Dec. 1, 1931. R. E. PIERCE 1,834,802

LAMINATED WATERPROOF LINING FOR CONTAINERS

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FIG. 1

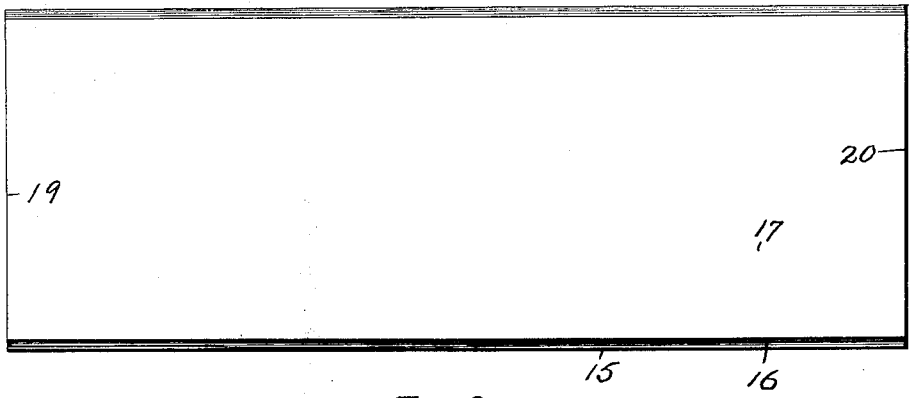


FIG. 2

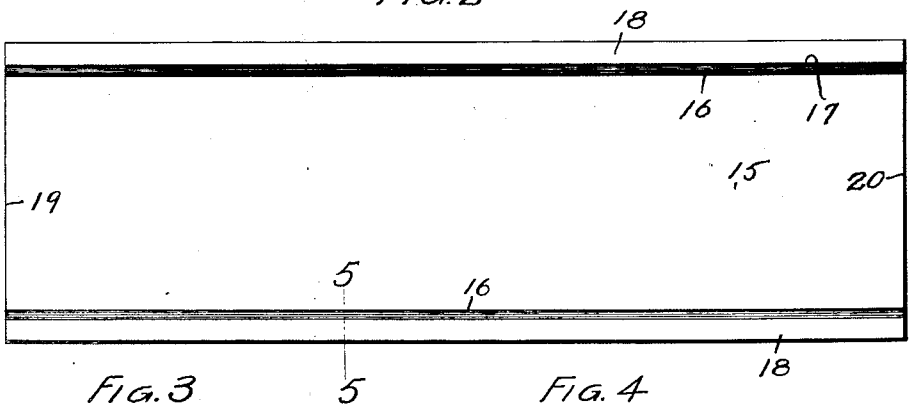
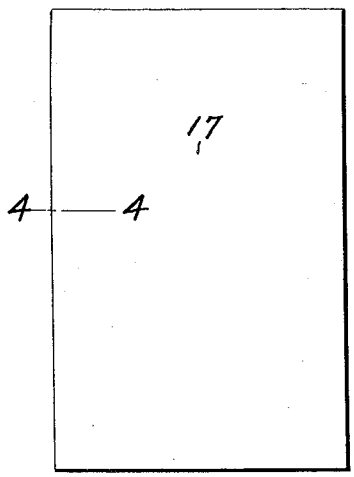


FIG. 3



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FIG. 4

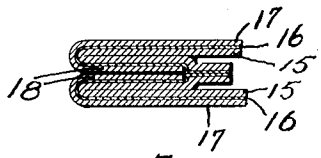


FIG. 6

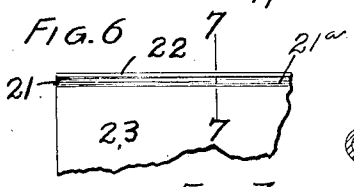


FIG. 5

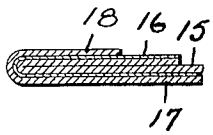
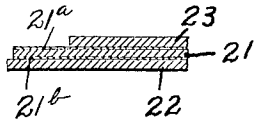


FIG. 7



INVENTOR
ROBERT E. PIERCE
BY Edwards & Ingram
ATTY.

