Feb. 21, 1933. C. V. BRADY ET AL 1,897,998

FASTENER

Filed May 8, 1931

FIG. 1.

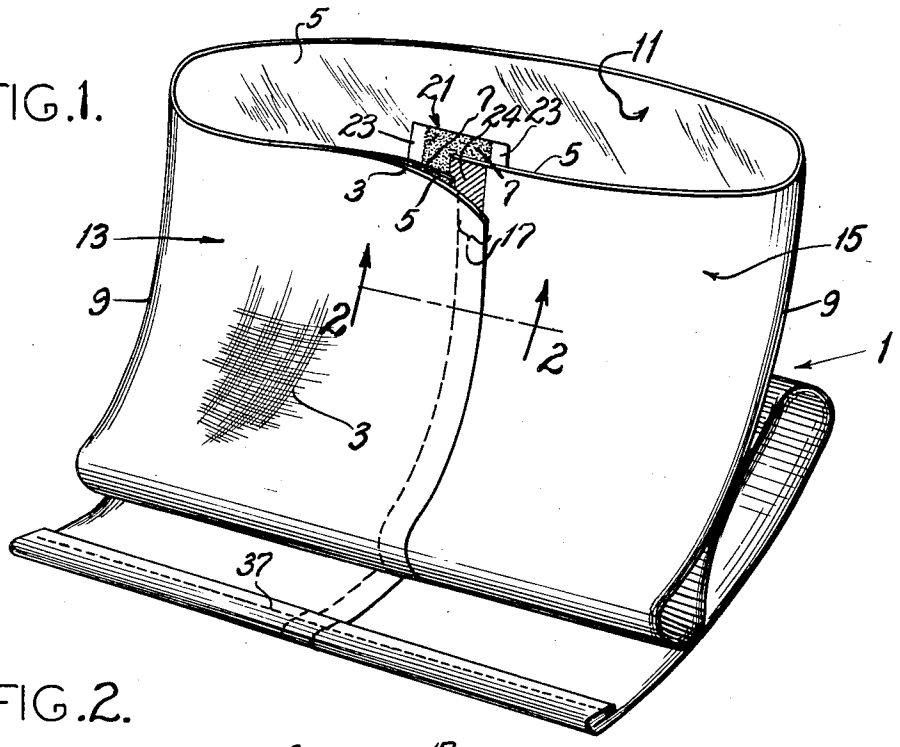


FIG. 2.

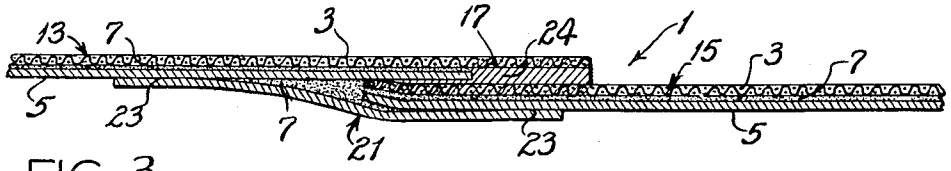


FIG. 3.

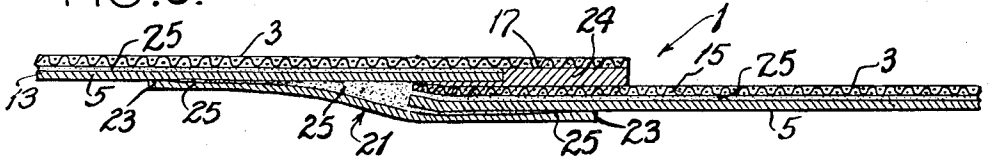
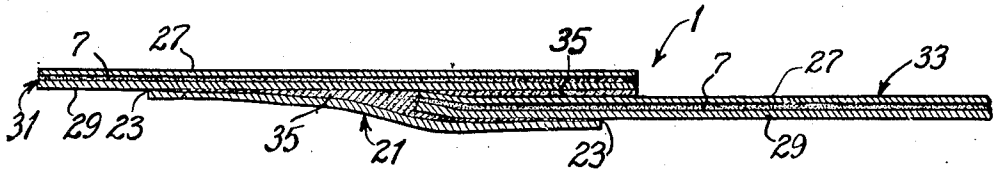


FIG. 4.



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UNITED STATES PATENT OFFICE

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FASTENER

Application filed May 8, 1931. Serial No. 535,864.

This invention relates to fastenings for lined materials such as fabrics and the like, and with regard to certain more specific features, to improved seams for fastening lined materials, and is adapted to be used more particularly in connection with the manufacture of lined bags.

