UNITED STATES PATENT OFFICE.

FRANKLIN C. ROBINSON AND WILLIAM H. COTHREN, OF BRUNSWICK, ME.

PROCESS OF TREATING ARTICLES MADE OF PAPER-STOCK OR WOOD PULP, &c.

SPECIFICATION forming part of Letters Patent No. 347,200, dated August 10, 1886.

Application filed May 18, 1886. Serial No. 202,570. (No specimens.)

To all whom it may concern:

Be it known that we, FRANKLIN C. ROBINSON and WILLIAM H. COTHREN, both citizens of the United States, residing at Brunswick, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in the Process of Treating Articles Made of Paper-Stock or Wood Pulp, and in the articles so produced, of which the following is a specification.

It has been found to be a matter of great importance to water-proof and harden hollow and other articles made of paper or wood pulp, so that the same shall be rendered impervious to moisture, proof against the action of acids or alkalies, and hard enough to be capable of sustaining a polish.

The necessity for such an invention as above is rendered greater as the manufacture of the articles referred to is increasing very rapidly. Heretofore attempts have been made to gain the designed ends by the use of a mixture of which linseed or other oil was a principal element; but the use of such a compound does not seem to have fully compassed all the conditions of the case, or to have insured the desired result.

Our invention is designed to accomplish the desired result by a process wherein oil is not used, and whereby a product is obtained peculiarly perfect for all the uses to which it may properly be put, all as will now be set forth more fully and in detail.

We melt together paraffine-wax and resin in varying proportions, according to the character of the article we wish to turn out. If we desire a very stiff, firm product, more resin is used. In general we use one part of resin to two of paraffine. The article to be treated, whether it be a pail, flat card-board, or, in fact, anything that can be made of paper-stock or wood pulp, is dipped in this hot mixture. The time of soaking depends on the size of the article and the quality of the product desired. In general the article is thoroughly saturated or impregnated with the solution—that is, the paper stock or body is soaked full, but no excess is left on the surface. This treatment is sufficient for many articles, as the paper is entirely changed in appearance and characteristics. It is rendered much tougher, has the appearance of horn to some extent, can be worked with tools, and is impervious to water and acids. In order that when an article treated as above is in an atmosphere near that of boiling water its filling may not be softened, so that some of the paraffine and resin will be liable to appear on the surface, we next place the article thus treated in an oven and heat it at a temperature of about 110° centigrade. Oxidation takes place, and the heating is continued till the surface of the article becomes dry and hard. The time of heating is dependent on the proportions of the resin and paraffine, the size and uses to which the article is to be put, &c. The articles thus treated have a hard, glossy, or smooth surface; will cut like box-wood; can be worked with tools; are not affected by acids, alkalies, or boiling water, &c., and are flexible.

If an article is desired to resist great wear on its surface, the article, treated as above, is covered with a coat of water-glass, and then the water-glass is made insoluble in one or two ways. It can be made insoluble by brushing it over with dilute chlorhydric acid, or, preferably, by heating it (the article) again. In the latter case the article becomes covered with a fine glossy coating, like a pottery-glaze.

Having now described our invention, what we consider new, and desire to secure by Letters Patent, is—

1. The above-described process of treating articles made of paper or wood pulp by a heated mixture composed of one part resin and two parts paraffine and then heating the same, whereby the article is hardened and solidified and has a smooth surface, substantially as described.

2. The described process of treating articles made of paper or wood pulp, consisting in soaking or impregnating the same with a hot mixture of resin and paraffine and producing on them an insoluble surface, all substantially as described.

3. The herein-described article of paper or wood stock treated with a mixture of resin and paraffine, substantially as described.

4. The herein described article of paper or wood stock treated with a mixture of resin and paraffine, and surfaced, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANKLIN C. ROBINSON.
WILLIAM H. COTHREN.

Witnesses:
ARTHUR F. BELCHER,
HERBERT C. WHITTEMORE.