

Nov. 21, 1933.

C. V. BRADY

1,935,612

FASTENING

Filed Feb. 9, 1931

Fig. 1.

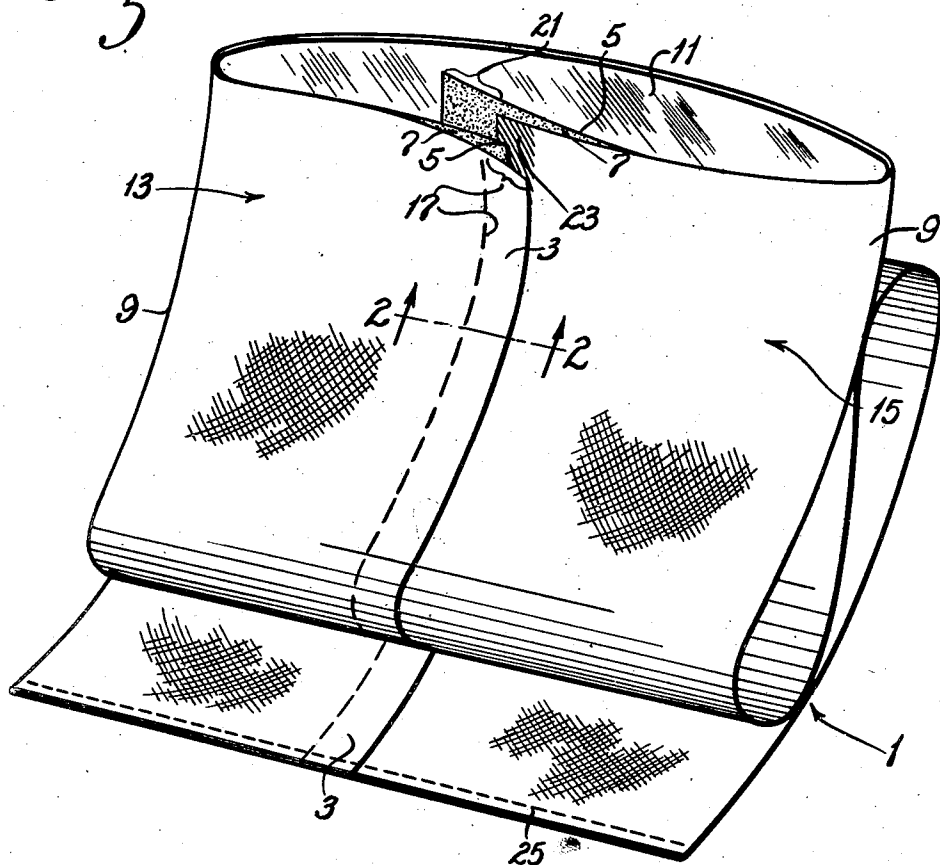
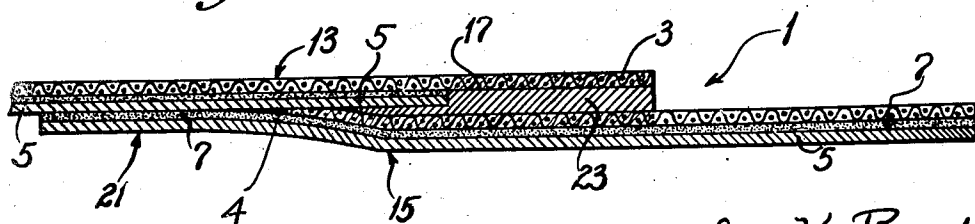


Fig. 2.



Charles V. Brady,
Inventor,
By S. Haynes,
Attorney.

UNITED STATES PATENT OFFICE

1,935,612

FASTENING

Charles V. Brady, St. Louis, Mo., assigner to
Bemis Bro. Bag Company, St. Louis, Mo., a
corporation of Missouri

Application February 9, 1931. Serial No. 514,359

4 Claims. (Cl. 150—1)

This invention relates to fastenings for lined fabric and the like, and with regard to certain more specific features, to seams for fastening lined fabrics, and 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 woven fabric, as disclosed in my United States application, Serial Number 441,264, filed April 3, 1930; the provision of a 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; the provision of a seam for lined fabric bags which seam presents a smooth interior surface at said seam and which prevents the products bagged from coming into contact with the outer fabric; the provision of a seam for lined bags, which provides for a union whose strength may be varied without varying the thickness of the seam; the provision of a seam for lined bags which provides an independent and positive closure for each layer of material comprising said bag; and, the provision of seams for lined bags which may be quickly and economically 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; and,

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

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

As explained in my Patent No. 1,853,013, dated April 5, 1932, for Fastening, and my copending application filed April 3, 1930, Serial No. 441,264, the conventional mode of fastening or seaming edges of lined woven fabric comprises overlaying two or more layers of fabric and sewing there-through 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 there-through, 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 opening 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 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 my 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 certain 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.

