Sept. 30, 1947. H. S. DANIELS 2,428,266

CLOTH AND PAPER BAG

Filed Aug. 2, 1944 3 Sheets-Sheet 1

Fig. 1.

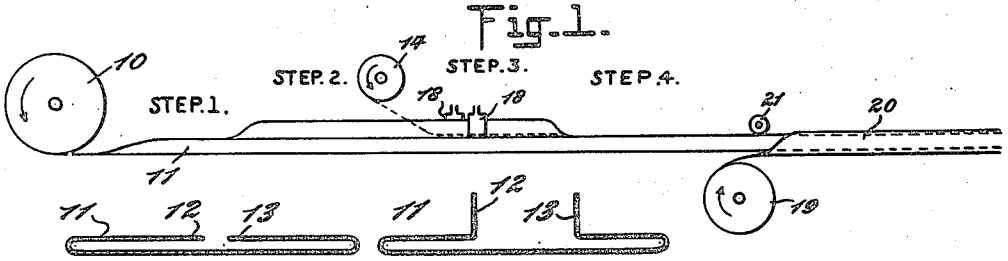


Fig. 1A.

Fig. 1B.

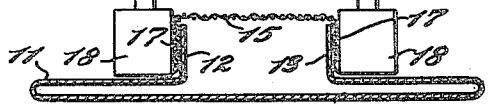


Fig. 1C.

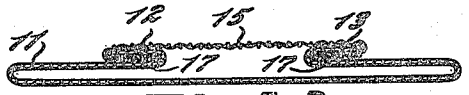


Fig. 1D.

Fig. 1E.

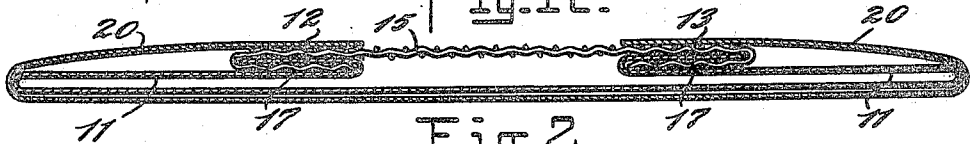
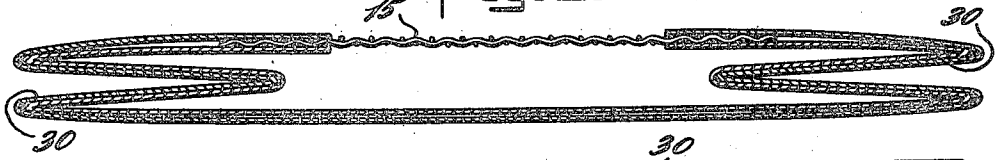


Fig. 2.



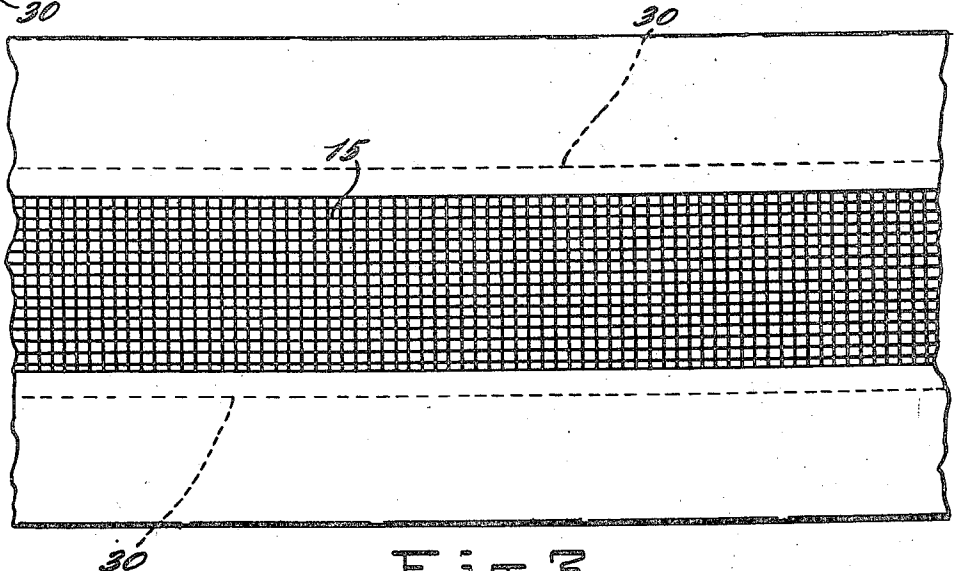


Fig. 3.

