(No Model.)

W. B. HOWE.

PARAFFINE COATED PAPER BOX.

No. 339,418. Patented Apr. 6, 1886.

Fig. 1.

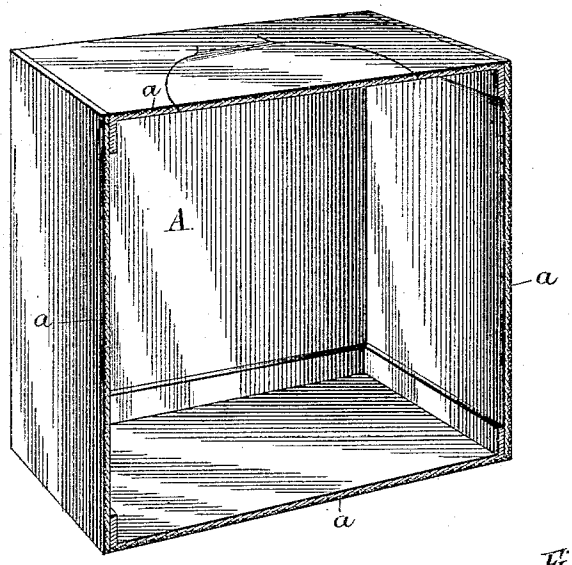


Fig. 2.

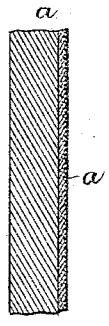


Fig. 3.

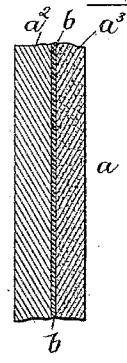
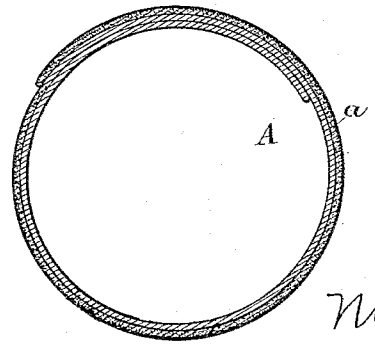


Fig. 4.



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UNITED STATES PATENT OFFICE.

WARREN B. HOWE, OF CHICAGO, ILLINOIS.

PARAFFINE-COATED PAPER BOX.

SPECIFICATION forming part of Letters Patent No. 339,418, dated April 6, 1886.

Application filed October 12, 1885. Serial No. 179,612. (No model.)

To all whom it may concern:

Be it known that I, WARREN B. HOWE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Paraffine-Coated Paper Boxes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to the manufacture of that class of cartons, canisters, boxes, or other vessels made in whole or in part of paper, straw-board, or other permeable material, and which are treated with paraffine or similar substance to render them impervious to moisture, and more especially to vessels which have paraffine applied thereto after the joints uniting the parts have been made, whereby a continuous body of paraffine-saturated material is obtained, extending over the joints as well as over other parts of the walls, and whereby the box is made of full strength at its joints by reason of the absence of paraffine upon the surfaces, which are overlapped and pasted or glued together in forming the joints.

The invention embraces both an improved means and method of constructing vessels of the class above referred to; and it consists in the matters hereinafter described, and pointed out in the appended claims.

Prior to my invention paper boxes and other vessels for containing sensitive articles of merchandise have been rendered impervious to moisture by treating the box or vessel with melted paraffine in such manner as to fully saturate the walls thereof throughout their entire thickness with the paraffine. It has been attempted heretofore, also, to make a paper box impermeable to moisture by applying to the paper stock, before the box is made, a covering of paraffine-saturated paper, caused to adhere to the box by means of paste or glue. Boxes constructed in this manner have been defective, for the reason that the oily nature of the paraffine prevents the paper saturated with it from adhering with any degree of tenacity to the stock, and inasmuch as in a box made in this manner the paraffined paper comes between the adjacent faces of the stock where the latter is overlapped at the joints of the box, a strong and permanent attachment at the joints cannot be obtained, and the box will be too weak to be of practicable utility. In a box made in this manner, furthermore, the layer of paraffined paper is not continuous; but its continuity is interrupted at the joints of the box, and at places at which the edges of the paraffined paper are joined, so that opportunity for the passage of moisture is thus afforded, this construction being especially objectionable in the case of a vessel intended to contain a fluid or semi-fluid substance.

