

UNITED STATES PATENT OFFICE.

FRANK EUGENE KEYES, OF PETERBOROUGH, NEW HAMPSHIRE, ASSIGNOR
TO THE AMOSKEAG INDURATED FIBRE WARE COMPANY, OF SAME PLACE.

METHOD OF TREATING PULP OR FIBROUS MATERIAL AND THE RESULTING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 369,862, dated September 13, 1887.

Application filed January 25, 1887. Serial No. 225,474. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK EUGENE KEYES, a citizen of the United States, residing at Peterborough, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Methods of Treating Pulp or Fibrous Material and the Resulting Material; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved process of treating articles made of pulp, wood, or analogous fibrous material, such as wood-pulp pails, other hollow vessels, and, in fact, all the various kinds of pulp ware, wooden ware, and fibrous ware, whereby said articles may be water-proofed and indurated, and it relates likewise to the product resultant from this mode of treatment, the object being to render the articles impervious to moisture and proof against the corrosive and destructive action of acids and alkalies; also, to provide them with a surface capable of receiving a high degree of polish, and that will not be liable to peel off or break or be easily subject to disfigurement and marring when brought into contact with other things.

Processes have heretofore been devised for accomplishing the desired result by employing saturating-baths for the articles, in which linseed-oil or paraffine was the sole or chief ingredient. My invention, however, dispenses with the use of linseed-oil and paraffine and proceeds by a novel, cheap, and more effective process to impart to the pulp or fibrous articles those characteristics of impermeability, hardness, toughness, and strength which it is necessary for them to possess.

In carrying out my improved process I first commingle resin and cotton-seed oil or analogous substances in suitable proportions, by weight, which vary according to the properties which it is desired the article may have after treatment. If we desire a very stiff, firm product, more resin is used. In general, I prefer to use one part of resin and two parts of cotton-seed oil. The mixed resin and cotton-seed oil are boiled together for five hours at a

temperature of about 600°. The articles to be treated are then immersed in this mixture at a somewhat lower temperature—say, about 300°, more or less, as the article may seem to require. After the articles have become thoroughly saturated, they are removed from the bath and allowed to stand for twelve hours or so before baking. The soaked articles are next placed into an oven and baked for an hour at a temperature of 100°. The temperature is then increased until about 225° is reached, and the articles permitted to continue to bake at that heat until there is no odor or gas about them. This usually requires about eight hours' time, and the resulting article is a firm, solid body, but has no gloss.

In order to furnish the article or material with a good gloss that will not crack or be otherwise liable to injury, I use cotton-seed oil, litharge, and resin, the parts being proportioned substantially as follows: Seventy per cent. of cotton-seed oil, twenty per cent. of resin, and ten per cent. of litharge, or thereabout. These constituents are boiled together for five hours at a high temperature of about 600°, when the composition is partly cooled and strained off. It is then ready for use. The articles to be treated are dipped into the mixture thus prepared at a temperature of about 200°, and allowed to remain therein only long enough to have their surfaces completely covered. They are then placed immediately in the oven again and baked at a temperature of about 225°. For common ware—such as pails, tubs, and the like—this baking will continue for about eight hours until no gas or odor escapes from the article. The last and finishing coat is given by repeating the last immersion and baking, and thus a good gloss is given to the articles, so that they will be enabled to withstand the action of chemicals, &c.

I am aware that linseed-oil has heretofore been used for purposes similar to those contemplated in the use of cotton-seed oil in the present invention; but chemically cotton-seed oil is not the equivalent of linseed-oil. Linseed-oil is an oxidizing or drying oil, its principal constituent being linoleum, a body peculiar to drying-oil. Cotton-seed oil is a non-oxidizing, non-drying oil, consisting entirely

of a mixture of palmitine and oleine bodies, which are valuable for making soaps and lubricants. In a pure condition this oil undergoes little change through the influence of the atmosphere; but if impurities are present a slow fermentation sets in, rendering it thick and greasy. It could be thickened by heat, but this is due to volatile matters being thrown off, and not to oxidation.

10 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

15 1. The herein described process of treating pulp, wood, or analogous fibrous articles for the purpose of waterproofing, indurating, and making the same tough and impervious, which consists in saturating said articles in a hot bath of melted resin and cotton-seed oil or analogous substances, substantially as described.

20 2. The herein-described process of treating pulp or fibrous ware so as to harden and render it impervious, which consists in first immersing the articles in a heated mixture of melted resin and cotton-seed oil or analogous substances, and subsequently baking them, substantially as described.

30 3. The method herein specified of treating pulp, wood, or analogous fibrous articles for the purpose of waterproofing and indurating the same, which consists in saturating said articles in a heated mixture of cotton-seed oil, resin, and litharge or analogous substances, substantially as described.

35 4. The method herein described of treating pulp, wood, or analogous fibrous articles for the purpose of waterproofing and indurating the same, which consists in saturating said articles in a heated mixture of cotton-seed oil and resin or analogous substances, then baking the articles, and then immersing them in a

hot bath of cotton-seed oil, litharge, and resin, substantially as described.

5. The method herein specified of treating pulp or fibrous articles, which consists in saturating said articles in a heated mixture of resin and cotton-seed oil, then baking them, next immersing them in cotton-seed oil, litharge, and resin, again baking, and then repeating the last immersion and baking, substantially as described.

6. The herein-described process of treating pulp ware, wood, or analogous fibrous substances, which consists in first saturating the articles in a heated mixture of resin and cotton-seed oil, then baking them for a shorter time at a lower temperature and for a longer time at a higher temperature, next immersing them in a heated mixture of cotton-seed oil, litharge, and resin, and then baking again, substantially as described.

7. The herein-described material, consisting of pulp, wood, or analogous fibrous substances that has been indurated, toughened, and rendered impervious in a mixture of melted resin and cotton-seed oil, substantially as described.

8. The herein-described material, consisting of pulp, wood, or analogous fibrous material, having its interstices filled with mixed cotton-seed oil, litharge, and resin, substantially as described.

9. The herein-described material, consisting of pulp or fibrous material that has been surfaced with a mixture of cotton-seed oil, litharge and resin, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK EUGENE KEYES.

Witnesses:

J. M. CUMMINGS,

GEORGE E. WILKINS.