

Jan. 3, 1950

E. B. HOPPE

2,493,348

BAG WITH EXTENSIBLE SEALED LINER

Filed Sept. 21, 1944

FIG-1-

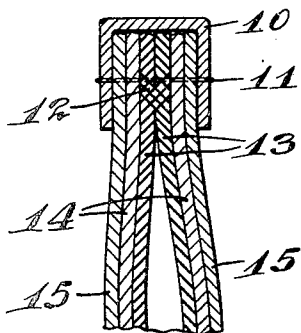


FIG-2-

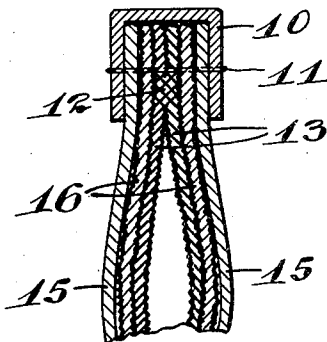


FIG-3 -

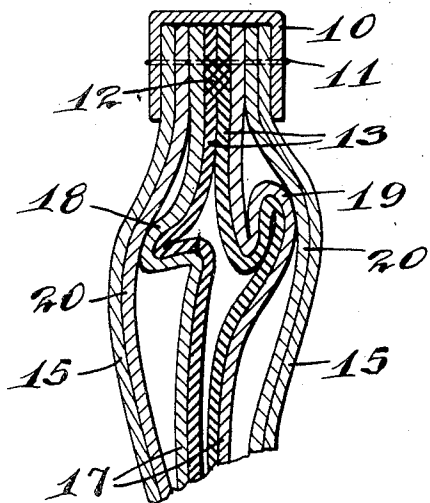
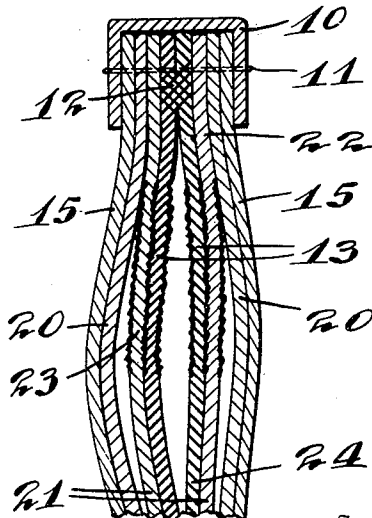


FIG-4 -



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## UNITED STATES PATENT OFFICE

2,493,348

## BAG WITH EXTENSILE SEALED LINER

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corporation of New York

Application September 21, 1944, Serial No. 555,059

1 Claim. (Cl. 229—55)

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This invention relates to a bag of paper or the like closed by a sewed or stapled seam and provided with a liner which is sealed below the seam, said sealing constituting part of an expansible lining for the bag.

The object of the invention is to provide a paper bag with a hermetically sealed liner so constructed that the stress of the contents is taken up by the outer ply or plies without undue stress on the sealed inner ply. More specifically, the object is to provide a sewed or stapled bag with a heat-seal of thermoplastic material inside of the seam with provision for taking up the major part of the stress by the seam rather than by the seal.

Sewing or stapling a bag of paper or the like causes perforations which allow ingress or egress of fluids or fine dust. If a lining is provided and sealed along and below the seam, the contents will press initially against the seal and tend to break the seal before the stress is taken up by the seam. The primary purpose of this invention is to provide such a seal with provision for transmitting the major part of the stress exerted by the contents to the seam.

Details and minor objects of the invention will appear as the description proceeds.

In the accompanying drawings forming a part of this disclosure, Fig. 1 is a perspective view partially broken away showing the top portion of a filled bag embodying one form of the invention, and Fig. 2 is a sectional view taken substantially along the line 2—2 of Fig. 1.

In the drawings, there is shown a closure for a bag comprising a binding tape 10 folded over the end of a bag, a seam 11 sewed through the tape and bag walls, and a hermetic seal 12 inside of the seam.

