

April 17, 1945.

C. W. PINCKERT

2,374,128

METHOD OF MAKING A BAG MATERIAL AND THE PRODUCT THEREOF

Filed Sept. 27, 1943

2 Sheets-Sheet 1

FIG. 1.

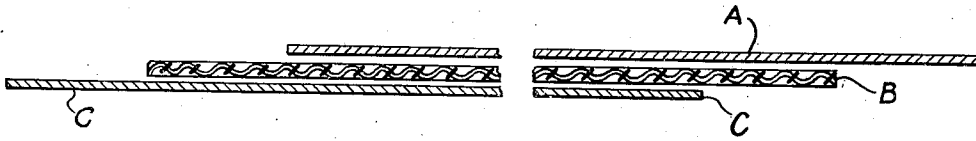


FIG. 2.

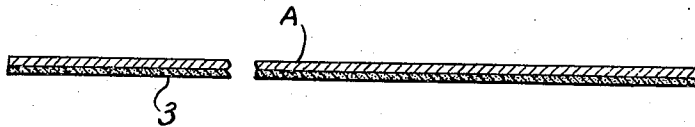


FIG. 3.

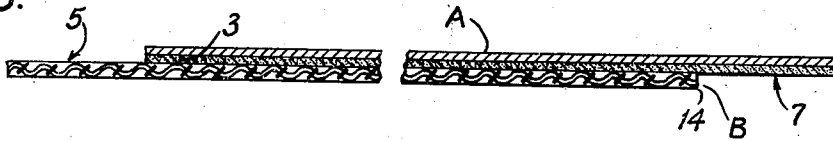


FIG. 4.

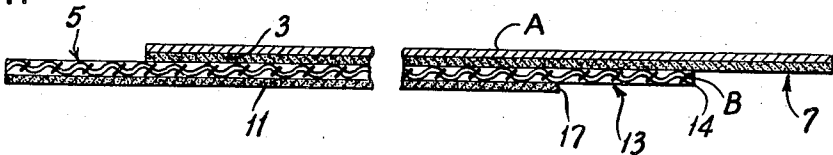


FIG. 5.

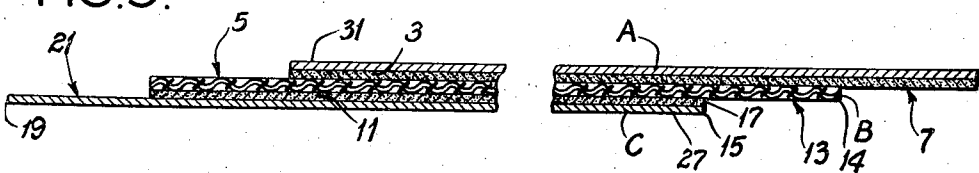
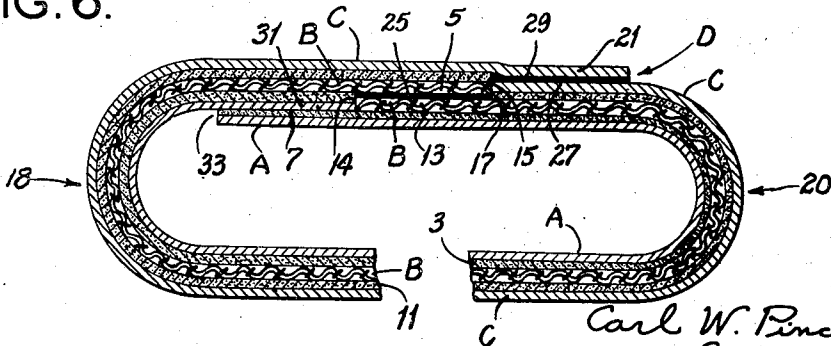


FIG. 6.



