

HENRY PEMBERTON, OF ALLEGHENY, AND BERNHARD HEINEMANN, OF  
NATRONA, PENNSYLVANIA.

Letters Patent No. 64,251, dated April 30, 1867.

IMPROVED BOXES, CANS, OR VESSELS FOR PUTTING UP CAUSTIC ALKALIES, &c.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN

Be it known that we, HENRY PEMBERTON, of Allegheny, and BERNHARD HEINEMANN, of Natrona, both in the county of Allegheny, and State of Pennsylvania, have invented a new and useful improvement in Boxes, Cans, or Wrappings for Caustic Alkalies, and other articles requiring enclosures impervious to air or moisture; and we do hereby declare the following to be a full, clear, and exact description thereof.

The object of our invention is the rendering of barrels, boxes, cans, or other cases, envelopes, or wrappings for holding saponifier, caustic alkalies, and other articles which require to be protected from the action of the air or moisture, not only impervious to air, moisture, or grease, but also capable of receiving their contents when in a melted or highly-heated condition.

There are various kinds of articles which require to be protected from the action of air and moisture in order to preserve them from destruction or deterioration by deliquescence or oxidation, and others which are penetrative, volatile, or corrosive, so as to require to be put in boxes, cans, or wrappings capable of resisting their tendency to escape from their enclosures, as well as of preventing the entrance of air or moisture from without. Among such articles may be named saponifier or caustic alkali, putty, or grease. Various means have been devised for rendering wood, paper, muslin, and other vegetable substances capable of answering the indication, but there is one difficulty which has not, we believe, been successfully overcome, which is that some articles require to be put into the box or can which is to contain them in a melted and highly-heated condition; for example, caustic soda and potash are best protected by being poured in a molten state into their receptacle. When in this condition these articles are intensely hot, sufficiently so to injure the texture of wood, paper, and other vegetable substances. We have discovered a plan of making paper or wooden boxes or cases not only impervious to air or moisture, but also capable of standing the required degree of heat without charring or burning, which method may also be applied to paper, muslin, or other vegetable fabrics, to be used as wrappers for such articles as have been named.

To enable others skilled in the art to make use of our invention, we will proceed to explain its nature and mode of practical application.

If our invention is to be applied to a paper box, it may be made of pasteboard, fastened together at its lapped edges, with a piece fitted into its bottom and top, or with a lid made like the box; or it may be made of paper wrapped round and round until it is of sufficient thickness. The cement used for fastening together the edges of the box or the layers of paper is a solution of silicate of soda or silicate of potassa of the consistence of thick sirup. The joints formed by the insertion of the top and bottom of the lid and box are covered by strips of paper saturated in the fluid silicate. Into the box thus prepared is poured some fluid silicate, which is turned round until all its inner surface, and also the inner surface of the lid, is covered and moistened with the silicate, and, while thus moistened, some finely-powdered gypsum (or other suitable article, as hereinafter mentioned) is poured in, and then emptied out, leaving a sufficient quantity of the powder adhering to the interior surface of the box to form a perfect coating. The result is that the powdered gypsum (plaster of Paris) not only adheres to the silicate, but makes a chemical combination therewith, thus coating the box internally with a silicate of sodium and lime, and forming a coating impervious to air, water, or grease, and likewise capable of withstanding a high degree of heat, so that into the box thus prepared molten caustic soda may be poured with impunity. The box is then covered with the lid, and the joint between the lid and box covered with a strip of paper saturated with silica, or otherwise.

Instead of gypsum, powdered lime, (slaked or unslaked), or fluoride of calcium, or silicate of aluminium, may be employed. Fine sand may be used, although this is not so good, as it forms a mechanical rather than a chemical union with the silicate of soda or potassa. Instead of paper or pasteboard, muslin or other textile fabric may be used for making the box or can; or the paper, muslin, or other article may be treated, as described, with silicate of soda or potassa, and then coated with plaster of Paris or lime, and used in this condition for wrapping up articles requiring protection. Barrels and boxes made of wood or other vegetable substance may be treated in like manner, by coating them either externally or internally, or both, with the solution of silicate of soda or of potassa, and then applying the powdered plaster of Paris, lime, or sand.

Having thus described our improvement, what we claim as our invention, and desire to secure by Letters Patent, is—

Protecting the surface, external or internal, or both, of barrels, boxes, cans, or cases, made of paper, muslin, wood, or other vegetable substance, or either or both surfaces of paper, muslin, or other vegetable fabric, for putting up caustic alkalies and other solid or liquid substances which require protection from air or moisture, or which are liable to penetrate their covering, by means of a coating of silicate of soda or potassa, in combination with powdered gypsum, lime, or other substance capable of combining therewith, substantially as and for the purposes hereinbefore described.

In testimony whereof we, the said HENRY PEMBERTON and BERNHARD HUNEMANN, have hereunto set our hands in presence of—

H. PEMBERTON,  
BERNHARD HEINEMANN.

Witnesses.

SAML. SIMES,  
T. H. BRACKEN.