Dec. 1, 1931. R. E. PIERCE 1,834,802

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FIG. 10

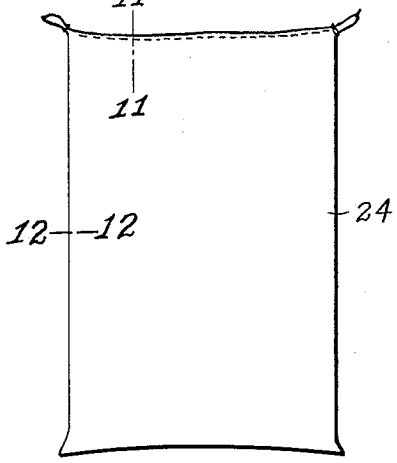


FIG. 14

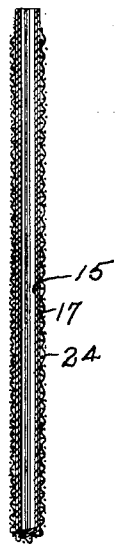


FIG. 11

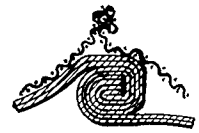


FIG. 12

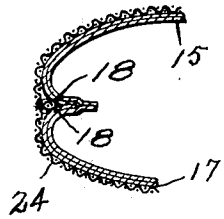


FIG. 8

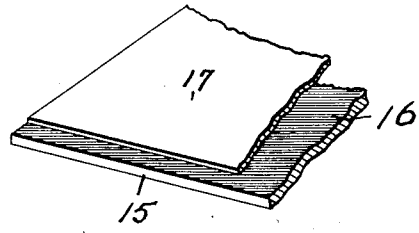


FIG. 13

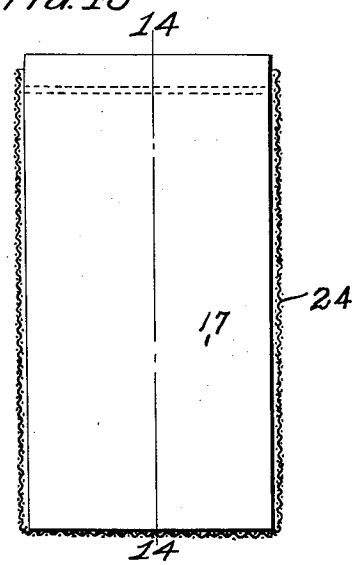
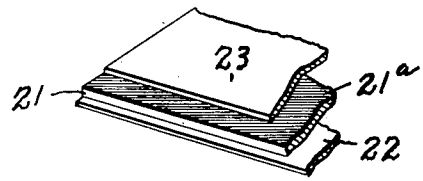


FIG. 9



INVENTOR
ROBERT E. PIERCE
BY Edward E Lyon
ATTY.

Patented Dec. 1, 1931

1,834,802

UNITED STATES PATENT OFFICE

ROBERT E. PIERCE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO BEMIS BRO. BAG CO., OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI

LAMINATED WATERPROOF LINING FOR CONTAINERS

Application filed April 13, 1928. Serial No. 269,667.

My invention relates to improvements in laminated water proof linings for containers, and has for its primary object a laminated lining for containers which is air, sift and water proof.

A further object is to construct a lining as aformentioned which is readily removable from the container so that the container itself can be salvaged.

A still further object is to construct a laminated lining which, in addition to being air, sift and water proof, can be readily inserted in and removed from a container, the lining itself not being sticky or tacky so that a number of linings can be stored or individual linings handled readily and without sticking to each other or sticking to the hands of the person handling the same.

In the drawings:

Fig. 1 is a plan view of a sheet of laminated material ready for folding.

Fig. 2 is a reverse view of the same with the longitudinal edges folded over.

Fig. 3 is a side view of my lining as completed for a bag.

Fig. 4 is an enlarged fragmental section taken on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged fragmental section taken on the line 5—5 of Fig. 2.

Fig. 6 is a fragmental view showing a variation in the laminations.

Fig. 7 is an enlarged view taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmental perspective view of a two ply lamination.

Fig. 9 is a similar view of a three ply lamination.

Fig. 10 is a view of a bag illustrating the manner of closing the open end thereof after my container has been inserted.

Fig. 11 is an enlarged fragmental section taken on the line 11—11 of Fig. 10.

Fig. 12 is an enlarged fragmental section taken on the line 12—12 of Fig. 11.

Fig. 13 is a view with the container in section showing my lining in position; and

Fig. 14 is an enlarged sectional view taken on the line 14—14 of Fig. 13.

In the construction of my device I employ a laminated lining consisting of several layers of flexible material such as paper or the like. It is preferable that this material in itself be air and sift proof. The laminations consist of a sheet of material 15, which has its surface coated with water proofing material or substance 16. This water proofing should be flexible so that it will not crack after setting and is applied while in a moist or plastic condition, and when in the condition as applied is adhesive.

After coating the sheet or lamination 15 with this water proofing substance a sheet or lamination 17 is placed thereon, the sheet or lamination 17 being narrower than the sheet or lamination 15 so that the longitudinal edges of the sheet or lamination 15, which have been coated with the water proofing substance, will be exposed and still be sticky. The sheet or lamination 17, of course, is placed intermediate the longitudinal edges of the sheet or lamination 15 so that the longitudinal margins on both sides of the lamination 17 will be equal.

After the lamination 17 has been placed in position on the lamination 15, the longitudinal edges of both laminations are folded over as illustrated in Fig. 2. In other words the longitudinal edges of the laminations 15 are folded over upon the lamination thus leaving nonadhesive zones 18 extending along the longitudinal edges of the laminated lining. The laminations are then folded upon themselves so as to bring the ends 19 and 20 into juxtaposition. Pressure is then exerted so that the marginal edges of the laminations 15 extending beyond the lamination 17 will adhere together by reason of the adhesiveness of the water proofing substance. In this way a closed lining having expansible vertical edges is formed. This is fully shown in Fig. 4.

