

UNITED STATES PATENT OFFICE.

SAMUEL CABOT, OF BROOKLINE, MASSACHUSETTS.

COMPOUND FOR BLEACHING AND PRESERVING WOOD.

SPECIFICATION forming part of Letters Patent No. 515,191, dated February 20, 1894.

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To all whom it may concern:

Be it known that I, SAMUEL CABOT, a citizen of the United States, and a resident of Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Compounds for Bleaching and Preserving Wood Surfaces, of which the following is a specification.

This invention is related to many others designed to improve or modify the appearance of wood, or wood structures, by treating the same in many different ways. It is especially intended for bleaching and preserving architectural erections and ornament thereon, in a peculiar and beautiful manner; and it is well adapted for newly shingled roofs, which, by this means may be brought into harmony with the rest of the building.

It is well known that the exposed surfaces of woods that are able to resist decay, become bleached or grayed by the action of the elements, and that the action is vastly greater and more perfect on the sea coast than elsewhere. This very marked difference seems to be due to the presence of salt spray or foam taken up by the winds and often carried for long distances in the air, an opinion which is justified by the very perfect bleaching of drift wood found upon the beach itself. This spontaneous bleaching of wood can only take place completely when a clean surface has been exposed, and when the wood is of such a kind as to withstand destructive decay, the time required for the completion of the natural process at the seashore being long, extending indeed over many years. The result so obtained is very beautiful, the surface of the wood being uniformly covered by a soft silvery white or gray color, which harmonizes well with all the stained and other tints used in artistic architecture.

My invention is designed to produce by chemical treatment in all suburban or country places, a like or superior result in a relatively rapid and much more reliable manner, but one which extends nevertheless over a long period as compared with ordinary bleaching operations in the arts. To accomplish this I apply to the exposed surface of the wood a preparation consisting of water fifty parts, creosote oil seventy parts, chloride of lime ten parts; which being mixed together give rise to

a creamy liquid in which the oily matter remains suspended or emulsified, a state of things largely due to the alkaline character of the chloride of lime, which always has an excess of caustic lime, and only a weak acid in combination. This preparation, or paint, as it may be regarded, is applied to the surface of the wood in sufficient quantities by a brush or otherwise. The coating is preferably made to freshly exposed surfaces, in which case bleaching and preservative changes begin at once; but it is only by exposure to the elements conjoined with the applied coating, and then after several months of such combined action that the most perfect results are obtained. These consist in the gradual but thorough destruction of the glutinous and extractive matter between the surface fibers and to an appreciable depth, as well as of the organic coloring matter present of whatever kind, so that in the end pure cellulose alone is left visible upon the surface of the wood in a gray-white silky condition liable to no further change.

As stated, I have discovered that the method or process of coating wood with a paint substantially of the composition herein given, and conjointly exposing the coated wood to external atmospheric influences, yields excellent results; better in quality and more rapid than can be obtained by any other means known to me, and much better than can be got by using either the chemical or the atmospheric influences alone. Full explanation of this fact is difficult, the bleaching action of the sunlight, ozone, and the moisture furnished by rain and dew, seems to be heightened by that of the hypochlorous acid or chlorine set free; but independently of any such theory it may be assumed with strong probability, that a very slow decomposition of the large excess of chlorinated lime present, is effected by the carbonic acid of the atmosphere. In addition to this the preservative action of the creosote oil, while it gives lasting qualities to inferior woods and lengthens the duration of all, has apparently a specific influence in restraining the rotting tendencies of the surface and the extension of the same to the cellulose; in which direction the salt of sea water is also active, though in a much less degree. The carbonate of

lime and other solid substances resulting from this prolonged process are finally removed by the mechanical as well as the solvent action of the rain, &c. In this way wood surfaces are successfully bleached and preserved at the same time by absorption of the antiseptic creosote oil, leaving the silky filaments of cellulose uninjured. But, to complete this process some months are usually required, and during that time the surface undergoing treatment is more or less disfigured by reason of the partial and splotchy removal of color and of the resulting products and residues generally. To remedy this I add to the mixture already described, two other substances, namely zinc white thirty parts, and linseed oil fifteen parts, and stir both into the emulsion consisting of the quantities of water, chlorinated lime, and creosote given above. These additions do not interfere with the working qualities, or with the bleaching and preservative properties of the resulting composition, on the contrary, a heavy coating adheres more tenaciously to the wood and remains advantageously in contact with it pending the completion of the process; but the important effect obtained is an immediate simulation of the appearance which the wood should finally assume. This is due to the presence of the zinc white in the drying oil, which though very thin and non-lasting as a paint is sufficient at first to mask the disagreeable appearances otherwise unavoidable, and yet to yield to wear and tear, &c., simultaneously, or nearly so, with the completion of the real change of surface. The mechanical and detergent action of the rain and wind, will soon remove the solid residues upon shingle roofs and like structures treated in this way, after the chemical changes have been accomplished. But when the process is otherwise ended mechanical rubbing or brushing may of course be resorted to to expedite the final result.

Having thus described my invention I wish it to be understood that I do not confine myself to the precise ingredients employed, or to the manner of applying the same, so long as the principles underlying my invention are maintained. It is possible for instance, to substitute other bleaching material in whole or in part for the chloride of lime. This would at once be accomplished by adding carbonate of soda in suitable quantity to the suspended chlorinated lime, which would cause the formation of sodium hypochlorite and calcium carbonate in quantities proportionate to the

quantity of soda employed. Or a solution of sodium hypochlorite may be used at once in conjunction with the other ingredients. But I have found the chlorinated lime better adapted for my purpose inasmuch as it gives upon the shingles or other surface a coating or layer having some quantity, which is not readily washed away (especially when helped to resist rain by the presence of the linseed or other drying oil) and which is gradually decomposed, setting free the hypochlorous acid (or chlorine) to act upon the yellow or brownish coloring matter of the wood, and destroy it in conjunction with the sunlight and rain.

In place of creosote oil other antiseptics may be substituted, and for the zinc white other white colors, though the lightness of the zinc is one of several advantages that it possesses, as it does not settle out of the paint.

The quantities hereinbefore given I have found to be the best adapted for general use, but they may be modified to suit circumstances and the quantity of water may be somewhat increased or diminished, so as to give rise to a greater or less thickness of coating on the surface to be bleached and preserved, or to facilitate transportation of the manufactured composition.

In this specification, when the word "long" or "prolonged" is used with reference to the time required to complete my process, I wish it to be understood that a time is meant very much in excess of that necessary for ordinary bleaching purposes, usually extending to months; and, by the word "detergent," as applied to coated, exposed and bleached surfaces, I refer to the cleansing power of the elements, chiefly of the rain and snow, which remove the products of chemical action as well as the remains of the bleaching paint itself.

What I claim is—

1. A composition for bleaching and preserving wood consisting of chlorinated lime, creosote oil and water in about the proportions specified; substantially as described.

2. A composition for bleaching and preserving wood consisting of chlorinated lime, creosote oil, zinc white, linseed oil and water in about the quantities specified; substantially as described.

SAM. CABOT.

Witnesses:

MARCH G. BARNETT,
CHAS. P. NICHOLS.