

# UNITED STATES PATENT OFFICE.

WILLIAM R. LONG, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO CARLOS G. TREDWAY, OF ST. LOUIS, MISSOURI.

## COMPOSITION FOR COATING RECEPTACLES.

No. 931,324.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed July 21, 1908. Serial No. 444,672.

*To all whom it may concern:*

Be it known that I, WILLIAM R. LONG, a citizen of the United States, residing at St. Louis, Missouri, have invented a new and useful Improvement in Composition for Coating Receptacles, of which the following is a specification.

This invention relates to a composition for coating packing and storing vessels, and has for its object to provide a suitable material or size for coating paper and like receptacles to render the same impervious to oils, greases, table syrups, preserves and the like, and which shall be, as far as possible, free from liability to crack or break, and which shall be non-absorbent.

A further object is to provide a composition for rendering such receptacles air-tight and to exclude therefrom light, thereby preventing deterioration in certain classes of contents on which air and light have a deleterious influence.

It has heretofore been proposed to apply an inner coating to casks or barrels with various preparations designed to prevent the absorption of oil or grease from materials such as white lead, paint, etc., packed in said casks or barrels, and it has also been proposed to apply a size to paper surfaces. All the materials however, so far as I am informed, which have been utilized for this purpose have either contained substances which would be deleterious, or in some cases even poisonous, if used for the packing or storing of food stuffs, or else they lack the requisite toughness, flexibility and elasticity for use on yielding surfaces such as that of a paper box or of a container made of paper pulp or other fibrous pulp.

With the objects above set forth and with a view of overcoming the above objections, I provide a size or coating composition by mixing approximately 150 lbs. of flour, preferably wheat which contains a large proportion of gluten, and 240 lbs. of water to which is added a sufficient quantity of acid to bring about the conversion of the starch contained in the flour. In practice I have used for this purpose  $37\frac{1}{2}$  ounces of commercial muriatic acid for the quantity of flour stated. When the batch, by agitation in a mixer, has been rendered free of lumps, steam is turned on to it and is injected through an open pipe into the mixer from a boiler carrying preferably from 55

to 65 lbs. pressure. The batch should be kept in motion constantly and the mixer should have an outlet on top to permit the emission of evaporation and steam. After about two hours of cooking in this manner, the steam is turned off and the acid is neutralized by adding soda ash in solution usually  $18\frac{1}{2}$  ounces of soda ash for the quantity of muriatic acid above mentioned. The quantity of the neutralizer to be used should be determined by the use of litmus paper, or otherwise.

Instead of muriatic acid, other acids may be used, as for instance, sulfuric, and any appropriate neutralizing substance may be used in place of the soda ash. I then add to the batch, preferably, 300 to 400 lbs. of 43 deg. Baumé glucose, and allow the mixer to run several minutes or long enough to thoroughly mix the glucose and flour solution. The batch can then be run into receptacles where it can be kept for use. To size the paper packages with this material, I take a quantity of the size and thin it while hot to the consistency of heavy syrup and apply the size to the receptacle either by pouring from one into another, or by the use of a brush, or by any other suitable method. The size may be applied either to the interior or the exterior surface of the receptacle or to both, or the package may be dipped in a bath of the size so that the entire surface inside and outside will be covered. Also the size may be applied, when the receptacle is composed of layers of paper or pasteboard, by applying it automatically, or by hand, to one or more of the interior layers of the paper. The receptacle should then be exposed to the air or be placed in a dry room until it is sufficiently dry.

The proportions of ingredients named herein are given by way of illustration, and while they are the ones which I prefer to use, they may be varied somewhat without sacrificing materially the advantages of the size composition.

To those skilled in the art it will be obvious that any suitable inert material, such as whiting, gypsum, talc and the like, may be incorporated in the size or coating composition to facilitate drying and act also as a filling material for the pores of the fiber to be coated.

What I claim is:—

1. The composition for rendering fiber



receptacles impervious to oils and the like and which is non-cracking, consisting of glucose and acid-treated flour containing gluten.

5 2. The composition for rendering fiber receptacles impervious to oils and the like and which is non-cracking, consisting of glucose and converted flour containing gluten.

10 3. The size or coating composition for rendering fiber receptacles impervious to oils and the like and which is non-cracking, consisting of glucose of 43 deg. Baumé 300 to 400 parts, acid converted wheat flour 150

15 parts, and water sufficient for incorporation.  
4. The composition for rendering fiber receptacles impervious to oils and the like

and which is non-cracking, consisting of glucose, acid-treated flour containing gluten, and a powdered filling material. 20

5. The composition for rendering fiber receptacles impervious to oils and the like and which is non-cracking, consisting of glucose, converted flour containing gluten, and a powdered filling material. 25

In testimony whereof, I hereunto affix my signature to this specification this 14th day of July, 1908, in the presence of two witnesses.

WILLIAM R. LONG. [L. S.]

In presence of—

J. D. RIPPEY,

L. C. KINGSLAND.