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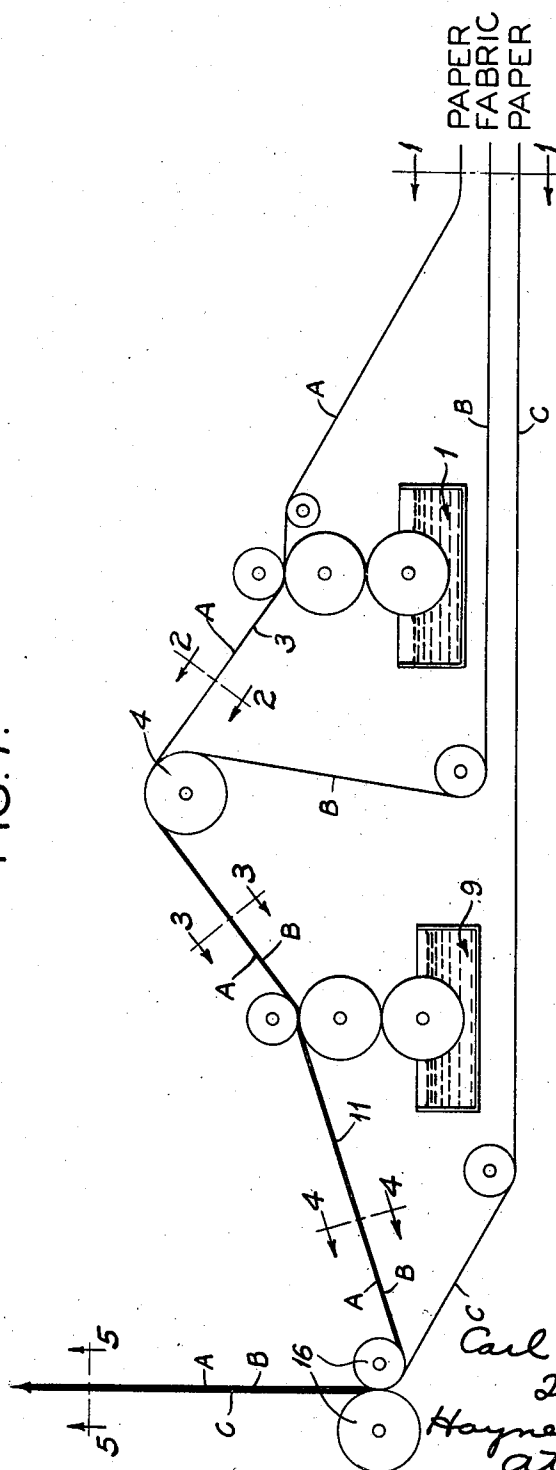
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FIG. 7.



UNITED STATES PATENT OFFICE

2,374,128

METHOD OF MAKING A BAG MATERIAL AND
THE PRODUCT THEREOF

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Application September 27, 1943, Serial No. 504,078

3 Claims. (Cl. 154-2)

This invention relates to a method of making a bag material and to the resulting product, and more specifically to a multi-ply material and bag having fabric and paper plies.

Among the several objects of the invention may be noted the provision of an easily constructed multi-ply material which by means of an adhesive lap seam may readily be made up into bags, case liners and the like which will be waterproof; the provision of an article of the class described which has an effective seal under most adverse conditions; and the provision of an article of this class which is economical to make and sell. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the steps and sequence of steps, elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated one of various possible embodiments of the invention,

Fig. 1 is a diagrammatic view taken on line 1-1 of Fig. 7 and showing the offset relationship between certain fabric and paper web materials as they enter certain coating and joining apparatus;

Fig. 2 is a cross section showing the application of an adhesive to the bottom of the upper web indicated in Figs. 1 and 7, the view being taken on line 2-2 of Fig. 7;

Fig. 3 is a cross section showing attachment of the two upper webs of Fig. 1, the view being taken on line 3-3 of Fig. 7;

Fig. 4 is a cross section showing the application of a second layer of adhesive to the assembly shown in Fig. 3, the view being taken on line 4-4 of Fig. 7;

Fig. 5 is a cross section showing the application of the bottom web of Fig. 1 to the assembly of Fig. 4, the view being taken on line 5-5 of Fig. 7;

Fig. 6 is a cross section of a seamed tube made from the material illustrated in Fig. 5; and,

Fig. 7 is a diagrammatic line drawing illustrating the coating process used.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

It is to be understood that the various views are diagrammatic and, where necessary, thicknesses are exaggerated in order to make clear features which would otherwise not appear.