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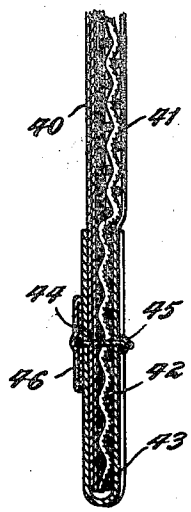


Fig. 4.

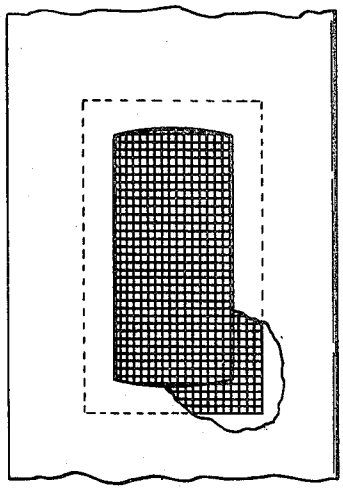


Fig. 11.

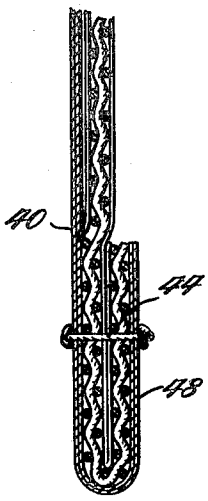


Fig. 5.

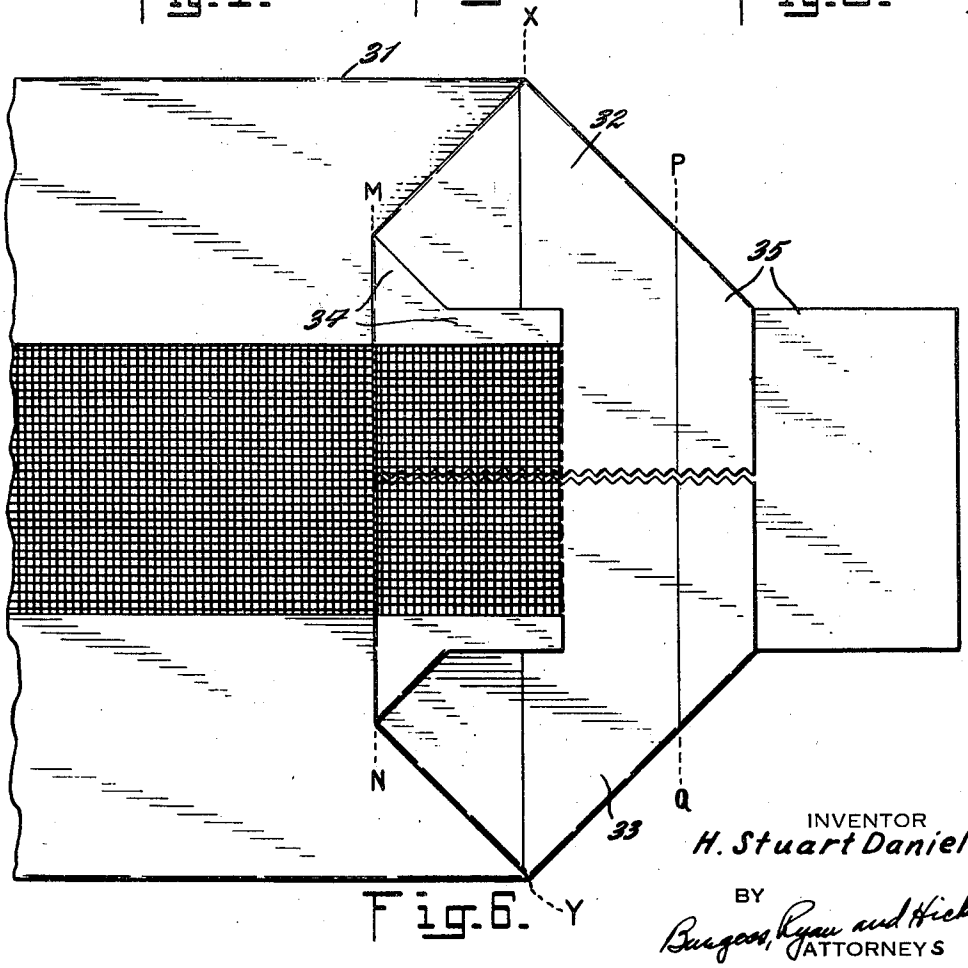


Fig. 6.