In Figs. 6, 7 and 9 I have shown fragmental views of a lining formed of three laminations in which the lamination 21 is coated on both faces. The lamination 22 is slightly wider than the lamination 21 and the lamination 23 narrower than the lamination 21, the laminations 22 and 23 corresponding to the laminations 15 and 17. The folding to the three ply structure is similar to

the folding of the laminated structure as disclosed in Figs. 2 and 5. The lamination 22 is folded over upon itself, and then the manner of folding is the same as that disclosed in Figs. 4 and 5.

With the structure of lining as disclosed in Fig. 6 I obtain, however, a double water proofing since the intermediate lamination 21 is coated with a water proofing substance on both sides instead of one side as disclosed in Figs. 1 to 5 inclusive.

I may, if desired, make one of the laminations, especially the coated lamination, of heavier material as disclosed in Figs. 8 and 9 without departing from the spirit of my invention. In other words, I may use a heavier material for the lamination, which is provided with the water proofing substance, or a material which has considerable tensile strength, and for the other lamination use a relatively thin material and of less tensile strength, the primary object being to construct a lining which is air, water and sift proof, and at the same time will not rupture easily. Therefore, if one of the laminations has considerable tensile strength, the other laminations need not be so strong, their main object being to cover the water proofing substance so that material placed in the liner will not adhere thereto nor will the liner be tacky when handled.

It is preferable when making a lining for fabric bags or casings that the liner be slightly longer than the bag or casing 24 itself. I also make the liner of less width than the bag or casing 24 so that it can be readily inserted.

My object in making the liner longer than the bag or casing 24 is that when the container is filled, the upper end of the liner can be folded over as illustrated in Fig. 11 and then the bag or casing 24 sewed together at its open end or it may be tied in any suitable manner.

By closing the liner independently of the bag I obviate all possibility of rupturing or tearing the liner or stitching through the liner and by having the side edges of the liner readily expansible a bag will be completely filled and all strain on the liner absorbed by the casing 24 thus preventing rupturing of the liner.

A further advantage of my liner is that it does not have to be folded in any manner to be inserted in a container. Sewing is not necessary and consequently my liner is air tight, which is not the case where sewed liners are used. Furthermore my liner is nonadhesive inside and out and, therefore, can be readily handled and inserted into and removed from containers so that the container itself can be salvaged, and by folding over the open end as illustrated in Fig. 11, the lining is practically hermetically sealed thus making a bag provided with my liner especially adaptable to the shipping of calcium chloride, quick lime, and similar substances which are affected by air and moisture, but still permits the salvage of the casing.

It will be noted from Fig. 7 that where a three ply laminated structure is used both faces of the lamination 21 are coated with an adhesive as indicated by the numerals 21*a* and 21*b*.

Having fully described my invention, what I claim is:—

1. The method of making an air and moisture proof lining for containers which consists in coating one face of a sheet of flexible material with an adhesive moisture and air proofing substance, placing on said sheet a second sheet of flexible material of less width than the first mentioned sheet so that the longitudinal margins of moisture proofing on the first mentioned sheet remain exposed, folding said exposed margins and a portion of said second mentioned sheet longitudinally and over onto said first mentioned sheet, and, lastly, folding said sheets over upon themselves by a lateral fold so that said exposed margins will be superimposed upon themselves and adhere together whereby a lining having expansible longitudinal edges is formed.

2. A lining for containers, comprising a flexible body made of laminated sheets, one of said sheets being narrower than the adjacent sheet so that the latter extends therebeyond, and an adhesive waterproof coating between said adjacent sheets and on the extending portion of the last-mentioned sheet, said body being folded along a line sufficiently inwardly of its free edge to present an uncoated marginal surface between said line of fold and the coated surface, and said body being folded upon itself with said coated surfaces in contact, to thereby provide an expansible portion for the lining between said coated portions and the line of longitudinal fold.

3. A lining for containers, comprising a flexible body made of superimposed sheets, one of which is narrower than the adjacent sheet so that the latter extends therebeyond at the longitudinal edges, and an adhesive coating between said adjacent sheets and on the extending surfaces of the last-mentioned sheet, said body being inturned along lines sufficiently inwardly of its free edges to present an uncoated surface along the folded margins of the body thus folded, and said body being also folded upon itself intermediate its length with said exposed coated surfaces in contact, to thereby secure the exposed coated portions together and leave an expansible uncoated portion beyond said coated portions and the longitudinal lines of fold.

4. A lining for containers, comprising a plurality of sheets of flexible material of equal length but of different widths, a wa-

terproof flexible adhesive substance between adjacent sheets, said lining being folded upon itself to bring its ends substantially together and having the inner portion of at least one of its edges secured together with said adhesive substance, and the outer marginal portions unsecured so that said marginal portions may expand under stress without rupturing the lining.

In testimony whereof I have affixed my signature.

ROBERT E. PIERCE.