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2,311,733

PAPER OR THE LIKE BAGS

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Fig. 1.

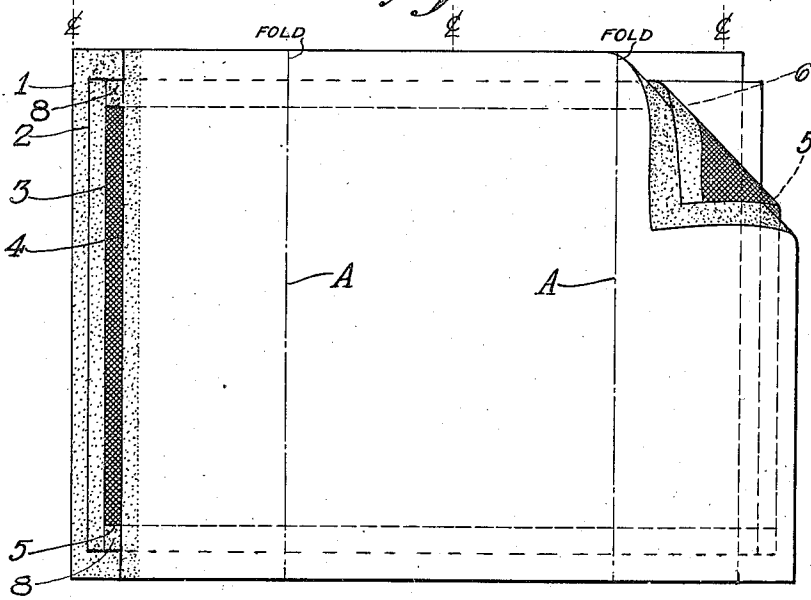


Fig. 2.

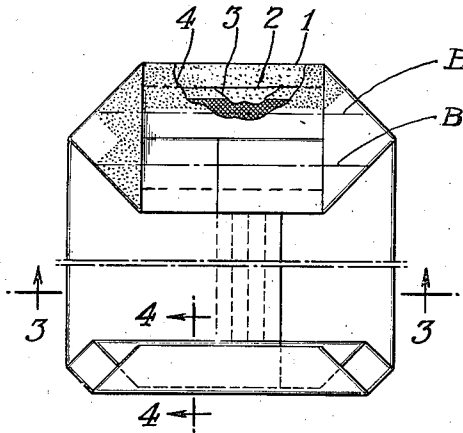


Fig. 3.

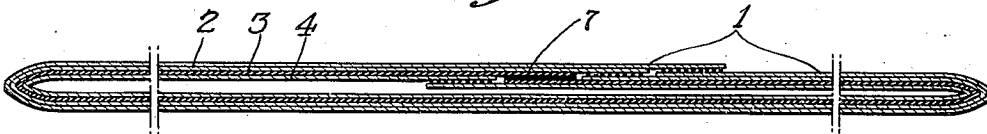
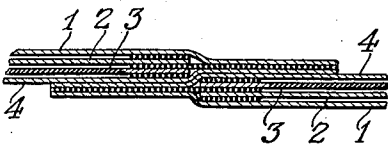


Fig. 4.



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UNITED STATES PATENT OFFICE

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PAPER OR THE LIKE BAG

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Application December 4, 1939, Serial No. 367,363

6 Claims. (Cl. 229—55)

This invention relates to bags made of paper or the like material which are moisture impervious or highly resistant to moisture. The invention has been found to be ideally adapted for multi-ply or laminated bags in which one or more plies of treated paper is or are utilized to provide the desired moisture resistant or moisture proof characteristics; such bags being especially useful for the packaging of cement and the like material.

Since the invention has been used with great success in multi-ply valve bags for the packaging of pulverulent material, such as cement, the invention will be exemplified with reference to bags adapted for such use.

It is well known, in such bags, to have one or more outer plies of pervious material, such as paper, and an inner ply of paper which has been specially treated to render it impervious to moisture, or to make it moisture proof. Such treated paper may be either coated or impregnated, and one such treated paper which is in wide use and well known in the trade is "Scutan". This and other pretreated moisture proof paper adapted for this use has a surface to which the usual adhesives, such as those made of starch and the like material or in general use for pasted bags, do not adhere. Hereinafter, when the term "ordinary adhesive" is used, it is intended to contemplate an adhesive satisfactory for use in forming the seams between adjacent surfaces of ordinary paper, but which has been found unsatisfactory in adhesively attaching treated moisture proof paper as utilized in the construction of bags.

Numerous special adhesives have been experimented with in order to find one suitable for use on such treated paper (i. e., a paper or the like fibrous sheet material pretreated to render it moisture proof and whose treated surface is not properly adhered to by the adhesives generally employed, or which may economically be employed, in the making of pasted bags). The best adhesive so far discovered for use on such pretreated paper is latex cement which is both costly and difficult to handle in the pasting operation, because it tends to build-up on the pasting rollers or mechanism. Furthermore latex is not satisfactorily durable, for it soon ages and loses much of its adhesive properties, which is especially detrimental relative to the pasted end seams of the bag; and this deficiency is serious in bags intended for cement or other weighty substances.