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CLOTH AND PAPER BAG

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Fig. 7.

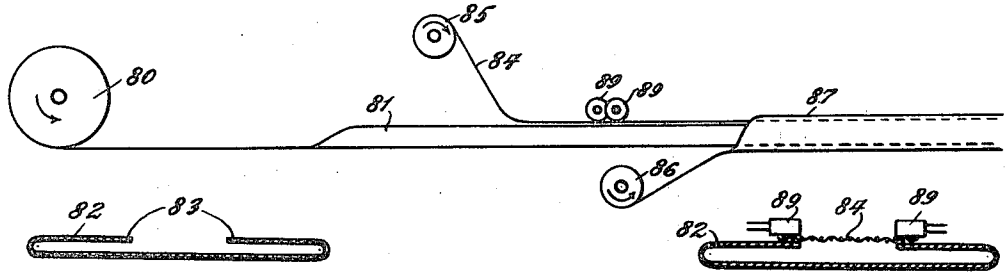


Fig. 7A.

Fig. 7B.

Fig. 7C.

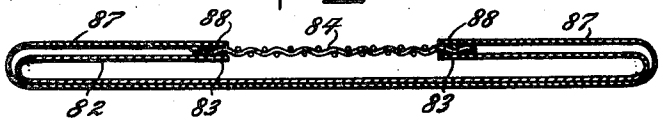


Fig. 8.

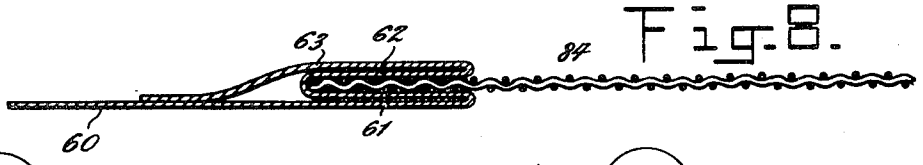


Fig. 10.

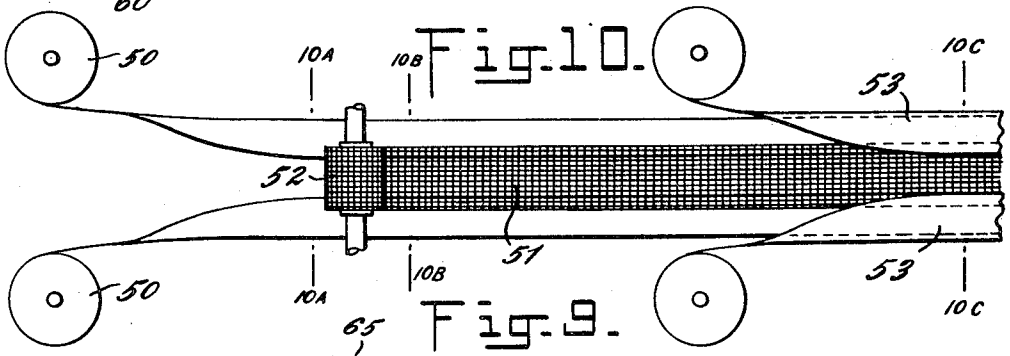


Fig. 9.

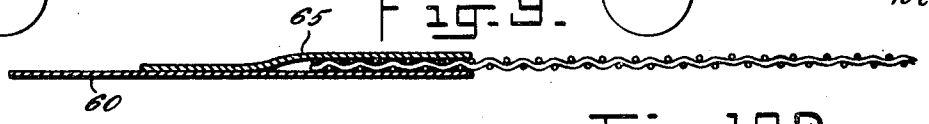


Fig. 10B.

Fig. 10A.

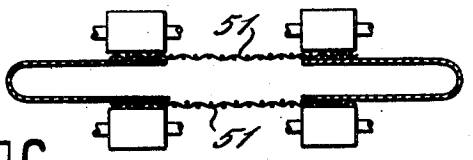
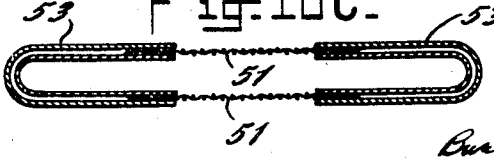


Fig. 10C.



