces, said zone of yield being weaker near the small end of the liner than it is near the large

end of the liner, said liner having sufficient strength to dependably hold itself together when furnishing the sole lateral support for a column of fruit or vegetables, and being of sufficiently weak stock to yield to the point of rupturing or tearing upon normal jolting down in the basket during packing if necessary to conform to the basket.

4. A tapered basket liner adapted to hold fruit or vegetables on a facing form before the basket is placed thereon and subsequently to yield beyond its elasticity to fit the basket, comprising a strip blank overlapping and connected at its ends to form an endless band by a staple near the large end of the liner having its legs piercing the ends of said strip substantially in the same vertical plane and by a staple near the small end of the liner having its legs piercing the ends of said strip substantially in the same horizontal plane.

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