

UNITED STATES PATENT OFFICE.

JAMES C. PEABODY, OF BOSTON, MASSACHUSETTS.

METHOD OF MAKING INDURATED ARTICLES FROM PLASTIC MATERIAL.

SPECIFICATION forming part of Letters Patent No. 517,011, dated March 20, 1894.

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To all whom it may concern:

Be it known that I, JAMES C. PEABODY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Methods of Making Indurated Articles from Plastic Material, of which the following is a specification.

Heretofore, in the manufacture of shaped articles from paper stock or similar material capable of being rendered plastic and then molded, two general methods of procedure have been followed. By the first of these methods, comminuted fiber in the condition of wet pulp is compressed into blocks of the necessary size, these blocks are subsequently placed in lathes and turned down, or otherwise worked down into shape, and then the surface thereof is smoothed by sand papering. By the second of these methods, a form or blank of much greater thickness, &c., than the finished article to be produced, resembling in general form and shape the said article, is first molded from the wet pulp and then this rough form or blank is worked down to proper thickness and dimensions. A characteristic feature of each of these old methods is the reduction of the fiber to the condition of wet or saturated pulp. The articles produced thereby are indurated or given a hard exterior by treatment, after being brought into shape, in accordance with well-known indurating processes, as for instance, with linseed oil, and resin, under one old mode of treatment, they being first boiled in oil, then in oil and resin, and again in oil.

The object of my present invention is to produce indurated shaped articles from plastic material containing fiber in a more economical and expeditious manner than heretofore.

My invention consists in the improved mode of procedure which will now first be described and then be defined in the claim at the close of the specification.

I employ fibrous material in a condition of extreme sub-division and fine reduction, such for instance as dry wood pulp prepared for paper-making.

In the practice of my invention, the first step is to feed the said fibrous material in a dry condition to suitable heated grinding and mixing rolls, and to combine with it proper indurating material, the whole being acted

upon by the rolls, and the indurating material being thereby thoroughly incorporated into the mass. Preferably the indurating material before being thus fed is first warmed. The indurating substance or material which I employ is linseed oil or some one of the known equivalents thereof. The proportions of the various ingredients of the combined mass may be varied to suit the views and needs of the manufacturers. I have found good results to be secured by adding to, say, about two thousand pounds of fibrous material, about twenty pounds of linseed oil. In addition, I employ a sufficient proportionate quantity of some gummy or resinous substance which will act as a binder and serve to hold the fibrous material together in a plastic mass until the oxidation of the linseed oil or equivalent indurating agent has progressed sufficiently to give to the mass a fair degree of tenacity. Thus, to the mixture aforesaid, I may add about one hundred pounds of resin. The resin or its equivalent or substitute gives the consistency or substance which is requisite to enable the molding to be effected. The grinding of the various ingredients of the mixture is continued until after they have become thoroughly incorporated and distributed throughout the mass, and until after the fibrous material has become thoroughly imbued with the indurating agent. Proper quantities of the mass are introduced while warm into cold metallic molds and compressed into shape. The articles thus produced are in practically completed condition when they are removed from the molds.

By my invention I obviate all necessity for putting into the condition of wet pulp the stock or material which is used, I obviate the necessity for using expensive machinery for molding the wet pulp, I obviate the necessity for cutting down into shape a block or rough blank and avoid the waste incident thereto, and I obviate all necessity for treating the shaped article with indurating material, and at the same time I produce in a direct and simple manner an article possessing the necessary induration and finish throughout the mass.

By my method of procedure the indurating material is distributed throughout the entire body of the article produced and produces

an induration uniform throughout the mass, whereas in articles produced by the old method hereinbefore described the induration either is greatest on the surface or extends only to a slight extent inward from the surface, leaving the interior portions unchanged, this latter condition being noticeable particularly in thick articles.

Lest the precise character of the invention should not be clearly understood, and in order that there may be no misunderstanding as to the intended scope of my claim, I would here state that by "induration" I do not have reference to mere hardness, and therefore when I speak of an indurated article I do not intend merely one which is composed in whole or part of a plastic material which becomes hard when cold. What I do intend by the term "induration" is the well-known hardening effect which is secured, in the case of articles made from paper or paper pulp, by oxidation or by other chemical changes which occur in the linseed oil, or the like so-called indurating substance or compound that is applied to the material of which such articles are produced. I state this in order that my claim may not be misunderstood as covering simply the employment of some substance such as pitch, or resin alone. By the terms

"fibrous material" I do not intend any such substance or material as saw dust, which is merely granulated wood, and in which the small proportionate quantity of true fiber is increased and surrounded by other substances.

In my experiments, I have found saw dust incapable of being put in the right condition for use in accordance with my invention, and the articles made of the same are altogether different in character and quality from articles in which pure fibrous material in a state of extreme sub-division and fine reduction is used.

What I claim is—

The herein described improved method of making articles of plastic fiber which consists in taking wood fiber or paper stock in dry condition, thoroughly mixing and incorporating therewith in the presence of heat linseed oil, and resin, in about the proportions specified, and then powerfully compressing the mass while still warm and plastic in cold molds to the required shape, substantially as described.

JAMES C. PEABODY.

Witnesses:

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