Referring now more particularly to Figs. 1 and 7 there is shown at A, a web of paper of a type suitable for bag liners. At B is shown a web of fabric such as is ordinarily used for bag bodies, for example, woven cotton, burlap or the like. At C is shown a web of paper which is preferably to become the outside of the finished bag. As will appear, the outside-inside relationship in the finished bag of the layers A and C may be reversed but the relationship shown is preferred.

As is indicated in Fig. 1 the webs or layers A, B and C are all of the same width which is equal to the girth dimension of the final bag plus a certain lap seam dimension to be indicated hereafter. These webs are successively offset with respect to one another by equal amounts. This is brought about as they pass through the coating machinery shown in Fig. 7 and as indicated in Fig. 1. In practice the offsets are of the order of one to one-and-one-half inches, although this is not to be taken as limiting.

As indicated in Fig. 7, the paper web A passes through a first asphalt coater 1, wherein is obtained on its bottom the asphalt coating 3 shown in Fig. 2. This coating reaches from edge to edge.

Then on a combining roller 4 the coated web A meets with the fabric web B with the offset as above established (see Fig. 3). This exposes an uncoated margin 5 of the offset fabric web B and an exposed coated margin 7 of the paper web A.

Then the assembly of the two webs shown in Fig. 3 proceeds to a second asphalt coater 9 which applies an asphalt coating 11 to the underside of the fabric layer B. This coating falls short of the right-hand edge 14 of layer B by an amount substantially equal to the said offset, thus exposing an uncoated lower margin 13 as shown in Fig. 4. Various means in association with coating rolls are available for establishing free margins such as 13, such as deflectors or masks, but since these means are known it will not be necessary to describe them in detail.

Next the coated paper-fabric assembly of Fig. 4 is led against the lower web of paper C so that one edge 15 of this paper comes flush with the set-back edge 17 of the asphalt layer 11. This is done in pressure rolls 16. The other edge of this paper layer C, shown at 19, thus becomes offset the stated marginal amount. Thus a third uncovered and exposed margin 21 is established.

The above completes the production of the composite web of Fig. 5, which constitutes an intermediate composite web product. This web is then suitably cut up into lengths equal to the

desired bag length and lapped over girthwise as shown in Fig. 6. This forms a tube from which a bag may be completed by subsequently forming bottom and top seams. Folding over is managed as at 18 and 20 so that the two exposed fabric margins 5 and 13 come together, an additional adhesive stripe 25 being used to form a joint. The adhesive 25 may be asphalt or other waterproof material. This procedure also brings together margins 21 and 27 of the now outer paper sheet C. Between these margins an additional adhesive stripe 29 is placed which is preferably like adhesive 25. The asphalt-covered margin 7 and uncoated margin 31 of the inner layer A also become adjacent to effect a juncture as shown at 33 in Fig. 6.

It is to be understood in connection with the application of the asphalt 11 (Fig. 4) that it may be controlled so it will not be pressed in to impregnate the fabric 13, but if impregnation is desired to have asphalt 11 join with asphalt 3, impregnation should be limited to exclude the marginal area 5, because asphalt at this region would interfere with the efficiency of adhesive 25. This differential impregnation, if desired, may be accomplished by relieving the pressure at the end of the coating roll which is adjacent to margin 5.

Advantages of the invention are as follows:

The offset arrangement for establishing margins to make an ultimate echelon-lapped bag side seam is quite economically brought about in the coating apparatus. All webs are of one width and only one degree of offset needs to be maintained throughout. Thus manufacture is extremely simplified.

The provision of a paper-to-paper adhesive joint outside of the bag seam as shown at D in Fig. 6 is advantageous for trimness since the paper is thinner than fabric. The fabric-to-fabric joint at 25 provides strength. The paper-to-paper joint inside at 7 makes a smooth inside joint.

Since adhesion between cloth and pre-coated paper (Figs. 2 and 3) is not likely to be as good as adhesion between pre-coated cloth and paper (lower layers of Figs. 4 and 5), it is desirable to have the latter combination outside for greatest protection and it is also desirable to have paper joined to paper at the outside lap by means of the additional adhesive 29, as distinguished from the adhesive 11, because this additional adhesive 29 may be chosen for its specific seaming purpose. This is a characteristic of the preferred construction since the outer layer of paper C, in the assembly process, has been adhered to a pre-coated layer of cloth (Figs. 4 and 5), and adhesive 29 may be different from adhesive 11; whereas the inner layer of paper A was itself first coated as shown in Fig. 2 and to this combination was applied the fabric (see Fig. 3), and the adhesive at 33 is the same as the adhesive 3 throughout the remainder of the area between paper A and fabric B. It may be noted that the adhesive at 33 may be of the character stated because the inside paper lap is ultimately under the same inside conditions of pressure from bag contents as the remainder of sheet A. Thus it will be seen that the most water-tight component is at the best location, namely, on the outside of the bag tube.