A box or vessel constructed as proposed by my invention differs from those above referred to as having been previously used, in being made of a single thickness, or two or more permanently-united thicknesses of paper or other permeable material, and in having its walls saturated in a part of their thickness only by paraffine applied after the joints of the box or vessel have been formed, whereby the vessel is provided with a continuous body of paraffine-saturated material which extends throughout the entire area of the walls of the vessel, including the joints thereof, and which is of sufficient thickness to render the vessel impervious to moisture. This construction has important advantages in point of economy, inasmuch as it requires a much less quantity of paraffine than when the vessel-walls are completely filled therewith.

I have discovered that while paraffine will pass freely by absorption through a layer of paste such as is commonly used in making boxes, a layer or coating of glue will wholly or partially arrest its flow. In order, therefore, to provide a box the walls of which contain paraffine in a portion of their thickness only, as is above described, I either apply to the surface of the box a thin solution of glue or sizing not having sufficient body to form an impervious coating, but which, on the contrary, is to some extent porous or permeable, so as to permit the absorption into the paper of a small amount of paraffine applied to the surface of the box; or I place an impermeable layer of glue between inner and outer thicknesses of paper composing a box-wall,

so as to positively confine the paraffine to the outer layer.

In the case of a box formed of a single thickness of paper or board, the construction first described will usually be found preferable, while in the case of boxes composed of several layers of paper the construction in which the layer of glue is used may be most conveniently employed, inasmuch as in such case the glue may be advantageously used instead of paste in securing the layers together.

In carrying out my invention, when a thin or permeable coating of glue is applied to the surface of the box, the glue will be first applied and allowed to dry, and the surface so coated will then be treated by dipping it in a bath of melted paraffine, or otherwise. Instead of applying the permeable coating of glue to the surface of the article, the same result may be obtained by making the box of or covering it with board or paper the surface of which has been previously prepared with glue or a substance containing glue—as, for instance, the glazed papers commonly used for covering ornamental boxes may be employed, the glaze upon said papers usually being found to operate effectively to limit the absorption of the paraffine, in the manner set forth.

The invention may be more fully understood by reference to the accompanying drawings, in which Figure 1 is a sectional perspective view of a box made of a single thickness of paper or board. Fig. 2 is a sectional view of a part of a box-wall, showing a layer of glazed paper applied thereto. Fig. 3 is a similar sectional view illustrating a wall made in two thicknesses, with a layer of glue between them. Fig. 4 is a sectional view of a cylindric box of the kind made by winding paper about a mandrel.

In the said drawings, A, Fig. 1, is a box, the walls *a* of which are saturated or filled with paraffine in their outer parts, as indicated by the darker shading, and the inner parts and surface of which are free from paraffine and in its dry or natural condition.

In Fig. 2 a box-wall is shown, which is provided with an outer layer, *a*, of a paper such as is glazed upon its outer surface, whereby only a relatively small quantity of paraffine is permitted to enter the paper, and the box-wall is completely saturated only in its outer part, and is saturated to a much less extent, or is entirely unsaturated, in its inner portion, depending upon the thickness of the wall and the amount of paraffine entering it. Such outer layer of paper will usually be pasted upon the box, this being the usual and cheaper way of securing it, so that the melted paraffine may enter the outer layer alone, or also strike through the paste into the board, according to the quantity of the paraffine which passes through the glazed coating.