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UNITED STATES PATENT OFFICE

2,428,266

CLOTH AND PAPER BAG

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Application August 2, 1944, Serial No. 547,688

6 Claims. (Cl. 229—55)

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This invention relates to bags having wall sections of different materials and particularly to paper and cloth bags. It will be described with particular relation to a paper and cloth bag having a longitudinal foraminous cloth section but it is understood that this particular description does not constitute a limitation within the natural scope of the invention and the meaning of the claims.

It has heretofore been proposed to make paper bags with transparent sections, the transparent sections being composed of Cellophane, which term is used herein to signify not only transparent regenerated cellulose sheeting but all other types of transparent organic pellicular substances. Such bags are attractive in appearance and easy to make, but they do not provide the ventilation needed in some uses, such as in packaging fruits and certain food stuffs. The use of perforated paper bags provides ventilation but the perforations decrease the strength of the bags. The use of a strong cloth bag does not solve the problems in many fields because of its high cost and because, even though it be finely woven, it differs in its characteristics from the desirable qualities of a paper bag, and does not offer the protection which is provided by the walls of a strong paper bag.

It is an object of my invention to make a bag of adequate strength, having a ventilating insert of at least equal strength, but in attaining this object I discovered that no method was known by which a ventilating insert such as cloth could be anchored securely to a paper bag wall. This was particularly true where coarse woven cloth was employed because the adhesive used for bonding the paper to the strands of the cloth has insufficient adherence to some of the strands which tear loose, put additional strain upon neighboring strands, and then tear out completely. Another problem which I encountered is that no satisfactory method has been devised heretofore for joining a strip of cloth forming a side section to the bottom of a bag. In the manufacture of a bag of this type it is desirable that ordinary bag making machinery should be employed, such machinery, for example, as is capable of producing the well known diamond fold bottom bag, the satchel bottom bag, the square bag, and the automatic bag. Conventional methods of forming bag bottoms failed to produce satisfactory bags because the adhesive which is applied to the various flaps to seal the bottom went through the cloth area and bonded the folded bottom to the back wall of the bag.

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In order that these problems, which I have overcome, shall be better understood, a brief description will be given of these types of bags.

The diamond fold bottom bag is made from a tube of paper by laying the collapsed tube flat, bending the lower end up at right angles to the body of the tube, opening the bent up portion and infolding the sides so that the bag corners come down upon the bend line at a considerable distance from each other, pressing the infolds flat to form upward and downward projecting flaps, folding the flaps over one another, and bonding them together and to the infolds with adhesive.

The satchel bottom bag is like the diamond fold bag, except that longitudinal slits are made in the tube end on each side of the center before bending and folding. The folding and bonding then produces wider flaps and a stronger bottom.

The square bag has gusset folds in the sides and a simple fold-over of the end upon the body of the bag, which is bonded thereto. The square bottom is formed by hand out of the sides of the bag at the time of use.

The automatic bag is like the square bag in having gusset folds, and is like the satchel bottom bag in bottom construction except for creases to assist in forming a rectangular shape on opening.

Attempts to make cloth inserts in a bag presented a problem because no known method of bonding gave a seam of sufficient strength between the cloth and the paper.

It is an object of this invention to make bags of paper and cloth.

It is a second object of the invention to make bags of paper having cloth inserts.

It is a third object of the invention to make diamond fold, satchel bottom, square and automatic bags, with foraminous or other cloth sections.

It is a fourth object of the invention to make sewn bags with cloth sections.

It is a fifth object of the invention to bond cloth and paper sections of a cloth and paper bag together so that the bond is of strength comparable or superior to the rest of the bag.

It is a sixth object of the invention to form bags of the various types hereinabove described having cloth sections bonded in the bag bottom by a satisfactory bond.

It is a seventh object of the invention to make satisfactory cloth and paper bags on bag making machinery of a standard type.

Other objects of the invention will be in part

stated hereinafter and in part drawn from a consideration of the specification and the drawings.

The objects of the invention are accomplished generally speaking by forming a tube having a foraminous cloth section bonded between paper lips formed at the edges of a paper section. Conversely the paper may be bonded between lips formed at the edges of a cloth section. A modification of the invention has edges of the cloth section in hooked relation to edges of the paper section, in addition to bonding an edge of one between lips on the other, but the simpler form is preferred.