Among the several objects of the invention may be noted the provision of improvements in seams for lined paper or woven fabrics, as disclosed in the United States application of Charles V. Brady, Serial Number 441,264, filed April 3, 1930 (file 5052); the provision of a guarded waterproof seam for lined fabrics which prevents any moisture or dust or the like from entering through the fabric to the inside of the inner lining; and the provision of such a seam which prevents the products bagged from coming into contact with the outer fabric or with any binder material; the provision of a seam for lined bags which has the above qualities and which may be more easily manufactured. Other objects will be in part obvious and in part pointed out hereinafter.

In the accompanying drawing, in which there is illustrated several of various possible embodiments of the invention,

Fig. 1 is a perspective view of a partially folded and lined bag showing the application of the invention thereto, with certain parts laid open for purposes of description;

Fig. 2 is a cross section taken on line 2—2 of Fig. 1, shown diagrammatically with certain thicknesses exaggerated for purposes of clarity;

Fig. 3 is similar to Fig. 2 but shows the invention applied to a different type of bag; and,

Fig. 4 is a view similar to Fig. 2 but shows the invention applied to a lined paper bag.

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

As explained in the copending patent applications of Charles V. Brady for Fastening, filed February 8, 1930, Serial No. 426,795 (file 5051) and April 3, 1930, Serial No. 441,264 (file 5052), the conventional mode of fastening or seaming edges of lined fabric comprises overlaying two or more layers of fabric and sewing therethrough a strand of some nature such as a thread, cord, twine or the like. This method of fastening or seaming has certain disadvantages which arise from several causes. For example, a bag seam should be quite strong, but, with a prior type of bag having a double or greater thickness at each seam, and stitching therethrough, the efficiency of the connection is only of the order of 60 to 70 per cent; that is, the seam per se has but 60 to 70 per cent of the strength of the goods in which the seam exists. The efficiency depends in part upon the number of layers of cloth included in the seam, but, because of the increase in bulk, the number of layers of cloth cannot be increased indefinitely. Even the conventional four-thickness seam is bulky.

The reason for the low efficiency above referred to is found in the fact that stresses applied to the sewed seam are concentrated at the points through which the thread passes. Thus the strain is greater in the regions around the threads and separation is likely to occur in such regions.

The described separation also leads to leakage or sifting through the openings of finely comminuted materials. Bags for holding such finely comminuted materials, finely crushed silica, for instance, have been lined with paper, an adhesive being used between the paper and the fabric in certain constructions. When such a bag is sewed at its seam, the stitching goes through the paper, as well as through the fabric, and the local concentration of the stresses not only weakens the seam but stretches the openings through which the thread passes and causes sifting therethrough, thus preventing the procurement of the best sealing effect from the liner. The openings further permit passage of moisture to and from the interior of the bag. It will be understood that openings are present, not alone because of the stresses, but because the needle

punctures themselves form openings, disregarding subsequent stretching.

The weakness of this prior sewed seam is also due to some extent to the fact that the threads of the cloth, from which the bag is made, beyond the sewed seam do not pull in the same line with the continuation of these threads running around the girth of the bag. The threads beyond the seam stand out almost at right angles to the body of the bag and when stressed, these threads running around the girth of the bag tend to be broken off.

Another disadvantage of using thread or cord or the like for sewing or binding is that it necessarily passes through the fabric and/or paper liner from inside to outside and vice versa and functions as a capillary wick for moisture and the like which is transferred along the thread and into the bag, or vice versa. Furthermore, if the substance in the bag contains any substance injurious to the threads, the threads themselves may be attacked and weakened or destroyed.

In the pending application Serial No. 441,264 is disclosed an improved seam for lined bags which overcomes the disadvantages resulting from stitched seams. The present invention incorporates the improvements there set out (see the drawing herein). It is to be noted, however, that in the improved seam of application, Serial No. 441,264, the outer fabric, where it comes into contact with the inner lined side of the bag is exposed to contact with the contents of the bag, that is, the liner is not fastened to itself but leaves an exposed selvage of fabric. In some, though not all instances such a seam would be relatively unsatisfactory, as when the material bagged is injurious to the fabric or the fabric injurious to the bagged material. Or, in instances where the outer fabric might be exposed to moisture damage might result from said moisture reaching the inside of the bag by capillary action, through the fabric portion of the seam terminating inside the bag.

As disclosed in the United States patent application of Charles V. Brady, Serial No. 514,359, filed February 19, 1931 (file 5035), the disadvantage hereinbefore set forth is overcome by extending one edge of the lining beyond the adjacent edge of the fabric, thereby providing an overlap of the lining which, when the two longitudinal edges of the fabric are brought together, form a continuous inner lining. The asphalt on the surface of the lining adjacent the fabric of the bag holds the extended portion of the lining against the juxtaposed lining.