Another feature is that shrinkage is minimized. This is because the final fabric-enveloping layer of asphalt 11 is applied to the fabric B after said fabric has been attached to the paper A. This coating 11, in the absence of the attached pa-

per A, would cause substantial shrinkage particularly if impregnated deeply. Unwanted shrinkage in unsupported cloth which is heavily coated with asphalt (particularly if on both sides) occurs because the asphalt is applied at elevated temperature and dries out the moisture in the cloth. By having the cloth supported by paper at or before the time the enclosing layer of asphalt contacts it, excessive shrinkage is prevented.

Bags made according to the present invention will protect their contents against moisture when submerged in sea water for at least 24 hours. For this reason the material when made up as case liners, which are special forms of bags, is quite useful for marine shipments which are sometimes lost overboard and retrieved, or even intentionally beached by floating in from a vessel.

The term bag, as used herein, is to be construed as covering any enclosures made up from a seamed tubular intermediate product. It includes case liners and the like of various shapes.

It will be understood that the end seams required for forming a bag from the tube of Fig. 6 are made of constructions which are of watertightness commensurate with that indicated in the Fig. 6 seam. End seams are not so difficult to make water-tight because they are not ordinarily lap seams, and in addition it is ordinarily not expected that they be as flat as the side seams. In other words, the present side seam withal its neat and flat appearance is as watertight as the heavier forms of end seams used. It is to be understood however that the seam disclosed may be used in other locations on bags than the one indicated.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A method of producing a multi-ply tubular material for making bags and the like comprising passing a first web of paper through an adhesive coater to receive an adhesive coat on one side from edge to edge, passing the adhesively coated web of paper into offset running and combining engagement with a web of fabric causing one uncovered margin of the fabric to extend from the paper, running the engaged offset paper and fabric webs through a second adhesive coater and applying adhesive to the back of the fabric from the edge of its extending margin to a line spaced from its other offset edge, subsequently passing the combined paper and fabric web into offset running and combining engagement with a second offset paper web one edge of which web is co-linear with said line of adhesive on the fabric and the other edge of which is offset, turning the margins of the combined layers so that an echelon lap seam is formed wherein the said first web of paper is inside with its margins lapped and joined by some of the adhesive coat already on it, and applying additional adhesive stripes to join the adjacent lapped marginal portions of the intermediate fabric layer and of the outside paper layer.

2. A tubular multi-ply structure for bags and the like comprising a fabric layer lapped and joined in the resulting lap by an adhesive stripe

therein, a paper liner which is exteriorly covered with a layer of asphalt to which said fabric layer is attached, said liner being lapped on one side of the fabric lap and joined by means of an integral continuation of said layer of asphalt, a layer of asphalt covering said fabric exteriorly including the part outside of its lap, and a cover of paper attached to said fabric by said asphalt outside of the fabric, said paper cover being lapped on the outside and next to the fabric lap, the lapper portions of the paper cover being attached by an adhesive stripe therein, said two adhesive stripes being non-integral with the asphalt joining the fabric layer and the paper cover.

3. A tubular product for bag manufacture and the like comprising an inner paper liner com-

pletely coated with adhesive and extended to lap itself to form one part of a seam wherein the adhesive is integral with and the same as the coat on the remainder of the paper, a layer of fabric attached outside of said asphalt coated paper liner, said fabric being lapped fabric to fabric adjacent to the lapped region of said inner paper sheet, adhesive in the fabric lap, and an outer paper cover sheet adhered to said fabric sheet with the exception of a portion of said outer paper sheet which laps itself, said last-named paper lap having an adhesive therein, the adhesive in the outer paper lap and in the fabric lap comprising different bodies from the bodies of the adhesive on opposite sides of said fabric sheet.

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