Aug. 15, 1933. J. A. ROSMAIT 1,922,867

MULTIPLE WALL WATERPROOF BAG

Filed April 25, 1932

Fig. 1

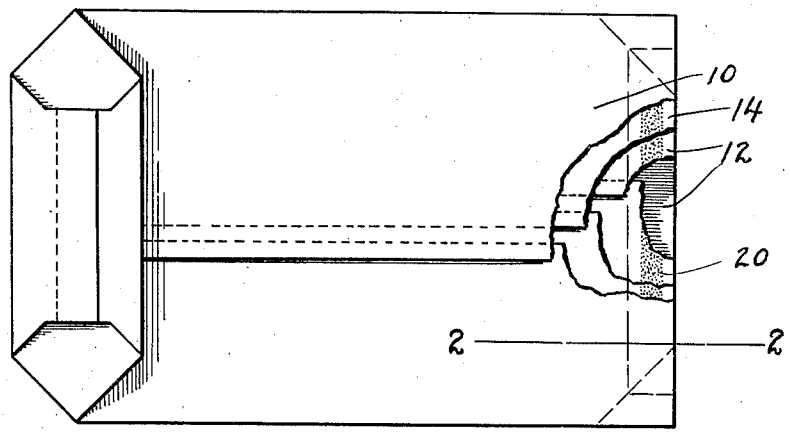


Fig. 2

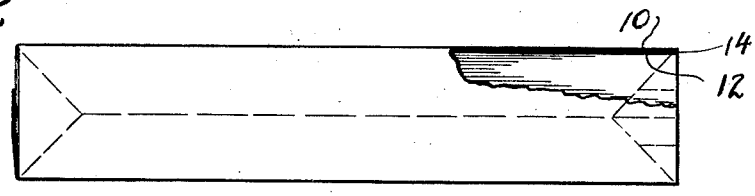


Fig. 3

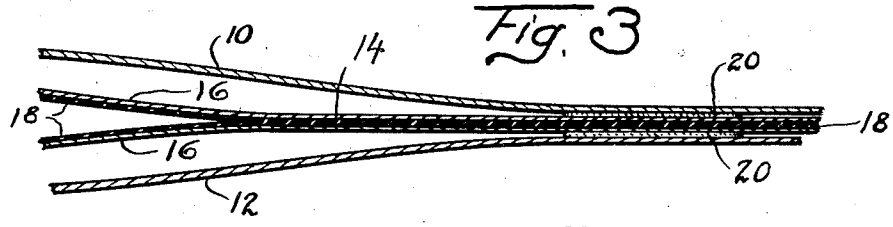
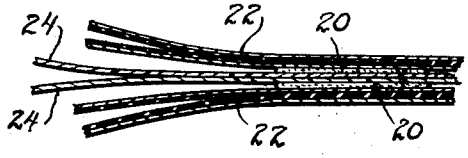


Fig. 4



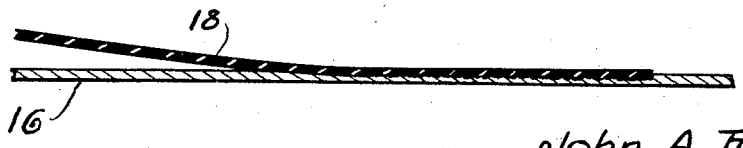


Fig. 5

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MULTIPLE WALL WATERPROOF BAG

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2 Claims. (Cl. 229—55)

My invention relates to improvements in multiple wall waterproof paper bags.

In the manufacture of paper bags multiple walls are widely used, particularly in the large bag sizes, because of the necessity of obtaining the required strength. The bags are formed of a plurality of tubular sections, the ends of which are either adhesively secured together or stitched together. Each tubular section is formed by bringing its longitudinal edges into overlapping relationship and adhesively securing them together.

In the manufacture of waterproof multiple wall paper bags it has been common practice to treat one or more plies which make up the bag with a suitable waterproofing compound. Various well known practices have been followed in treating the paper plies to render them waterproof. A common practice has been to treat the sheet of paper on one or both sides with a waterproofing composition, such as an asphaltum compound, to render the paper waterproof. In this treatment the asphaltum compound is caused to penetrate into the fibrous structure of the paper. If the waterproofing composition is applied to both sides of the paper the sheet is substantially completely enclosed in a waterproof layer.

A difficulty has then arisen in adhesively securing the edges of this layer together or in securing the layer to an adjacent layer of paper because of the presence of the waterproofing material and its tendency not to take or hold the adhesive. One method of overcoming this difficulty was to adhesively secure the edges together by the use of a latex composition which would adhere to the waterproof coated exterior of the paper. This latex composition would not enter intimately into the fibrous structure of the paper sheet and the adhesion accomplished was not particularly secure. As a rule, therefore, the ends of the tubular sections which made up the multiple wall bag were stitched together in order that the end closure might be secure. Due to the perforations produced by this stitching other adhesive and binding material was provided to seal the perforations.

My invention embodies a bag structure wherein the waterproofed ply of paper is so constructed that the water resistant material is arranged as an interior layer within the ply and the outer surfaces of the ply are substantially unchanged from the normal characteristics of the paper structure which makes up the ply. These outer surfaces do not carry any appreciable content of water resisting material and will therefore take and hold adhesive so that such waterproof ply may be adhesively secured on either or both sides to other adjacent paper plies. Furthermore, the exterior surfaces of my waterproofed ply of paper, because of the absence of waterproofing composition, are free from those qualities which characterize most waterproofed paper, namely, sticky, gummy qualities, or a hard, slick finish, and the outer surfaces possess their normal appearance. This waterproofed ply may, therefore, be handled and worked in the same manner as an untreated paper and presents the same appearance to the eye. It may therefore be employed as one of the plies in a paper bag to the same extent and in the same manner that it would be capable of employment if it were untreated.