The objects of the invention as to bonding cloth sections to a paper bottom are accomplished by forming a protective bottom of paper over the cloth. In a preferred form of the invention this is accomplished by forming infolds at the bottom which are of such extent that they substantially cover the bottom cloth.

In the drawings:

Fig. 1 is a diagrammatic view of a satisfactory process of making paper and cloth bags. This process will be described as applied to making a bag having a longitudinal scrim section.

Fig. 1A is a diagrammatic section through step 1 of the process.

Fig. 1B is a diagrammatic section through the step 2 of the process.

Fig. 1C is a diagrammatic section through step 3 of the process.

Fig. 1D is a diagrammatic section through step 4 of the process.

Fig. 1E is a diagrammatic section through step 5 of the process.

Fig. 2 is a section on line II—II of Fig. 3.

Fig. 3 is a plan view of a cloth and paper bag tube having its cloth section composed of coarse scrim and its paper sections composed of inner and outer walls.

Fig. 4 is a section through the bottom of a bag having a sewn end showing the construction.

Fig. 5 shows in section a sewn end bag having the paper and cloth in hooked relationship.

Fig. 6 is a diagrammatic view of a satchel bottom bag having a scrim section and infolds which substantially meet, the scrim flap being folded ready for sealing and the covering flap being ready for folding along the indicated fold line.

Fig. 7 shows a process of making a simple type of cloth and paper bag.

Fig. 7A shows the first step of the process in which the first strip of paper is formed into an incomplete tube.

Fig. 7B shows the laying of a scrim layer over the edges to complete the tube and the application of adhesive.

Fig. 7C shows the application of an incomplete outer tube to complete the bag tube, from which sections can be cut in a manner well known to the art.

Fig. 8 is a section through a connection between a single paper wall having attaching lips, and a piece of cloth.

Fig. 9 is a section similar to Fig. 8 showing a strip of paper bonded to the bag wall to make a pair of lips.

Fig. 10 is a diagrammatic showing of a method of making a paper bag with inserts of cloth on each side.

Fig. 10A is a section on line 10A—10A of Fig. 10 showing the folding of the paper strips.

Fig. 10B is a section on the line 10B—10B of

Fig. 10 showing the emplacement of the scrim and the application of adhesive from rollers.

Fig. 10C is a section on the line 10C—10C of of Fig. 10 showing the completed bag with cloth inserts on each side.

Fig. 11 is a view of a bag having a cloth patch in one side, the over layer of paper being broken away to show the nature of the cloth inserted.

Referring now to the numerals of Fig. 1, 10 is a roll of paper which is formed at 11, in the first step of the process, into an incomplete tube having edges 12, 13 which are spaced apart, or at least are not bonded together. In the second step of the process the edges 12, 13 are bent upward, as shown, and scrim cloth 15 from a roll 14 covers the space between them; the edges 16, 17 of the scrim are bent down and overlap the edges 12, 13 of the paper. Adhesive is applied to the overlapping edges by rollers 18 or the like, and the edges 12—16 and 13—17 are pressed flat in hooked relationship, as shown in Fig. 1D. At this point the hooked edges may be pressed and heated to set the adhesive, if a thermo-plastic adhesive is being used, before the application of the outer layer of paper which completes the tube. In Fig. 1E, a roll of paper 19 is formed into a tube 20 which overlies both the paper section of the tube 11 and that part of the scrim cloth which overlaps the folded edge. Adhesive is applied to the section of the cloth and to the outer face of the folds 12, 13 through rollers 21, prior to the emplacement of the tube 20. When the tube is emplaced the overlapped and interhooked edges are subjected to sufficient pressure and heat, to set the adhesive. The entire pressing and heating to set the adhesive may be carried out at this stage of the process, if desired.

The tube formed by this process has the construction shown in section in Fig. 1E and has as much strength, or more, at the seams as throughout any portion of the bag. It is satisfactory for packaging heavy objects such as vegetables or any other commodity where the buyer wants to inspect the contents before purchase. The scrim or other foraminous cloth gives visible access to the contents of the bag.

The cloth section may be of very coarse mesh and still be firmly bonded to the paper. Indeed, material can be used which is scarcely cloth at all, but is composed largely of strings, or ropes, of fibre or paper which are laid in, and bonded to the lips at the edges of the paper.