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 waterproof 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 improved lap 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 of lining 5, the fabric 3 not extending to the edge of the lining. In this way the edge of the panel is provided with an area 21 comprising an extending strip of the lining 5 and a layer of the binder 7 applied to the outer surface thereof.

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 23, 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 adhesive 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. The liner edge of the panel 15, extending beyond the fabric 3, adheres to the lining 5, as shown at numeral 21, due to the tarry binder 7, which is at this time sticky

and thus binds together two juxtaposed edges of the lining 5.

As shown in Fig. 2, the edge 4 of the fabric of the panel 15 may be positioned to lap over the edge of the liner 5 of the panel 13. It is to be noted, however, that part of the overlapping is faced with cement 23.

By carrying out the above described overlapping of the areas of the edges of the liners of panels 13 and 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. The adhesion of the liner edge at 21 covers the fabric selvage and prevents passage of moisture from the exterior of the tube to the interior via the fabric selvage.

Adhesion between the fabric layers as at 23 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 liner 5 of the panel 15 is cemented to the liner of the panel 13, 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, so that in actuality the seam is only slightly thicker than the cloth composing it and thus being 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.

It will be understood that a suitable bottom seam 25 is used on the bag.

An advantage of the present invention lies in the provision of an independent, positive closure of each of the layers. Thus no lint from the woven fabric can reach the material bagged. Furthermore, with no communication possible between the inside of the bag and the fabric 3, there is no danger of the bagged material attacking the fabric. Moreover, moisture cannot be conducted into the bag by way of the fabric.

The smooth interior surface of the seam is another advantage in that there is substantially no possibility of the bagged material working into and opening the seam. There is no edge for the material to work loose, because the interior surface presented is that of a tube of paper tightly adhered along a longitudinal seam.

It is to be understood that the various terms "binder", "cement", "adhesive", and the like, are used herein as distinguishing regions or locations, and not particular compositions of matter. That is, speaking from the standpoint of composition, the binder, cement, and adhesive may all be the same material, say asphalt, or they may be differ-

ent materials, as asphalt and latex. The different words are used to aid in distinguishing the particular regions of application, from the structural standpoint.

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

10 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.

15 I claim:

20 1. A bag having a lap seam comprising a layer of fabric and a liner for said fabric, said liner being attached to said fabric by means of an adhesive, said lap seam including an area of juxtaposed fabric to fabric, an area of juxtaposed liner to liner, and an area of juxtaposed fabric to liner, cement positioned between said fabric to fabric area, and an adhesive positioned between said liner to liner area.

25 2. A bag having a lap seam comprising a layer of fabric and a liner for said fabric, said liner being attached to said fabric by means of an

adhesive, said lap seam including an area of juxtaposed fabric to fabric, an area of juxtaposed liner to liner, and an area of juxtaposed fabric to liner, cement positioned between said fabric to fabric area, said first-named adhesive extending between said liner to liner area. 80

3. A bag having a lap seam comprising a layer of fabric and a liner for said fabric, said liner being attached to said fabric by means of an adhesive, said lap seam including an area of juxtaposed fabric to fabric, an area of juxtaposed liner to liner, and an area of juxtaposed fabric to liner, and cement positioned between said fabric to fabric area, said cement also extending between said fabric to liner area, and an adhesive extending between said liner to liner area. 85 90

4. A bag having a lap seam comprising a layer of fabric and a liner for said fabric, said liner being attached to said fabric by means of an adhesive, said lap seam including an area of juxtaposed fabric to fabric, an area of juxtaposed liner to liner, and an area of juxtaposed fabric to liner, and cement positioned between said fabric to fabric area, said cement also extending between said fabric to liner area, said first-named adhesive extending between said liner to liner area. 95 100

CHARLES V. BRADY.

30

105

35

110

40

115

45

120

50

125

55

130

60

135

65

140

70

145

75

150