In the above method of providing a moisture-proof seal at the seam, the black asphalt sometimes flows past the edge of the extended strip of lining and shows near the seam, presenting an unsightly appearance for some purposes. Also some classes of materials in the bag stick to this tacky area. Others, such as food products are spoiled by contact with the asphalt or the like, although certain classes of goods are not harmed nor is the area objectionable on bags therefor. The lined fabric which is used in forming bags with cemented seams hereinbefore described, is supplied to the bag or container forming machine in a roll as described in the United States patent application of Charles V. Brady et al., Serial No. 466,724, filed July 9, 1930, (file 5054). The improved extended edge of lining of the roll was sometimes damaged or torn while feeding through the machine. The asphalt on the extended edge was likely to stick to foreign material, or to itself and was torn under certain conditions.

We have overcome these difficulties by providing a separate cover strip of material having an asphalt, glue or other adhesive coating on one side.

Referring now more particularly to Fig. 1, there is shown at numeral 1 a lined bag comprising an outer layer 3 and an inner lining 5. The outer layer 3 may be composed of any suitable woven fabric, such as burlap, or the like, but the inner lining 5, when the bag is used for bagging certain dry materials, is composed of, for instance, papier mâché, or other paper which will yield without cracking when the bag is folded or otherwise strained. This inner layer 5 is held to the outer layer 3 by means of a water-proof binder such as an asphaltic material 7. It will be appreciated that when the fabric is thus rendered waterproof and leakproof by the application of the lining 5 with the binder 7, it is desirable to have the seams of the bag as tight as the treated fabric, or the leakproof effect will be at least partially lost.

The materials 3 and 5 are folded at the edges 9 thereby causing one side 11 of the bag 1 to be continuous and the other side to comprise two portions or panels 13 and 15.

The joint construction comprises a lateral edge or selvage of fabric 3 on panel 13, said inner lining 5 not extending to the edge of the panel 13. Thus there is left on this lateral edge a selvage area 17 in which the under side of the fabric is initially bare, having neither the lining 5 nor the binding material 7.

The juxtaposed edge of the panel 15 comprises a lateral edge in which the lining 5 and the fabric 3 may or may not extend beyond one another. In other words the lining 5 may end just short of the fabric 3 or extend slightly therebeyond. Hence tolerance is allowed in the original positioning of the lining 5 on the fabric 3 as the roll of lined fabric is formed. In Fig. 1, the

edge of the lining 5 falls slightly short of the edge of the fabric 3.

As the bag 1 is formed into its tube shape shown in Fig. 1, the edges of the panels 13 and 15 are overlapped and juxtaposed, and as they come together an adhesive material or cement 24, is applied to the cloth of panel 15 so as to come between it and the fabric edge of the panel 13. The adhesive material or cement comprises preferably latex, processed rubber, gum, asphalt or a like waterproof material or other adhesives capable of developing a seam of sufficient strength. As shown in Figs. 1 and 2 the cement positions itself along the seam in the form of a layer. This layer faces on one side the woven material of panel 15 against which it is originally applied and on the other side the woven material of panel 13 and may or may not extend partly over the edge of the lining 5.

To complete the herein improved seam a strip 21 is applied along the longitudinal edge of the panel 15 and the juxtaposed lining 5. The strip is preferebaly formed from the same material from which the lining 5 is formed, and is coated on one side with the binder 7 but in such a way as to leave free areas 23 along the edges of the strip. The asphalt or adhesive binder 7 may run out onto the free areas 23 as the strip is applied but the edge areas 23 are sufficiently wide to prevent any of the binder 7 from running beyond. Thus the final seam as viewed from the interior of the bag has no asphalt or binder 7 extending therebeyond or showing in any way.

Further, by carrying out the above described application of the strip 21 to the edge of the panel 15 a seam is formed which effects a positive closure of the individual layers of the bag independently of each other. Thus communication between the inside of the liner 5 and the inside of the fabric 3 is positively prevented. Hence material in the bag cannot come into contact with any part of the outer fabric layer or with any of the binder 7. The adhesion of the strip 21 covers the fabric selvage and prevents passage of moisture from the exterior of the bag or container to the interior via the fabric selvage.

Adhesion between the fabric layers is particularly effective, because the latex cement surrounds and embeds the upstanding fibers of the woven material 3 and passes into the interstices thereof. Thus, there is effected a substantially homogeneous material at the juncture between fabric and cement. The part of the joint which effects best sealing is that wherein the strip 21 is applied to the liner 5 of the panels 13 and 15, by means of the binder 7. This is a positive waterproof seal. However, the cementing material between woven fabric faces also effects a seal. It will be understood that the mass of cement may be carried merely up to the lateral edge of the liner 5 and good results obtained. It will also be understood that a compressing operation is used in juxtaposing the edges of the panels 13, 15, and in the application of the strip 21 so that in actuality the seam is only slightly thicker than the cloth composing it and thus is thinner than diagrammatically shown in Fig. 2.