The term hooked relationship is used to indicate that relation of parts in which folded edges are interlocked with one another, or in which one folded edge is hooked over a straight edge.

In Fig. 7 is shown a process of making a simpler bag, which differs from the process of Fig. 1 mainly in omitting the steps of forming the edges in hooked relationship. In this figure, 80 is a roll of paper which is bent at 81 into an incomplete tube 82, whose edges 83 do not meet or at least are not attached. The scrim cloth 84 from roll 85 is laid flat upon and in overlapping relationship to the edges 83, and adhesive is applied thereto by rollers 89. From roll 86 an outer tube 87, which is also incomplete in that the edges do not meet, is formed about the tube so as to overlap the edges of the scrim section 84. The edges 83 of the inner tube and 88 of the outer tube constitute paper lips between which the scrim is bonded. Heat and/or pressure may be applied to set the adhesive if their use is desirable.

In Figs. 2 and 3 is shown, in section and plan, respectively, a bag made according to the method

of Fig. 7 but with gusset folds 30 in its sides. In forming the satchel bottom for any such bag the teaching of Fig. 6 may be followed. In this figure, the end of the tube 31 is folded up on the transverse fold line X—Y. The end is then opened and the infolds 32, 33 are formed by infolding the corners of the bag along the line X—Y. The infolds substantially touch or do actually meet, according to my invention. When pressed flat after this folding operation there is an upper flap 34 and a lower flap 35. Before the upper flap 34 is folded an adhesive is applied to a portion of the flap which is to be overlapped, the flap is then folded along the line M—N, and the flap 35 is folded over the line P—Q. The adhesive firmly attaches both flaps together and to the bottom of the bag. The meeting infolds of my invention prevent the adhesive from going through and sticking the bottom of the bag to the inner wall thereof.

The principles which have been herein set forth for the satchel bottom bag are equally applicable to the other types of bonded bottom bags.

When the invention is applied to bags of the sewn end type the methods of Figs. 4 and 5 can be used to attach the scrim to the bottom of the bag. In Fig. 4, for example, 40 is the back paper wall of the bag, 41 is the lower end of a central front scrim section, 42 is a reinforcing strip folded over the ends of the bag, and 43 is adhesive between the reinforcing strip, the cloth, and the paper. The whole is held together by a sewn seam 44 which has a looper stitch 45 on one side and a binding strip 46 on the other side.

In Fig. 5 the bag 40 is bent up in front at 48 and the sewing 44 is put therethrough.

The principles which have been herein discussed are applicable to many uses. They are applicable with modifications, of the kind which have been disclosed, to all types of bags whether sewn or bonded, whether plain or gusseted.

The material of which the bag is made is preferably paper and foraminous cloth, but the cloth may be of finely woven material if desired. The paper sections of the walls may be replaced by Cellophane if desired. There may be as many walls as desired; there may be multiple walls or a single wall. When a single wall is used, constructions of the type shown in Figs. 8 and 9 are useful.

In Fig. 8 for example, a wall 60 is folded back once at 61, in a reverse fold at 62, and in a return fold at 63. Adhesive is placed between folds 60 and 63, between 62 and 63, between 60 and 61 and between 61 and 62. The scrim 64 is caught between the upper and lower lips formed by the respective folds and is bonded to both of them in the preferred form of the invention. It is conceivable that it might be bonded to one only but the advantage of such a structure is not apparent.

In Fig. 9 the wall of the bag 60 is not folded at its end but the scrim is caught between it and an overlying strip 65 which is bonded to the wall 60 and to the scrim.

Fig. 10 diagrammatically discloses the process of producing a paper and scrim bag. In this figure numerals 50 are rolls of paper from which are drawn strips which are folded as shown in Fig. 10A to make facing, spaced apart, U-shaped bag members upon the upper and lower edges of which scrim sections 51 are laid from roller 52, as shown in Fig. 10B. The overlapped edges of the scrim and paper are coated with adhesive from rollers, as shown in Fig. 10B and strips of paper 53 are drawn from rollers as shown in Fig. 10C to form

a multiple wall for the sides of the bag. The inner edges of this outer paper layer are bonded to the edge of the scrim section by the adhesive which was applied thereto as shown in Fig. 10B.

This bag has the advantage of cross-ventilation, which is useful in many instances and necessary in some. It is very strong and withstands severe usage.