This invention consists in the novel features

embodied by way of example in the bag hereafter described, which happens to be a multi-ply valve bag, and the invention will be more particularly pointed out in the appended claims; it being understood that the invention is not limited to the specific type of bag illustrated, but is useful in all forms of pasted paper bags.

An object of this invention is to provide a moisture proof bag of the character described which is adapted for economic production and which at the same time avoids the above-mentioned difficulties.

Another object of the invention is to provide a bag having one or more plies of paper rendered moisture proof throughout the area of the bag and yet provides means for pasting said ply or plies of paper in the bag structure with ordinary adhesive for pasting the untreated paper.

Further objects and advantages of the invention will more fully appear from the detailed description taken in connection with the accompanying drawing, which shows by way of example the preferred embodiment of the invention.

Referring to the drawing in which the same reference characters indicate the same parts in the various views:

Fig. 1 is a plan view showing the arrangement of the sheets or plies to form the blank before folding and cementing to form the bag tube;

Fig. 2 shows the blank formed into a tube with the bottom end of the bag completed and with the flaps at the top, or valve end, of the bag uncemented and partially broken away to show the manner of cementing the ends;

Fig. 3 is a section of the bag tube as viewed at 3—3 of Fig. 2; and

Fig. 4 is a sectional view taken at 4—4 of Fig. 2 to show the end construction.

In forming a bag in accordance with this invention, the sheets comprising the various layers or plies of the bag are adhesively fastened together along their top and bottom marginal edges in the relationship as shown in Fig. 1, in which the numeral 1 designates a sheet of ordinary paper used to form the outer ply, 2 another sheet of ordinary paper to form an intermediate ply, 3 a sheet of treated paper, such as "Scutan," used to form an intermediate ply, and 4 a sheet of ordinary paper used to form the inner ply of the bag. As will be noted, the individual sheets, although of equal length (horizontally of Fig. 1), are of varying widths (vertically of Fig. 1); the outer and inner plies 1 and 4 being wider than the intermediate plies 2 and 3, and the plies being

staggered lengthwise to form the side seams of the bag in the manner to be more particularly pointed out.

The pretreated sheet of moisture resistant or impervious material forming the ply 3 is provided with untreated selvage or marginal areas, such as 6, 6, so that these areas present surfaces to which the ordinary adhesive will adhere. Accordingly, the upper and lower marginal edges of the plies 1, 2, 3 and 4 are each cemented to the adjacent ply or plies by the use of ordinary adhesive material, as indicated in Fig. 4 by the heavy vertical sectional lines, i. e. the marginal edges of plies 2 and 3 are cemented together, the outside of 2 is cemented to the inside of 1, the outside of 3 to the inside of 4 and the interior surface of 1 to the adjacent interior surface of 4 throughout their extended portions.

When thus assembled, each ply, with respect to its length, has opposing exposed marginal surface portions extending beyond an extremity of the adjacent sheet, so that when the assembled sheets are folded along the lines A, A (Fig. 1) to form the tube, the opposing exposed surfaces of the respective stepped marginal edges will overlap and be contiguous adjacent each other, as indicated in Fig. 3.

These exposed marginal surface end portions of each sheet are then coated throughout the stippled areas (Fig. 1) with ordinary cement or adhesive paste, and the only areas not susceptible to ordinary adhesive are the two end portions 5, 5 lying intermediate the untreated portions 6, 6 of the moisture proof ply 3. To these limited areas 5, 5 latex cement is applied; the paste line of which is indicated in Fig. 3 by the heavy solid line 7. After the adhesive has thus been applied, the tube for the bag is formed by folding the blank along the fold lines A, A, causing the adhesive coated areas of said marginal end surfaces of the respective areas to meet and overlap the cooperating opposite marginal end surfaces and cementing the same together.

It will thus be seen that throughout the areas serving to attach the respective plies together to form the blank and throughout the major pasted areas serving to form the tube, ordinary cement is utilized save for the limited areas 5, 5; and that these limited areas 5, 5 are not depended upon entirely for fastening the respectively opposite marginal edges of the treated ply 3 together. In other words, even as to the vertical seam of the tube the opposite edges of the treated ply 3 are fastened together in their stepped relationship by ordinary cement at opposite ends of the stepped marginal edge, such for example as at the areas 9, 9.

The top and bottom of the bag are then formed by the usual folding operation, the steps of which are indicated in Fig. 2, and may be carried out in an ordinary bag closure machine or bottomer.