It will be seen that the joint comprises juxtaposed fabric faces between which the cement is positioned, the liner 5 having its edge away from the edge of fabric 3 so as to permit this. The reason for this construction is that the seam holds with the proper strength between fabric faces, whereas it would not so hold between a paper and a fabric such as would be had if the liner 5 went to the edge of panel 13.

An advantage of the present invention is the provision of a seam which is not only moistproof but which presents a smooth interior surface free from any of the adhesive ingredients used in forming the seam, and/or attaching the lining to the fabric. Furthermore, the necessity of more or less accurately positioning the lining 5 on the fabric 3 in the initial combination of the material for manufacture into bags is eliminated, inasmuch as it is not necessary to provide a definite extended edge of lining 5 beyond an edge of the fabric 3. The extended edge which was in an inherently critical position has been eliminated.

Referring now to Fig. 3 the cross section shown is that of a bag in which the binder 7 has been replaced by a binder 25 which comprises a glue such as dextrine, or other glues unaffected by oil. In instances in which containers such as illustrated at numeral 1 are used for bagging oily materials, the use of asphalt 7 as a binder is inadvisable, because the oil from the oily material is a solvent to the asphalt and reduces its binding qualities. We have overcome this difficulty by using dextrine 25 or the like for the binder which is unaffected by the oil which may be contained in the material in the bag 1.

The dextrine 25 is quick drying and dries soon after it is applied to the paper or fabric 3; hence the formation of the seam of the bag 1 by the method as described in the aforementioned application, Serial No. 514,359, would not be possible because dextrine on the extended edge of the lining 5, applied at the time of the combination of the fabric and lining, would dry too soon to be of use in making a subsequent attachment. Because dextrine dries hard rather than remaining in a tacky state, it is not necessary to use care to leave free areas 23 on the strip 21. Any dextrine 25 which

passes beyond the areas 23 onto the lining 5 hardens, and accordingly is not ordinarily deleterious to the contents of the bag. It should be understood however, that where it is deleterious, the principles may be used as described in connection with the free area 23. Another advantage of the invention is that binding materials may be used which dry relatively rapidly.

Referring now more particularly to Fig. 4, there is shown a section of a seam similar to the seam shown in Fig. 1 but of which the outer layer of the bag 27 is formed from a relatively light weight paper. The inner layer 29 is formed from paper but of a stronger quality than that of the outer layer 27. The two layers 27 and 29 are joined together by a binder 7 such as asphalt or the like, and the seam between the two panels 31 and 33 is formed as shown in Figs. 1 through 3, except for the fact that the layers 27 and 29 do not extend beyond one another at the end of the panels 31 and 33, and glue 35 is used rather than latex 24.

Paper bags thus formed are used in instances in which the strength of the outer woven fabric of Fig. 1, is not required. The outer layer in such cases has a good finish and is used as a surface on which advertising material is printed, whereas the inner layer is considerably stronger.

The strip 21 is formed from the same material from which the inner lining 29 is formed and is adapted to provide a much stronger seam or fastening than would otherwise be secured between the two panels 31 and 33. This is true because the lining 29 of the panel 31 is lapped over the edge of the panel 33 and is cemented to the outer layer 27 which layer is formed from the weaker paper. The strip 21 provides a fastener between the two edges of the lining 29, of the panels 31 and 33, and thus effects a strong seam.

Glue or other quick drying adhesives 35 is used on the strip 21, and thus it is not vital that the glue does not extend up to the edges of the strip 21.

It is to be understood that a suitable bottom seam 37 is used on all modifications of the bags.

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 carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

We claim:

1. A seam for lined bags comprising a lap joint and an interior, flat cover strip attached to said seam, said cover strip having its longitudinal edges arranged free from attachment to said seam, an adhesive extending into said lapped joint and joining said cover strip to said seam.

2. The seam for bags formed from composite material having at least one outer layer and at least one inner layer, said seam comprising lapped juxtaposed edge areas of said materials and a separate, flat strip of material attached along the edge of at least one of said juxtaposed edge areas, and an adhesive between the juxtaposed edge areas, and between said strip and said areas, said strip being of material corresponding in characteristics to that of said inner layer, said strip having its longitudinal edges arranged free from attachment to said areas.

3. A seam for bags formed from a composite material having an inner and an outer layer, said seam comprising lapped juxtaposed edge areas of said material and a separate, flat cover strip of said inner layer applied along the inner edge area whereby a continuous inner layer of a given material is effected in said container, said layers, the central longitudinal portion of said strip, and said inner edge area being joined together by an adhesive but leaving the longitudinal edge portions of said strip free of adhesive, the inner layer and strip being formed of material having corresponding characteristics.

In testimony whereof, we have signed our names to this specification this 20th day of April, 1931.

CHARLES V. BRADY.
WILLIAM CASE.