The seal 12 may be formed by any suitable adhesive which is impervious under the conditions to which it is to be subjected. The sealing material may be applied to an impervious liner just before the sewing or stapling, but preferably it is formed by heat-sealing an impervious thermoplastic liner. Usually this lining is stretchable, and without any great strength. The strength is provided by outer layers, in this instance being shown as two layers, 14 and 15, of paper or the like. In this construction, the lining 13 is free to stretch without elongation of layers 14 and 15, that is, the latter layers will be substantially non-stretchable in normal use of the bag. Therefore, although the formation of seal 12 somewhat shortens the bag formed by the liner layer with respect to bags formed by layers

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14 and 15, the liner readily stretches so that the stress of the contents is transmitted chiefly to the outer plies.

For simplicity, reference has been made to the lining of thermoplastic material, but it will be understood that thermoplasticity is necessary only where the seal is made, and the rest of the inner ply may be of uncoated paper or of paper coated or treated in any suitable way to serve as an acceptable container for the material to be packaged therein.

In the form shown in the drawings, the sheet 13 may be of any stretchable material suitable for contact with the intended contents of the bag, with enough thermoplastic material to make the seal 12.

Because of the extensile characteristic required of the lining which is sealed, it is somewhat difficult to form a bag of the kind described on a tuber of the kind into which there are fed long sheets of material that are folded and sealed as they progress longitudinally. It is considered preferable to sever sheets of the size to form the several plies, superpose them, and then fold them into tubes, adhering their edges to form a multiply tube.

Alternative embodiments of the invention and other methods for making bags according to the invention are disclosed and claimed in applicant's divisional application Serial No. 713,274, filed November 30, 1946.

It will be readily understood that the invention may be applied readily to valve bags, open-mouthed bags, gusseted or ungusseted bags, and stapled as well as sewed bags. Various other variations may be made within the scope of the appended claim.

What I claim is:

A multi-ply bag, the outer ply or plies of which are formed of paper, substantially non-stretching in normal use of the bag and enveloping a liner ply of fluid-impervious substantially stretchable material, the plies all having a line of perforations along an end of the bag, and stitching means extending through said perforations to retain the opposed bag walls at said end in closed upstanding condition, the opposed wall surface areas of the liner ply, at least along a band just inside said line of perforations, being formed of thermoplastic material and being adhered and sealed together along said band, said liner ply being sufficiently stretchable longitudinally of the bag as compared with an outer ply or plies, when the bag is filled and expanded adjacent said end, to compensate for the relative shortening of the

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liner ply due to such sealing inside the stitching means, and whereby the stress applied to the liner ply when filled and sealed will be largely transmitted to an outer ply or plies and to said stitching means to thus relieve the adhered sealed areas of substantial stress.

EDGAR B. HOPPE.

#### REFERENCES CITED

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

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| Jaite           | July 11, 1933 |
| Cundall         | Nov. 12, 1935 |
| Spengler et al. | Aug. 16, 1938 |
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| Hangen          | Dec. 29, 1942 |
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| Avery           | Feb. 23, 1943 |

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|---------------|---------------|
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| Italy         | Apr. 25, 1936 |
| Great Britain | Nov. 26, 1931 |

# Certificate of Correction

Patent No. 2,493,348

January 3, 1950

EDGAR B. HOPPE

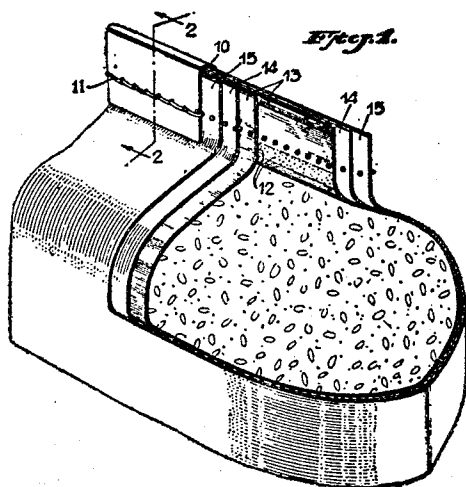
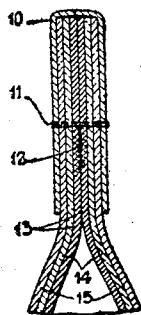
It is hereby certified that error appears in the above numbered patent requiring correction as follows:

In the drawing, the present sheet should be canceled and the sheet as shown below, containing Figures 1 and 2, should be substituted therefor, as part of the Letters Patent—

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and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of February, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,  
Assistant Commissioner of Patents.