Thus it will be seen that the treated moisture proof sheet or ply (which heretofore has been incapable of fabrication in a multi-ply bag without attaching all seams by latex) is still used for the purpose of rendering the bag moisture proof and impervious and by means of this invention all end seams of the bag and a portion of the side seams serving to attach this sheet in the bag structure are effected by means of ordinary cement, with a great saving in cost and vast improvement in strength.

Having thus described my invention with particularity with reference to a preferred embodi-

ment of the same, it will be obvious to those skilled in the art, after understanding my invention, that changes and modifications may be made therein without departing from the spirit and scope of the invention, and I aim in the appended claims to cover such changes and modifications as are within the scope of the invention.

What I claim is:

1. In a multi-ply bag, the combination of a plurality of plies of moisture pervious material to which ordinary adhesives readily adhere, and at least one ply of moisture impervious material disposed intermediate the inner and outer plies of the bag, said moisture impervious ply comprising a sheet of fibrous material treated with and carrying a substance imparting moisture proof qualities and presenting a surface to which ordinary adhesive will not readily adhere, said ply having untreated marginal edges extending lengthwise of said sheet on the same side thereof and a continuous treated area on the same side extending throughout the length of said sheet and throughout the full width of said sheet intermediate said untreated marginal edges, and said ply being secured to at least one other ply by ordinary adhesive applied to said marginal edges positioned adjacent the ends of said bag.

2. A multi-ply paper bag having at least one intermediate ply treated throughout substantially all of its area with a moisture impervious substance presenting a treated surface area to which ordinary adhesives will not adhere and upper and lower marginal edges untreated on the same side of said ply and to which ordinary adhesives will readily adhere, to thereby provide one side of the said ply with horizontally extending upper and lower untreated marginal edges between which the remaining area presents a continuous treated surface throughout the circumferential extent of said ply from edge to edge, said ply being positioned with said treated surface facing an adjacent ply and being secured thereto by ordinary adhesive applied to said untreated marginal edges throughout substantially the circumferential extent of said ply.

3. A multi-ply bag comprising inner and outer plies of moisture pervious material and an intermediate ply disposed therebetween, said intermediate ply comprising a sheet of pretreated moisture impervious material whose web length extends circumferentially of said bag and which has treated and untreated portions, the treated area of said sheet presenting a surface to which ordinary adhesive will not readily adhere and which extends the full length of said sheet on one side thereof so as to include overlapping portions of the vertical seam intermediate the end seams of said bag, the untreated portions of said sheet being disposed along the respective lateral marginal edges of said sheet throughout the circumferential extent of said bag, so as to provide marginal edges for the upper and lower end seams of said bag, said overlapping portions intermediate said untreated marginal edges being secured at said vertical seam by latex adhesive and the marginal edges being secured to an adjacent ply with ordinary adhesive at respective of said end seams.

4. In a multi-ply bag, the combination of a plurality of plies of moisture pervious material to which ordinary adhesives readily adhere, and at least one ply of moisture impervious material disposed intermediate the inner and outer plies of the bag, said moisture impervious ply com-

prising a sheet of fibrous material treated with and carrying a substance imparting moisture proof qualities and presenting a surface to which ordinary adhesive will not readily adhere, said ply having untreated marginal edges extending lengthwise of said sheet on the same side thereof and a continuous treated area on the same side extending throughout the length of said sheet and throughout the full width of said sheet intermediate said untreated marginal edges, said ply being secured to at least one other ply by ordinary adhesive applied to said marginal edges positioned adjacent the ends of said bag, the opposite ends of respective of said marginal edges being cemented together with ordinary cement at the vertical seam of said bag and the treated vertical edges of said ply intermediate said marginal edges being cemented together at said seam with latex adhesive.

5. A multiply paper bag comprising a tubular body closed at one end by folding over and adhering the ends of the tubular body walls, and comprising at least one ply treated with a moisture impervious substance presenting a surface to which ordinary adhesives will not adhere and an adjacent untreated ply, each ply consisting of a sheet folded with its ends overlapped to form a tubular ply, said surface extending the entire

length of said treated ply but stopping short of the edge thereof, at least on the side adjacent said untreated ply, the said plies being adhered together by ordinary adhesive along the untreated portion of the treated ply, and the untreated ply extending beyond the edge of the treated ply and said extension being folded and adhered to form a part of said end closure.

6. A multiply paper bag comprising a tubular body closed at one end by folding over and adhering the ends of the tubular body walls, and comprising at least one ply treated with a moisture impervious substance presenting a surface to which ordinary adhesives will not adhere and an adjacent untreated ply, each ply consisting of a sheet folded with its ends overlapped to form a tubular ply, said surface extending the entire length of said treated ply but stopping short of the edge thereof, at least on the side adjacent said untreated ply, the overlapping ends of the treated ply being adhered together by latex cement, the said plies being adhered together by ordinary adhesive along the untreated portion of the treated ply, and the untreated ply extending beyond the edge of the treated ply and said extension being folded and adhered to form a part of said end closure.

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