In Fig. 11 is shown a bag with foraminous sections applied as a patch and held between the lips of a hole cut in a multiply bag wall. This bag may be made by forming a complete paper tube, die cutting a hole in the wall, applying a scrim patch over the hole together with bonding material for the edges of the scrim and the paper and forming a second paper tube having a registering aperture.

As an alternative method of constructing the bag of Fig. 10 it is possible to lay the scrim between the edges of parallel paper strips, overlay with additional paper strips, turn the upper strip up and in to form the sides of the bag, emplace the scrim thereupon and turn the under layers of paper over to form the outer side walls of the bag.

An advantage of this invention is the presentation to the trade of a bag having sections of different materials. A particular advantage is the invention of paper and cloth bags. Another particular advantage of the invention is the presentation of a bag having a ventilating section.

An advantage of the invention is in the extremely strong bonds which are herewith disclosed for uniting the cloth and paper of a bag.

Another advantage of the invention is that this bag may be constructed on typical bag forming machinery known to the prior art, with only minor modifications and adjustments.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments thereof except as defined in the appended claims.

I claim:

1. The method of making a paper and cloth bag which comprises forming an incomplete paper tube from a paper strip whose edges do not meet, bending the edges thereof, applying adhesive thereto, applying cloth thereover to complete the tube, folding and sealing the edges in hooked relationship, and bonding paper over the folds of paper and cloth along the edges of said tube.

2. A paper and cloth bag comprising a paper tube having a portion thereof missing, an open mesh cloth covering said missing portion, the edge portions of said cloth being bonded to the edge portions of said paper tube defining said missing portion, and a second paper tube having a portion thereof missing and adapted to enclose said first paper tube in a registering position with respect to both of said missing portions, said second tube overlapping the edge portions of said cloth and being bonded to said overlapped edge portions, thereby permitting said cloth to function as a ventilating means for said bag.

3. A paper and cloth bag comprising an incomplete paper tube having longitudinal edges spaced apart from each other, each of said longitudinal edges being reversely folded back towards said tube, an open mesh cloth strip extending longitudinally of said bag and having its edges in hooked relation with said reversely folded paper edges, said cloth strip being bonded to the paper tube, and a second incomplete paper

tube enclosing said first paper tube and overlapping the edge portions of said cloth strip, said second tube being bonded to the overlapped edges of the cloth strip, thereby permitting said strip to function as a ventilating means for said bag.

4. A paper and cloth bag comprising an incomplete paper tube having longitudinal edges spaced apart from each other, each of said longitudinal edges being reversely folded back towards said tube, an open mesh cloth strip extending longitudinally of said bag and having its edges in hooked relation with said reversely folded paper edges, said cloth strip being bonded to the paper tube by means of adhesive, and a second incomplete paper tube enclosing said first paper tube and overlapping the edge portions of said cloth strip, said second tube being bonded to the overlapped edges of the cloth strip by means of adhesive, thereby permitting said strip to function as a ventilating means for said bag.

5. A paper and cloth bag comprising an incomplete paper tube having longitudinal edges spaced apart from each other, each of said longitudinal edges being reversely folded back towards said tube, an open mesh cloth strip extending longitudinally of said bag and having its edges in hooked relation with said reversely folded paper edges, and a second incomplete paper tube enclosing said first paper tube and overlapping the edge portions of said cloth strip, thereby permitting said strip to function as a ventilating means for said bag.

6. The method of making a paper and cloth bag which comprises bending the edges of a paper

section inwardly and longitudinally thereof to form an incomplete tube with said edges spaced apart from each other, applying a cloth strip to said incomplete tube to form a complete tube, said cloth strip having its edges overlapping the edges of the paper tube, applying adhesive to said overlapped edges, then applying over said complete tube a second incomplete paper tube the edges of which register with the edges of said first-mentioned paper tube, and attaching the edges of the second tube to said overlapped edges.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
428,853	McCaffrey et al.	May 27, 1890
643,291	Hoffman	Feb. 12, 1900
686,847	Green	Nov. 19, 1901
1,383,809	Howard	July 5, 1921
1,625,968	Ware	Apr. 26, 1927
1,857,010	Avery	May 3, 1932
1,926,066	Scholl	Sept. 12, 1933
2,022,501	Cramer	Nov. 26, 1935
2,085,365	Israel	June 29, 1937
2,311,248	Poppe	Feb. 16, 1943

FOREIGN PATENTS

Number	Country	Date
22,036	Great Britain	Oct. 13, 1904