Other objects and advantages of my improved bag structure more fully appear from the following specification, appended claims, and accompanying drawing wherein:

Fig. 1 is a plan view, partly broken away, of a bag structure embodying my invention,

Fig. 2 is a side elevation, partly broken away, along the line 2—2 of Fig. 1 of the bag shown in Fig. 1,

Fig. 3 is an enlarged view along the section line of Fig. 2,

Fig. 4 is a view taken on the same line as Fig. 3 showing a modified form of construction, and

Fig. 5 is an enlarged sectional view showing a portion of the waterproofed ply.

In Figs. 1–3 of the drawing I have shown my invention as embodied in a bag structure consisting of three plies or walls of paper, considering the waterproofed wall as a single ply.

In this construction also the waterproofed wall is shown as being the intermediate wall. It is apparent that the paper bag might be formed of any number of walls or plies. Through the use of my improvement, the waterproofed wall or ply might be the outer wall or the innermost wall because of the fact that its outer surfaces possess the normal characteristics of the paper structure independent of the waterproof characteristics.

In the first three figures of the drawing the paper bag is shown as embodying an outer ply 10, an inner ply 12, and an intermediate ply 14. The intermediate ply is the waterproofed ply. It is apparent that if it were desired to impart other characteristics than merely waterproofing that a suitable compound or composition might be used to impart such characteristics. It might be desired to render the ply resistant to the attack of gases or fumes or moisture discharge of

different chemicals and the ply could therefore be treated with a substance which would accomplish these ends.

As here shown the intermediate ply which has been specially treated is formed of two laminations of paper indicated as 16. Each of these laminations is treated with whatever substance is required to impart the desired characteristics to the ply. For waterproofing purposes I might choose to employ an asphaltum compound. In Fig. 5 a lamination 16 is treated with an asphaltum composition 18 which forms a layer over one surface and which penetrates into the fibrous structure of the lamination as there indicated. This penetration of the waterproofing composition is incomplete. It extends only partially into the paper lamination but not entirely therethrough and, therefore, the opposite outer surface of the paper is not changed.

The two laminations 16 are treated alike. The treated surfaces of these laminations are juxtaposed and a ply is then formed which comprises the two outer paper laminations 16 and an inner layer of asphaltum compound 18. This ply is resistant to passage of moisture because of the asphaltum layer. It retains, however, all the outward characteristics of paper in that each outer surface possesses the normal attributes both physically and visually of the untreated paper which makes up the ply. It may therefore be worked or handled in the manner normal to such paper.

In the making up of a multiple wall paper bag the several plies which make up the bag are adhesively secured to each other at the ends to effect a tight closure. In Fig. 1 a band of adhesive is indicated at 20. This adhesive may be arranged as desired to accomplish the purpose intended. In Fig. 3 the same bands of adhesive 20 are also indicated. Due to the fact that the outer surfaces of my waterproofed layer possesses only the normal characteristics of the paper this adhesive may penetrate into the fibrous structure through that portion which is not impregnated with the waterproofing compound and form as secure and firm a joint as is possible with untreated paper plies. I therefore am able to make a multiple wall paper bag in a large size wherein the several plies are adhesively secured together and the ends of the tubular plies are folded and pasted in a manner well known to the art to seal the ends of the bag. If the waterproofed ply is used as the outer ply, as in Fig. 4, it may be imprinted or otherwise stenciled in the same manner that any ordinary paper ply may be and presents the same appearance. In this construction the waterproofed ply is indicated as 22 and each of the two inner plies as 24.

Though it is not shown in the drawing the waterproofed ply may be arranged so as to form the innermost ply and when the bag is used to contain certain ingredients this may be found to be a desired method of arrangement.

Wherever the word "waterproof" appears throughout the specification and claims it is intended to include the term moisture proof. As set forth in the specification the asphaltum treated lamination or layer is intended to be moisture resistant and the term "waterproof" is used to include such definition.

What I claim is:

1. A multiple wall bag comprising a plurality of tubular paper wall plies, each ply being adhesively secured to the adjacent ply at the ends and said plies further adhesively secured together at the ends to form end closures for the bag, said bag having an intermediate wall ply comprising two laminations of papers coated and adhesively secured together along their juxtaposed surfaces by a moisture resistant compound providing an interior layer of waterproofing material extending from the interior of said two laminations of paper into the fibrous structure of each paper lamination toward both outer sides but without appreciably changing the normal characteristics of the exterior surfaces of each paper lamination whereby the outer surface of each lamination of said ply may be adhesively secured to the adjacent paper ply as described.

2. A multiple wall bag comprising a plurality of tubular paper plies, one of said innermost plies consisting of two laminations of paper joined together by a layer of moisture resistant material forming a barrier therebetween and permeating slightly into each paper lamination but not extending therethrough to change the normal characteristics of the two outer surfaces of said ply, said ply adhesively secured to each adjacent outer ply by adhesive which permeates the untreated portions only of the laminations of the ply.

JOHN A. ROSMAIT.