In Fig. 3 a part of a box-wall is shown, consisting of two thicknesses of paper, a^2 a^3, united by glue applied in a body, *b*, sufficiently thick to prevent the passage of any considerable quantity of paraffine. For this purpose the body of glue need not be any thicker than would usually be applied for the purpose of holding the parts together, it only being necessary that the layer of glue should be practically continuous. In this case the paraffine applied to the outer layer, a^2, of paper will saturate that layer only, and thereby effectually exclude moisture and dampness.

Fig. 4 illustrates in section a common form of cylindric box, the side walls of which are composed of two or more thicknesses of paper arranged spirally—such as is commonly formed by winding a strip or sheet of paper about a mandrel. In carrying out my invention in the construction of a box of this kind, the layers of paper will be secured by glue instead of paste, so that the layer of glue securing the outer or inner layer to the one next to it will operate to limit the saturation by the paraffine to the said outer or inner layer.

It is entirely obvious that in a box having its walls partially saturated with paraffine or its equivalent, as above set forth, the saturated part may be adjacent either to the inner or outer surface of the box. A box saturated upon its outer surface will usually be used for holding tea, coffee, or other dry articles liable to injury by moisture, while in the case of a box for lard or other fluid or semi-fluid substances the box will preferably be saturated interiorly.

Other substances having the characteristics of glue—such, for instance, as a solution of gum-arabic or shellac—may be used for forming either an impervious coating between the thicknesses of a box-wall or a permeable coating for the outer surface thereof. The particular means of carrying out my invention in which a permeable or pervious coating of glue or its equivalent is applied to one surface of the article to limit the absorption of the paraffine is, however, herein specifically claimed as part of my invention.

It is entirely obvious that a coating or layer of glue or its equivalent may be applied to limit the absorption of paraffine in a box or canister made of permeable material other than paper or straw-board, and it is also obvious that such layer of glue or its equivalent may be applied to the permeable parts of a box or canister made in part of a permeable material suitable for treatment with paraffine (such as paper) and in part of some other material employed to give greater strength or rigidity to the article, or for other purpose—as, for instance, in a vessel made of wood or metal, and having an outer or inner paraffined lining formed by a single thickness, or two or more permanently-united thicknesses, of permeable material, and provided with a coating or layer of glue or its equivalent, as above set forth.

The process hereinbefore described for constructing boxes or vessels having a permeable

or porous coating upon its surface containing glue or its equivalent, whereby the influx of paraffine to the box-wall is limited, forms an important and valuable improvement in the art of making vessels of the character herein described, and said process is therefore herein claimed as part of my invention. It is to be understood, however, that a box or vessel embodying the broad features of my invention may be made otherwise than by the said process.

I am aware that it has been proposed to construct wooden vessels with an inner lining of paper united with the wooden walls of the vessel by means of a layer of shellac or paraffine, intended to make the vessel water-proof. The construction herein claimed differs from those above described, for the reason that when shellac is employed in the manner stated the paraffine or any substance corresponding therewith is absent, the shellac alone being relied upon to make the vessel water-proof, and when paraffine is used there is nothing corresponding with the layer or coating of glue used by me to limit the absorption of the paraffine, so that the paraffine, if applied hot, will fully saturate the paper lining and will enter, to some extent, the wood composing the vessel. In this prior construction last referred to, obviously the improved result of limiting the quantity of paraffine entering the paper lining obtained by the construction herein claimed is entirely absent.

I claim as my invention—

1. A box or vessel the walls of which are composed of a single thickness or two or more permanently-united thicknesses of paper or other permeable material, and which are provided with a layer or coating of glue or its equivalent, and which contain paraffine occupying only part of the thickness of the walls, substantially as described.

2. A paraffined box or vessel the walls of which are made of paper or other permeable material, and which are provided with one or more permeable or porous layers or coatings containing glue or its equivalent, substantially as described.

3. The method of constructing paraffined boxes of permeable material, which consists in forming and joining the body or foundation of the box of unparaffined material, then applying a layer or substance containing glue or its equivalent, and finally applying the paraffine over said added layer or substance, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

WARREN B. HOWE.

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